HEALTHCARE BUSINESS MARKET RESEARCH HANDBOOK 2019-2020

20th EDITION

RKMA MARKET RESEARCH HANDBOOK SERIES

By: Richard K. Miller and Kelli Washington

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PART I: AMERICA’S HEALTH
1

GENERAL HEALTH

1.1 National Assessment

According to the Behavioral Risk Factor Surveillance System (BRFSS, www.cdc.gov/brfss/) of the Centers for Disease Control and Prevention (CDC, www.cdc.gov), adults rate their general health as follows:
- Excellent: 18.6%
- Very good: 33.6%
- Good: 30.9%
- Fair: 12.3%
- Poor: 4.4%

1.2 State Assessment

According to the CDC BRFSS, adults rate their general health as follows:

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<th>Excellent</th>
<th>Very Good</th>
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<tr>
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<td>Poor</td>
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</tr>
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<tr>
<td>Nevada</td>
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<tr>
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<tr>
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<tr>
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<tr>
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<td>29.9%</td>
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</tr>
<tr>
<td>South Dakota</td>
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<td>Vermont</td>
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</tr>
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<td>Virginia</td>
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</tr>
<tr>
<td>Washington</td>
<td>18.5%</td>
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<td>31.4%</td>
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</tr>
<tr>
<td>West Virginia</td>
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<td>32.7%</td>
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</tr>
<tr>
<td>Wisconsin</td>
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<tr>
<td>Wyoming</td>
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<td>34.7%</td>
<td>30.2%</td>
<td>11.1%</td>
<td>4.2%</td>
</tr>
</tbody>
</table>

The following states have the highest percentages of adults rating their personal health as excellent or good:
- Vermont: 87.9%
- Minnesota: 87.6%
- Utah: 87.5%
- New Hampshire: 87.4%
- South Dakota: 87.4%

The following states have the highest percentages of adults rating their personal health as fair or poor:
- West Virginia: 25.7%
- Mississippi: 24.4%
- Arkansas: 24.1%
1.3 Metropolitan Assessment

According to the CDC BRFSS, adults, by Metropolitan Statistical Area (MSA), Metropolitan Division (MD), or Micropolitan Statistical Area (μSA), rate their general health as follows:

<table>
<thead>
<tr>
<th>Location</th>
<th>Excellent</th>
<th>Very Good</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akron, OH MSA:</td>
<td>18.4%</td>
<td>31.2%</td>
<td>29.9%</td>
<td>13.7%</td>
<td>6.8%</td>
</tr>
<tr>
<td>Albuquerque, NM MSA:</td>
<td>19.7%</td>
<td>30.3%</td>
<td>32.3%</td>
<td>13.3%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Allentown-Bethlehem-Easton, PA-NJ MSA:</td>
<td>19.2%</td>
<td>35.9%</td>
<td>28.2%</td>
<td>11.8%</td>
<td>5.1%</td>
</tr>
<tr>
<td>Anaheim-Santa Ana-Irvine, CA MD:</td>
<td>22.7%</td>
<td>35.1%</td>
<td>29.1%</td>
<td>10.7%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Anchorage, AK MSA:</td>
<td>20.3%</td>
<td>33.9%</td>
<td>32.1%</td>
<td>10.2%</td>
<td>3.6%</td>
</tr>
<tr>
<td>Asheville, NC MSA:</td>
<td>19.7%</td>
<td>31.4%</td>
<td>32.5%</td>
<td>11.4%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Atlanta-Sandy Springs-Marietta, GA MSA:</td>
<td>20.4%</td>
<td>33.7%</td>
<td>32.5%</td>
<td>10.3%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Atlantic City, NJ MSA:</td>
<td>16.1%</td>
<td>31.1%</td>
<td>36.4%</td>
<td>12.4%</td>
<td>4.1%</td>
</tr>
<tr>
<td>Augusta-Richmond County, GA-SC MSA:</td>
<td>23.4%</td>
<td>25.9%</td>
<td>33.1%</td>
<td>12.6%</td>
<td>5.1%</td>
</tr>
<tr>
<td>Augusta-Waterville, ME μSA:</td>
<td>15.4%</td>
<td>36.8%</td>
<td>30.1%</td>
<td>12.2%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Austin-Round Rock, TX MSA:</td>
<td>20.3%</td>
<td>31.4%</td>
<td>32.5%</td>
<td>11.6%</td>
<td>4.2%</td>
</tr>
<tr>
<td>Baltimore-Towson, MD MSA:</td>
<td>20.1%</td>
<td>34.3%</td>
<td>29.1%</td>
<td>13.3%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Bangor, ME MSA:</td>
<td>16.2%</td>
<td>37.7%</td>
<td>28.5%</td>
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</tr>
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<td>Barnstable Town, MA MSA:</td>
<td>27.8%</td>
<td>35.2%</td>
<td>25.4%</td>
<td>9.4%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Barre, VT μSA:</td>
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<td>2.3%</td>
</tr>
<tr>
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<td>6.6%</td>
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<tr>
<td>Bellingham, WA MSA:</td>
<td>24.8%</td>
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<td>28.4%</td>
<td>8.7%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Berlin, NH-VT μSA:</td>
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<td>31.3%</td>
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<td>7.5%</td>
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<td>3.8%</td>
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<tr>
<td>Birmingham-Hoover, AL MSA:</td>
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<td>33.1%</td>
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<td>5.9%</td>
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<tr>
<td>Bismarck, ND MSA:</td>
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<td>37.0%</td>
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<td>2.8%</td>
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<tr>
<td>Boise City-Nampa, ID MSA:</td>
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<td>4.4%</td>
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<td>2.5%</td>
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<tr>
<td>Boulder, CO MSA:</td>
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</tr>
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<td>Bridgeport-Stamford-Norwalk, CT MSA:</td>
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<td>27.9%</td>
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<td>2.6%</td>
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<tr>
<td>Burlington-South Burlington, VT MSA:</td>
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<tr>
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<td>2.7%</td>
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</tr>
<tr>
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<td>27.3%</td>
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<td>4.8%</td>
</tr>
<tr>
<td>Charlotte-Gastonia-Concord, NC-SC MSA:</td>
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<td>31.4%</td>
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<td>13.2%</td>
<td>4.2%</td>
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<tr>
<td>Chattanooga, TN-GA MSA</td>
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<tr>
<td>Cheyenne, WY MSA</td>
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<td>35.2%</td>
<td>27.5%</td>
<td>11.8%</td>
<td>6.0%</td>
</tr>
<tr>
<td>Chicago-Naperville-Joliet, IL-IN-WI MSA</td>
<td>19.1%</td>
<td>32.6%</td>
<td>32.0%</td>
<td>13.4%</td>
<td>3.0%</td>
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<tr>
<td>Cincinnati-Middletown, OH-KY-IN MSA</td>
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<tr>
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<td>9.7%</td>
<td>2.6%</td>
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<tr>
<td>Cleveland-Elyria-Mentor, OH MSA</td>
<td>19.9%</td>
<td>32.3%</td>
<td>30.3%</td>
<td>13.5%</td>
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<tr>
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<tr>
<td>Columbia, SC MSA</td>
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<td>37.2%</td>
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<tr>
<td>Dallas-Plano-Irving, TX MD</td>
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<tr>
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<td>28.8%</td>
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<td>3.6%</td>
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<tr>
<td>Detroit-Livonia-Dearborn, MI MD</td>
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<td>29.1%</td>
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<td>6.2%</td>
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<td>Dover, DE MSA</td>
<td>19.8%</td>
<td>31.9%</td>
<td>30.3%</td>
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<td>3.8%</td>
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<tr>
<td>Duluth, MN-WI MSA</td>
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<td>3.0%</td>
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<tr>
<td>El Paso, TX MSA</td>
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<tr>
<td>Eugene-Springfield, OR MSA</td>
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<td>36.8%</td>
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<td>Fargo, ND-MN MSA</td>
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<td>2.5%</td>
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<td>Farmington, NM MSA</td>
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<td>Fayetteville, NC MSA</td>
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<tr>
<td>Fayetteville-Springdale-Rogers, AR-MO MSA</td>
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<td>Fort Collins-Loveland, CO MSA</td>
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<tr>
<td>Fort Wayne, IN MSA</td>
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<td>Fort Worth-Arlington, TX MD</td>
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<td>Grand Island, NE µSA</td>
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<td>Grand Rapids-Wyoming, MI MSA</td>
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<td>Great Falls, MT MSA</td>
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<td>Greensboro-High Point, NC MSA</td>
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<tr>
<td>Greenville, SC MSA</td>
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<tr>
<td>Gulfport-Biloxi, MS MSA</td>
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<td>Hagerstown-Martinsburg, MD-WV MSA</td>
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<td>Harrisburg-Carlisle, PA MSA</td>
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<td>Heber, UT µSA</td>
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<td>Hilo, HI µSA</td>
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<td>Honolulu, HI (urban) MSA</td>
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<td>Houston-Sugar Land-Baytown, TX MSA</td>
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<tr>
<td>Huntington-Ashland, WV-KY-OH MSA</td>
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<td>Huntsville, AL MSA</td>
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<td>Idaho Falls, ID MSA</td>
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<tr>
<td>Indianapolis-Carmel, IN MSA</td>
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<tr>
<td>Jackson, MS MSA</td>
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<td>Jacksonville, FL MSA</td>
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<tr>
<td>Kahului-Wailuku, HI μSA</td>
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<td>Kalispell, MT μSA</td>
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<td>Kansas City, MO-KS MSA</td>
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<td>Kapaa, HI μSA</td>
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<td>Keene, NH μSA</td>
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<td>Kennewick-Richland-Pasco, WA MSA</td>
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<td>Kingsport-Bristol, TN-VA MSA</td>
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<td>Las Cruces, NM MSA</td>
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<td>Las Vegas-Paradise, NV MSA</td>
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<tr>
<td>Lewiston-Auburn, ME MSA</td>
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<tr>
<td>Lexington-Fayette, KY MSA</td>
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<td>Lincoln, NE MSA</td>
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<tr>
<td>Little Rock-North Little Rock, AR MSA</td>
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<td>Logan, UT-ID MSA</td>
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<tr>
<td>Los Angeles-Long Beach-Glendale, CA MD</td>
<td>20.6%</td>
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<td>Louisville, KY-IN MSA</td>
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<td>Lumberton, NC μSA</td>
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<td>Manchester-Nashua, NH MSA</td>
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<tr>
<td>McAllen-Edinburg-Mission, TX MSA</td>
<td>12.8%</td>
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<td>Memphis, TN-MS-AR MSA</td>
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<tr>
<td>Miami-Ft, Lauderdale-Miami Beach, FL MSA</td>
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<tr>
<td>Milwaukee-Waukesha-West Allis, WI MSA</td>
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<tr>
<td>Minneapolis-St. Paul-Bloom., MN-WI MSA</td>
<td>21.8%</td>
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<td>Missoula, MT MSA</td>
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<td>Mobile, AL MSA</td>
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<tr>
<td>Montgomery-Bucks-Chester County, PA MD</td>
<td>22.7%</td>
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<td>Montgomery, AL MSA</td>
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<td>Myrtle Beach-Conway, SC MSA</td>
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<td>Nashville-Davidson-Murfreesboro, TN MSA</td>
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<td>Nassau-Suffolk, NY MD</td>
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<td>New Haven-Milford, CT MSA</td>
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<td>New Orleans-Metairie-Kenner, LA MSA</td>
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<tr>
<td>New York-Jersey City-W. Plains, NY-NJ MD</td>
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<td>Newark-Union, NJ-PA MD</td>
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<tr>
<td>Norfolk, NE μSA</td>
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<tr>
<td>North Platte, NE μSA</td>
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</table>
• Norwich-New London, CT MSA: 20.3% 39.1% 27.7% 8.3% 4.6%
• Oakland-Fremont-Hayward, CA MD: 20.9% 36.6% 29.5% 10.5% 2.5%
• Ocean City, NJ MSA: 19.0% 31.7% 29.7% 14.6% 5.0%
• Ogden-Clearfield, UT MSA: 20.8% 35.4% 30.9% 9.5% 3.4%
• Oklahoma City, OK MSA: 15.4% 32.6% 33.9% 12.6% 5.5%
• Olympia, WA MSA: 17.8% 30.8% 32.5% 11.2% 7.7%
• Omaha-Council Bluffs, NE-IA MSA: 18.8% 35.3% 31.8% 11.5% 2.5%
• Orlando-Kissimmee, FL MSA: 19.1% 31.1% 26.7% 11.6% 11.6%
• Philadelphia, PA MD: 18.2% 31.4% 32.1% 13.8% 5.1%
• Phoenix-Mesa-Scottsdale, AZ MSA: 20.2% 31.1% 31.9% 11.2% 5.7%
• Pittsburgh, PA MSA: 17.8% 34.9% 30.7% 11.4% 5.1%
• Portland-Biddeford, ME MSA: 22.4% 39.3% 24.9% 9.8% 3.6%
• Portland-Vancouver, OR-WA MSA: 21.7% 34.3% 28.5% 11.8% 3.7%
• Providence-New Bedford, RI-MA MSA: 20.2% 33.7% 29.6% 11.4% 5.1%
• Provo-Orem, UT MSA: 23.4% 35.2% 30.1% 8.5% 2.9%
• Raleigh-Cary, NC MSA: 21.1% 37.3% 27.1% 11.4% 3.1%
• Rapid City, SD MSA: 18.5% 37.9% 29.4% 10.0% 4.2%
• Reno-Sparks, NV MSA: 21.3% 30.0% 32.2% 12.9% 3.5%
• Richmond, VA MSA: 23.1% 30.0% 31.5% 12.8% 2.6%
• Riverside-San Bernardino-Ontario, CA MSA: 20.3% 31.1% 30.4% 14.0% 4.2%
• Rockingham Strafford Counties, NH MD: 22.5% 36.6% 27.9% 9.4% 3.6%
• Rutland, VT µSA: 17.7% 35.1% 32.1% 11.2% 3.8%
• Sacramento-Arden-Roseville, CA MSA: 24.7% 33.9% 27.3% 9.4% 4.8%
• Salisbury, MD MSA: 14.6% 33.4% 30.9% 16.0% 5.1%
• Salt Lake City, UT MSA: 22.6% 32.2% 30.9% 11.2% 3.0%
• San Antonio, TX MSA: 20.4% 26.7% 34.0% 15.3% 3.7%
• San Diego-Carlsbad-San Marcos, CA MSA: 26.0% 30.5% 27.7% 11.9% 3.9%
• San Francisco-San Mateo, CA MSA: 23.6% 36.4% 26.6% 11.0% 2.4%
• San Jose-Sunnyvale-Santa Clara, CA MSA: 24.1% 36.2% 28.0% 9.1% 2.6%
• Santa Fe, NM MSA: 23.4% 32.8% 27.4% 12.5% 3.9%
• Sayre, PA µSA: 19.0% 31.8% 33.7% 11.4% 4.1%
• Scottsbluff, NE µSA: 15.7% 33.3% 31.3% 13.9% 5.8%
• Scranton-Wilkes-Barre, PA MSA: 14.6% 38.0% 30.3% 11.5% 5.6%
• Seattle-Bellevue-Everett, WA MD: 20.2% 35.5% 30.5% 11.1% 2.7%
• Shreveport-Bossier City, LA MSA: 16.3% 25.1% 34.7% 16.3% 7.5%
• Silver Spring-Frederick-Rockville, MD MD: 23.6% 37.5% 25.3% 11.5% 2.1%
• Sioux City, IA-NE-SD MSA: 17.5% 33.2% 31.3% 14.4% 3.6%
• Sioux Falls, SD MSA: 19.6% 39.8% 29.4% 8.2% 3.1%
• Spartanburg, SC MSA: 13.9% 25.6% 37.7% 15.9% 6.9%
• Spokane, WA MSA: 19.8% 35.1% 30.2% 10.6% 4.3%
• Springfield, MA MSA: 18.2% 30.9% 33.3% 13.8% 3.8%
• St. Louis, MO-IL MSA: 19.2% 36.0% 28.4% 11.6% 4.8%
• Tacoma, WA MD: 17.6% 31.6% 34.1% 13.0% 3.7%
• Tampa-St. Petersburg-Clearwater, FL MSA: 16.5% 34.7% 29.8% 14.3% 4.7%
• Toledo, OH MSA: 19.1% 32.0% 30.1% 13.6% 5.2%
• Topeka, KS MSA: 16.2% 37.3% 29.4% 12.9% 4.2%
• Torrington, CT μSA: 21.2% 41.7% 25.4% 8.1% 3.5%
• Trenton-Ewing, NJ MSA: 21.4% 34.4% 30.3% 11.6% 2.3%
• Tucson, AZ MSA: 19.7% 32.0% 29.6% 13.4% 5.3%
• Tulsa, OK MSA: 17.8% 33.7% 32.2% 10.6% 5.8%
• Tuscaloosa, AL MSA: 13.0% 28.1% 32.3% 16.5% 10.1%
• Vineland-Millville-Bridgeton, NJ MSA: 18.1% 26.7% 31.8% 19.1% 4.3%
• Virginia Beach-Norfolk, VA-NC MSA: 21.4% 30.8% 30.6% 12.5% 4.7%
• Warren-Troy-Farmington Hills, MI MD: 16.8% 36.1% 33.6% 10.0% 3.5%
• Washington-Alexandria, DC-VA-MD-WV MD: 24.4% 34.5% 27.7% 10.4% 3.1%
• Wichita, KS MSA: 17.7% 35.0% 32.1% 11.8% 3.4%
• Wilmington, DE-MD-NJ MD: 21.6% 33.8% 29.8% 11.3% 3.6%
• Winston-Salem, NC MSA: 14.1% 31.2% 31.6% 17.6% 5.4%
• Worcester, MA MSA: 21.0% 37.0% 29.3% 9.7% 3.0%
• Yakima, WA MSA: 14.1% 23.3% 36.1% 20.9% 5.5%
• Youngstown-Warren, OH-PA MSA: 16.5% 32.0% 31.0% 15.7% 4.7%

The following metropolitan/micropolitan areas have the highest percentages of adults rating their personal health as excellent or good:
• Boulder, CO MSA: 90.5%
• Fargo, ND-MN MSA: 90.5%
• Hilton Head-Beaufort, SC μSA: 90.5%
• Burlington-South Burlington, VT MSA: 90.1%
• Logan, UT-ID MSA: 90.1%

The following areas have the highest percentages of adults rating their personal health as fair or poor:
• Las Cruces, NM MSA: 28.8%
• Mobile, AL MSA: 28.1%
• Lumberton, NC μSA: 27.3%
• Kingsport-Bristol, TN-VA MSA: 27.0%
• Huntington-Ashland, WV-KY-OH MSA: 26.7%
2.1 Gallup Poll

A November 2017 poll conducted by Gallup (www.gallup.com) surveyed adults on personal health issues. The following are the results of the poll:

1. How would you describe your own physical health at this time?
   • Excellent: 29%
   • Good: 47%
   • Only fair: 19%
   • Poor: 5%

2. How would you describe your own mental health or emotional well-being at this time?
   • Excellent: 45%
   • Good: 37%
   • Only fair: 14%
   • Poor: 3%

3. Overall, how would you rate the quality of healthcare you receive?
   • Excellent: 36%
   • Good: 41%
   • Only fair: 17%
   • Poor: 5%

4. Overall, how would you rate your healthcare coverage?
   • Excellent: 28%
   • Good: 42%
   • Only fair: 17%
   • Poor: 11%
   • Not applicable/no opinion: 3%

5. Are you generally satisfied or dissatisfied with the total cost you pay for your healthcare?
   • Yes: 61%
   • No: 38%
   • No opinion: 1%
6. Who pays the cost of premiums on your health insurance (based on adults with private health insurance)?
   • Self/household: 27%
   • Employer pays all: 10%
   • Costs are shared: 61%
   • None/other: 2%

7. Over the past year, has the amount you paid for your and your family’s health insurance changed (based on adults who pay all or part of their health premiums)?
   • Gone up a lot: 26%
   • Gone up a little: 40%
   • Not changed: 27%
   • Gone down a little: 4%
   • Gone down a lot: 0%
   • No opinion: 3%

8. Within the last 12 months, have you or a member of your family put off any sort of medical treatment because of the cost you would have to pay?
   • Yes, serious condition: 18%
   • Yes, non-serious condition: 11%
   • No: 70%
3.1 Summary By Disease

The following is a summary of the impact of major diseases and health conditions affecting the U.S. population:

**Allergies**
- According to the Asthma and Allergy Foundation of America (www.aafa.org), more than 60 million people in America have allergies. Annual direct costs for treating allergies are $6 billion ($5.7 billion in medications and $300 million in office visits). Among adults, allergies are the fifth-leading chronic disease and a major cause of work absenteeism, resulting in nearly four million missed or lost workdays each year and accounting for more than $700 million in total lost productivity. An estimated two million school days are lost each year due to allergies.

**Alzheimer’s Disease**
- 2018 Alzheimer’s Disease Facts and Figures, by the Alzheimer’s Association (www.alz.org), estimates 5.7 million Americans of all age have Alzheimer’s disease (AD). The course of the disease can be from two to 20 years. The cost of diagnosis, treatment, and long-term care for patients with AD is $277 billion annually in the United States, a number expected to rise to $1.1 trillion (in today’s dollars) by 2050.

**Arthritis**
- Arthritis is the number one cause of disability in America, affecting 54.7 million people, according to the Centers for Disease Control and Prevention (CDC, www.cdc.gov), and costs the U.S. economy $140 billion per year in medical care and $164 billion in lost wages. It is responsible for 427 million days of restricted activity, 156 million days in bed, and 45 million days lost from work each year, according to the Arthritis Foundation (www.arthritis.org).

**Asthma**
- According to the CDC, 20.4 million adults (8.3% of all adults) suffer from asthma. An additional 6.1 million children have the disease. Approximately 1.7 million emergency room visits per year are for asthma. The total annual cost for asthma management is $56 billion.
Cancer
- Cancer is the second-leading cause of death in the United States, exceeded only by heart disease. There are about 15.5 million Americans with a history of cancer. The 5-year survival rate for all cancers combined is 66%.
- *Cancer Facts and Figures 2018*, by the American Cancer Society (www.cancer.org), projects that 1.64 million people in the U.S. will be diagnosed with cancer in 2018; 609,640 are expected to die of cancer.

Cardiovascular Disease
- According to *2018 Heart Disease and Stroke Statistics*, by the American Heart Association (www.americanheart.org), 92.1 million Americans have one or more type of cardiovascular disease (CVD). Of them, 48% are male and 52% are female; 38% are age 65 or older. There were 836,545 deaths in the U.S. attributed to CVD. Direct costs of cardiovascular diseases and stroke are $199 billion.

Diabetes
- According to the CDC, 30.3 million Americans have diabetes, and an estimated 84.1 million U.S. adults have prediabetes. An estimated 7.2 million Americans with diabetes do not know they have the disease.
- According to the American Diabetes Association (ADA, www.diabetes.org), annual direct medical expenditures related to diabetes treatment are $244 billion; approximately 44% of those costs are attributed to inpatient hospital stays.
- Approximately 800,000 new cases of diabetes develop each year. By 2030, the total number of Americans with diabetes could reach 50 million.

Headaches
- According to the National Headache Foundation (www.headaches.org), as many as 50 million Americans suffer from chronic headaches.

HIV and AIDS
- In 2017, the CDC reported that 973,800 people in the U.S. were living with diagnosed human immunodeficiency virus (HIV); 552,300 with acquired immune deficiency syndrome (AIDS). An estimated 300,000 people with HIV are not aware that they are infected, and unaware carriers are responsible for half of the 48,000 new HIV cases each year.

Infectious Diseases
- According to the National Center for Infectious Diseases (www.cdc.gov/diseasesconditions), the following are the most fatal infectious diseases in the United States (typical mortality figures; exact numbers vary each year):
  - Influenza and pneumonia: 55,000 annual deaths
  - Septicemia: 35,000 annual deaths
  - Viral hepatitis: 8,000 annual deaths
• Americans get about 1.4 billion colds each year. Children typically get up to eight colds every year; adults catch an average of two to four colds each year.

**Kidney Disease**

• According to the National Kidney Foundation (NKF, [www.kidney.org](http://www.kidney.org)), approximately 30 million Americans – or 1 in 10 adults – suffer from chronic kidney disease (CKD). Presently, another 20 million are susceptible due to risk factors such as diabetes, high blood pressure, cardiovascular disease, family history of kidney disease, and racial or ethnic heritage.

**Pain**

• An estimated 25 million U.S. adults suffer from pain daily, according to the National Center for Health Statistics ([www.cdc.gov/nchs](http://www.cdc.gov/nchs)). Arthritis and back pain account for up to 60% of cases.

**Vision**

• The Census Bureau, reported that 7.3 million people, including 6.8 million age 16 and older, have a vision disability. In addition, 34.1 million people have myopia (nearsightedness) and 14.2 million have hyperopia (farsightedness). According to Prevent Blindness ([www.preventblindness.org](http://www.preventblindness.org)), the annual cost of eye and vision disorders is about $140 billion.

• According to the Vision Council of America ([www.thevisioncouncil.org](http://www.thevisioncouncil.org)), approximately 75% of adults use some sort of vision correction. About 64% of them wear eyeglasses and about 11% wear contact lenses.

### 3.2 State-by-State

Prevalence data for each state is available at [www.rkma.com/prevalence.pdf](http://www.rkma.com/prevalence.pdf).
STATE HEALTH RANKINGS

4.1 Overview
Since 1990, the United Health Foundation (www.unitedhealthfoundation.org) has developed an annual healthcare index for each state; the District of Columbia is not included in the assessment. The annual assessment uses a composite of 17 criteria measuring demographic and lifestyle factors, access to healthcare, occupational safety, and disease/mortality rates. Ranking Score is based on the weighted number of standard deviations relative to the national average.

4.2 Rankings 2017

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<th>Ranking Score</th>
<th>Ranking</th>
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4.3 Overall Assessment

The 2017 study by United Health Foundation marked the 28th year for the assessment. Numerous changes in America's health have been documented since the first report in 1990. The following are some key observations:

**Air Pollution**

- Air pollution, measured as the average exposure of the general public to particulate matter of 2.5 microns or less in size, has decreased yearly since America's Health Rankings started tracking it in 2003. In the past five years, the level of air pollution decreased 18% from 10.5 to 8.6 micrograms of fine particles per cubic meter. In the past 10 years, the level of air pollution decreased 30% from 12.2 micrograms of fine particles per cubic meter to 8.6.

**Cancer Deaths**

- The age-adjusted number of deaths due to all cancer causes per 100,000 population has remained relatively constant at approximately 190 deaths per 100,000 population for the last eight years. Cancer deaths occur at a significantly higher rate among males than females, despite a decline in the cancer death rate among males in the past five years. Cancer death rates among females remained constant in the past five years.
- The rate of cancer deaths among blacks at 218.1 deaths per 100,000 population is significantly higher than for whites at 190.6 deaths per 100,000 population. In the past five years, the cancer death rate among blacks has decreased from 224.2 deaths per 100,000 to 218.1, while whites have experienced an increase from 189.7 deaths to 190.6. Blacks have a higher rate of cancer deaths than Hispanics, Asian/Pacific Islanders and American Indian/Alaska Natives.

**Cardiovascular Deaths**

- Cardiovascular deaths – the age-adjusted number of deaths due to all causes of cardiovascular disease including heart disease and stroke per 100,000 population – increased for the second consecutive year after continuously decreasing for the first 25 years of America’s Health Rankings history. In the past two years, the cardiovascular death rate increased significantly by 2%, from 250.8 to 254.6 deaths per 100,000 population.
- Males have a significantly higher cardiovascular death rate than females. The rate of cardiovascular deaths among blacks is significantly higher than whites, Hispanics, Asian/Pacific Islanders and American Indian/Alaska Natives. In the past five years, cardiovascular deaths declined among Asians, Hispanics and blacks. Cardiovascular deaths have held approximately constant among whites.

**Children in Poverty**

- The percentage of children younger than 18 who live in households at or below the poverty threshold decreased for the second consecutive year. Children in poverty decreased 9% from 19.7% to 18.0% of children in the past year, and it decreased 15% in the past two years. The percentage of children in poverty, however, is 14% above its 25-year low of 15.8% of children in 2002.
Diabetes
• In 2017, the percentage of adults who reported being told by a health professional that they have diabetes (excluding prediabetes and gestational diabetes) increased 6% from 9.9% to 10.5% of adults. This is a new high. Since 2012, the prevalence of diabetes increased 11% from 9.5 to 10.5% of adults. Among adults aged 25 and older, diabetes prevalence is higher among those in the lowest education and income groups.

Drug Deaths
• In 2017, the age-adjusted number of deaths due to drug injury increased 7% from 14.0 to 15.0 deaths per 100,000 population. This increase continues an upward trend, with drug death rates up 23% since 2012 and up 60% since 2007.
• The drug death rate among males is 18.7 deaths per 100,000, which is significantly higher than females at 11.3 deaths per 100,000 population. Since 2012, the rate of drug deaths increased more among males (15.0 deaths in 2012 to 18.7 deaths in 2017 per 100,000) than among females (9.3 in 2012 to 11.3 in 2017). The rate of drug deaths among whites continues to be significantly higher than the rate for blacks, Hispanics, Asian/Pacific Islanders and American Indian/Alaska Natives.

Infant Mortality
• There was no improvement in the infant mortality rate in 2017. In the past 10 years, the infant mortality rate, defined as the number of infant deaths occurring before age 1 per 1,000 live births, decreased 13% from 6.8 to 5.9 deaths per 1,000 live births.

Low Birthweight
• The percentage of infants weighing less than 2,500 grams, or 5 pounds 8 ounces, at birth has remained historically high since 2007, hovering between 8.0% and 8.2% of live births. Black mothers have a significantly higher prevalence of low birthweight babies compared with white and Hispanic mothers. Overall, the prevalence of low birthweight decreases with educational attainment.

Obesity
• In the past five years, the percentage of adults with a body mass index of 30.0 or higher based on reported height and weight increased 8% from 27.8% to 29.9% of adults.
• Obesity prevalence is similar for males and females, but it is significantly higher among blacks compared with whites, Hispanics and all other race/ethnicity groups except American Indian/Alaska Natives. Since 2012, obesity prevalence among adults increased more among American Indian/Alaska Natives (35.4% to 38.1%), Hawaiian/ Pacific Islanders (25.0% to 30.6%), Hispanics (30.1% to 33.1%) and whites (26.2% to 28.6%) than among Asians (8.7% to 9.8%) and blacks (37.3% to 38.3%).
• Obesity among adults aged 25 and older increased in all income groups in the past five years and is significantly higher among those living in households with less than
$25,000 income versus all other household income levels. Obesity prevalence is also significantly higher among adults aged 25 and older without a high school degree than among those with all other educational levels and rural adults versus suburban or urban adults.

Premature Death
• Premature death includes deaths from all causes before the age of 75 and is an important indicator of a population's health. In the past two years, the premature death rate – the number of years of potential life lost before age 75 per 100,000 population – significantly increased 3% from 6,997 to 7,214 years lost per 100,000 population. This is the third straight year premature death increased, however, it still remains dramatically lower than in 1990 when the rate was 8,716 years lost per 100,000 population.

Preventable Hospitalizations
• The preventable hospitalization rate, defined as the number of discharges for ambulatory care-sensitive conditions per 1,000 Medicare enrollees aged 65 and older, has decreased annually since 2008 at a rate of approximately 3.3% per year. The rate declined 1% in the past year from 49.9 to 49.4 discharges per 1,000 Medicare enrollees.

Smoking
• In 2017, the percentage of adults who reported smoking at least 100 cigarettes in their lifetime and who currently smoke decreased 2% from 17.5% to 17.1% of adults. In the past five years, the prevalence of smoking decreased 19% from 21.2% of adults to 17.1%. Nationally, smoking prevalence is significantly higher (based on non-overlapping 95% confidence intervals) in men than women as well as in adults aged 25 and older without a high school degree compared with those with higher levels of education. In the past five years, the prevalence of smoking decreased the most among adults aged 18 to 44 compared with adults aged 45 to 64 and adults aged 65 and older.

Uninsured
• In the past five years, the percentage of the population that does not have health insurance privately, through an employer or through the government decreased 44% from 16.0% to 9.0%. This decline coincides with the enactment of the Affordable Care Act.

Violent Crime
• Violent crime – the number of murders, rapes, robberies and aggravated assaults per 100,000 population – has increased 8% in the past two years, from 368 to 397 offenses per 100,000 population. Despite this increase, violent crime is 48% lower today than in 1993 when there were 758 offenses per 100,000 population.
4.4 Senior Health and Healthcare

United Health Foundation also assesses senior health and healthcare for each state. This assessment was launched in 2013.

The senior assessment uses a composite of 34 criteria measuring determinants and outcomes. Ranking Score is based on the weighted number of standard deviations a state is above or below the national average.

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4.5 Market Resources

STATE HEALTH SYSTEM PERFORMANCE

5.1 Overview

_Scorecard on State Health System Performance 2017_, by The Commonwealth Fund (www.commonwealthfund.org), assesses states on 42 indicators of healthcare access, quality, costs, and outcomes over the prior five years.

Changes in health system performance during the five-year period were mixed overall. In a few areas that were the focus of national and state attention – childhood immunizations, hospital readmissions, safe prescribing, and cancer deaths – there were widespread gains. Overall, however, states exhibited little or no improvement. Access to care deteriorated for adults, while costs increased. Persistent disparities in performance across and within states and evidence of poor care coordination highlight the importance of insurance expansions, healthcare delivery reforms, and payment changes in promoting a more equitable, high-quality health system.

5.2 Ranking

_Scorecard on State Health System Performance 2017_ ranked states as follows:

1. Vermont
2. Minnesota
3. Hawaii
4. Rhode Island
5. Massachusetts
6. (tie) Iowa
6. (tie) Colorado
8. (tie) New Hampshire
8. (tie) Connecticut
10. Washington
11. Wisconsin
12. (tie) New York
12. (tie) Maryland
14. California
15. (tie) Utah
15. (tie) South Dakota
15. (tie) Delaware
15. (tie) Nebraska
15. (tie) Maine
20. (tie) North Dakota
20. (tie) District of Columbia
22. (tie) Pennsylvania
22. (tie) New Jersey
22. (tie) Oregon
25. Virginia
26. Idaho
27. Illinois
28. Kansas
29. (tie) New Mexico
29. (tie) Michigan
29. (tie) Montana
32. (tie) Arizona
32. (tie) Ohio
32. (tie) Wyoming
35. North Carolina
36. Alaska
37. Missouri
38. West Virginia
39. (tie) Kentucky
39. (tie) Florida
41. (tie) South Carolina
41. (tie) Texas
41. (tie) Georgia
44. (tie) Tennessee
44. (tie) Indiana
46. Nevada
47. Alabama
48. Arkansas
49. (tie) Louisiana
49. (tie) Oklahoma
51. Mississippi

5.3 Market Resources
Scorecard on State Health System Performance 2017, The Commonwealth Fund.
(www.commonwealthfund.org/interactives/2017/mar/state-scorecard/)

The Commonwealth Fund, 1 East 75th Street, New York, NY 10021. (212) 606-3800.
(www.commonwealthfund.org)
COUNTY HEALTH RANKINGS

6.1 Overview

County Health Rankings (www.countyhealthrankings.org) is a collaboration between the Robert Wood Johnson Foundation (www.rwjf.org) and the University of Wisconsin Population Health Institute (http://uwphi.pophealth.wisc.edu).

The annual County Health Rankings measure vital health factors. Nearly every county in America is assessed.

The annual Rankings provide a revealing snapshot of how health is influenced by people’s environment.

6.2 Assessment

The County Health Rankings are based on 34 factors, as follows:

- Access to exercise opportunities
- Adult obesity
- Adult smoking
- Air pollution - particulate matter
- Alcohol-impaired driving deaths
- Children in poverty
- Children in single-parent households
- Dentists
- Diabetic screening
- Drinking water violations
- Driving alone to work
- Excessive drinking
- Food environment index
- High school graduation
- Inadequate social support
- Injury deaths
- Long commute - driving alone
- Low birthweight
- Mammography screening
- Mental health providers
- Physical Inactivity
- Poor mental health days
- Poor or fair health
• Poor physical health days
• Premature death
• Preventable hospital stays
• Primary care physicians
• Severe housing problems
• Sexually transmitted infections
• Some college
• Teen births
• Unemployment
• Uninsured
• Violent crime

6.3 Top Counties

County Health Rankings reported the top counties in health outcomes and health factors as follows:

Alabama
• Health outcomes: Shelby
• Health factors: Shelby

Alaska
• Health outcomes: Juneau
• Health factors: Juneau

Arizona
• Health outcomes: Santa Cruz
• Health factors: Maricopa

Arkansas
• Health outcomes: Benton
• Health factors: Benton

California
• Health outcomes: Marin
• Health factors: Marin

Colorado
• Health outcomes: Douglas
• Health factors: Douglas

Connecticut
• Health outcomes: Tolland
• Health factors: Middlesex
Delaware
• Health outcomes: New Castle
• Health factors: New Castle

Florida
• Health outcomes: St. Johns
• Health factors: St. Johns

Georgia
• Health outcomes: Forsyth
• Health factors: Oconee

Hawaii
• Health outcomes: Honolulu
• Health factors: Honolulu

Idaho
• Health outcomes: Madison
• Health factors: Madison

Illinois
• Health outcomes: Woodford
• Health factors: DuPage

Indiana
• Health outcomes: Hamilton
• Health factors: Hamilton

Iowa
• Health outcomes: Sioux
• Health factors: Story

Kansas
• Health outcomes: Johnson
• Health factors: Johnson

Kentucky
• Health outcomes: Oldham
• Health factors: Oldham

Louisiana
• Health outcomes: St. Tammany
• Health factors: St. Tammany
Maine
• Health outcomes: Hancock
• Health factors: Cumberland

Maryland
• Health outcomes: Montgomery
• Health factors: Howard

Massachusetts
• Health outcomes: Middlesex
• Health factors: Norfolk

Michigan
• Health outcomes: Ottawa
• Health factors: Washtenaw

Minnesota
• Health outcomes: Carver
• Health factors: Olmsted

Mississippi
• Health outcomes: DeSoto
• Health factors: Madison

Missouri
• Health outcomes: Nodaway
• Health factors: Platte

Montana
• Health outcomes: Gallatin
• Health factors: Gallatin

Nebraska
• Health outcomes: Polk
• Health factors: Seward

Nevada
• Health outcomes: Lincoln
• Health factors: Douglas

New Hampshire
• Health outcomes: Rockingham
• Health factors: Rockingham
New Jersey
• Health outcomes: Hunterdon
• Health factors: Hunterdon

New Mexico
• Health outcomes: Los Alamos
• Health factors: Los Alamos

New York
• Health outcomes: Livingston
• Health factors: Nassau

North Carolina
• Health outcomes: Wake
• Health factors: Orange

North Dakota
• Health outcomes: Dickey
• Health factors: Burleigh

Ohio
• Health outcomes: Geauga
• Health factors: Delaware

Oklahoma
• Health outcomes: Kingfisher
• Health factors: Cleveland

Oregon
• Health outcomes: Benton
• Health factors: Benton

Pennsylvania
• Health outcomes: Union
• Health factors: Chester

Rhode Island
• Health outcomes: Bristol
• Health factors: Bristol

South Carolina
• Health outcomes: Beaufort
• Health factors: Beaufort
South Dakota
• Health outcomes: Hutchinson
• Health factors: Lincoln

Tennessee
• Health outcomes: Williamson
• Health factors: Williamson

Texas
• Health outcomes: Presidio
• Health factors: Collin

Utah
• Health outcomes: Morgan
• Health factors: Cache

Vermont
• Health outcomes: Chittenden
• Health factors: Chittenden

Virginia
• Health outcomes: Loudoun
• Health factors: Arlington

Washington
• Health outcomes: San Juan
• Health factors: King

West Virginia
• Health outcomes: Pleasants
• Health factors: Putnam

Wisconsin
• Health outcomes: Ozaukee
• Health factors: Ozaukee

Wyoming
• Health outcomes: Teton
• Health factors: Teton
6.4 Market Resources

County Health Rankings, Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute. (www.countyhealthrankings.org)

Robert Wood Johnson Foundation, 50 College Road East, Princeton, NJ 08540. (877) 843-7953. (www.rwjf.org)

University of Wisconsin Population Health Institute, 610 Walnut Street, 575 WARF, Madison, WI 53726. (608) 263-6294. (http://uwphi.pophealth.wisc.edu)
AT-RISK BEHAVIORS

7.1 Overview

It is widely accepted within the medical community – and commonly understood by most people – that general good health can be maintained (and 80% to 90% of all cardiovascular disease could be avoided) when adhering to the following:

- Not smoking
- Eating at least five servings of fruits and vegetables a day
- Being moderately active for 30 minutes a day
- Maintaining a healthy weight

Only about 3% of American adults comply with all of these behaviors.

“Only 10% to 15% of an individual’s health status is attributable to the healthcare services he or she receives. The rest is driven by behavior, genetics and social determinants, including living conditions, access to food, and education status. That means that the trillions of dollars the United States spends on healthcare services contribute to only one-tenth of the nation’s health. An individual’s behavior is, by far, the single most important contributor to his or her overall health.”

American Hospital Association
7.2 Tobacco Use

The American Cancer Society (www.cancer.org) estimates that half of all smokers will end up dying from a smoking-related illness. In the U.S. alone, smoking is responsible for nearly 1 in 5 deaths, and about 8.6 million people suffer from smoking-related lung and heart diseases.

According to the Centers for Disease Control and Prevention (CDC, www.cdc.gov), smoking-related diseases kill 440,000 Americans a year, including more than 35,000 exposed only to secondhand smoke.

Smoking accounts for about 8% of all personal healthcare-related spending. Each pack of cigarettes sold in the United States costs an average of $7.18 in health-related losses, according to the CDC. Even these numbers are low, because the CDC does not include the impact of cigars, pipes, and smokeless tobacco. Nor does it include lost productivity from smoking-related disability, absenteeism, and smoke breaks. The CDC reports that the economic toll from smoking is $157 billion a year – increasing despite a decline in the number of people who smoke.

7.3 Weight Control

According to the CDC, 29.4% of adults are obese; another 35.4% are overweight. Obesity is assessed in Chapter 117 of this handbook.

7.4 Physical Inactivity

The Centers for Disease Control and Prevention and the President’s Council on Physical Fitness and Sports (www.fitness.gov) report that physically inactive people are twice as likely to develop coronary heart disease compared to people who exercise regularly. Physical inactivity, which is almost as high of a risk factor as cigarette smoking, high blood pressure, and high blood cholesterol, is far more prevalent than any other health risk factor.

Physical Activity Guidelines for Americans, published by the U.S. Department of Health and Human Services (www.hhs.gov), provides a comprehensive review of scientific research about physical activity and health. These guidelines recommend 150 minutes of moderate-intensity activity per week, 75 minutes of vigorous-intensity activity per week, or an equivalent combination of moderate- and vigorous-intensity physical activity as the minimum level of activity required to produce substantial health benefits in adults.

7.5 Poor Diets

According to the CDC, diets rich in fruits and vegetables may reduce the risk of cancer and other chronic diseases. Fruits and vegetables also provide essential vitamins and minerals, fiber, and other nutrients that are important for good health. The recommended daily consumption of fruits and vegetables varies with age, gender, and
physical activity. Five cups of fruits and vegetables daily is the typical recommended amount for middle-age adults who engage in moderate physical activity.

7.6 State-by-State
At-risk behavior data for each state and the District of Columbia is available at www.rkma.com/AtRiskBehaviors.pdf

7.7 Youth Risk Behavior
The Youth Risk Behavior Survey (YRBS), conducted biennially by the CDC and the Division of Adolescent and School Health, National Center for Chronic Disease Prevention and Health Promotion (www.cdc.gov/healthyyouth), monitors the following six categories of priority health-risk behaviors among youth and young adults:
- Alcohol and other drug use
- Behaviors contributing to unintentional injuries and violence
- Obesity-related and unhealthy dietary behaviors
- Physical inactivity
- Sexual behaviors that contribute to unintended pregnancy and sexually transmitted diseases (STDs), including human immunodeficiency virus (HIV) infection
- Tobacco use

The YRBS includes a national school-based survey conducted by the CDC as well as state, territorial, and local school-based surveys conducted by education and health agencies.

The following is a summary of the YRBS:

Alcohol and Drug Use
- 66.2% of students had drunk alcohol (other than a few sips); 34.9% of students had at least one drink of alcohol during the 30 days before the survey.
- 40.7% of students had used marijuana one or more times.
- 20.8% of students had had five or more drinks of alcohol in a row (i.e., within a couple of hours) during the 30 days before the survey; 6.1% reported having 10 or more drinks during that period.
- 18.6% of students had drunk alcohol (other than a few sips) for the first time before age 13 years.
- 23.4% of students had used marijuana one or more times during the 30 days before the survey.
- 8.9% of students had sniffed glue, breathed the contents of aerosol spray cans, or inhaled paints or sprays to get high one or more times.
- 8.6% of students had tried marijuana for the first time before age 13 years.
- 5.3% of students had used any form of cocaine (e.g., powder, crack, or freebase) one or more times during the 30 days before the survey.
- 2.2% of students had used heroin one or more times.
Behaviors That Contribute To Unintentional Injury and Violence

• Among the 67.0% of students who had ridden a bicycle during the 12 months before the survey, 87.9% had rarely or never worn a bicycle helmet.

• Among the 64.3% of students nationwide who drove a car or other vehicle during the 30 days before the survey, 10.0% had driven a car or other vehicle one or more times when they had been drinking alcohol.

• 24.7% of students had been in a physical fight one or more times during the 12 months before the survey; 3.1% were injured and had to be treated by a doctor.

• 21.9% of students had ridden one or more times in a car or other vehicle driven by someone who had been drinking during the 30 days before the survey.

• 19.6% of students had been bullied on school property during the 12 months before the survey.

• 17.9% of students had carried a weapon (e.g., a gun, knife, or club) during the 30 days before the survey.

• 17.0% of students had seriously considered attempting suicide, and 8.0% of students had attempted suicide one or more times during the 12 months before the survey.

• 14.8% of students had been bullied through e-mail, chat rooms, instant messaging, websites, or texting, during the 12 months before the survey.

• 7.6% of students had rarely or never worn a seat belt when riding in a car driven by someone else.

• 7.1% of students had not gone to school during the 30 days before the survey because they felt they would be unsafe at school or on their way to or from school.

• 6.9% of students had been threatened or injured with a weapon (e.g., a gun, knife, or club) on school property one or more times during the 12 months before the survey.

• 5.5% of students had carried a gun during the 30 days before the survey.

• 5.2% of students had carried a weapon (e.g., a gun, knife, or club) on school property during the 30 days before the survey.

Obesity and Dietary Behaviors

• 71.6% of students had not eaten vegetables two or more times per day during the seven days before the survey.

• 66.8% of students had not eaten fruit or drunk 100% fruit juices two or more times per day during the seven days before the survey.

• 61.9% of students had not eaten breakfast during the seven days before the survey; 13.7% of students had not eaten breakfast at all during that entire period.

• 13.7% of students were obese and 16.6% of students were overweight.

• 5.0% of students had taken diet pills, powders, or liquids without a doctor’s advice to lose weight or to keep from gaining weight during the 30 days before the survey.

Physical Inactivity

• 52.7% of students did not meet recommended levels of physical activity by being physically active doing any kind of physical activity that increased their heart rate...
and made them breathe heavily some of the time for a total of at least 60 minutes per day on five or more days during the seven days before the survey. 15.2% had not done so on any day during that period.

• 52.0% of students did not participate in physical education (PE) classes on one or more days in an average week when they were in school.
• 41.3% of students played video or computer games or used a computer for something that was not school work for three or more hours per day on an average school day.
• 32.5% of students watched television 3 or more hours per day on an average school day.

Sexual Behaviors
• 46.8% had sexual intercourse.
• 34.0% of students had sexual intercourse during the three months before the survey.
• Among the 34.0% of currently sexually active students, 40.9% had not used a condom during the last occasion of sexual intercourse.
• 15.0% of students had sexual intercourse with four or more persons.
• 5.6% of students had sexual intercourse for the first time before age 13 years.

Tobacco Use
• 15.7% of students had smoked cigarettes during the 30 days before the survey.
• 9.3% of students had smoked a whole cigarette for the first time before age 13 years.
• 8.8% of students had used smokeless tobacco (e.g., chewing tobacco, snuff, or dip) during the 30 days before the survey.
• 8.0% of students had smoked cigarettes every day during the 30 days before the survey.
• 3.8% of students had smoked cigarettes on school property during the 30 days before the survey.

Other Health-Related Issues
• 89.9% of students did not wear sunscreen (SPF >15) most of the time when outside for more than one hour on sunny days.
• 68.3% of students did not have eight or more hours of sleep on an average school night.
• 21.0% of students had been told by a doctor or nurse that they had asthma.

7.8 Market Resources
Youth Risk Behavior Survey, Centers for Disease Control. (www.cdc.gov/healthyyouth)
CAUSES OF DEATH

8.1 All Causes

Deaths: Leading Causes for 2015, published in November 2017 by the National Center for Health Statistics (www.cdc.gov/nchs), reported 2,712,630 deaths.

Deaths by gender and race/ethnicity were as follows:

Gender
- Male: 1,373,404
- Female: 1,339,226

Race/Ethnicity
- Caucasian: 2,306,861
- Black/African-American: 320,072
- Hispanic/Latino: 179,457
- Asian/Pacific Islander: 66,681
- Native American/Native Alaskan: 19,016

8.2 Leading Causes

The leading causes of deaths were as follows:
- Diseases of heart: 633,842
- Malignant neoplasms: 595,930
- Chronic lower respiratory diseases: 155,041
- Unintentional injuries: 146,571
- Cerebrovascular diseases: 140,323
- Alzheimer's disease: 110,561
- Diabetes mellitus: 79,535
- Influenza and pneumonia: 57,062
- Nephritis, nephrotic syndrome, and nephrosis: 49,959
- Suicide: 44,193

8.3 Assessment By Gender

The leading causes of deaths by gender were as follows:

Male
- Diseases of heart: 335,002
- Malignant neoplasms: 313,818
• Unintentional injuries: 92,919
• Chronic lower respiratory diseases: 72,498
• Cerebrovascular diseases: 58,288
• Diabetes mellitus: 43,123
• Suicide: 33,994
• Alzheimer's disease: 33,690
• Influenza and pneumonia: 26,903
• Chronic liver disease and cirrhosis: 25,666

Female
• Diseases of heart: 298,840
• Malignant neoplasms: 282,112
• Chronic lower respiratory diseases: 82,543
• Cerebrovascular diseases: 82,035
• Alzheimer's disease: 76,871
• Unintentional injuries: 53,652
• Diabetes mellitus: 36,412
• Influenza and pneumonia: 30,159
• Nephritis, nephrotic syndrome, and nephrosis: 24,518
• Septicemia: 21,388

8.4 Assessment By Race/Ethnicity

The leading causes of deaths by race/ethnicity were as follows:

Caucasian
• Diseases of heart: 540,857
• Malignant neoplasms: 505,613
• Chronic lower respiratory diseases: 141,766
• Unintentional injuries: 125,773
• Cerebrovascular diseases: 116,788
• Alzheimer's disease: 99,866
• Diabetes mellitus: 61,938
• Influenza and pneumonia: 48,877
• Suicide: 39,796
• Nephritis, nephrotic syndrome, and nephrosis: 39,078

Black/African-American
• Diseases of heart: 75,249
• Malignant neoplasms: 69,389
• Cerebrovascular diseases: 17,988
• Unintentional injuries: 15,745
• Diabetes mellitus: 13,869
• Chronic lower respiratory diseases: 10,475
• Homicide: 9,173
• Nephritis, nephrotic syndrome, and nephrosis: 9,170
• Alzheimer's disease: 8,156
• Septicemia: 6,647

Hispanic/Latino
• Malignant neoplasms: 37,804
• Diseases of heart: 36,401
• Unintentional injuries: 13,806
• Cerebrovascular diseases: 9,795
• Diabetes mellitus: 8,278
• Alzheimer's disease: 6,444
• Chronic liver disease and cirrhosis: 6,018
• Chronic lower respiratory diseases: 5,159
• Nephritis, nephrotic syndrome, and nephrosis: 3,581
• Influenza and pneumonia: 3,497

Asian/Pacific Islander
• Malignant neoplasms: 17,570
• Diseases of heart: 14,273
• Cerebrovascular diseases: 4,871
• Unintentional injuries: 2,975
• Diabetes mellitus: 2,641
• Alzheimer's disease: 2,212
• Influenza and pneumonia: 2,202
• Chronic lower respiratory diseases: 1,917
• Nephritis, nephrotic syndrome, and nephrosis: 1,359
• Suicide: 1,316

American Indian/Alaska Native
• Diseases of heart: 3,463
• Malignant neoplasms: 3,358
• Unintentional injuries: 2,078
• Diabetes mellitus: 1,087
• Chronic liver disease and cirrhosis: 1,061
• Chronic lower respiratory diseases: 883
• Cerebrovascular diseases: 676
• Suicide: 577
• Nephritis, nephrotic syndrome, and nephrosis: 352
• Influenza and pneumonia: 342
PART II: HEALTHCARE SPENDING
9

NATIONAL HEALTH EXPENDITURES

9.1 Overview

The Centers for Medicare & Medicaid Services (CMS, www.cms.gov) annually assesses and forecasts national health expenditures by type of service delivered (hospital care, physician services, nursing home care, etc.) and source of funding for the services (private health insurance, Medicare, Medicaid, out-of-pocket spending, etc.).

This chapter provides a summary of historical data and CMS projections for national health expenditures.

9.2 Spending

<table>
<thead>
<tr>
<th>Year</th>
<th>Spending (growth)</th>
<th>% of GDP</th>
<th>Per Capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000:</td>
<td>$1.37 trillion (7.0%)</td>
<td>13.4%</td>
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<tr>
<td>2001:</td>
<td>$1.49 trillion (8.6%)</td>
<td>14.1%</td>
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<td>2002:</td>
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<tr>
<td>2003:</td>
<td>$1.78 trillion (8.0%)</td>
<td>15.4%</td>
<td>$ 6,129</td>
</tr>
<tr>
<td>2004:</td>
<td>$1.91 trillion (6.9%)</td>
<td>15.5%</td>
<td>$ 6,508</td>
</tr>
<tr>
<td>2005:</td>
<td>$2.04 trillion (6.9%)</td>
<td>15.5%</td>
<td>$ 6,887</td>
</tr>
<tr>
<td>2006:</td>
<td>$2.17 trillion (6.5%)</td>
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<td>$ 7,265</td>
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<td>$2.30 trillion (6.2%)</td>
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<td>2008:</td>
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<tr>
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<tr>
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<td>2013:</td>
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<td>2014:</td>
<td>$3.02 trillion (5.1%)</td>
<td>17.4%</td>
<td>$ 9,515</td>
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<tr>
<td>2015:</td>
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<td>2016:</td>
<td>$3.34 trillion (4.3%)</td>
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<tr>
<td>2017:</td>
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<td>18.0%</td>
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<tr>
<td>2018:</td>
<td>$3.68 trillion (5.3%)</td>
<td>18.2%</td>
<td>$11,193</td>
</tr>
<tr>
<td>2019:</td>
<td>$3.87 trillion (5.2%)</td>
<td>18.3%</td>
<td>$11,670</td>
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<tr>
<td>2020:</td>
<td>$4.09 trillion (5.8%)</td>
<td>18.4%</td>
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<tr>
<td>2022:</td>
<td>$4.56 trillion (5.5%)</td>
<td>18.7%</td>
<td>$13,394</td>
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“Rising healthcare costs are an important determinant of the nation’s fiscal future, and they also affect the budgets for states, businesses, and families across the country. Healthcare costs now approach a fifth of the economy, and careful reviews suggest that a significant portion of those costs does not lead to better health or better care.”

American Hospital Association

9.3 Source Of Funds

By source of funds, health expenditures in 2018 were estimated by CMS as follows (change from 2017 in parenthesis):

- Private health insurance: $1.244 trillion (4.8%)
- Medicare: $748.1 billion (6.0%)
- Medicaid: $622.0 billion (6.9%)
- Other 3rd party payers:* $540.3 billion (4.6%)
- Out-of-pocket payments: $379.8 billion (4.0%)
- Other health insurance: $141.1 billion (6.2%)

* Includes worksite healthcare, other private revenues, Indian Health Service, workers’ compensation, general assistance, maternal and child health, vocational rehabilitation, other federal programs, Substance Abuse and Mental Health Services Administration, other state and local programs, and school health.

9.4 Distribution of Expenditures

By type of expenditure, expenditures in 2018 were estimated by CMS as follows (change from 2017 in parenthesis):

- Hospital care: $1.189 trillion (5.1%)
- Physician and clinical services: $773.9 billion (5.1%)
- Prescription drugs (retail outlet sales): $360.2 billion (6.6%)
- Net cost of private health insurance: $256.3 billion (7.8%)
- Nursing home care and continuing care retirement communities: $174.6 billion (3.9%)
- Other personal healthcare: $191.6 billion (6.2%)
• Dental services: $134.4 billion (4.2%)
• Other professional services: $101.6 billion (5.3%)
• Home healthcare: $102.8 billion (5.9%)
• Government public health activities: $87.1 billion (3.1%)
• Non-durable medical products (retail outlet sales): $68.0 billion (4.4%)
• Structures and equipment: $118.2 billion (4.4%)
• Research: $52.9 billion (4.5%)
• Durable medical equipment (retail outlet sales): $55.7 billion (5.2%)
• Government administration of health insurance: $48.1 billion (6.6%)

9.5 Market Resources
National Health Expenditures, Centers for Medicare & Medicaid Services. (www.cms.hhs.gov/NationalHealthExpendData)
HEALTH EXPENDITURES BY STATE

10.1 Overview


Based on CMS’s health expenditure growth projections (see section 9.2), this chapter provides estimates of health spending in 2018.

10.2 Total Expenditures

CMS assessed total U.S. health expenditures in 2018 at $3.68 trillion. Of this amount, $3.11 billion was for personal healthcare. The balance was for administration of private and governmental insurance, public health services, and investment.

Personal healthcare expenditures in 2018 were distributed by state as follows:

- Alabama: $ 42.84 billion
- Alaska: $ 9.90 billion
- Arizona: $ 52.68 billion
- Arkansas: $ 26.71 billion
- California: $354.78 billion
- Colorado: $ 44.22 billion
- Connecticut: $ 43.03 billion
- Delaware: $ 11.65 billion
- District of Columbia: $ 9.56 billion
- Florida: $195.16 billion
- Georgia: $ 80.73 billion
- Hawaii: $ 12.56 billion
- Idaho: $ 13.75 billion
- Illinois: $129.16 billion
- Indiana: $ 66.51 billion
- Iowa: $ 30.97 billion
- Kansas: $ 26.95 billion
- Kentucky: $ 42.92 billion
- Louisiana: $ 44.13 billion
- Maine: $ 15.41 billion
- Maryland: $ 62.36 billion
- Massachusetts: $ 86.60 billion
- Michigan: $ 97.04 billion
- Minnesota: $ 58.78 billion
- Mississippi: $ 27.80 billion
- Missouri: $ 59.70 billion
- Montana: $ 10.22 billion
- Nebraska: $ 19.22 billion
- Nevada: $ 23.11 billion
- New Hampshire: $ 15.48 billion
- New Jersey: $108.22 billion
- New Mexico: $ 18.26 billion
- New York: $234.26 billion
- North Carolina: $ 87.67 billion
- North Dakota: $ 8.86 billion
- Ohio: $122.73 billion
- Oklahoma: $ 35.93 billion
- Oregon: $ 38.78 billion
- Pennsylvania: $143.88 billion
- Rhode Island: $ 12.24 billion
- South Carolina: $ 42.89 billion
- South Dakota: $ 9.25 billion
- Tennessee: $ 58.62 billion
- Texas: $229.10 billion
- Utah: $ 21.38 billion
- Vermont: $ 7.76 billion
- Virginia: $ 76.36 billion
- Washington: $ 67.82 billion
- West Virginia: $ 21.25 billion
- Wisconsin: $ 60.88 billion
- Wyoming: $ 5.90 billion

### 10.3 Per Capita Expenditures

CMS assessed total health expenditures in 2018 at $11,193 per capita; personal healthcare spending was $946.42 per capita.

By state of residence, per capita personal healthcare spending in 2018 was assessed as follows:

- Alabama: $ 8,569
- Alaska: $12,471
- Arizona: $ 7,122
- Arkansas: $ 8,426
- California: $ 8,523
- Colorado: $ 8,188
- Connecticut: $11,823
- Delaware: $11,585
- District of Columbia: $11,138
- Florida: $ 9,777
- Georgia: $ 7,469
- Hawaii: $ 9,367
- Idaho: $ 7,730
- Illinois: $ 9,230
- Indiana: $ 9,107
- Iowa: $ 9,456
- Kansas: $ 9,266
- Kentucky: $ 9,012
- Louisiana: $ 9,248
- Maine: $11,641
- Maryland: $10,236
- Massachusetts: $12,676
- Michigan: $ 9,042
- Minnesota: $10,123
- Mississippi: $ 8,977
- Missouri: $ 9,519
- Montana: $ 9,072
- Nebraska: $ 9,629
- Nevada: $ 7,835
- New Hampshire: $10,710
- New Jersey: $10,360
- New Mexico: $ 9,087
- New York: $11,396
- North Carolina: $ 8,804
- North Dakota: $10,587
- Ohio: $ 9,668
- Oklahoma: $ 8,925
- Oregon: $ 8,990
- Pennsylvania: $10,561
- Rhode Island: $11,352
- South Carolina: $ 8,638
- South Dakota: $ 9,641
- Tennessee: $ 8,759
- Texas: $ 8,094
- Utah: $ 6,874
- Vermont: $10,432
- Virginia: $ 8,588
- Washington: $ 9,266
- West Virginia: $10,475
- Wisconsin: $ 9,882
- Wyoming: $ 9,618
10.4 Market Resources


STATE SPENDING FOR HOSPITAL CARE

11.1 Percentage of Total Spending For Hospital Care

According to Health Expenditures by State, by the Centers for Medicare & Medicaid Services (CMS, www.cms.gov), spending for hospital care accounts for 36.5% of total U.S. healthcare spending. The percentage of total healthcare spending by residents in each state is as follows:

- Alabama: 34.2%
- Alaska: 40.2%
- Arizona: 36.0%
- Arkansas: 38.1%
- California: 34.8%
- Colorado: 35.1%
- Connecticut: 31.7%
- Delaware: 36.7%
- District of Columbia: 49.2%
- Florida: 33.1%
- Georgia: 35.6%
- Hawaii: 37.1%
- Idaho: 37.1%
- Illinois: 38.3%
- Indiana: 38.7%
- Iowa: 38.9%
- Kansas: 35.0%
- Kentucky: 36.6%
- Louisiana: 30.4%
- Maine: 35.3%
- Maryland: 37.2%
- Massachusetts: 39.2%
- Michigan: 39.6%
- Minnesota: 33.9%
- Mississippi: 41.9%
- Missouri: 41.5%
- Montana: 41.3%
- Nebraska: 40.3%
- Nevada: 32.5%
- New Hampshire: 35.7%
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<tr>
<th>State</th>
<th>Percentage</th>
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<td>Wyoming</td>
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### 11.2 Market Resources

12

REGIONAL VARIATIONS IN HEALTHCARE SPENDING

12.1 Overview
Researchers have long documented variations in healthcare spending. This chapter focuses on variations across geographic areas and among providers, and even among populations within a geographic area.

The Dartmouth Atlas of Healthcare (www.dartmouthatlas.org) reports variations in Medicare spending per beneficiary as follows:

Highest Per Capita
- Miami, FL: $15,786
- New York (Bronx), NY: $15,109
- New York (Manhattan), NY: $14,082
- Los Angeles, CA: $13,691
- Chicago, IL: $13,423

Lowest Per Capita
- Grand Junction, CO: $6,752
- Missoula, MT: $6,818
- Bend, OR: $6,853
- Dubuque, IA: $6,904
- Honolulu, HI: $6,979

12.2 Dartmouth Atlas Project
For more than 20 years the Dartmouth Atlas Project has documented the glaring variations in how medical resources are distributed and used in the United States. The project uses Medicare data to provide comprehensive information and analysis about national, regional, and local markets, as well as individual hospitals and their affiliated physicians.

The Dartmouth Atlas Project uses the Hospital Care Intensity index (HCI) for its assessment. The HCI reflects both the amount of time spent in a hospital and the intensity of physician services delivered in the hospital. Chronically ill patients living in states and regions or using hospitals with a high HCI are likely to spend more days in the hospital and see more physicians during hospitalizations.
12.3 Hospital Care Intensity

Based on the HCI, New Jersey is the most aggressive in providing healthcare services (e.g., highest per capita spending); Utah is the most conservative (e.g., lowest per capita spending). States are ranked as follows:

1. New Jersey  
2. New York  
3. Louisiana  
4. Hawaii  
5. Nevada  
6. Florida  
7. California  
8. Mississippi  
9. Pennsylvania  
10. Delaware  
11. Texas  
12. Illinois  
13. Arkansas  
14. Tennessee  
15. Kentucky  
16. West Virginia  
17. South Carolina  
18. Maryland  
19. Alabama  
20. Michigan  
21. Oklahoma  
22. Massachusetts  
23. Missouri  
24. Virginia  
25. Rhode Island  
26. Ohio  
27. Connecticut  
28. Georgia  
29. Kansas  
30. North Carolina  
31. Indiana  
32. Arizona  
33. Nebraska  
34. South Dakota  
35. Iowa  
36. Alaska  
37. Wisconsin  
38. Colorado  
39. Maine  
40. New Hampshire  
41. Minnesota  
42. New Mexico  
43. Vermont  
44. North Dakota  
45. Wyoming  
46. Montana  
47. Washington  
48. Idaho  
49. Oregon  
50. Utah

12.4 Regional Variations

Specific to Medicare, there are wide regional variations in elective surgery among patients with similar conditions. The following are examples (sources: Dartmouth Atlas Project and the Foundation for Informed Medical Decision Making [www.informedmedicaldecisions.org]):

- Medicare patients with heart disease in Elyria, Ohio, are 10 times more likely than those in Honolulu, Hawaii, to have a procedure such as angioplasty or stents.
- In San Luis Obispo, California, men over 65 with early-stage prostate cancer are 12 times more likely to have surgery to remove their prostate than those in Albany, Georgia.
- Women over 65 living in Victoria, Texas, are seven times more likely to undergo mastectomy for early-stage breast cancer than women in Muncie, Indiana.
“These striking variations are the by-product of a doctor-centric medical delivery system. In highlighting the variation from community to community for elective procedures, we hope to shine a light on the fact that patients’ preferences are not always taken into account when medical decisions are made.”

Dartmouth Institute for Health Policy and Clinical Practice

12.5 State Cost Index

Based on data from the Health Care Cost Institute (www.healthcostinstitute.org), *Modern Healthcare* reported the State Cost Index (ratio of the state average to the national average for 162 common medical services) as follows:

- Alaska: 2.64
- Arizona: 0.82
- California: 1.00
- Colorado: 1.01
- Connecticut: 1.18
- Delaware: 1.15
- District of Columbia: 1.16
- Florida: 0.76
- Georgia: 0.99
- Illinois: 1.07
- Indiana: 1.06
- Iowa: 1.35
- Kansas: 1.07
- Kentucky: 0.92
- Louisiana: 0.94
- Maine: 1.30
- Maryland: 0.88
- Massachusetts: 1.30
- Minnesota: 1.60
- Mississippi: 1.24
- Missouri: 0.98
- Nebraska: 1.41
- Nevada: 0.91
- New Hampshire: 1.65
- New Jersey: 1.07
- New Mexico: 1.25
- New York: 0.96
- North Carolina: 1.16
- North Dakota: 1.68
- Ohio: 0.97
- Oklahoma: 0.97
- Oregon: 1.34
- Pennsylvania: 1.21
- Rhode Island: 1.02
- South Carolina: 1.08
- Tennessee: 0.89
- Texas: 0.93
- Utah: 0.98
- Virginia: 1.10
- Washington: 1.16
- West Virginia: 1.17
- Wisconsin: 1.91
Data was not available for Alabama, Arkansas, Hawaii, Idaho, Michigan, Montana, South Dakota, Vermont, and Wyoming. There are also significant differences in costs between metropolitan areas within states.

“In Cleveland, the average price paid for a pregnancy ultrasound was $522. But just 60 miles away in Canton, Ohio, the average price was $183.”

Modern Healthcare

12.6 Market Resources
Dartmouth Atlas of Health Care, The Dartmouth Institute for Health Policy and Clinical Practice. (www.dartmouthatlas.org)

Health Care Cost Institute, 1100 G Street NW, Suite 600, Washington, DC 20005. (202) 803-5200. (www.healthcostinstitute.org)
PART III: HOSPITALS & HEALTHCARE PROVIDERS
ACCOUNTABLE CARE ORGANIZATIONS

13.1 Overview

Accountable Care Organization (ACO) refers to a group of providers and suppliers of services (e.g., hospitals, physicians, and others involved in patient care) that work together to coordinate care for the patients they serve. The goal of an ACO is to deliver seamless, high-quality care for beneficiaries.

The Medicare Shared Savings Program rewards ACOs that stabilize healthcare costs while meeting performance standards on quality of care. The costs for ACOs in a region are compared by the CMS; those with costs below the median receive bonuses.

According to the Center for Medicare & Medicaid Services (CMS, www.cms.gov), there were 561 Accountable Care Organizations in the Medicare Shared Savings Program in 2018, an increase from 480 in 2017. The number of beneficiaries in these ACOs in 2018 was 10.5 million.

CMS also reported that in 2018, 58 ACOs participated in the Next Generation ACO model which gives participants the opportunity to take on even higher levels of financial risk, potentially receiving a greater share of potential savings.

13.2 Largest ACOs

Ranked by number of Medicare recipients covered, the largest ACOs at year-end 2017 were as follows (source: Leavitt Partners):

- Trinity Health (Livonia, MI): 139,617
- Delaware Valley ACO (Villanova, PA): 123,888
- Physician Organization of Michigan ACO (Ann Arbor, MI): 114,559
- Mercy Health ACO (Chesterfield, MO): 82,614
- Illinois Health Partners ACO (Downers Grove, IL): 81,093
- Health Connect Partners (Seattle, WA): 76,497
- University of Iowa Health Alliance (Des Moines, IA): 73,192
- Cleveland Clinic Medicare ACO (Cleveland, OH): 71,113
- Baylor Scott & White Quality Alliance (Dallas, TX): 69,437
- Mercy Health Select (Cincinnati, OH): 67,250
13.3 Shared Savings

CMS reported total savings from ACOs in Medicare shared savings programs as follows:

- 2013: $234 million
- 2014: $292 million
- 2015: $429 million
- 2016: $652 million
- 2017: $1.1 billion

Medicare ACOs generated $652 million in savings in 2016. Participant bonuses totaled $691 million, resulting in a $39 million loss for the program.

In 2017, about 60% of Medicare ACOs generated at total of $1.1 billion in savings. The CMS shared $780 millions in savings, netting a $314 million savings from the program.

Experience is a key factor is savings generated. Based on the year launched, savings were as follows:

- 2012: $295 million
- 2013: $205 million
- 2014: $90 million
- 2015: $50 million
- 2016: $10 million

13.4 ACO Use Of IT

The following are the key IT components for ACOs (source: Hospitals & Health Networks):

Data Warehouse
- Accountable care depends on access to real-time, meaningful data. The amount of data collected across the continuum of care requires significant storage and support. Data warehouses can help ACOs to aggregate and analyze patient care data. It also can support business intelligence and reporting so organizations can analyze the clinical and financial risk of the patient population.

Disease Registries
- Disease registries help to ensure that patients receive appropriate care based on predetermined guidelines. The use of disease registries for such chronic conditions as congestive heart failure helps providers to track the patients’ conditions and supports preventive healthcare.

Electronic Health Records
- Electronic health records (EHRs) are essential to the exchange of patient information across the continuum of care. EHRs can serve as useful communication tools, supporting case management and ultimately enhancing patient engagement and satisfaction.
Health Information Exchange
• A health information exchange (HIE) supports the transmission of data across disparate technology systems. The establishment of a health information exchange allows providers to securely access and share a patient’s medical information electronically, regardless of IT platform.

Patient Portal
• Patient portals enhance patient-provider communication by providing patients with access to their healthcare information and support between visits. Patient portals can be useful educational tools and also can be used to send treatment reminders.

Population Health Management
• Population health management systems help to aggregate patient data by helping organizations understand risks intrinsic in a patient population and proactively manage the population to ensure the best possible outcomes. Population health management systems help to coordinate care across the continuum and track patients in need of care management.

Hospitals & Health Networks provides the following assessment of how ACOs are using IT:

Business Tools
• Use tools for clinical decision-making: 82%
• Use business intelligence tools in single departments: 74%
• Use sophisticated analytics or scenario planning to make better management decisions: 21%

Clinical Analytics
• Executive support for clinical analytics projects: 81%
• Clinical analytics at the enterprise level: 70%
• Quality scores delivered to clinical leaders: 70%
• Enterprise-level governance for clinical analytics: 67%
• Clinical analytics at the departmental level: 64%

Disease Registries
• Participate and actively exchange data in at least one HIE/RHIO*: 40%
• Have the electronic framework to participate, but not participating in any HIE/RHIO at this time: 30%
• Do not have the electronic framework to participate, and not participating in any HIE/RHIO at this time: 18%
• Do not have the electronic framework to participate, and not participating in any HIE/RHIO at this time, but plan to do so in the next year: 11%

* HIE/RHIO: Health Information Exchange/Regional Health Information Organization
13.5  ACO Management Of Pharmaceuticals

The National Pharmaceutical Council (www.nationalpharmaceuticalcouncil.org) reported the following percentages of ACOs with capabilities for management of pharmaceuticals:

- Transmit prescriptions electronically: 70%
- View prescription and medical data in one system: 54%
- Formularies encourage appropriate generic medication use: 50%
- Identify potential drug-drug or drug-disease or polypharmacy concerns: 43%
- Visit summaries list of all medications, potential adverse reactions and clear directions for use: 41%
- Formularies synchronized across different care sites: 35%
- Alert providers of preventive care gaps: 28%
- Use quality metrics for a diversity of conditions: 22%
- Pharmacists are involved in direct patient care: 22%
- Notify care providers when medication is prescribed: 20%
- Employ protocols to avoid duplicate medications/polypharmacy: 17%
- Capture patient reported outcomes electronically: 15%
- Share potential drug-drug or drug-disease or polypharmacy concerns with the care team: 13%
- Educate patients about alternatives/implications when determining the recommended medication care plan: 11%
- Notify care providers when medication is filled: 9%
- Quantify medication care offsets: 7%

13.6  Market Resources

Leavitt Partners, 299 South Main Street, Suite 2300, Salt Lake City, UT 84111. (801) 538-5082. (www.leavittpartners.com)

14

AMBULATORY SURGERY CENTERS

14.1 Overview

Ambulatory Surgery Centers (ASCs) compete with hospital outpatient departments for procedures that don’t require overnight stays, like colonoscopies and some joint surgeries. The average ASC is 15,262 square feet and has four operating rooms.

Sixty-four percent (64%) of ASCs are physician-owned and another 29% are partly owned by physicians, many in partnership with hospitals.

From the early 1980s to present, the share of outpatient surgeries performed in hospitals has declined from more than 90% to 45% as the result of ASCs.

There was rapid growth in ambulatory surgery centers from 1996 through 2005; more recent growth has been moderate.

14.2 ASC Census

At year-end 2017, there were 5,499 Medicare-certified freestanding ambulatory surgery centers in the United States, according to the Ambulatory Surgery Center Association (ASCA, www.ascassociation.org).

The number of ambulatory surgery centers by state are as follows:

- Alabama: 35
- Alaska: 15
- Arizona: 174
- Arkansas: 60
- California: 794
- Colorado: 122
- Connecticut: 48
- Delaware: 23
- District of Columbia: 3
- Florida: 417
- Georgia: 339
- Hawaii: 21
- Idaho: 52
- Illinois: 122
- Indiana: 125
- Iowa: 24
- Kansas: 63
- Kentucky: 33
- Louisiana: 81
- Maine: 16
- Maryland: 345
- Massachusetts: 56
- Michigan: 99
- Minnesota: 69
- Mississippi: 69
- Missouri: 95
- Montana: 17
- Nebraska: 47
- Nevada: 69
- New Hampshire: 26
- New Jersey: 269
- New Mexico: 18
- New York: 134
- North Carolina: 104
• North Dakota: 11
• Ohio: 186
• Oklahoma: 42
• Oregon: 86
• Pennsylvania: 234
• Rhode Island: 10
• South Carolina: 67
• South Dakota: 19
• Tennessee: 136
• Texas: 366
• Utah: 41
• Vermont: 1
• Virginia: 52
• Washington: 194
• West Virginia: 10
• Wisconsin: 77
• Wyoming: 18

14.3 Market Assessment
Ambulatory surgery center gross charges in 2017 were approximately $12 billion. The payer mix as a percent of ASC gross charges was as follows (source: VMG Health):
• Commercial: 59%
• Medicare: 29%
• Worker’s compensation: 9%
• Medicaid: 7%
• Self pay: 4%
• Other pay: 5%

Net revenue per case at ASCs for various procedures was as follows (source: VMG Health):
• Orthopedic procedures: $3,222
• ENT: $2,492
• Urology: $2,394
• Podiatry: $2,339
• OB/GYN: $2,271
• General surgery: $2,051
• Plastic: $1,801
• Ophthalmology: $1,395
• Oral surgery: $1,355
• Pain management: $1,015
• Gastroenterology: $973

14.4 Market Leaders
The following ASC management companies operate the most centers (source: ASCA):
• United Surgical Partners International/Tenet: 450
• AmSurg: 260
• Surgical Care Affiliates: 205
• Hospital Corporation of America: 117
Ranked by total number of annual procedures, the following are the largest ambulatory surgery centers (source: *Modern Healthcare*):

- **AtlantiCare Surgery Center** (www.atlanticare.org): 19,153
- **Northwest Michigan Surgery Center** (www.northwestmichigansurgerycenter.com): 17,954
- **Stony Point Surgery Center** (www.stonypointsc.com): 16,010
- **Lakeview Surgery Center** (www.lakeviewsurgerycenter.com): 12,398
- **Allied Physicians Surgery Center** (www.apsurgery.com): 11,711
- **Seattle Orthopedic Center** (www.proliancesurgeons.com): 11,611
- **Evansville Surgery Center** (www.evansvillesurgerycenter.com): 10,748
- **St. Cloud Surgical Center** (www.stcsurgicalcenter.com): 10,070
- **Prohance Highlands Surgery Center** (www.proliancesurgeons.com): 8,924
- **Village SurgiCenter** (www.vscerie.com): 6,948
- **Gulf Coast Endoscopy Center of Venice** (www.gulfcoastendocenter.com): 6,879
- **Edmonds Center for Outpatient Surgery** (www.proliancesurgeons.com): 6,667
- **Orthopaedic Center at Springhill** (www.alortho.com/ambulatory.php): 6,190
- **Valley Orthopedic Associates Ambulatory Surgery Center** (www.proliancesurgeons.com): 6,155
- **Southgate Surgery Center** (www.southgatesurgery.com): 5,184
- **Murdock Ambulatory Surgery Center** (www.murdockssurgerycenter.com): 4,932
- **Lakewood Surgery Center** (www.proliancesurgeons.com): 3,808
- **Evergreen Orthopedic Surgery Center** (www.proliancesurgeons.com): 3,642
- **Seashore Surgical Institute** (www.seashoresurgical.com): 3,551
- **Parkridge Surgery Center** (www.palmettohealth.org): 3,372
- **Everett Bone and Joint Surgery Center** (www.proliancesurgeons.com): 3,236
- **Central Minnesota Surgical Center** (www.cmsurg.com): 3,217
- **Surgery Center at Rainier** (www.proliancesurgeons.com): 3,142
- **Summit View Surgery Center** (www.summitviewsc.com): 2,972

### 14.5 Procedures

According to *Modern Healthcare*, ambulatory surgery centers perform 2.7 million procedures annually, or 860.7 per 100,000 population.

The number of procedures by state are as follows:

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<tr>
<th>State</th>
<th>Procedures</th>
<th>Procedures per 100,000</th>
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<td>Arkansas:</td>
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HEALTHCARE BUSINESS MARKET RESEARCH HANDBOOK 2019-2020  
• 85 •
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<tr>
<td>South Dakota</td>
<td>7,929</td>
<td>951</td>
</tr>
<tr>
<td>Tennessee</td>
<td>91,618</td>
<td>1,415</td>
</tr>
<tr>
<td>Texas</td>
<td>196,932</td>
<td>756</td>
</tr>
<tr>
<td>Utah</td>
<td>13,553</td>
<td>475</td>
</tr>
<tr>
<td>Vermont</td>
<td>1,165</td>
<td>186</td>
</tr>
<tr>
<td>Virginia</td>
<td>51,893</td>
<td>634</td>
</tr>
<tr>
<td>Washington</td>
<td>61,712</td>
<td>895</td>
</tr>
</tbody>
</table>
- West Virginia: 9,211 496
- Wisconsin: 32,016 559
- Wyoming: 5,419 940

### 14.6 Market Resources

Ambulatory Surgery Center Association, 1012 Cameron Street, Alexandria, VA 22314. (703) 836-8808. (www.ascassociation.org)

Beaker’s ASC Review. (www.beckersasc.com)

Physician Hospitals of America, 2025 M Street NW, Suite 800, Washington, DC 20036. (202) 367-1113. (www.physicianhospitals.org)
15

BEST PLACES TO WORK

15.1 Overview
Modern Healthcare names the 100 Best Places To Work in Healthcare annually.

15.2 Top 100
The following are companies receiving the Best Places To Work In Healthcare designation in 2018:
• ABM Healthcare (St. Clair Shores, MI)
• Accountable Healthcare Staffing (Boca Raton, FL)
• Adaptive Medical Partners (Irving, TX)
• Advocate BroMenn Medical Center (Normal, IL)
• American College of Cardiology (Washington, DC)
• Atlantic Health System (Morristown, NJ)
• Avaap (Edison, NJ)
• Avia (Chicago, IL)
• Avizia (Reston, VA)
• axialHealthcare (Nashville, TN)
• Axxess (Dallas, TX)
• Aya Healthcare (San Diego, CA)
• Bailey Medical Center (Owasso, OK)
• Beach Cities Health District (Redondo Beach, CA)
• Black River Memorial Hospital (Black River Falls, WI)
• Bluegrass Care Navigators (Lexington, KY)
• Boone County Health Center (Albion, NE)
• BroadJump (Dallas, TX)
• Burwood Group (Chicago, IL)
• Cahaba Medical Care (Centreville, AL)
• CAQH (Washington, DC)
• Care Dimensions (Danvers, MA)
• CareSource (Dayton, OH)
• Christus Shreveport-Bossier Health System (Shreveport, LA)
• CipherHealth (New York, NY)
• CommWell Health (Newton Grove, NC)
• CompHealth (Midvale, UT)
• Computer Task Group (CTG) (Buffalo, NY)
• Conway Regional Medical Center (Conway, AR)
• Corazon (Pittsburgh, PA)
• Cox Monett Hospital (Monett, MO)
• CQuence Health Group (Omaha, NE)
• Crothall Healthcare (Wayne, PA)
• Cumberland Consulting Group (Franklin, TN)
• Deaconess - The Women’s Hospital (Newburgh, IN)
• Divurgent (Virginia Beach, VA)
• Educational Commission for Foreign Medical Graduates (Philadelphia, PA)
• Encompass Health - Home Health & Hospice (Dallas, TX)
• Excel Health (Atlanta, GA)
• Experian Health (Franklin, TN)
• Forcura (Jacksonville, FL)
• FreemanWhite (Charlotte, NC)
• Galen Healthcare Solutions (Chicago, IL)
• Health By Design (San Antonio, TX)
• Health Catalyst (Salt Lake City, UT)
• Healthcare Resource Group (Spokane Valley, WA)
• HealthScape Advisors & Pareto Intelligence (Chicago, IL)
• Heart 'n Home Hospice & Palliative Care (Fruitland, ID)
• HeartCare Imaging (Tequesta, FL)
• Henry County Hospital (Napoleon, OH)
• Hills & Dales General Hospital (Cass City, MI)
• Hoag Orthopedic Institute (Irvine, CA)
• Hospice of the Northwest (Mount Vernon, WA)
• Hospice Care of South Carolina (Spartanburg, SC)
• Huron (Chicago, IL)
• Impact Advisors (Naperville, IL)
• Indiana Health Information Exchange (Indianapolis, IN)
• Intelligent InSites (Fargo, ND)
• J2 Interactive (Charlestown, MA)
• Jackson Physician Search (Alpharetta, GA)
• Jamestown Regional Medical Center (Jamestown, ND)
• Joliet Area Community Hospice (Joliet, IL)
• JPS Health Network (Fort Worth, TX)
• King's Daughters Medical Center (Brookhaven, MS)
• Lafayette General Medical Doctors (Lafayette, LA)
• Lafayette General Surgical Hospital (Lafayette, LA)
• Landmark Health (Huntington Beach, CA)
• Lee’s Summit Medical Center (Lee’s Summit, MO)
• Lexington Regional Health Center (Lexington, NE)
• Licking Memorial Health Systems (Newark, OH)
• LiquidAgents Healthcare (Plano, TX)
• Loma Linda University Surgical Hospital (Redlands, CA)
• Louisiana Organ Procurement Agency (Metairie, LA)
• Lovelace Medical Center (Albuquerque, NM)
• Lovelace UNM Rehabilitation Hospital (Albuquerque, NM)
• Marathon Health (Winooski, VT)
• Medasource (Indianapolis, IN)
• Medicus Healthcare Solutions (Windham, NH)
• MedKoder (Mandeville, LA)
• MedPartners (Coral Springs, FL)
• MedPartners Locum Tenens (Coral Springs, FL)
• MedSys Group (Plano, TX)
• Memorial Healthcare System (Hollywood, FL)
• Methodist Ambulatory Surgery Hospital (San Antonio, TX)
• Methodist Healthcare System Office (San Antonio, TX)
• Methodist Stone Oak Hospital (San Antonio, TX)
• Methodist Texsan Hospital (San Antonio, TX)
• Metropolitan Methodist Hospital (San Antonio, TX)
• MMY Consulting (Indianapolis, IN)
• Monarch Medical Technologies (Charlotte, NC)
• Morrison Healthcare (Sandy Springs, GA)
• MPRO (Farmington Hills, MI)
• Nathan Adelson Hospice (Las Vegas, NV)
• National Medical Billing Services (Chesterfield, MO)
• Navin, Haffty & Associates (Westborough, MA)
• Neosho Memorial Regional Medical Center (Chanute, KS)
• New England Donor Services (Waltham, MA)
• Orthopaedic Hospital of Wisconsin (Glendale, WI)
• Pacific Companies (Aliso Viejo, CA)
• PANTHERx Specialty Pharmacy (Pittsburgh, PA)
• Parkview Huntington Hospital (Huntington, IN)
• Parkview LaGrange Hospital (LaGrange, IN)
• Parkview Noble Hospital (Kendallville, IN)
• Parkview Ortho Hospital (Fort Wayne, IN)
• Parkview Wabash Hospital (Wabash, IN)
• Parkview Whitley Hospital (Columbia City, IN)
• Pelham Medical Center (Greer, SC)
• Phreesia (New York, NY)
• Physicians Surgical Hospitals (Amarillo, TX)
• Pivot Point Consulting (Brentwood, TN)
• pMD (San Francisco, CA)
• Progyny (New York, NY)
• Prominence Advisors (Chicago, IL)
• ProPath (Dallas, TX)
• Protenus (Baltimore, MD)
• Providence Little Company of Mary Medical Center Torrance (Torrance, CA)
• RiverView Health (Crookston, MN)
• RNnetwork (Midvale, UT)
• ROI Healthcare Solutions (Atlanta, GA)
• Royal Ambulance (San Leandro, CA)
• Santa Rosa Consulting (Franklin, TN)
• Self Regional Healthcare (Greenwood, SC)
• Shriners Hospitals for Children-Erie (Erie, PA)
• Signature Performance (Omaha, NE)
• Solera Health (Phoenix, AZ)
• South Baldwin Regional Medical Center (Foley, AL)
• South Broward Endoscopy (Cooper City, FL)
• Southern Tennessee Regional Health System-Pulaski (Pulaski, TN)
• SpineNevada Minimally Invasive Spine Institute (Reno, NV)
• St. Martin Hospital (Lafayette, LA)
• Stillwater Medical Center (Stillwater, OK)
• Sutter Amador Hospital (Jackson, CA)
• Sutter Davis Hospital (Davis, CA)
• Talent Plus (Lincoln, NE)
• Tandigm Health (Conshohocken, PA)
• Texas Institute for Surgery (Dallas, TX)
• Texas Orthopedic Hospital (Houston, TX)
• The Chartis Group (Chicago, IL)
• The Medicus Firm (Dallas, TX)
• TigerConnect (Santa Monica, CA)
• TSI Healthcare (Chapel Hill, NC)
• Tulsa Spine & Specialty Hospital (Tulsa, OK)
• University Hospital and Clinics (Lafayette, LA)
• Uvalde Memorial Hospital (Uvalde, TX)
• VirtualHealth (New York, NY)
• Vizient (Irving, TX)
• Weatherby Healthcare (Fort Lauderdale, FL)
• West Valley Medical Center (Caldwell, ID)
• Woman’s Hospital (Baton Rouge, LA)
• York General (York, NE)
16

CHILDREN’S HOSPITALS

16.1 Overview

According to the Children’s Hospital Association (www.childrenshospitals.net), there were approximately 220 children’s hospitals in the United States at year-end 2017. These free-standing children’s hospitals serve about 12% of all hospitalized children, are responsible for 20% of the cost of treating children, and train about 25% of all pediatricians in the United States. More than 8.3 million outpatient visits are provided by children’s hospitals.

Academic medical centers with children’s hospitals admit 18% of all inpatient children and garner 29% of the revenue in that area. There are 60 independent children’s teaching hospitals.

According to the Children’s Hospital Association, nearly two-thirds of the care given at children’s hospitals is for kids 5 and younger, with 25% for newborns. Compared with the 9% of general hospital beds allotted to intensive care, children’s hospitals devote 26% of their beds to the ICU.

Children’s hospitals perform 97% of all pediatric organ transplants and 90% of all pediatric cancer care.

16.2 Market Assessment

Approximately one out of every six discharges from U.S. hospitals is for children aged 17 years and younger, the majority of whom are infants, including newborns.

According to the Agency for Healthcare Research and Quality (AHRQ, www.ahrq.gov), there are 5.9 million discharges from general and children’s hospitals annually, a number that has remained relatively unchanged in recent years.

Across all hospitalizations, children have mean hospital costs of $6,800. When neonatal and maternal stays are excluded, children have mean hospital costs of $12,000.

According to a 2018 report by the Children’s Hospital Association, the median number of annual visits to children’s hospitals are as follows:

- Outpatient: 179,908
- Emergency: 41,913
- Inpatient: 7,993
16.3 Largest Children’s Hospitals
The largest children’s hospitals, ranked by number of staffed beds, are as follows (source: Modern Healthcare, December 2017):

- Texas Children’s Hospital (Houston, TX): 681
- Nationwide Children’s Hospital (Columbus, OH): 616
- Cincinnati Children’s Hospital Medical Center (Cincinnati, OH): 582
- Children’s Hospital of Philadelphia (Philadelphia, PA): 520
- Phoenix Children’s Hospital (Phoenix, AZ): 433
- Rady Children’s Hospital (San Diego): 429
- Children’s Hospital Colorado (Aurora, CO): 416
- Boston Children’s Hospital (Boston, MA): 415
- Children’s Hospitals and Clinics of Minnesota (Minneapolis, MN): 413
- Akron Children’s Hospital (Akron, OH): 391

16.4 Market Resources
Children’s Hospital Association, 600 13th Street NW, Suite 500, Washington, DC 20005. (202) 753-5500. (www.childrenshospitals.net)

Children’s Hospital Directory, Children’s Hospital Association, 2018. (www.childrenshospitals.org/Directories/Hospital-Directory)
17

COMMUNITY HEALTH CENTERS

17.1 Overview

Community health centers (CHC) are facilities located in high-need areas identified as having elevated poverty, higher than average infant mortality, and where few physicians practice. They provide comprehensive primary and other healthcare services, including services that help their patients access care, such as transportation, translation, and case management. They are open to all residents of the communities they serve regardless of insurance status or ability to pay.

There are 10,400 community health center clinics and delivery sites in the U.S. operated by 1,367 organizations, according to the National Association of Community Health Centers (NACHC, www.nachc.com). They are largely federally and locally funded.

Most community health centers are modernized with new equipment; 98% utilize electronic health records and 65% have Patient-Centered Medical Home recognition.

Community health centers served over 25.9 million patients, with 104.1 million visits in 2016. Annually, they serve approximately one million patients covered by plans purchased through federal exchanges, most of whom have income below 200% of the poverty level. Forty-nine percent (49%) of CHC patients have Medicaid, 9% have Medicare, and 23% are uninsured.

17.2 Market Assessment

The revenue stream for CHCs is as follows (source: Germane Solutions [www.germane-solutions.com]):

- Medicaid: 44%
- Federal grants: 18%
- Medicare: 7%
- State and local governments: 8%
- Patient fees: 4%
- Other: 19%
“By law, community health centers receive cost-based prospective payments even if their state uses capped payments for Medicaid.”

Modern Healthcare, 2/19/18

By reducing costly emergency, hospital, and specialty care, community health centers save the U.S. healthcare system $24 billion a year.

17.3 Services By State

By state, the number of community health centers and use are as follows (source: NACHC):

<table>
<thead>
<tr>
<th>State</th>
<th>Organizations</th>
<th>Sites</th>
<th>Patients</th>
<th>Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>14</td>
<td>128</td>
<td>347,694</td>
<td>1,084,685</td>
</tr>
<tr>
<td>Alaska</td>
<td>28</td>
<td>183</td>
<td>113,027</td>
<td>545,430</td>
</tr>
<tr>
<td>Arkansas</td>
<td>12</td>
<td>120</td>
<td>195,397</td>
<td>721,288</td>
</tr>
<tr>
<td>Arizona</td>
<td>21</td>
<td>159</td>
<td>548,487</td>
<td>2,080,644</td>
</tr>
<tr>
<td>California</td>
<td>176</td>
<td>1,529</td>
<td>4,438,827</td>
<td>20,078,878</td>
</tr>
<tr>
<td>Colorado</td>
<td>20</td>
<td>202</td>
<td>594,959</td>
<td>2,446,065</td>
</tr>
<tr>
<td>Connecticut</td>
<td>16</td>
<td>250</td>
<td>373,182</td>
<td>1,943,325</td>
</tr>
<tr>
<td>Delaware</td>
<td>3</td>
<td>15</td>
<td>49,900</td>
<td>171,842</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>8</td>
<td>60</td>
<td>178,324</td>
<td>874,310</td>
</tr>
<tr>
<td>Florida</td>
<td>48</td>
<td>535</td>
<td>1,397,966</td>
<td>5,276,142</td>
</tr>
<tr>
<td>Georgia</td>
<td>35</td>
<td>225</td>
<td>457,644</td>
<td>1,437,176</td>
</tr>
<tr>
<td>Hawaii</td>
<td>14</td>
<td>75</td>
<td>152,155</td>
<td>715,612</td>
</tr>
<tr>
<td>Idaho</td>
<td>14</td>
<td>87</td>
<td>171,126</td>
<td>658,290</td>
</tr>
<tr>
<td>Illinois</td>
<td>45</td>
<td>402</td>
<td>1,265,889</td>
<td>4,665,853</td>
</tr>
<tr>
<td>Indiana</td>
<td>25</td>
<td>183</td>
<td>473,237</td>
<td>1,675,508</td>
</tr>
<tr>
<td>Iowa</td>
<td>14</td>
<td>72</td>
<td>188,969</td>
<td>680,595</td>
</tr>
<tr>
<td>Kansas</td>
<td>18</td>
<td>61</td>
<td>193,843</td>
<td>582,658</td>
</tr>
<tr>
<td>Kentucky</td>
<td>23</td>
<td>232</td>
<td>423,515</td>
<td>1,609,691</td>
</tr>
<tr>
<td>Louisiana</td>
<td>34</td>
<td>229</td>
<td>384,893</td>
<td>1,409,006</td>
</tr>
<tr>
<td>Maine</td>
<td>18</td>
<td>130</td>
<td>186,039</td>
<td>818,065</td>
</tr>
<tr>
<td>Maryland</td>
<td>17</td>
<td>126</td>
<td>313,411</td>
<td>1,478,011</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>39</td>
<td>288</td>
<td>751,918</td>
<td>3,839,821</td>
</tr>
<tr>
<td>Michigan</td>
<td>39</td>
<td>262</td>
<td>672,753</td>
<td>2,554,782</td>
</tr>
<tr>
<td>Minnesota</td>
<td>16</td>
<td>77</td>
<td>174,811</td>
<td>675,680</td>
</tr>
<tr>
<td>Mississippi</td>
<td>21</td>
<td>203</td>
<td>295,052</td>
<td>887,060</td>
</tr>
</tbody>
</table>
• Missouri 28 228 527,054 1,925,230
• Montana 17 79 106,342 407,084
• Nebraska 7 48 84,556 296,136
• Nevada 5 35 88,962 275,210
• New Hampshire 11 42 89,280 380,772
• New Jersey 23 144 511,947 1,892,603
• New Mexico 17 195 320,163 1,482,714
• New York 65 654 2,038,538 9,468,465
• North Carolina 38 229 508,599 1,771,333
• North Dakota 4 22 40,331 133,261
• Ohio 45 271 667,007 2,326,809
• Oklahoma 20 98 200,937 699,203
• Oregon 31 212 383,691 1,723,557
• Pennsylvania 44 264 774,921 2,660,676
• Rhode Island 8 55 164,057 683,021
• South Carolina 22 176 374,257 1,386,551
• South Dakota 5 48 69,137 239,716
• Tennessee 29 182 396,877 1,413,029
• Texas 73 466 1,309,020 4,918,538
• Utah 13 56 151,250 496,233
• Vermont 11 66 171,828 677,293
• Virginia 26 145 304,756 1,093,227
• Washington 27 306 1,035,629 4,188,973
• West Virginia 17 115 303,266 1,147,896
• Wyoming 6 10 17,582 53,786

17.4 Primary Diagnoses And Services

Community health center visits and number of patients are as follows (select medical conditions, source: NACHC):

<table>
<thead>
<tr>
<th>Condition</th>
<th>Visits</th>
<th>Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td>9,879,784</td>
<td>3,808,106</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>6,823,848</td>
<td>2,005,338</td>
</tr>
<tr>
<td>Depression/mood disorders</td>
<td>5,638,339</td>
<td>1,799,436</td>
</tr>
<tr>
<td>Substance abuse</td>
<td>4,291,369</td>
<td>n/a</td>
</tr>
<tr>
<td>Anxiety and PTSD</td>
<td>3,614,085</td>
<td>1,221,126</td>
</tr>
<tr>
<td>Asthma</td>
<td>2,134,267</td>
<td>1,137,617</td>
</tr>
<tr>
<td>Heart disease</td>
<td>1,662,248</td>
<td>639,639</td>
</tr>
<tr>
<td>Other mental disorders</td>
<td>3,206,366</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Visits and number of patients for select preventive services are as follows (source: NACHC):
<table>
<thead>
<tr>
<th>Service</th>
<th>Visits</th>
<th>Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immunizations</td>
<td>7,136,426</td>
<td>n/a</td>
</tr>
<tr>
<td>Oral dental exams</td>
<td>5,124,448</td>
<td>3,882,984</td>
</tr>
<tr>
<td>Health supervision ages 0-to-11</td>
<td>4,381,982</td>
<td>2,834,403</td>
</tr>
<tr>
<td>Pap test</td>
<td>1,876,599</td>
<td>1,750,863</td>
</tr>
<tr>
<td>HIV test</td>
<td>1,322,317</td>
<td>1,194,684</td>
</tr>
<tr>
<td>Hepatitis B and C test</td>
<td>854,429</td>
<td>747,311</td>
</tr>
<tr>
<td>Mammogram</td>
<td>515,913</td>
<td>470,976</td>
</tr>
</tbody>
</table>

### 17.5 Cost Of Care

Cost of care at community health centers is as follows (source: NACHC):

#### Average Cost per Patient
- Medical cost per medical patient: $516
- Dental cost per dental patient: $439
- Total cost per patient: $763

#### Average Cost per Patient Visit
- Medical cost per medical patient visit: $165
- Dental cost per dental patient visit: $176
- Mental health and substance abuse cost per mental health and substance abuse health patient visit: $145

### 17.6 Market Resources

National Association of Community Health Centers, 7501 Wisconsin Avenue, Bethesda, MD 20814. (301) 347-0400. ([www.nachc.com](http://www.nachc.com))
COMPLEMENTARY & ALTERNATIVE MEDICINE

18.1 Overview
The National Center for Complementary and Integrative Health (NCCIH, www.nccih.nih.gov) defines complementary and alternative medicine (CAM) as a group of diverse medical and healthcare interventions, practices, products, or disciplines that are not generally considered part of conventional medicine.

“Complementary” generally refers to using a non-mainstream approach together with conventional medicine. “Alternative” refers to using a non-mainstream approach in place of conventional medicine.

The following are part of CAM:

Mind and Body Practices
• Acupuncture
• Chiropractic or osteopathic manipulation
• Homeopathy
• Massage
• Meditation
• Yoga

Natural Products
• Coenzyme Q10
• Cranberry (pills, capsules)
• Echinacea
• Fish oil/omega-3 fatty acids
• Garlic supplements
• Ginkgo biloba
• Ginseng
• Glucosamine and/or chondroitin
• Melatonin
• Probiotics/prebiotics

18.2 CAM Use In The U.S.
Every five years the NCCIH surveys the public about its use of complimentary medicine. The most recent assessment, *Use of Complementary Health Approaches in the U.S.* (https://nccih.nih.gov/research/statistics/NHIS/2012), published in 2015, reported on consumer use of complimentary medicine in 2012. The findings of this survey follow.
18.3 Mind And Body Practices

The NCCIH survey reported use of body and mind practices as follows:

- Approximately 21 million adults and 1.7 million children practiced yoga, representing 9.5% and 3.1%, respectively, of the adult and youth populations.
- Nearly 20 million adults and 1.9 million children (representing 8.4% and 3.3%, respectively, of the adult and youth populations) had chiropractic or osteopathic manipulation.
- Nearly 18 million adults and 927,000 children practiced meditation. This represented 8.0% and 1.6%, respectively, of the adult and youth populations.
- Approximately 15.5 million adults (6.9%) practiced massage therapy. Only 0.7% of children and teens did so.
- Children whose parents use a complementary health approach are more likely to use one as well.

The largest shift in use of mind and body approaches was the increased use of yoga. Among adults ages 18-to-44, the percentage practicing yoga doubled from five years prior. Among those ages 45-to-64, yoga practice increased to 7.2% from 5.2% five years prior. Approximately 400,000 more children ages 4-to-17 reported practicing yoga since the previous survey.

“The high rates of use may be partly due to a growing body of research showing that some mind and body practices can help manage pain and reduce stress. Another factor that may have influenced the increased popularity of yoga is increased access as the number of yoga studios in the United States has increased substantially in recent years.”

NCCIH

There are significant regional differences in the use of mind and body practices. Nationally, 8.4% of adults practice yoga. The practice peaks at 12.1% in the Pacific states and is only 5.1% in the East South Central states of Alabama, Kentucky, Mississippi, and Tennessee.

The regional pattern for massage therapy is similar. Overall, 6.8% of adults use massage therapy. The percentage peaks at 9.4% in the Pacific and Mountain states and is lowest, at 2.5%, in the East South Central states.
18.4 Natural Products
The NCCIH survey reported the percentages of adults and youth using natural products as follows:

<table>
<thead>
<tr>
<th>Product</th>
<th>Adults (%)</th>
<th>Youth (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish oil/Omega-3 fatty acids</td>
<td>7.8</td>
<td>1.1</td>
</tr>
<tr>
<td>Glucosamine and/or chondroitin</td>
<td>2.6</td>
<td>0.1</td>
</tr>
<tr>
<td>Probiotics/Prebiotics</td>
<td>1.6</td>
<td>0.5</td>
</tr>
<tr>
<td>Melatonin</td>
<td>1.3</td>
<td>0.7</td>
</tr>
<tr>
<td>Coenzyme Q10</td>
<td>1.3</td>
<td>&lt;0.1</td>
</tr>
<tr>
<td>Echinacea</td>
<td>0.9</td>
<td>0.4</td>
</tr>
<tr>
<td>Cranberry (pills, capsules)</td>
<td>0.8</td>
<td>0.1</td>
</tr>
<tr>
<td>Garlic supplements</td>
<td>0.8</td>
<td>0.1</td>
</tr>
<tr>
<td>Ginseng</td>
<td>0.7</td>
<td>0.1</td>
</tr>
<tr>
<td>Ginkgo biloba</td>
<td>0.7</td>
<td>&lt;0.1</td>
</tr>
</tbody>
</table>

The NCCIH assessed shifts in use of natural products as follows:
- Adults’ use of fish oil, probiotics or prebiotics, and melatonin increased since the previous survey.
- Adults’ use of glucosamine/chondroitin, echinacea, and garlic decreased since the previous survey.
- Fish oil was the top natural product among children. This is a change from the previous survey when echinacea was used most.
- Melatonin is the second-most used natural product by children. Its use increased substantially from five years prior.

18.5 Spending
According to the NCCIH, adults spend $33.9 billion out-of-pocket annually on visits to CAM practitioners and on purchases of related products, classes, and materials. Eighty-one percent (81%) of users pay for services out-of-pocket.

Nearly two-thirds of the total out-of-pocket spending by adults on CAM is for self-care purchases of products, classes, and materials. Despite this emphasis on self-care therapies, 38 million adults make an estimated 355 million visits to CAM practitioners of each year.

Distribution of CAM spending is as follows:
- Non-vitamin, non-mineral, and natural products: $14.8 billion
- Office visits: $11.9 billion
- Classes (yoga, tai chi, etc.): $4.1 billion
- Homeopathic medicine: $2.9 billion
- Relaxation techniques: $0.2 billion

Medicare pays $500 million to 36,000 chiropractors providing 21 million treatments for 2.5 million beneficiaries annually.
“Alternative medicine is big business. It's 1.1% of total healthcare expenditures in the United States. It's 9.2% of total out-of-pocket healthcare expenditures. The $12 billion devoted to natural products is 24% of the amount Americans spend out-of-pocket on prescription drugs. The $15 billion devoted to complementary health practitioners is 30% of the amount Americans spend out-of-pocket on physician visits.”

Demo Memo

18.6 Hospital Programs

According to the American Hospital Association (www.aha.org), 21% of hospitals offer some type of complimentary medicine, a figure that has remained unchanged since 2006.

A survey by Health Forum (www.healthforum.com), a subsidiary of the American Hospital Association, found that among hospitals that offer complimentary medicine, the top therapies offered are as follows:

Inpatient Services
• Massage therapy: 37%
• Music/art therapy: 26%
• Therapeutic touch: 25%
• Guided imagery: 22%
• Relaxation training: 20%
• Acupuncture: 12%

Outpatient Services
• Massage therapy: 71%
• Tai Chi, yoga, or qi gong: 47%
• Relaxation training: 43%
• Acupuncture: 39%
• Guided imagery: 32%
• Therapeutic touch: 30%
The following are the key reasons hospitals offer complimentary health services (source: Hospitals & Health Networks):

- Patient demand: 87%
- Reflecting organizational mission: 62%
- Clinical effectiveness: 61%
- Attracting new patients: 38%
- Physicians’ requests: 37%
- Differentiation from competitors: 28%
- Possible cost savings: 14%
- Employee requests: 11%
- Insurance coverage: 4%
- Other: 9%

__________________________________________

“Complimentary and alternative medicine is growing in popularity within hospitals and health systems, driven by interest from the public.”

American Hospital Association

18.7 Market Resources
National Center for Complementary and Integrative Health, 9000 Rockville Pike, Bethesda, MD 20892. (888) 644-6226. (www.nccih.nih.gov)
19

CORPORATE WELLNESS PROGRAMS

19.1 Overview

Corporate wellness programs were developed to enhance employee health and well-being, increase competitiveness, and reduce the cost of healthcare coverage. According to the U.S. Department of Labor (DOL, www.dol.gov) and the U.S. Department of Health and Human Services (HHS, www.hhs.gov), approximately half of U.S. employers provide wellness promotion initiatives. Larger employers are more likely to have more complex wellness programs.

Kaiser Family Foundation (www.kkf.org) found that 36% of firms with more than 200 workers, and 18% of companies overall, use financial incentives tied to health objectives like weight loss and smoking cessation. Fifty-one percent (51%) of those with 200 workers or more offer incentives for employees to complete health risk assessments.

The National Business Group on Health (www.businessgrouphealth.org) reported that medium-to-large employers spend an average of $521 per employee on wellness programs, double the amount they spent five years prior.

“There’s little doubt that employers want their workers to be healthy. And in recent years, an increasing number of companies have set out to offer programs, rewards, and initiatives that encourage employees to take better care of themselves.”

Fortune

19.2 Market Assessment

According to a 2017 report by IBISWorld (www.ibisworld.com), corporate wellness services are a $7 billion market; annual market growth is 0.6%.

IBISWorld estimates 535 businesses in the corporate wellness marketplace. Market leaders are as follows:
• Health Fitness Corporation (www.healthfitness.com): $144.2 million
• Healthways (www.healthways.com): $ 89.1 million
• Healthtrax (www.healthtrax.com): $ 25.1 million
• Viverae (www.viverae.com): $ 21.0 million

19.3 Program Characteristics And Effectiveness

According to the DOL/HHS study, 72% of employers offering a wellness program characterize their programs as a combination of screening activities and interventions. Eighty percent (80%) of employers with a wellness program screen their employees for health risks.

Among employers offering a lifestyle management program, the percentages offering specific interventions are as follows:
• Nutrition/weight control: 79%
• Smoking cession: 77%
• Fitness: 72%
• Alcohol/drug abuse: 52%
• Stress management: 52%
• Health education: 36%

“A new wave of programs and technologies designed to help employees get – and stay – healthy is enabling companies to boost productivity and reduce healthcare costs.”

Fortune

An assessment of the effectiveness of wellness programs on health-related behavior and health risks by Rand Corporation (www.rand.org) found increased smoking cessation rates, improvements in physical activity, higher fruit and vegetable consumption, and lower fat intake as well as a reduction in body weight, cholesterol levels, and blood pressure.

The Kaiser survey found that 71% of firms with wellness programs think such programs are “very” or “somewhat” effective.

19.4 Market Resources

Workplace Wellness Programs Study, Rand Corporation.
(www.rand.org/content/dam/rand/pubs/research_reports/rr200/rr254/rand_rr254.sum.pdf)
20

DESIGN & CONSTRUCTION

20.1 Overview

Modern Healthcare assesses the healthcare construction market annually. This chapter presents a summary of the 39th annual Construction & Design Survey, published in March 2018.

20.2 Healthcare Construction Projects

The cost of healthcare construction projects completed in 2017 totaled $36.2 billion. This represented 2,604 projects of all type (new facilities, expansions, and renovations) and 22,490 beds. Distribution by type of facility is as follows:

Acute-care Hospitals
- Entire facilities: $11.49 billion (148 projects)
- Expansions: $ 6.39 billion (214 projects)
- Renovations: $ 3.25 billion (932 projects)

Rehabilitation Hospitals
- Entire facilities: $ 907 million (27 projects)

Psychiatric Centers/Hospitals
- All projects: $ 499 million (59 projects)

Stand-Alone Emergency Departments
- All projects: $ 40 million (12 projects)

Specialty Hospitals
- Entire facilities: $ 1.66 billion (37 projects)
- Expansions: $ 93 million (16 projects)
- Renovations: $ 216 million (54 projects)

Outpatient Facilities
- Entire facilities: $ 2.54 billion (112 projects)
- Expansions: $ 1.15 billion (108 projects)
- Renovations: $ 1.28 billion (250 projects)
Medical Office Buildings

- Entire facilities: $ 1.54 billion (92 projects)
- Expansions: $ 153 million (43 projects)
- Renovations: $ 226 million (221 projects)
- Research facilities: $ 3.10 billion (103 projects)
- Other: $ 1.72 billion (176 projects)

For 2017, 1,937 projects broke ground, with 24,151 beds at a projected construction cost of $43.2 billion. Representing 3,387 projects and 56,419 beds, in total, $60.5 billion in healthcare projects were designed during 2017.

20.3 Market Leaders

The 2018 Construction and Design Survey reported market leaders in the healthcare design and construction field as follows:

Architecture

- AECOM
- HDR Architecture
- Stantec Architecture
- HOK
- CannonDesign
- HKS
- NBBJ
- Perkins & Will
- Cathryn Bang & Partners Architecture
- Page
- Leo A. Daly
- SmighGroupJJR
- Earl Swensson Associates
- ZGF Architects

Construction Management

- Turner Construction
- Mortenson Construction
- Skanska USA
- Kitchell
- Gilbane Building Co.
- Whiting-Turner Construction Co.
- JE Dunn Construction Co.
- Suffolk
- LF Driscoll
- Landlease
Design/Build
• Neenan Co.
• Haskell
• Monitor Builders
• GMK Associates

Development Companies
• Hammes Co.
• Navigant
• JLL
• Meadows & Ohly
• Concord Healthcare Development
• Johnson Development
• Rendina Healthcare Real Estate
• NexCore Group
• Caddis Partners
• Pacific Medical Buildings

General Contracting
• McCarthy Holdings
• DPR Construction
• Robbins & Morton
• Brasfield & Gorrie
• Walsh Group
• Clark Construction Group
• Balfour Beatty U.S.
• Layton Construction Co.
• Hoar Construction
• Batson-Cook Co.

20.4 Design Awards
Since 2005, the Modern Healthcare annual Design Awards have recognized excellence in the design and planning of new and remodeled healthcare facilities. Awards in 2017 were as follows:

Gold Award
• Shirley Ryan AbilityLab (Chicago, IL)
• Project architects: HDR and Gensler

Silver Award
• Children's Pavilion at Children's Hospital of Richmond at VCU (Richmond, VA)
• Project architect: HKS
Bronze Award
• Indian River Medical Center Scully-Welsh Cancer Center (Vero Beach, FL)
• Project architect: Array Architects

Environmentally Friendly Award
• Meridian Center for Health (Seattle, WA)
• Project architect: HBBJ

A list of previous award winners is available at www.modernhealthcare.com/section/awards-and-recognition?module=900&id=3203894.
21.1 Health Topics

According to the Pew Internet & American Life Project (www.pewinternet.org), 80% of online adults search for health information on the Internet. The following are percentages of Internet users who have performed an online search related to specific health topics:

- Specific disease or medical problem: 66%
- Certain medical treatment or procedure: 55%
- Exercise or fitness: 52%
- Prescription or over-the-counter drugs: 45%
- Health insurance, including Medicare/Medicaid: 37%
- Alternative treatments or medicines: 35%
- How to lose weight or weight control: 33%
- Depression, anxiety, stress, or mental health: 28%
- Experimental treatments or medicines: 20%
- How to stay healthy on a trip overseas: 12%
- Other health issues: 26%

21.2 Physician Services Online

In May 2017, Texas became the last state to allow online visits without face-to-face preliminary meetings between patients and doctors. Approximately 50% of doctors communicate with patients online.

According to the Survey Of Health Care Consumers, by the Deloitte Center for Health Solutions (www.deloitte.com), 55% of healthcare consumers want to communicate with their doctors via email to exchange health information and to get answers to questions. Sixty-eight percent (68%) are interested in remote monitoring devices that allow self-monitoring of their condition and electronic reporting of results to their physician.

The American Medical Association (AMA, www.ama-assn.org) has created a reimbursement code (code 0074T) for online communication between doctors and patients, making it easier for doctors to seek reimbursement from health plans. Insurers ultimately decide whether to cover email consultations; an increasing number are doing so.

Insurers that cover digital visits typically require the use of specific technologies or formats, in part, to meet federal privacy requirements and also to ensure that a digital
visit is legitimate. Digital visits are being reimbursed by Aetna, BlueCross BlueShield, Cigna, Humana, United Health, WellPoint, and other plans.

Physicians typically won’t treat certain conditions through an online appointment, particularly chest pain or other symptoms that may signal an emergency. Even with minor ailments, many physicians will offer digital advice only to regular patients – for liability reasons and also because they feel that in-person visits are important to discuss broader health issues.

A survey by Lightspeed Research (www.lightspeedresearch.com) asked consumers how they would like to communicate with their primary care physician. Approximately 60% of survey respondents said they would like to use email for communication. Reasons given were as follows (percent of respondents):

- Saves me time because I don’t have to see the doctor: 59%
- There is less time waiting for an appointment: 56%
- I don’t have to go to a waiting room with other ill people: 51%
- It is quicker than a regular consultation so the doctor has more time to see patients: 50%
- It would be cheaper: 50%
- I would have a written set of instructions from the doctor that I could refer to: 49%
- Saves on transportation costs: 45%
- I do not have to miss work: 44%
- I may feel too ill to travel: 34%
- It is less embarrassing: 15%

A study published in Health Affairs reported that patients who use e-mail to communicate with their doctors not only save time and money, but also have healthier outcomes. The study reviewed more than 500,000 patient-doctor e-mails sent within the Kaiser Permanente network and found that people with hypertension or diabetes who corresponded via e-mail with their doctors managed their blood pressure and blood sugar better than those who did not.

Most doctors who interact with patients via e-mail contract with software vendors to set up secure independent websites to comply with federal privacy laws. Private insurers will typically reimburse for secure, third-party electronic communication but not for standard e-mail.

### 21.3 Online Sources For Health Information

A poll by The Harris Poll (www.theharrispoll.com) found that 89% of online adults, or 74% of all adults, had used the Internet to search for health-related information in the prior year; 60% had done so in the prior month. Among those who searched for health-related information in the prior month, 19% did so 10 or more times.

Adults who have looked online for information about health topics say they usually use the following sources:
• Search engines: 69%
• Medical websites: 62%
• Forums: 16%
• Social media websites: 8%
• Other: 11%

Among those who have searched for health-related information, 90% said the information they obtained is reliable; only 4% believed it is unreliable.
Fifty-seven percent (57%) of those who conducted online searches discussed the information they found with their doctor.

“Consumers' use of the Internet for health information is now on par with their use of the more traditional, longstanding sources of books, magazines and newspapers, and friends or relatives.”

American Hospital Association

A survey by Makovsky Health (www.makovskyhealth.com) found that adults spend, on average, 52 hours looking for health information on the Internet annually. Online resources used are as follows:
• WebMD: 53%
• Wikipedia: 22%
• Health magazine websites: 19%
• Advocacy group websites: 16%
• YouTube: 10%
• Facebook: 10%
• Blogs: 10%
• Pharmaceutical company websites: 9%

21.4 Use Of Social Media For Healthcare
The Mayo Clinic Center for Social Media (https://network.socialmedia.mayoclinic.org) reports on social networking activities of 1,616 community hospitals. In 2018, hospital use of various social sites was as follows:
• Facebook: 1,305
• 4Square: 1,078
• Twitter: 1,021
Social media use for each of the community hospitals is posted online at (https://network.socialmedia.mayoclinic.org/hcsmi-grid).

Based on surveys by PricewaterhouseCoopers (www.pwc.com), Hospitals & Health Networks reported consumer use of social media to seek health information as follows:

- Health-related consumer reviews: 42%
  - Medications or treatments: 12%
  - Doctors: 11%
  - Hospitals and medical facilities: 10%
  - Health insurers: 9%
- Friends/family health experiences: 32%
- Other patients’ experience with their disease: 29%
- Health-related videos/images posted by patients: 24%

According to Hospitals & Health Networks, hospitals and health systems use social media to provide the following:

- General hospital information: 91%
- Crisis communications: 47%
- Care management messages: 29%
- Chats with physicians: 22%
- Live streaming of procedures/surgeries: 16%

A survey by Computer Sciences Corporation (www.csc.com), reported by Hospitals & Health Networks, cited the reasons hospitals use social media and their perception of social media experiences as follows:

**Reasons For Social Media Use**

- Promote wellness and healthy behaviors: 58%
- Marketing services or products: 47%
- Workforce recruitment: 47%
- Consumer relations: 47%
- Reputation management: 47%
- Distribute educational information: 47%
- Brand management: 44%

**Perception Of Social Media Experience**

- Positive: 64%
- Neutral: 18%
- Too soon to determine: 15%
- Negative: 0%
21.5 Use Of Health Apps

There were an estimated 3.5 billion medical and health app downloads in 2017. Over 100,000 mobile health apps were brought to market in 2017, according to Research 2 Guidance (www.research2guidance.com), bringing the total to over 300,000. Over 3,000 global health organizations have developed at least one app. According to IMS Institute for Healthcare Informatics (www.imshealth.com/institute), 69% target consumers and patients, while 31% were built for use by clinicians.

The Association of Medical Directors of Information Systems (www.amdis.org), and the College of Healthcare Information Management Executives (www.chimecentral.org) conducted a survey of healthcare professionals regarding the use of mobile apps. Among 27 categories of healthcare apps, the following were identified as most important (percentage of respondents):

- Drug reference: 27%
- Clinical decision-support reference: 26%
- Communication: 7%
- Electronic health record access: 6%
- Medical education: 3%

A survey by the Healthcare Information and Management Systems Society (HIMSS, www.himss.org) asked healthcare IT professionals about applications of mobile technology within their organization. Responses were as follows:

- View patient information: 69%
- Look up non-patient health information: 65%
- Educational and training: 49%
- Clinical notifications: 42%
- Secure communication regarding patients: 39%
- Tracking work lists: 39%
- Collecting bedside data: 36%
- e-Prescribing: 33%
- Use barcode reader on mobile device: 28%
- Monitor data from medical devices: 26%

According to Accenture (www.accenture.com) and Modern Healthcare (December 2017), the Top 10 apps, ranked by number of downloads, are as follows:

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Touch Surgery</td>
<td>Surgical training platform</td>
</tr>
<tr>
<td>Epocrates</td>
<td>Clinical decision support</td>
</tr>
<tr>
<td>Figure 1</td>
<td>Instagram for doctors</td>
</tr>
<tr>
<td>NCLEX RN Mastery</td>
<td>Study guide for the NCLEX exam</td>
</tr>
<tr>
<td>Medscape</td>
<td>Clinical decision support</td>
</tr>
<tr>
<td>UpToDate</td>
<td>Clinical decision support</td>
</tr>
<tr>
<td>Medical Dictionary</td>
<td>Reference</td>
</tr>
<tr>
<td>NurseGrid</td>
<td>Staffing and communications</td>
</tr>
<tr>
<td>Visual Anatomy</td>
<td>Study guide</td>
</tr>
<tr>
<td>Essential Skeleton 4</td>
<td>Study guide</td>
</tr>
</tbody>
</table>
21.6 Online Patient Groups

Social networks have long been used to create communities of people seeking a wide range of information as well as to make connections. Most-advanced among healthcare-focused social networks are online patient groups where participants chart their medical histories in detail. Along with providing insight and support for group members with similar conditions, these groups have become invaluable partners to physicians and researchers searching for cures. Patient groups which operate this patients-as-partners model are sometimes referred to as Health 2.0 or Patients 2.0.

There are several hundred online patient groups, most of which provide support for single diseases or rare conditions. The larger groups have sub-groups that address numerous conditions. The following are some of the more prominent groups:

- **Army Of Women** ([www.armyofwomen.org](http://www.armyofwomen.org)): in partnership with the Avon Foundation for Women ([www.avonfoundation.org](http://www.avonfoundation.org)) has helped 360,000 women sign up for breast-cancer-prevention research
- **Association of Cancer Online Resources** ([www.acor.org](http://www.acor.org)): a collaboration of 142 online cancer groups that work with researchers to inform patients of clinical trials, tissue banks, and genetic studies
- **CureTogether** ([www.curetogether.com](http://www.curetogether.com)): with 6,600 members, helps people anonymously track and compare health data, contribute data to research, better understand their bodies, and make more informed treatment decisions
- **Diabetic Connect** ([www.diabeticconnect.com](http://www.diabeticconnect.com)): over 35,000 registered users who share advice on managing their condition
- **LMSarcoma Direct Research Foundation** ([www.lmsrd.org](http://www.lmsrd.org)): a resource for patients with leiomyosarcoma, a rare soft-tissue cancer
- **Myeloproliferative Disorders** ([www.mpdinof.org](http://www.mpdinof.org)): for patients with blood cancer who provide DNA samples to researchers and participate in quality-of-life studies
- **Patients Like Me** ([www.patientslikeme.com](http://www.patientslikeme.com)): over 300,000 active members share information about 2,300 conditions, including chronic diseases such as amyotrophic lateral sclerosis (ALS), chronic fatigue syndrome, epilepsy, fibromyalgia, HIV/AIDS, Parkinson’s disease, mood disorders, and multiple sclerosis
- **Trusera** ([http://blog.trusera.com](http://blog.trusera.com)): online health network where people can share about real-world health experiences, ask a question, or provide an answer

A survey by the Strategic & Analytic Consulting Group at Epsilon ([www.epsilon.com](http://www.epsilon.com)) found that 40% of adults use social media sites such as these to guide decision making related to their health.

21.7 Searching Online For Healthcare Providers

According to the Center for Health System Change ([www.hschange.com](http://www.hschange.com)), 11% of American adults look for a new primary care physician each year, 28% need a new specialist physician, and 16% undergo a medical procedure at a new facility. Many conduct searches for these services online.
Pew Internet & American Life Project (www.pewinternet.org) found that 57% of people use online sources when in need of information or assistance in dealing with health or medical issues.

Forty-seven percent (47%) of adults have looked online for information about doctors or other healthcare professionals. Thirty-eight percent (38%) have looked online for information about hospitals or other medical facilities.

21.8 Online Appointments

ZocDoc is an online service that allows patients to find a nearby doctor or dentist with real-time availability. Appointments may be booked online at ZocDoc.com or via mobile app. A Spanish-language version, ZocDoc en Español, is available.

Launched in 2007, ZocDoc reports more than 2.5 million monthly users. The service is free to patients. Doctors pay a $250 monthly fee to be listed in ZocDoc’s directory.

21.9 Remote Second Opinions

Online second-opinion services offer patients consultations from specialists based on the medical records that they fax, mail, or send via the Internet. The cost for such services, typically payable upfront, is $500 to $1,500 depending on the number of radiology or pathology interpretations required. Patients usually have online access to the second-opinion report in about two weeks.

Most leading medical centers offer second-opinion services via the Internet. The Cleveland Clinic and Johns Hopkins Medicine, leaders in remote second-opinion services, each render about 1,000 second opinions online annually. Second-opinion services are also provided by specialists such as Partners Online Specialty Consultations (POSC, www.econsults.partners.org), which has served over 10,000 patients since first offering the service in 2001.
22.1 Overview
In 2017, the American Hospital Association (www.aha.org) published *The Economic Contribution of Hospitals*. This chapter sources data from the report.

22.2 Hospital Care and The U.S. Economy
Hospital care is the largest component of the healthcare sector. This sector represents 17.9% of GDP, or approximately $3.8 trillion. Hospital revenue accounts for $1.2 trillion of that total.

Hospitals employ nearly 5.7 million people and are the second-largest source of private sector jobs. Hospitals pay over $350 billion in wages and salaries annually. Hospitals spend over $851 billion annually on goods and services.

“Based on current hiring trends, healthcare will become the nation’s largest sector by 2019, passing the entire retail sector.”

2018 Environmental Scan
American Hospital Association

22.3 Hospital Employment By State
By state, hospital employment is as follows (source: *The Economic Contribution of Hospitals*):

- Alabama: 89,242
- Alaska: 10,704
- Arizona: 82,352
- Arkansas: 51,445
- California: 528,317
- Colorado: 75,586
- Connecticut: 66,535
- Delaware: 22,605
- District of Columbia: 27,696
- Florida: 309,503
- Georgia: 152,498
- Hawaii: 19,202
### 22.4 Hospital Expenditures By State

By state, direct spending by hospitals is as follows (source: *The Economic Contribution of Hospitals*):

<table>
<thead>
<tr>
<th>State</th>
<th>Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>$10.3 billion</td>
</tr>
<tr>
<td>Alaska</td>
<td>$1.9 billion</td>
</tr>
<tr>
<td>Arizona</td>
<td>$13.7 billion</td>
</tr>
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<td>Arkansas</td>
<td>$6.3 billion</td>
</tr>
<tr>
<td>California</td>
<td>$96.9 billion</td>
</tr>
<tr>
<td>Colorado</td>
<td>$12.6 billion</td>
</tr>
<tr>
<td>Connecticut</td>
<td>$10.8 billion</td>
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<tr>
<td>Delaware</td>
<td>$3.1 billion</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>$4.2 billion</td>
</tr>
<tr>
<td>Florida</td>
<td>$45.5 billion</td>
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<tr>
<td>Georgia</td>
<td>$21.4 billion</td>
</tr>
<tr>
<td>Hawaii</td>
<td>$3.3 billion</td>
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<tr>
<td>Idaho</td>
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<td>Illinois</td>
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<td>Indiana</td>
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<td>Iowa</td>
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<tr>
<td>Kansas</td>
<td>$7.3 billion</td>
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<td>Kentucky</td>
<td>$11.7 billion</td>
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<td>Louisiana</td>
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<td>Maine</td>
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<td>Maryland</td>
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<td>Massachusetts</td>
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<td>Nevada</td>
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<td>New Mexico</td>
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<td>New York</td>
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<td>North Carolina</td>
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<tr>
<td>Ohio</td>
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<td>Oklahoma</td>
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<td>Oregon</td>
<td>$10.7 billion</td>
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<tr>
<td>Pennsylvania</td>
<td>$40.6 billion</td>
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<td>Rhode Island</td>
<td>$3.4 billion</td>
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<tr>
<td>Tennessee</td>
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<td>Texas</td>
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<tr>
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<td>Vermont</td>
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<td>Wyoming</td>
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<tr>
<td>State</td>
<td>Market Size</td>
</tr>
<tr>
<td>-----------</td>
<td>----------------</td>
</tr>
<tr>
<td>Tennessee</td>
<td>$16.0 billion</td>
</tr>
<tr>
<td>Texas</td>
<td>$58.3 billion</td>
</tr>
<tr>
<td>Utah</td>
<td>$6.1 billion</td>
</tr>
<tr>
<td>Vermont</td>
<td>$2.2 billion</td>
</tr>
<tr>
<td>Virginia</td>
<td>$18.7 billion</td>
</tr>
<tr>
<td>Washington</td>
<td>$19.8 billion</td>
</tr>
<tr>
<td>West Virginia</td>
<td>$5.8 billion</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>$17.7 billion</td>
</tr>
<tr>
<td>Wyoming</td>
<td>$1.4 billion</td>
</tr>
</tbody>
</table>

### 22.5 Market Resources
American Hospital Association, 155 N. Wacker Drive, Chicago, IL 60606. (312) 422-3000. [www.aha.org](http://www.aha.org)
23.1 Hospital Use of EHRs

The adoption of electronic health records (EHRs), also called electronic medical records (EMRs), is seen as an important effort in making the healthcare system more efficient.

Virtually all U.S. hospitals now have operational EHRs. The 2015 edition of an annual survey by the American Hospital Association (www.aha.org) reported that 96% of hospitals have an EHR federally tested and certified for the government's incentive program.

In 2009, the year the federal economic stimulus law that created the EHR program passed, just 12.2% of hospitals had even a basic EHR.

Through the end of FY2016, the federal incentive programs had paid out $34.5 billion to 4,924 hospitals and 493,612 physicians and other eligible professionals for implementation of EHRs.

A key goal of the federal program was to ensure that EHRs were “interoperable,” meaning patient information would be made available where it’s needed to improve patient safety, quality of care and to reduce healthcare costs. The federal EHR program excludes many healthcare delivery organizations, such as nursing homes and behavioral health organizations.

A recent survey by the Office of the National Coordinator for Health Information Technology (HEALTHIT, www.healthit.gov) reported that only 18% of those surveyed indicated their hospital clinicians often use patient information received electronically from outside providers or other sources, another 35% use such information “sometimes.” Another 20% use it “rarely”; 16% “never” do and 11% responded that the don’t know.

Fifty-three percent (53%) of respondents to the HEALTHIT survey said the biggest barrier to interoperability is that shared information is not available to clinicians in their EHRs. That is, to view and use the information, clinicians must move out of their regular workflows to receive and view it. Difficulty integrating the exchanged information in an EHR ranked second, cited by 45% of survey respondents.
“The nation’s hospitals have almost completed their transition to electronic health records. But much work remains to be done to make those records available to other providers and to patients.”

*Modern Healthcare, 2/20/17*

### 23.2 EHR Vendors

According to the HEALTHIT and *Modern Healthcare* (November 2017), the top vendors of acute-care EHR systems, ranked by number of hospitals reporting a company as primary vendor, are as follows:

- Epic Systems: 997
- Cerner Corp.: 994
- Meditech: 935
- McKesson Corp.: 444
- Medhost: 333
- Evident CPSI: 272
- Allscripts Healthcare Solutions: 243
- Sunquest Information Systems: 219
- YourCareUniverse (Medhost): 212
- Healthland CPSI: 191
- FairWarning: 166
- CPSI: 163
- Iatric Systems: 152
- HCA Information Technology & Services: 139
- SCC Soft Computer: 139
- Orion Health: 136
- Medisolv: 117
- Influence Health: 107
- Midas+ (Conduent): 86
- Siemens Healthineers: 84

Approximately 260 EHR systems have been developed by hospitals.
23.3 Physician Use of EMRs

Most hospitals and health systems are collaborating with physicians on an integrated inpatient and outpatient medical record. According to Hospitals & Health Networks, 80% report subsidizing physician-office EMRs. Subsidy activity for physician-office EMRs was reported as follows:

- Employed physician practices only: 48%
- Both employed and independent physician practices: 30%
- Independent physician practices only: 2%
- Do not subsidize any physician-office EMR: 20%

“Nine in 10 physicians use an electronic medical record in their practices.”

2018 Environmental Scan
American Hospital Association

23.4 Patient Access of EHRs

Modern Healthcare (February 2017) reported that 69% of patients can view, download, and transmit their EHRs to outsiders. The percentages by state are as follows:

- Alabama: 89%
- Alaska: 89%
- Arizona: 60%
- Arkansas: 76%
- California: 54%
- Colorado: 73%
- Connecticut: 42%
- Delaware: 50%
- District of Columbia: 82%
- Florida: 82%
- Georgia: 74%
- Hawaii: 29%
- Idaho: 54%
- Illinois: 69%
- Indiana: 71%
- Iowa: 69%
- Kansas: 57%
- Kentucky: 70%
- Louisiana: 66%
- Maine: 49%
- Maryland: 84%
- Massachusetts: 76%
- Michigan: 71%
- Minnesota: 73%
- Mississippi: 76%
- Missouri: 54%
- Montana: 63%
- Nebraska: 55%
- Nevada: 54%
- New Hampshire: 71%
- New Jersey: 83%
- New Mexico: 69%
- New York: 64%
- North Carolina: 73%
- North Dakota: 79%
- Ohio: 79%
- Oklahoma: 78%
- Oregon: 65%
- Pennsylvania: 69%
- Rhode Island: 70%
- South Carolina: 63%
- South Dakota: 69%
- Tennessee: 83%
- Texas: 70%
- Utah: 57%
- Vermont: 83%
- Virginia: 87%
- Washington: 77%
- West Virginia: 60%
- Wisconsin: 64%
- Wyoming: 57%
24.1 Profile Of Emergency Medicine

According to Hospital Statistics 2018, by the American Hospital Association (AHA, www.aha.org), the number of emergency departments (EDs) and ED visits have been as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th># EDs</th>
<th>Total ED Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>4,621</td>
<td>106.0 million</td>
</tr>
<tr>
<td>2002</td>
<td>4,620</td>
<td>110.0 million</td>
</tr>
<tr>
<td>2003</td>
<td>4,570</td>
<td>111.0 million</td>
</tr>
<tr>
<td>2004</td>
<td>4,595</td>
<td>112.6 million</td>
</tr>
<tr>
<td>2005</td>
<td>4,611</td>
<td>114.8 million</td>
</tr>
<tr>
<td>2006</td>
<td>4,587</td>
<td>128.4 million</td>
</tr>
<tr>
<td>2007</td>
<td>4,565</td>
<td>120.8 million</td>
</tr>
<tr>
<td>2008</td>
<td>4,613</td>
<td>123.0 million</td>
</tr>
<tr>
<td>2009</td>
<td>4,594</td>
<td>127.3 million</td>
</tr>
<tr>
<td>2010</td>
<td>4,564</td>
<td>127.2 million</td>
</tr>
<tr>
<td>2011</td>
<td>4,461</td>
<td>129.5 million</td>
</tr>
<tr>
<td>2012</td>
<td>4,460</td>
<td>133.2 million</td>
</tr>
<tr>
<td>2013</td>
<td>4,460</td>
<td>133.4 million</td>
</tr>
<tr>
<td>2014</td>
<td>4,440</td>
<td>133.6 million</td>
</tr>
<tr>
<td>2015</td>
<td>4,422</td>
<td>134.9 million</td>
</tr>
<tr>
<td>2016</td>
<td>4,408</td>
<td>136.3 million</td>
</tr>
</tbody>
</table>

Of the 4,408 EDs, approximately 400 are free-standing emergency rooms.

The American College of Emergency Physicians (ACEP, www.acep.org) provides the following profile of emergency medicine in the United States:

- Emergency physicians in clinical practice: 31,797
- Emergency nurses: 89,300
- EMS providers (EMT basics, EMT intermediates paramedics, and first responders): 815,000
- Ambulance services: 17,000

24.2 Reasons For Hospitalizations Through EDs

According to the Agency for Healthcare Research and Quality (AHRQ, www.ahrq.gov), the following are the major reasons for hospitalizations through EDs:
• Circulatory disorders: 26%
• Respiratory disorders: 15%
• Injuries: 11%
• Mental health and substance abuse: 6%
• Endocrine disorders: 5%
• Genitourinary disorders: 5%
• All other disorders: 18%

ED fees are coded on a scale of 1-to-5, reflecting the complexity of care delivered and the amount of resources devoted to the patient. The distribution of ED claims are as follows (source: Center For Improving Value In Health Care [www.civhc.org]):

• Level 1 - Low severity: 1.5%
• Level 2 - Low-to-moderate severity: 5.3%
• Level 3 - Moderate severity: 28.0%
• Level 4 - Not life/function threatening: 31.7%
• Level 5 - Life/function threatening: 33.5%

High severity claims comprised 65.2% of ED visits in 2017; that statistic was 56.1% a decade prior.

Contrary to popular perception, individuals who are uninsured and who do not have a usual source of care are actually less likely to visit an emergency department than those who are insured and have a regular healthcare provider. According to the National Hospital Ambulatory Medical Care Survey (NHAMCS), by the National Center for Health Statistics (www.cdc.gov/nchs), only 17% of ED patients are uninsured.

“With the average cost of an emergency room visit hovering at $1,200, funneling patients through the ER is not an effective way to manage chronic health conditions. Those who lack medical insurance aren’t the only subgroup using the ER as a doctor’s office.”

*Modern Healthcare*

ACEP found that among frequent visitors (four or more visits a year) to EDs, 84% are insured; 81% have a primary source of care.
24.3 Profile Of Emergency Medical Services

The National Association of Emergency Medical Technicians (www.naemt.org) provides the following profile of emergency medical services (EMS):

- Number of emergency calls annually: 37 million
- Number of EMS vehicles (ambulances, fire trucks, helicopters): 81,295
- Number of EMS agencies: 21,283
- Number of EMS Medical Directors - physicians who provide oversight to EMS agencies: 8,459

“[The year] 2017 certainly put the emergency medical services workforce to [the] test, with multiple natural disasters and another string of mass shootings, all on top of the everyday medical emergencies and carnage from traffic accidents and urban violence.”

Modern Healthcare, 12/18/17

24.4 Pediatric ED Visits

According to the AHRQ, there are 25.5 million ED visits annually for children younger than 18. The most common reasons for pediatric emergency department visits are as follows:

- Injury or poisoning: 7.6 million
- Respiratory disorders: 6.8 million
- Nervous system disorders: 3.4 million
- Infectious and parasitic diseases: 2.4 million
- Digestive disorders: 1.8 million
- Skin and subcutaneous tissue disorders: 1.6 million
- Mental and behavioral health conditions: 1.1 million
- Musculoskeletal disorders: 1.1 million
- Genitourinary disorders: 981,000
- Endocrine disorders: 690,000

24.5 Busiest Hospital Emergency Departments

The following hospitals have the highest number of annual ED visits (source:
Modern Healthcare based on the AHA Annual Survey of Hospitals:

- Florida Hospital (Orlando, FL): 474,745
- New York-Presbyterian Hospital (New York, NY): 311,731
- Methodist Healthcare Memphis Hospitals (Memphis, TN): 310,311
- Montefiore Medical Center (New York, NY): 210,087
- Methodist Hospital (San Antonio, TX): 273,750
- Orlando Regional Medical Center (Orlando, FL): 244,224
- Memorial Hermann Northwest Hospital (Houston, TX): 230,376
- Jackson Health System (Miami, FL): 212,657
- Cone Health (Greensboro, NC): 211,033
- Nationwide Children’s Hospital (Columbus OH): 209,268
- Baptist Medical Center (San Antonio, TX): 197,167
- Mount Sinai St. Lukes (New York, NY): 193,656
- Baptist Medical Center (Jacksonville, FL): 193,265
- Spectrum Health Butterworth Hospital (Grand Rapids, MI): 192,048
- Southcoast Hospitals Group (Fall River, MA): 188,556
- Lakeland Regional Medical Center (Lakeland, FL): 187,425
- Henry Ford Hospital (Detroit, MI): 187,088
- St. Joseph’s Regional Medical Center (Paterson NJ): 175,667
- Christiana Care Health System (Wilmington, DE): 173,857

### 24.6 Overcrowding and Diversions

According to the AHA’s Hospital Statistics™, the percentages of hospital EDs at or over capacity are as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>At</th>
<th>Over</th>
</tr>
</thead>
<tbody>
<tr>
<td>All hospitals</td>
<td>21%</td>
<td>17%</td>
</tr>
<tr>
<td>Urban hospitals</td>
<td>23%</td>
<td>27%</td>
</tr>
<tr>
<td>Rural hospitals</td>
<td>20%</td>
<td>11%</td>
</tr>
<tr>
<td>Teaching hospitals</td>
<td>19%</td>
<td>32%</td>
</tr>
</tbody>
</table>

According to the NHAMCS, 16.2 million patients annually arrive at emergency departments by ambulance; about 500,000 are diverted.

According to Sg2 (www.sg2.com), hospital EDs spend 3% of their time in diversion status.

The primary reason for diversion among EDs is as follows (source: AHA Hospital Statistics™):

- Lack of critical care or monitored beds: 42%
- ED overcrowding: 27%
- Staff shortages: 9%
- Lack of general acute care beds: 8%
- Lack of specialty physician coverage: 8%
- Lack of psychiatric beds: 8%
### 24.7 Wait Times

*ER Wait Watcher*, published in February 2018 by Pro Publica ([www.propublica.org](http://www.propublica.org)), reported wait times as follows:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Alaska</td>
<td>26 minutes</td>
<td>140 minutes</td>
<td>53 minutes</td>
<td>122 minutes</td>
</tr>
<tr>
<td>Alabama</td>
<td>26 minutes</td>
<td>129 minutes</td>
<td>61 minutes</td>
<td>81 minutes</td>
</tr>
<tr>
<td>Arkansas</td>
<td>22 minutes</td>
<td>122 minutes</td>
<td>60 minutes</td>
<td>73 minutes</td>
</tr>
<tr>
<td>Arizona</td>
<td>25 minutes</td>
<td>168 minutes</td>
<td>48 minutes</td>
<td>104 minutes</td>
</tr>
<tr>
<td>California</td>
<td>23 minutes</td>
<td>161 minutes</td>
<td>55 minutes</td>
<td>141 minutes</td>
</tr>
<tr>
<td>Colorado</td>
<td>13 minutes</td>
<td>130 minutes</td>
<td>41 minutes</td>
<td>83 minutes</td>
</tr>
<tr>
<td>Connecticut</td>
<td>24 minutes</td>
<td>152 minutes</td>
<td>53 minutes</td>
<td>149 minutes</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>38 minutes</td>
<td>209 minutes</td>
<td>66 minutes</td>
<td>264 minutes</td>
</tr>
<tr>
<td>Delaware</td>
<td>36 minutes</td>
<td>165 minutes</td>
<td>69 minutes</td>
<td>160 minutes</td>
</tr>
<tr>
<td>Florida</td>
<td>19 minutes</td>
<td>152 minutes</td>
<td>44 minutes</td>
<td>114 minutes</td>
</tr>
<tr>
<td>Georgia</td>
<td>26 minutes</td>
<td>141 minutes</td>
<td>54 minutes</td>
<td>105 minutes</td>
</tr>
<tr>
<td>Hawaii</td>
<td>19 minutes</td>
<td>122 minutes</td>
<td>53 minutes</td>
<td>125 minutes</td>
</tr>
<tr>
<td>Iowa</td>
<td>19 minutes</td>
<td>109 minutes</td>
<td>44 minutes</td>
<td>61 minutes</td>
</tr>
<tr>
<td>Idaho</td>
<td>18 minutes</td>
<td>119 minutes</td>
<td>44 minutes</td>
<td>71 minutes</td>
</tr>
<tr>
<td>Illinois</td>
<td>22 minutes</td>
<td>144 minutes</td>
<td>44 minutes</td>
<td>94 minutes</td>
</tr>
<tr>
<td>Indiana</td>
<td>17 minutes</td>
<td>130 minutes</td>
<td>45 minutes</td>
<td>85 minutes</td>
</tr>
<tr>
<td>Kansas</td>
<td>16 minutes</td>
<td>108 minutes</td>
<td>44 minutes</td>
<td>58 minutes</td>
</tr>
<tr>
<td>Kentucky</td>
<td>22 minutes</td>
<td>140 minutes</td>
<td>49 minutes</td>
<td>81 minutes</td>
</tr>
<tr>
<td>Louisiana</td>
<td>19 minutes</td>
<td>122 minutes</td>
<td>49 minutes</td>
<td>93 minutes</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>34 minutes</td>
<td>170 minutes</td>
<td>51 minutes</td>
<td>132 minutes</td>
</tr>
<tr>
<td>Maryland</td>
<td>53 minutes</td>
<td>218 minutes</td>
<td>58 minutes</td>
<td>147 minutes</td>
</tr>
<tr>
<td>Maine</td>
<td>23 minutes</td>
<td>137 minutes</td>
<td>47 minutes</td>
<td>104 minutes</td>
</tr>
<tr>
<td>Michigan</td>
<td>19 minutes</td>
<td>140 minutes</td>
<td>49 minutes</td>
<td>100 minutes</td>
</tr>
<tr>
<td>Minnesota</td>
<td>18 minutes</td>
<td>104 minutes</td>
<td>41 minutes</td>
<td>69 minutes</td>
</tr>
<tr>
<td>Missouri</td>
<td>20 minutes</td>
<td>137 minutes</td>
<td>48 minutes</td>
<td>83 minutes</td>
</tr>
<tr>
<td>Mississippi</td>
<td>22 minutes</td>
<td>115 minutes</td>
<td>58 minutes</td>
<td>66 minutes</td>
</tr>
<tr>
<td>Montana</td>
<td>14 minutes</td>
<td>113 minutes</td>
<td>45 minutes</td>
<td>73 minutes</td>
</tr>
<tr>
<td>North Carolina</td>
<td>26 minutes</td>
<td>153 minutes</td>
<td>54 minutes</td>
<td>110 minutes</td>
</tr>
<tr>
<td>North Dakota</td>
<td>16 minutes</td>
<td>100 minutes</td>
<td>50 minutes</td>
<td>74 minutes</td>
</tr>
<tr>
<td>Nebraska</td>
<td>19 minutes</td>
<td>113 minutes</td>
<td>40 minutes</td>
<td>77 minutes</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>25 minutes</td>
<td>142 minutes</td>
<td>55 minutes</td>
<td>110 minutes</td>
</tr>
<tr>
<td>New Jersey</td>
<td>24 minutes</td>
<td>155 minutes</td>
<td>53 minutes</td>
<td>144 minutes</td>
</tr>
<tr>
<td>New Mexico</td>
<td>22 minutes</td>
<td>151 minutes</td>
<td>54 minutes</td>
<td>106 minutes</td>
</tr>
<tr>
<td>Nevada</td>
<td>14 minutes</td>
<td>150 minutes</td>
<td>42 minutes</td>
<td>151 minutes</td>
</tr>
<tr>
<td>New York</td>
<td>20 minutes</td>
<td>162 minutes</td>
<td>57 minutes</td>
<td>158 minutes</td>
</tr>
<tr>
<td>Ohio</td>
<td>17 minutes</td>
<td>130 minutes</td>
<td>50 minutes</td>
<td>85 minutes</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>17 minutes</td>
<td>109 minutes</td>
<td>47 minutes</td>
<td>66 minutes</td>
</tr>
<tr>
<td>Oregon</td>
<td>27 minutes</td>
<td>151 minutes</td>
<td>53 minutes</td>
<td>87 minutes</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>22 minutes</td>
<td>142 minutes</td>
<td>56 minutes</td>
<td>106 minutes</td>
</tr>
</tbody>
</table>
Some hospital EDs use check-in kiosks to streamline the admissions process. Besides offering patients more privacy, the kiosks can help nurses identify the most urgent cases.

Hospitals are increasingly making their wait times available to the public. Those with low wait times do so, in part, to promote their services to consumers.

24.8 Admissions Via Emergency Room

About one-third of hospital admissions come through the ED. Approximately 8% of ED visits result in hospital admission.

The National Hospital Ambulatory Medical Care Survey, by the National Center for Health Statistics (www.cdc.gov/nchs), reported 136.3 million visits to hospital EDs in 2016 resulting in 11.2 million hospital admissions. In total, there were 33.4 million hospital admissions that year.

“The emergency department [is] the front porch of the medical neighborhood. It could be an entry point or a portal into more value-based systems of care like ACOs, or the medical home, or episodes of care. [The ED] can help coordinate care either to a primary care home, or specialty care, or even to a skilled nursing facility.”

Hospitals & Health Networks
24.9 Non-Urgent Care Visits

Only about two-thirds of ED visits are for urgent care. The other third are for routine care or treatment for non-urgent conditions. Non-urgent treatment contributes to ED overcrowding and long wait times.

Faced with patients using the ED out of convenience rather than urgency, many EDs are now trying to direct many of these patients to clinics or other less expensive care centers.

After finding that patients who went to the ED more than four times a year made up one-fifth of all emergency visits paid for by Medicaid, the state of Washington set up a database of patient ED visits. This allowed physicians to identify frequent ED users and helped them to identify which patients might better be guided to other types of providers. The state reported that ED visits by Medicaid patients fell 10% during the first 12 months of the program; the rate of ED visits that resulted in a non-acute diagnosis decreased 14%.

24.10 Stand-Alone EDs

According to \textit{Modern Healthcare}, there were 580 in the U.S. at year-end 2017. Affiliations were as follows:

- Affiliated with hospitals: 377
- Independent: 203

Texas has the most stand-alone EDs, with 191. Dallas alone has 73. Colorado and Ohio also have large concentrations of stand-alone EDs.

Stand-alone EDs tend to be located in affluent areas. In Texas, for example, the median household income in ZIP code areas with stand-alone EDs is $73,003 and is $49,267 in other ZIP code areas.

Stand-alone EDs charge significantly more than other medical facilities. In Texas, for example, the average cost to treat a strep throat is as follows:

- Stand-alone ED: $2,732
- Hospital-based ED: $1,784
- Urgent care clinic: $159
- Physician office: $128

Ninety-three percent (93%) of stand-alone EDs in Texas charge a facility fee, adding an average of over $1,000 per visit.

24.11 Market Resources

American College of Emergency Physicians, 1125 Executive Circle, Irving, TX 75038.
(800) 798-1822. (www.acep.org)

National Association of Emergency Medical Technicians, P.O. Box 1400, Clinton, MS 39060. (601) 924-7744. (www.naemt.org)
25 FUNDRAISING

25.1 Overview
Reimbursements are generally sufficient to maintain hospital operations, but substantial improvements to a hospital require financial assistance from outside donors. Philanthropy is important for growth of healthcare systems.

“Fundraising produces about 3% of health systems’ revenue. That’s close to the size of many health system operating margins in recent years.”

Modern Healthcare, 3/12/18

25.2 Market Assessment
The Association for Healthcare Philanthropy (AHP, www.ahp.org) reports funds raised by healthcare institutions as follows:

- 2004: $ 6.10 billion
- 2005: $ 7.09 billion
- 2006: $ 7.90 billion
- 2007: $ 8.35 billion
- 2008: $ 8.59 billion
- 2009: $ 7.64 billion
- 2010: $ 8.26 billion
- 2011: $ 8.94 billion
- 2012: $ 8.94 billion
- 2013: $ 9.22 billion
- 2014: $ 9.63 billion
- 2015: $ 9.65 billion
- 2016: $10.14 billion
“AHP’s annual survey of gifts, pledges and grants shows that total funds raised by healthcare institutions increased by 5% in the U.S. last year. The median ROI was $4.06 [per dollar spent].”

Association for Healthcare Philanthropy, 10/17

Median fundraising (i.e., cash donations and pledge payments) by type of institution in 2016 was as follows:

- Children’s hospitals: $20.6 million
- Teaching/academic medical centers: $17.4 million
- Health systems: $11.0 million
- Post-acute facilities: $ 9.6 million
- Tertiary hospitals: $ 6.9 million
- Other: $ 3.9 million
- Community hospitals: $ 1.7 million

25.3 Market Resources
HEALTH INFORMATION EXCHANGES

26.1 Overview
Health information Exchanges (HIEs) are responsible for increasing connectivity and enabling patient-centric information flow to improve the quality and efficiency of care within a state, region, or community. The goal is to facilitate access to and retrieval of clinical data to provide safer, more timely, efficient, effective, equitable, patient-centered care. HIEs are also useful to public health authorities to assist in analyses of the health of the population.

There are over 150 health information exchange organizations in the U.S.

26.2 Guide To HIE Organizations
The following is a list of health information exchange organizations throughout the United States:

Alaska
- Alaska eHealth Network (Anchorage)
- Alaska Native Tribal Health Consortium (Anchorage)

Alabama
- Montgomery Area Wellness Coalition (Montgomery)

Arizona
- Arizona Community Partners Health Information Exchanges (Marana)
- Arizona Government Information Technology Agency - GITA (Phoenix)
- Arizona Health-e Connection (Phoenix)
- Arizona Medical Information Exchange - AMIE (Phoenix)
- Arizona Rural Community Health Information Exchange - ARCHIE (Bisbee)
- Arizona Rural Hospital Flexibility Program (Tucson)
- Marana Health Center (Marana)
- Yuma Regional Medical Center (Yuma)

Arkansas
- Arkansas Foundation for Medical Care (Little Rock)

California
- California Regional Health Information Organization - CalRHIO (San Francisco)
- East Kern County Integrated Technology Association - EKCITA (Valencia)
• Fresno Healthy Communities Access Partners (Fresno)
• Health-e-LA (City of Industry)
• L.A. Care Health Plan (Los Angeles)
• Los Angeles County Disease Surveillance (Los Angeles)
• Northern Sierra Rural Health Network (Nevada City)
• Redwood MedNet (Ukiah)
• Santa Cruz County Health Information Exchange (Santa Cruz)

Colorado
• Colorado Regional Health Information Organization - CORHIO (Denver)
• Peak Vista Community Health Centers (Colorado Springs)
• Quality Health Network (Grand Junction)
• SynapticHealth (Greenwood Village)

Connecticut
• eHealth Connecticut (Hartford)

Delaware
• Delaware Health Information Network - DHIN (Lewes)

District of Columbia
• Children’s IQ Network (Washington)
• DC Primary Care Association (Washington)

Florida
• Agency for Health Care Administration (Tallahassee)
• Big Bend RHIO (Tallahassee)
• Central Florida Regional Health Information Organization - CFRHIO (Orlando)
• Greater Ocala Health Information Trust (Ocala)
• Hillsborough Health Care Coalition (Tampa)
• Northwest Florida Regional Health Information Organization (Pensacola)
• Tampa Bay RHIO (Tampa)

Georgia
• Ear, Nose and Throat of Georgia (Atlanta)
• Georgia Department of Community Health Office of Health Information Technology and Transparency (Atlanta)

Hawaii
• Quality Healthcare Alliance (Honolulu)

Idaho
• Idaho Health Data Exchange (Boise)
• North Idaho Rural Health Consortium (Couer d’Alene)
Illinois
• Association of Community Mental Health Authorities of Illinois Local Funds Initiative (Urbana)

Indiana
• HealthLINC (Bloomington)
• Indiana Health Information Exchange (Indianapolis)
• Michiana Health Information Network (South Bend)

Iowa
• Iowa HIT Advisory Council Member Representing Consumers (Ankeny)
• Iowa e-Health Project (Des Moines)

Kansas
• Kansas Health Policy Authority - KHPA (Topeka)

Louisiana
• Blue Cross Blue Shield Louisiana (Baton Rouge)
• Louisiana Health Information Exchange (Baton Rouge)
• Louisiana Rural Health Information Exchange - LARHIX (Pride)

Maine
• HealthInfoNet (Manchester)

Maryland
• Chesapeake Regional Information System for Out Patients - CRISP (Columbia)
• LifeBridge Health and St. Agnes Hospital (Baltimore)
• Metro DC Health Information Exchange - MeDHIX (Silver Spring)
• Universata (Germantown)

Massachusetts
• MA-SHARE (Waltham)
• Massachusetts eHealth Collaborative (Waltham)
• Massachusetts Health Data Consortium (Waltham)
• Masspro (Waltham)
• New England Healthcare EDI Network - NEHEN (Waltham)
• SAFEHealth (Worcester)

Michigan
• Ann Arbor Area Health Information Exchange (Ypsilanti)
• Capital Area Regional Health Information Organization (Okemos)
• Greater Flint Health Coalition Regional Health Information Exchange Planning Project (Flint)
• HealthCurrent (Ann Arbor)
• Michigan Health Information Network - Michigan Department of Community Health and Michigan Department of Information Technology (Lansing)
• Newberry Hospital (Newberry)
• Southeast Michigan Initiative (Detroit)

**Minnesota**
• Courage Center (Minneapolis)
• HIEBridge (Duluth)
• Minnesota e-Health Initiative (Saint Paul)
• Minnesota Health Information Exchange (Saint Paul)

**Mississippi**
• Mississippi Coastal Health Information Exchange (Ridgeland)
• Pegasus Health Information Exchange (Jackson)

**Missouri**
• CareEntrust (Kansas City)
• KC CareLink (Kansas City)
• Missouri Department of Health and Senior Services (Jefferson City)
• St. Louis Integrated Health Network - IHN (St. Louis)

**Montana**
• HealthShare (Helena)
• Montana Frontier Healthcare Network & Northwest EHR Collaborative (Anaconda)

**Nebraska**
• Western Nebraska Health Information Exchange (Lincoln)

**Nevada**
• WorldDoc Charitable Education and Research Foundation (Las Vegas)

**New Hampshire**
• New Hampshire Citizens Health Initiative (Bow)

**New Jersey**
• SAFE–BioPharma Association (Fort Lee)

**New Mexico**
• LovelaceClinic Foundation/New Mexico Health Information Collaborative - LCF/NMHIC (Albuquerque)
• New Mexico Medical Review Foundation (Albuquerque)
New York
• Bronx Regional Health Information Organization - Bronx RHIO (Bronx)
• Brooklyn Health Information Exchange - BHIX (Brooklyn)
• e-Health Network of Long Island (East Setauket)
• Greater Rochester RHIO (Rochester)
• GRIPA Connect Clinical Integration (Rochester)
• Health Advancement Collaborative of Central New York (Syracuse)
• Healthcare Information XChange of NY (Clifton Park)
• HEALTHeLINK - The Clinical Information Exchange for Western New York (Buffalo)
• Interboro Regional Health Information Organization (Elmhurst)
• New York Clinical Information Exchange - NYCLIX (New York City)
• New York eHealth Collaborative (New York City)
• Salud Medical P.C. (New York City)
• United Care Group (New York City)
• United Health Services (Johnson City)

North Carolina
• NCHICA - North Carolina Healthcare Information and Communications Alliance (Research Triangle Park)
• Southern Piedmont Health Information Exchange North Carolina Health Information Exchange (Kannapolis)
• WNC Data Link (Asheville)

North Dakota
• North Dakota HIT Steering Committee (Grand Forks)

Ohio
• Alcohol & Drug Addiction Services Board of Cuyahoga County (Cleveland)
• HealthBridge (Cincinnati)
• HealthLink RHIO Wright State University Center for Healthy Communities (Dayton)
• Health Policy Institute of Ohio (Columbus)
• Northeast Ohio Regional Health Information Organization - NEO RHIO (Munroe Falls)
• Patient Information Network—Independent Hospital Network RHIO (Canton)
• Secure Medical Records (Tahlequah)

Oklahoma
• Citizen Potawatomi Nation Health Services (Shawnee)

Oregon
• Mid Rogue Foundation (Grants Pass)
• OCHIN (Portland)
• Oregon & SW Washington Healthcare, Privacy & Security Forum (Portland)
• Salem Area Community Health Information Exchange (Salem)

Pennsylvania
• Exela Health Physician Practices (Saltsburg)
• Keystone Health Information Exchange (Dansville)
• Pennsylvania eHealth Initiative (Harrisburg)

Rhode Island
• Blue Cross Blue Shield Rhode Island (Providence)
• Rhode Island Quality Institute (Providence)

South Carolina
• Electronic Health Network (Charleston)
• Foothills Health Information Network (Seneca)
• Lakelands Rural Health Network (Greenwood)

South Dakota
• South Dakota Department of Health eHealth Collaborative (Pierre)

Tennessee
• CareSpark (Kingsport)
• Middle Tennessee eHealth Connect (Nashville)
• MidSouth eHealth Alliance (Nashville)
• Shared Health (Chattanooga)
• State of Tennessee, Office of eHealth Initiatives (Nashville)

Texas
• CriticalConnection (Austin)
• Harris County Healthcare Alliance (Houston)
• Healthcare Access (San Antonio)
• Integrated Care Collaboration (Austin)
• Texas Department of State Health Services (Austin)

Utah
• Utah Health Information Network (Murray)

Vermont
• Vermont Information Technology Leaders (Montpelier)

Virginia
• MedVirginia (Richmond)
• Northern Virginia Regional Health Information Organization - NVRHIO (McLean)
**Washington**
- Community Choice Health Record Bank (Cashmere)
- Franciscan Health (Tacoma)
- Inland Northwest Health Services (Spokane)
- South Sound Health Communication Network (Tacoma)
- Washington State Health Care Authority (Olympia)
- Whatcom Health Information Network (Bellingham)

**West Virginia**
- West Virginia Health Information Network (Charleston)

**Wisconsin**
- Marshfield Clinic TeleHealth (Marshfield)
- Wisconsin eHealth Initiative (Madison)
- Wisconsin Health Information Exchange (Mequon)
- Wisconsin Primary Health Care Association (Madison)

**Wyoming**
- Wyoming Health Information Organization (Cheyenne)
27.1 Market Assessment

According to IBISWorld (www.ibisworld.com), healthcare management consulting service revenue has been as follows:

- 2008: $3.24 billion
- 2009: $3.08 billion
- 2010: $3.41 billion
- 2011: $3.68 billion
- 2012: $3.96 billion
- 2013: $4.17 billion
- 2014: $4.86 billion
- 2015: $5.16 billion
- 2016: $5.36 billion
- 2017: $5.58 billion

27.2 Types Of Services

According to a 2017 report by IBISWorld, healthcare consulting revenue is distributed by type of service as follows:

- Strategic management: 49%
- Financial management and operations: 10%
- Human resources and management: 9%
- IT strategy: 9%
- Other: 22%

27.3 Market Leaders

Ranked by 2017 healthcare services revenue, the largest healthcare management consulting firms are as follows (source: Modern Healthcare):

- Deloitte Consulting (New York, NY): $2.57 billion
- Optum (Eden Prairie, MN): $920 million
- KPMG (New York, NY): $843 million
- Advisory Board Co. (Washington, DC): $803 million
- Navigant Consulting (Chicago, IL): $446 million
- Huron Consulting Group (Chicago, IL): $357 million
- Vizient (Irving, TX): $330 million
<table>
<thead>
<tr>
<th>Company</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTI Consulting (Washington, DC)</td>
<td>$277 million</td>
</tr>
<tr>
<td>Gallagher Healthcare Practice Group (Rolling Meadows, IL)</td>
<td>$260 million</td>
</tr>
<tr>
<td>Berkeley Research Group (Emeryville, CA)</td>
<td>$200 million</td>
</tr>
<tr>
<td>Alvarez &amp; Marsal (New York, NY)</td>
<td>$178 million</td>
</tr>
<tr>
<td>Crowe LLC (Chicago, IL)</td>
<td>$151 million</td>
</tr>
<tr>
<td>ECG Management Consultants (Seattle, WA)</td>
<td>$114 million</td>
</tr>
<tr>
<td>Quorum Health Resources (Brentwood, TN)</td>
<td>$ 80 million</td>
</tr>
<tr>
<td>West Monroe Partners (Chicago, IL)</td>
<td>$ 80 million</td>
</tr>
<tr>
<td>RSM US (Chicago, IL)</td>
<td>$ 76 million</td>
</tr>
<tr>
<td>GE Healthcare Partners (Chicago, IL)</td>
<td>$ 59 million</td>
</tr>
<tr>
<td>Dixon Hughes Goodman (Charlotte, NC)</td>
<td>$ 53 million</td>
</tr>
<tr>
<td>BKD (Springfield, MO)</td>
<td>$ 51 million</td>
</tr>
<tr>
<td>PYA (Knoxville, TN)</td>
<td>$ 51 million</td>
</tr>
<tr>
<td>Point B (Seattle, WA)</td>
<td>$ 47 million</td>
</tr>
<tr>
<td>CLA (Minneapolis, MN)</td>
<td>$ 39 million</td>
</tr>
</tbody>
</table>
28

HOME CARE

28.1 Overview
At any given time, 1.4 million Americans are receiving some form of healthcare at home for a period of one to three months. The following are characteristics of this market (source: National Center for Health Statistics [www.cdc.gov/nchs]):
- Receive skilled nursing services: 75%
- Over age 65: 70%
- Rely on Medicare as primary payment source: 52%
- Heart disease: 11%
- Diabetes: 8%
- Congestive heart failure: 4%
- Osteoarthritis: 4%
- Fractures: 4%
- Hypertension: 3%

Some three million people over age 65 can only leave their homes with extreme difficulty, according to Joanne Schwartzberg, M.D., the American Medical Association (AMA, www.ama-assn.org) director of aging and community health. Many suffer from a complex mix of chronic conditions that require constant attention. One solution is home care for this population.

According to Retooling for an Aging America, 90% of those receiving care at home get help from family and friends; 80% rely solely on them.

Home care is a cost-effective service not only for individuals recuperating from a hospital stay, but also for those who, because of a functional or cognitive disability, are unable to care for themselves.

28.2 Market Assessment
According to the Centers for Medicare and Medicaid Services (www.cms.gov), national expenditures for home healthcare have been, and are projected, as follows:
- 2010: $ 71.6 billion
- 2011: $ 74.6 billion
- 2012: $ 78.1 billion
- 2013: $ 80.5 billion
- 2014: $ 84.0 billion
- 2015: $ 88.8 billion
• 2016: $92.4 billion
• 2017: $97.1 billion
• 2018: $102.8 billion
• 2019: $109.7 billion
• 2020: $117.1 billion

Home health industry expenditures are distributed as follows (sources: Deutsche Bank and Forbes):
• Home nursing, excluding Medicare (including commercial, Medicaid and other): 38%
• Equipment and other: 27%
• Medicare home nursing: 25%
• Hospice: 10%

The 2017 Cost of Care Survey, by Genworth (www.genworth.com), reported national median home health aide services at $4,099 per month, or $49,192 per year, based on 44 hours per week. The median cost for homemaker services is $3,994 per month, or $47,934 per year. The five-year average annual growth rate (AAGR) for both services is 3%.

By state, median annual costs and five-year growth rates are as follows:

<table>
<thead>
<tr>
<th>Homemaker Services</th>
<th>Home Health Aide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Cost</td>
<td>Annual Cost</td>
</tr>
<tr>
<td>AAGR</td>
<td>AAGR</td>
</tr>
<tr>
<td>$59,488 1%</td>
<td>$63,492 2%</td>
</tr>
<tr>
<td>$38,553 1%</td>
<td>$38,553 1%</td>
</tr>
<tr>
<td>$41,184 1%</td>
<td>$41,184 1%</td>
</tr>
<tr>
<td>$48,048 2%</td>
<td>$51,480 2%</td>
</tr>
<tr>
<td>$57,200 3%</td>
<td>$57,200 2%</td>
</tr>
<tr>
<td>$54,866 4%</td>
<td>$54,912 3%</td>
</tr>
<tr>
<td>$45,760 1%</td>
<td>$52,624 2%</td>
</tr>
<tr>
<td>$45,760 N/A</td>
<td>$45,760 N/A</td>
</tr>
<tr>
<td>$50,336 1%</td>
<td>$50,908 -1%</td>
</tr>
<tr>
<td>$44,044 3%</td>
<td>$45,760 2%</td>
</tr>
<tr>
<td>$43,472 2%</td>
<td>$43,472 2%</td>
</tr>
<tr>
<td>$57,772 3%</td>
<td>$59,488 1%</td>
</tr>
<tr>
<td>$53,768 4%</td>
<td>$54,912 3%</td>
</tr>
<tr>
<td>$48,620 3%</td>
<td>$49,192 3%</td>
</tr>
<tr>
<td>$50,336 2%</td>
<td>$51,480 2%</td>
</tr>
<tr>
<td>$45,760 2%</td>
<td>$47,956 2%</td>
</tr>
<tr>
<td>$45,760 2%</td>
<td>$48,048 3%</td>
</tr>
<tr>
<td>$44,341 3%</td>
<td>$44,616 3%</td>
</tr>
<tr>
<td>$34,320 0%</td>
<td>$34,892 0%</td>
</tr>
<tr>
<td>$57,772 2%</td>
<td>$59,488 1%</td>
</tr>
<tr>
<td>$49,718 3%</td>
<td>$52,281 3%</td>
</tr>
<tr>
<td>$52,624 3%</td>
<td>$53,768 1%</td>
</tr>
<tr>
<td>$48,048 2%</td>
<td>$49,192 1%</td>
</tr>
<tr>
<td>State</td>
<td>Revenue 1</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Minnesota</td>
<td>$59,488</td>
</tr>
<tr>
<td>Missouri</td>
<td>$46,767</td>
</tr>
<tr>
<td>Mississippi</td>
<td>$40,475</td>
</tr>
<tr>
<td>Montana</td>
<td>$52,578</td>
</tr>
<tr>
<td>North Carolina</td>
<td>$41,184</td>
</tr>
<tr>
<td>North Dakota</td>
<td>$63,972</td>
</tr>
<tr>
<td>Nebraska</td>
<td>$52,624</td>
</tr>
<tr>
<td>Nevada</td>
<td>$50,336</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>$57,200</td>
</tr>
<tr>
<td>New Jersey</td>
<td>$50,336</td>
</tr>
<tr>
<td>New Mexico</td>
<td>$45,760</td>
</tr>
<tr>
<td>New York</td>
<td>$51,480</td>
</tr>
<tr>
<td>Ohio</td>
<td>$48,048</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>$45,760</td>
</tr>
<tr>
<td>Oregon</td>
<td>$54,912</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>$50,336</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>$52,624</td>
</tr>
<tr>
<td>South Carolina</td>
<td>$43,472</td>
</tr>
<tr>
<td>South Dakota</td>
<td>$57,200</td>
</tr>
<tr>
<td>Tennessee</td>
<td>$42,557</td>
</tr>
<tr>
<td>Texas</td>
<td>$44,616</td>
</tr>
<tr>
<td>Utah</td>
<td>$51,480</td>
</tr>
<tr>
<td>Virginia</td>
<td>$45,440</td>
</tr>
<tr>
<td>Vermont</td>
<td>$55,484</td>
</tr>
<tr>
<td>Washington</td>
<td>$60,632</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>$53,768</td>
</tr>
<tr>
<td>West Virginia</td>
<td>$38,896</td>
</tr>
<tr>
<td>Wyoming</td>
<td>$59,488</td>
</tr>
</tbody>
</table>

Under some reimbursement systems, insurers pay hospitals based on illness, giving hospitals an incentive to get patients discharged as quickly as possible. Home care can assist in meeting this need by providing follow-up for patients who continue to need care but do not need to remain in the hospital.

Studies show that home care reduces hospital inpatient days. Providing regular care in the home for certain conditions also reduces ED visits. Also, it frees resources for acute-care patients and more profitable procedures.

### 28.3 Largest Home Healthcare Companies

The following are the largest home healthcare companies (source: Modern Healthcare):

**For-Profit**
- Civitas Solutions (www.civitassolutions.com): $1.26 billion
- Amedisys (www.amedisys.com): $1.20 billion
• Vitas Healthcare (www.vitas.com): $1.06 billion
• LHC Group (www.lhcgroup.com): $733 million
• Addus HomeCare (www.addus.com): $313 million

Not-for-Profit
• Visiting Nurse Service of New York (www.vnsny.org): $2.69 billion
• ElderServe Health (www.elderserveinc.org): $412 million
• SSM Health (www.ssmhealth.com): $212 million
• BayCare Home Care (www.baycare.org/home-care): $139 million
• Metropolitan Jewish Home Care (www.mjhs.org/home-care/): $136 million

Frandata (www.frandata.com) estimates the private, non-hospital affiliated home care market at $55 billion. The sector includes more than 45,000 companies, including 2,800 franchise operations from companies such as Accessible Home Health Care (www.accessiblehomehealthcare.com), BrightStar (www.brightstarcare.com), HomeWell (www.homewell.biz), and LivHome (www.livhomefranchise.com).

28.4 Hospitals In The Home Care Market

According to Hospital Statistics 2018™, by the American Hospital Association (www.aha.org), 61% of community hospitals are direct providers of some aspect of home care service (nursing, physical therapy, occupational therapy, respiratory care, equipment, etc.).

Of Medicare-certified agencies, free-standing proprietary agencies comprise 40%, and hospital-based agencies and public health agencies each make up 30%. This differs markedly from the industry composition in the early 1980s, when public health agencies dominated the ranks of certified agencies and proprietary and hospital-based agencies combined accounted for only one-fourth of the total.

The number of hospital-based and free-standing proprietary agencies has been growing faster than any other type of Medicare-certified agency, according to the National Association of Home Care and Hospice (www.nahc.org).

The following are the 10 largest healthcare systems operating home care agencies (source: Modern Healthcare):

<table>
<thead>
<tr>
<th>Visits</th>
<th>Agencies</th>
<th>Branches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catholic Health East:</td>
<td>1.95 million</td>
<td>30</td>
</tr>
<tr>
<td>Cox Health:</td>
<td>1.14 million</td>
<td>4</td>
</tr>
<tr>
<td>Catholic Health Initiatives:</td>
<td>701,400</td>
<td>n/a</td>
</tr>
<tr>
<td>Trinity Health:</td>
<td>699,100</td>
<td>37</td>
</tr>
<tr>
<td>Hartford Healthcare System:</td>
<td>554,100</td>
<td>2</td>
</tr>
<tr>
<td>Ascension Health:</td>
<td>546,785</td>
<td>14</td>
</tr>
<tr>
<td>Adventist Health System:</td>
<td>534,200</td>
<td>20</td>
</tr>
<tr>
<td>North Shore-Long Island Jewish Health System:</td>
<td>508,600</td>
<td>4</td>
</tr>
<tr>
<td>Bon Secours Health System:</td>
<td>499,200</td>
<td>5</td>
</tr>
<tr>
<td>University of Pittsburgh Medical Center:</td>
<td>450,000</td>
<td>2</td>
</tr>
</tbody>
</table>
28.5 Home-Based Monitoring

*Hospitals & Health Networks* reports the following percentages of hospitals provide real-time management online for patients with the following conditions:

- Diabetes: 15%
- Congestive heart failure: 14%
- Heart disease: 12%
- Asthma: 10%
- Chronic obstructive pulmonary disease: 10%
- Cancer: 7%

“Patients and providers are increasingly relying on home-based monitoring. Patient-generated data help providers improve efficiency and better control patients’ chronic conditions.”

*Modern Healthcare*

28.6 Market Resources

National Association for Home Care & Hospice, 228 Seventh Street SE, Washington, DC 20003. (202) 547-7424. ([www.nahc.org](http://www.nahc.org))
HOSPICE & PALLIATIVE CARE

29.1 Overview
Hospice and palliative services provide patients with end-of-life care. The biggest difference between hospice care and hospital-based palliative care is that hospice care seeks to move end-of-life patients out of the hospital to a home environment.

“There is a consistent emphasis on the continuum of care, care transitions, and the management of patients with advanced serious illnesses upstream from end-of-life care to create seamless support across sites of care. Palliative care plays a particularly important role for patients with progressive illnesses and declining function who often get caught in the vortex of healthcare consumption. These are the 10% of our healthcare population whose escalating needs compel them to utilize the hospital and emergency department for lack of better alternatives.”

Martha L. Twaddle, M.D., Chairman
Circle Of Life Committee

29.2 Market Assessment
Annual hospice and palliative care expenditures in the U.S. are estimated at $20 billion. Of this amount, Medicare pays about $15.5 billion. Spending is distributed by payer as follows (source: Modern Healthcare):
Researchers at Duke University found that hospice care reduced Medicare costs by an average of $2,309 per patient compared with hospitalization. On average, hospice use decreased Medicare costs for cancer patients using hospice care for fewer than 233 days. For non-cancer patients, there were cost savings seen at up to 154 days of hospice care. Medicare pays an average of $11,500 per hospice beneficiary.

29.3 Characteristics Of Hospice Care

_Hospice Care in America_, published in October 2017 by the National Hospice and Palliative Care Organization (NHPCO, [www.nhcpo.org](http://www.nhcpo.org)), provided the following assessment:

- CMS paid 4,199 hospices to provide care under the Medicare hospice benefit.
- Forty-six percent (46%) of Medicare recipients who died during the past year received one day or more of hospice care and were enrolled in hospice at the time of death.
- Median length of service was 23 days.
- Seventy-five percent (75%) of patients received care for 90 days or less, while those receiving care for more than 180 days accounted for 13%.
- Cancer was the most common principle diagnosis, accounting for 28% of patients.
- Ninety-eight percent (98%) of care was provided at the Routine Home Care (RHC) level, with 56% of RHC days taking place in the home.

“Recent research out of the Yale University Medical School and published in the _Journal of the American Geriatric Society_ suggests that individuals who access hospice care often do so too late to benefit fully and additional strategies are needed to better address the high burden of distressing symptoms and disability at the end of life.”

_Hospice Care in America_

NHPCO, 10/17
The following is additional data on hospice care in the United States (source: NHPCO):

**Characteristics of U.S. hospice programs**
- 5,300 estimated operational hospice programs
- 58% of hospices are not-for-profit, 36% are for-profit, and 6% are run by government agencies
- 79% of hospices have fewer than 500 total admissions

**Characteristics of patients served by hospice**
- An estimated 1.58 million patients are served by hospice programs
- The median time spent receiving hospice care is 19.7 days
- 56% of hospice patients are female; 44% are male
- 67% are 75 years of age or older
- Primary diagnosis of hospice patients: cancer (36%), heart disease (14%), and dementia (13%); 13% have unspecified debilities
- 1.0 million patients die under hospice care each year; 41.6% of all deaths occurred under hospice care

**Volunteer commitment**
- Approximately 468,000 hospice volunteers contribute 21 million hours to hospices each year, according to Hospice Foundation of America (HFA, [www.hospicefoundation.org](http://www.hospicefoundation.org))

### 29.4 Market Leaders
The following are the largest providers of hospice care:
- Gentiva Health Services ([www.gentiva.com](http://www.gentiva.com))
- Golden Living ([www.goldenliving.com](http://www.goldenliving.com))
- Heartland-Manor Care ([www.heartland-manorcare.com](http://www.heartland-manorcare.com))
- Vitas Healthcare ([www.vitas.com](http://www.vitas.com))

### 29.5 Hospital Palliative Care
According to *Hospital Statistics 2018™*, by the American Hospital Association ([AHA, www.aha.org](http://www.aha.org)), 65% of community hospitals offer palliative care services.

In a palliative care program, attending to quality of life and cost-effective service are not mutually exclusive. Palliative care systems have been shown to enhance compliance with pain and quality accreditation standards and improved support for staff who deal with complex diagnoses and around-the-clock needs. Pain, nausea, fatigue, and weakness; depression or other psychological issues; family needs; and provider-patient communication – all of these interventions improve when a hospital puts a palliative care system in place.

In conjunction with the Center to Advance Palliative Care ([www.capc.org](http://www.capc.org)), The Robert Wood Johnson Foundation ([www.rwjf.org](http://www.rwjf.org)) has funded Palliative Care...
Leadership Centers – model programs that offer hands-on technical assistance, training, and a year of mentoring to hospitals hoping to launch a palliative care program – at the following hospitals:

• Fairview Health Services (Minneapolis, MN)
• Massey Cancer Center of Virginia Commonwealth University Health System (Richmond, VA)
• Medical College of Wisconsin (Milwaukee, WI)
• Mount Carmel Health System (Columbus, OH)
• Palliative Care Center of the Bluegrass (Lexington, KY)
• The University of California (San Francisco, CA)

“Once viewed as a service only offered to terminally ill patients, an increasing number of hospitals now offer palliative care to patients from the moment they enter the ED or ICU.”

_Hospitals & Health Networks_
Hospices’ average performance in the inaugural posting of Hospice Compare data was as follows:

- Treating patient with respect: 90.6%
- Getting emotional and religious respect: 89.5%
- Willingness to recommend hospice: 84.5%
- Rating of hospice care: 80.4%
- Hospice team communication: 80.3%
- Getting timely care: 78.0%
- Getting hospice care training: 75.2%
- Getting help for symptoms: 75.2%

“In late February, the CMS for the first time posted findings on Hospice Compare from the CAHPS hospice surveys. The results at first glance are a success story ... but a low-response rate could be tilting the results higher.”

*Modern Healthcare*, 4/2/18

**29.7 Market Resources**

Center to Advance Palliative Care, 55 West 125th Street, 13th Floor, New York, NY 10027. (212) 201-2670. ([www.capc.org](http://www.capc.org))

Hospice Foundation of America, 1710 Rhode Island Avenue NW, Suite 400, Washington, DC 20036. (202) 457-5811. ([www.hospicefoundation.org](http://www.hospicefoundation.org))

National Association for Home Care & Hospice, 228 Seventh Street SE, Washington, DC 20003. (202) 547-7424. ([www.nahc.org](http://www.nahc.org))

National Hospice and Palliative Care Organization, 1731 King Street, Suite 100, Alexandria, VA 22314. (703) 837-1500. ([www.nhpco.org](http://www.nhpco.org))
30.1 Number of Deals
Irving Levin Associates (www.levinassociates.com) reported the number of hospital merger and acquisition (M&A) deals as follows:

- 2013: 88
- 2014: 99
- 2015: 102
- 2016: 89
- 2017: 78

“Since 2010, the number of announced hospital mergers and acquisitions increased by 70%. This recent history, along with future demands, suggests that consolidations will continue. More affiliations between traditional and nontraditional organizations will take place. Hospitals get rapid access to new capabilities, while nontraditional provider organizations get rapid access to larger patient populations.”

2018 Environmental Scan
American Hospital Association

30.2 Financial Analysis
Kaufman Hall & Associates (www.kaufmanhall.com) assessed hospital M&As and combined revenue of smaller deal partners as follows:
<table>
<thead>
<tr>
<th>Number of Deals</th>
<th>Combined Revenue of Smaller Deal Partner</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013: 98</td>
<td>$31.3 billion</td>
</tr>
<tr>
<td>2014: 102</td>
<td>$23.1 billion</td>
</tr>
<tr>
<td>2015: 112</td>
<td>$32.0 billion</td>
</tr>
<tr>
<td>2016: 102</td>
<td>$31.3 billion</td>
</tr>
<tr>
<td>2017: 115</td>
<td>$63.2 billion</td>
</tr>
</tbody>
</table>

### 30.3 Hospital Merger Benefits

A 2017 assessment by Charles River Associates (www.crai.com) identified the following benefits of hospital mergers:
- Decreased costs – 1.5% reduction in annual operating expenses at acquired hospitals
- Decreased capital and operating costs
- Improved clinical standardization
- Improved outcomes for patients and reduced readmission rates

“It is no longer struggling independents or desperate health systems at death’s door looking to merge. More and more, even well-positioned systems see benefits.”

*Modern Healthcare, 1/29/18*

### 30.4 Largest Hospital Mergers

*Modern Healthcare* reported the largest health system mergers & acquisitions in 2017 as follows:

<table>
<thead>
<tr>
<th>Larger Partner</th>
<th>Smaller Partner</th>
<th>Combined Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dignity Health</td>
<td>Catholic Health Initiatives</td>
<td>$27.4 billion</td>
</tr>
<tr>
<td>Ascension</td>
<td>Presence Health</td>
<td>$24.6 billion</td>
</tr>
<tr>
<td>Highmark Health</td>
<td>Penn State Health</td>
<td>$20.0 billion</td>
</tr>
<tr>
<td>Carolinas HealthCare System</td>
<td>UNC Health Care</td>
<td>$14.0 billion</td>
</tr>
<tr>
<td>Advocate Health Care</td>
<td>Aurora Health Care</td>
<td>$10.7 billion</td>
</tr>
<tr>
<td>Steward Health Care</td>
<td>Iasis Healthcare</td>
<td>$ 8.0 billion</td>
</tr>
</tbody>
</table>
**30.5 Market Resources**

Charles River Associates, 200 Clarendon Street, Boston, MA 02116. (617) 425-3000. (www.crai.com)

Kaufman Hall & Associates, 5202 Old Orchard Road, Suite 700, Skokie, IL 60077. (847) 441-8780. (www.kaufmanhall.com)

Irving Levin Associates, 268½ Main Avenue, Norwalk, CT 06851. (203) 846-6800. (www.levinassociates.com)
31.1 Overview
The Healthcare Cost and Utilization Project (www.hcup-us.ahrq.gov), from the Agency for Healthcare Research and Quality (AHRQ, www.ahrq.gov), provides statistics for principal diagnoses, procedures, and spending for stays at community hospitals. Data for the most frequent diagnoses and procedures in 2016, published by AHRQ in November 2017, are presented in this chapter.

31.2 Most Frequent Primary Diagnoses
The most frequent primary diagnoses are as follows:

- Liveborn: 1,195 per 100,000
- Septicemia (except in labor): 552 per 100,000
- Osteoarthritis: 339 per 100,000
- Congestive heart failure; nonhypertensive: 297 per 100,000
- Pneumonia (except that caused by tuberculosis or sexually transmitted disease): 276 per 100,000
- Mood disorders: 267 per 100,000
- Cardiac dysrhythmias: 212 per 100,000
- Complication of device; implant or graft: 203 per 100,000
- Acute myocardial infarction: 196 per 100,000
- Other complications of birth; puerperium affecting management of mother: 195 per 100,000

31.3 Most Frequent Hospital Procedures
The most frequent operating room procedures (excluding maternal/neonatal stays) are as follows:

- Arthroplasty knee: 236 per 100,000
- Hip replacement; total and partial: 167 per 100,000
- Spinal fusion: 147 per 100,000
- Percutaneous transluminal coronary angioplasty (PTCA): 147 per 100,000
- Laminectomy; excision intervertebral disc: 136 per 100,000
- Other OR procedures on vessels other than head and neck: 130 per 100,000
- Partial excision bone: 115 per 100,000
• Cholecystectomy and common duct exploration: 111 per 100,000
• Colorectal resection: 94 per 100,000
• Other therapeutic procedures on muscles and tendons: 93 per 100,000

31.4 Most Frequent Ambulatory Surgery Procedures

The most frequent ambulatory surgery procedures are as follows:

- Lens and cataract procedures: 865,000
- Other therapeutic procedures on muscles and tendons: 543,000
- Other OR therapeutic procedures on joints: 420,000
- Cholecystectomy and common duct exploration: 376,000
- Excision of semilunar cartilage of knee: 336,000
- Inguinal and femoral hernia repair: 260,000
- Other OR therapeutic procedures on skin and breast: 231,000
- Lumpectomy; quadrantectomy of breast: 225,000
- Decompression peripheral nerve: 224,000
- Other hernia repair: 218,000
- Other OR therapeutic procedures on nose; mouth and pharynx: 205,000
- Other OR procedures on vessels other than head and neck: 202,000
- Other excision of cervix and uterus: 201,000
- Partial excision bone: 190,000
- Other OR therapeutic procedures on bone: 180,000
- Transurethral excision; drainage; or removal urinary obstruction: 173,000
- Excision of skin lesion: 160,000
- Other OR therapeutic procedures; female organs: 160,000
- Insertion; revision; replacement; removal of cardiac pacemaker or cardioverter/defibrillator: 160,000
- Skin graft: 160,000
- Hysterectomy; abdominal and vaginal: 156,000
- Other intraocular therapeutic procedures: 155,000
- Debridement of wound; infection or burn: 154,000
- Bunionectomy or repair of toe deformities: 134,000
- Laminectomy; excision intervertebral disc: 122,000
32

HOSPITAL PROFILE

32.1 Data Summary

*Hospital Statistics 2018™, by the American Hospital Association (AHA, www.aha.org), provides the following data on U.S. hospitals:

- Total number of all U.S. registered hospitals: 5,534
  - U.S. community hospitals*: 4,840
  - Non-government not-for-profit community hospitals: 2,849
  - Investor-owned (for-profit) community hospitals: 1,035
  - State and local government community hospitals: 956
  - Non-federal psychiatric hospitals: 397
  - Federal government hospitals: 209
  - Non-federal long-term care hospitals and other hospitals: 88

- Total staffed beds in all U.S. registered hospitals: 894,574
  - Staffed beds in community hospitals: 780,272

- Total admissions in all U.S. registered hospitals: 35,158,934
  - Admissions in community hospitals: 33,424,253

- Number of urban community hospitals: 3,015
- Number of rural community hospitals: 1,825
- Number of community hospitals in a system**: 3,231
- Number of community hospitals in a network***: 1,689
- Number of emergency departments: 4,408

* Community hospitals are defined as all non-federal, short-term general, and other special hospitals. Other special hospitals include obstetrics and gynecology; eye, ear, nose, and throat; rehabilitation; orthopedic; and other individually described specialty services. Community hospitals include academic medical centers or other teaching hospitals if they are non-federal short-term hospitals. Excluded are hospitals not accessible by the general public, such as prison hospitals or college infirmaries.

** System is defined by AHA as either a multi-hospital or a diversified single hospital system. A multi-hospital system is two or more hospitals owned, leased, sponsored, or contract-managed by a central organization. Single, freestanding hospitals may be categorized as a system by bringing into membership three or more, and at least 25%, of their owned or leased non-hospital pre-acute or post-acute healthcare organizations. System affiliation does not preclude network participation.

*** Network is a group of hospitals, physicians, other providers, insurers and/or community agencies that work together to coordinate and deliver a broad spectrum of services to their community. Network participation does not preclude system affiliation.
32.2 Utilization

Inpatient, emergency department, and outpatient utilization in community hospitals is as follows (source: Hospital Statistics™):

- Total inpatient admissions: 33,066,720
- Inpatient admissions per 1,000: 103.7
- Total inpatient days: 180,456,434
- Inpatient days per 1,000: 565.9
- Inpatient surgeries: 9,015,467
- Average length of stay: 5.5
- Emergency department (ED) visits: 136,300,000
- ED visits per 1,000: 428
- Outpatient visits: 693,106,685
- Outpatient visits per 1,000: 2,173.7
- Outpatient surgeries: 17,386,061

32.3 Financial Performance

Hospital financial performance is as follows (source: Hospital Statistics™):

Margins
- Aggregate total hospital margins: 8.3%
- Aggregate operating margins: 7.7%
- Percentage of hospitals with negative total margins: 23.3%
- Percentage of hospitals with negative operating margins: 29.9%

Revenue Distribution
- Inpatient: 55.0%
- Outpatient: 45.0%

Distribution Of Hospital Cost By Payer Type
- Medicare: 40.2%
- Private payer: 33.1%
- Medicaid: 17.6%
- Uncompensated care: 5.3%
- Non-patient: 2.1%
- Other government: 1.7%

Aggregate Hospital Payment-to-Cost Ratios
- Medicare: 96.9%
- Medicaid: 93.7%
- Private payer: 124.4%
32.4 Uncompensated Care

The American Hospital Association (www.aha.org) defines ‘uncompensated care’ as an overall measure of hospital care provided for which no payment was received from the patient or insurer. It is the sum of a hospital’s bad debt and the charity care it provides. A hospital incurs bad debt when it cannot obtain reimbursement for care provided; this happens when patients are unable or unwilling to pay their bills. Uncompensated care excludes other unfunded costs of care, such as underpayment from Medicaid and Medicare. Charity care is care for which hospitals never expected to be reimbursed.

Each year the American Hospital Association publishes aggregate information on the level of uncompensated care delivered in U.S. hospitals. National costs to hospitals for uncompensated care have been as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Hospitals</th>
<th>Cost</th>
<th>% of Total Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>4,915</td>
<td>$21.6 billion</td>
<td>6.0%</td>
</tr>
<tr>
<td>2001</td>
<td>4,908</td>
<td>$21.5 billion</td>
<td>5.6%</td>
</tr>
<tr>
<td>2002</td>
<td>4,927</td>
<td>$22.3 billion</td>
<td>5.4%</td>
</tr>
<tr>
<td>2003</td>
<td>4,895</td>
<td>$24.9 billion</td>
<td>5.5%</td>
</tr>
<tr>
<td>2004</td>
<td>4,919</td>
<td>$26.9 billion</td>
<td>5.6%</td>
</tr>
<tr>
<td>2005</td>
<td>4,936</td>
<td>$28.8 billion</td>
<td>5.6%</td>
</tr>
<tr>
<td>2006</td>
<td>4,927</td>
<td>$31.2 billion</td>
<td>5.7%</td>
</tr>
<tr>
<td>2007</td>
<td>4,897</td>
<td>$34.0 billion</td>
<td>5.8%</td>
</tr>
<tr>
<td>2008</td>
<td>5,010</td>
<td>$36.4 billion</td>
<td>5.8%</td>
</tr>
<tr>
<td>2009</td>
<td>5,008</td>
<td>$39.1 billion</td>
<td>6.0%</td>
</tr>
<tr>
<td>2010</td>
<td>4,985</td>
<td>$39.3 billion</td>
<td>5.8%</td>
</tr>
<tr>
<td>2011</td>
<td>4,973</td>
<td>$41.1 billion</td>
<td>5.9%</td>
</tr>
<tr>
<td>2012</td>
<td>4,999</td>
<td>$45.9 billion</td>
<td>6.1%</td>
</tr>
<tr>
<td>2013</td>
<td>4,974</td>
<td>$46.4 billion</td>
<td>5.9%</td>
</tr>
<tr>
<td>2014</td>
<td>4,926</td>
<td>$42.8 billion</td>
<td>5.3%</td>
</tr>
<tr>
<td>2015</td>
<td>4,862</td>
<td>$35.7 billion</td>
<td>4.2%</td>
</tr>
<tr>
<td>2016</td>
<td>4,840</td>
<td>$38.3 billion</td>
<td>4.2%</td>
</tr>
</tbody>
</table>

Since 2000, hospitals of all types have provided more than $576 billion in uncompensated care to their patients.”

American Hospital Association, 12/17
32.5 Hospital Services

The following percentages of U.S. community hospitals offer specialized healthcare services (source: American Hospital Association):

- Birthing, labor, and delivery: 65%
- Chemotherapy: 57%
- Sleep center: 49%
- Sports medicine: 40%
- Ambulatory surgery center: 24%
- Dental services: 23%
- Bariatric/weight control: 22%
- Complementary medicine services: 21%
- Alzheimer’s center: 4%
- Free-standing emergency center: 4%

The percentage of U.S. community hospitals providing services beyond traditional inpatient and outpatient care are as follows (source: Hospital Statistics™):

- Hospice: 65%
- Home health service: 61%
- Skilled nursing facility: 38%
- Meals on wheels: 21%
- Assisted living: 14%
- Other long-term care: 14%

32.6 Hospital Statistics By State

According to American Hospital Directory (August 2017), statistics for non-federal, short-term, acute care hospitals are as follows:

<table>
<thead>
<tr>
<th>State</th>
<th>No. of Hospitals</th>
<th>Staffed Beds</th>
<th>Total Discharges</th>
<th>Patient Days</th>
<th>Gross Patient Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>94</td>
<td>15,841</td>
<td>586,032</td>
<td>2,859,618</td>
<td>$ 53.26 billion</td>
</tr>
<tr>
<td>Alaska</td>
<td>10</td>
<td>1,191</td>
<td>45,262</td>
<td>239,577</td>
<td>$ 4.58 billion</td>
</tr>
<tr>
<td>Arkansas</td>
<td>51</td>
<td>7,977</td>
<td>319,831</td>
<td>1,389,323</td>
<td>$ 24.01 billion</td>
</tr>
<tr>
<td>Arizona</td>
<td>72</td>
<td>13,492</td>
<td>605,083</td>
<td>2,633,036</td>
<td>$ 66.27 billion</td>
</tr>
<tr>
<td>California</td>
<td>345</td>
<td>74,793</td>
<td>3,100,201</td>
<td>14,387,888</td>
<td>$386.92 billion</td>
</tr>
<tr>
<td>Colorado</td>
<td>54</td>
<td>8,460</td>
<td>393,684</td>
<td>1,722,245</td>
<td>$ 54.36 billion</td>
</tr>
<tr>
<td>Connecticut</td>
<td>33</td>
<td>8,920</td>
<td>374,243</td>
<td>1,720,491</td>
<td>$ 34.84 billion</td>
</tr>
<tr>
<td>Delaware</td>
<td>8</td>
<td>2,044</td>
<td>90,230</td>
<td>449,516</td>
<td>$ 6.67 billion</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>8</td>
<td>2,619</td>
<td>107,169</td>
<td>620,145</td>
<td>$ 11.28 billion</td>
</tr>
<tr>
<td>Florida</td>
<td>217</td>
<td>92,232</td>
<td>2,506,894</td>
<td>11,877,974</td>
<td>$277.34 billion</td>
</tr>
<tr>
<td>Georgia</td>
<td>114</td>
<td>22,078</td>
<td>910,019</td>
<td>4,457,301</td>
<td>$ 87.95 billion</td>
</tr>
<tr>
<td>Hawaii</td>
<td>14</td>
<td>2,523</td>
<td>91,534</td>
<td>530,268</td>
<td>$ 7.00 billion</td>
</tr>
<tr>
<td>Idaho</td>
<td>16</td>
<td>2,440</td>
<td>112,954</td>
<td>462,406</td>
<td>$ 10.07 billion</td>
</tr>
<tr>
<td>Illinois</td>
<td>142</td>
<td>30,704</td>
<td>1,266,927</td>
<td>5,733,599</td>
<td>$132.91 billion</td>
</tr>
<tr>
<td>Indiana</td>
<td>97</td>
<td>16,001</td>
<td>662,475</td>
<td>3,027,683</td>
<td>$ 68.74 billion</td>
</tr>
<tr>
<td>State</td>
<td>Beds per 1,000</td>
<td>Avg. Stay</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>----------------</td>
<td>-----------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iowa</td>
<td>40</td>
<td>266,913</td>
<td>1,182,679</td>
<td>$ 21.62 billion</td>
<td></td>
</tr>
<tr>
<td>Kansas</td>
<td>59</td>
<td>270,738</td>
<td>1,155,848</td>
<td>$ 28.48 billion</td>
<td></td>
</tr>
<tr>
<td>Kentucky</td>
<td>75</td>
<td>543,014</td>
<td>2,576,854</td>
<td>$ 50.43 billion</td>
<td></td>
</tr>
<tr>
<td>Louisiana</td>
<td>105</td>
<td>512,856</td>
<td>2,430,476</td>
<td>$ 48.54 billion</td>
<td></td>
</tr>
<tr>
<td>Maryland</td>
<td>52</td>
<td>588,254</td>
<td>2,911,624</td>
<td>$ 18.28 billion</td>
<td></td>
</tr>
<tr>
<td>Maine</td>
<td>19</td>
<td>114,128</td>
<td>531,582</td>
<td>$ 9.54 billion</td>
<td></td>
</tr>
<tr>
<td>Massachusetts</td>
<td>77</td>
<td>743,615</td>
<td>3,539,724</td>
<td>$ 59.51 billion</td>
<td></td>
</tr>
<tr>
<td>Michigan</td>
<td>105</td>
<td>1,096,564</td>
<td>4,863,002</td>
<td>$ 83.58 billion</td>
<td></td>
</tr>
<tr>
<td>Minnesota</td>
<td>56</td>
<td>469,896</td>
<td>2,114,003</td>
<td>$ 38.81 billion</td>
<td></td>
</tr>
<tr>
<td>Mississippi</td>
<td>70</td>
<td>324,039</td>
<td>1,525,021</td>
<td>$ 31.21 billion</td>
<td></td>
</tr>
<tr>
<td>Missouri</td>
<td>88</td>
<td>674,471</td>
<td>3,198,114</td>
<td>$ 65.36 billion</td>
<td></td>
</tr>
<tr>
<td>Montana</td>
<td>17</td>
<td>75,756</td>
<td>335,504</td>
<td>$ 6.42 billion</td>
<td></td>
</tr>
<tr>
<td>North Carolina</td>
<td>109</td>
<td>962,626</td>
<td>4,660,375</td>
<td>$ 87.25 billion</td>
<td></td>
</tr>
<tr>
<td>North Dakota</td>
<td>10</td>
<td>76,038</td>
<td>351,663</td>
<td>$ 7.35 billion</td>
<td></td>
</tr>
<tr>
<td>Nebraska</td>
<td>28</td>
<td>177,025</td>
<td>808,665</td>
<td>$ 13.75 billion</td>
<td></td>
</tr>
<tr>
<td>New Hampshire</td>
<td>14</td>
<td>102,675</td>
<td>482,507</td>
<td>$ 11.11 billion</td>
<td></td>
</tr>
<tr>
<td>New Jersey</td>
<td>74</td>
<td>954,710</td>
<td>4,361,876</td>
<td>$112.44 billion</td>
<td></td>
</tr>
<tr>
<td>New Mexico</td>
<td>38</td>
<td>167,172</td>
<td>772,019</td>
<td>$ 15.61 billion</td>
<td></td>
</tr>
<tr>
<td>Nevada</td>
<td>26</td>
<td>264,781</td>
<td>1,329,248</td>
<td>$ 36.10 billion</td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>195</td>
<td>2,175,099</td>
<td>11,782,721</td>
<td>$205.72 billion</td>
<td></td>
</tr>
<tr>
<td>Ohio</td>
<td>151</td>
<td>1,246,283</td>
<td>5,609,392</td>
<td>$132.91 billion</td>
<td></td>
</tr>
<tr>
<td>Oklahoma</td>
<td>98</td>
<td>403,332</td>
<td>1,845,576</td>
<td>$ 39.75 billion</td>
<td></td>
</tr>
<tr>
<td>Oregon</td>
<td>38</td>
<td>324,222</td>
<td>1,409,161</td>
<td>$ 24.29 billion</td>
<td></td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>179</td>
<td>1,487,921</td>
<td>6,898,550</td>
<td>$181.80 billion</td>
<td></td>
</tr>
<tr>
<td>Rhode Island</td>
<td>12</td>
<td>107,068</td>
<td>502,862</td>
<td>$ 9.04 billion</td>
<td></td>
</tr>
<tr>
<td>South Carolina</td>
<td>63</td>
<td>468,551</td>
<td>2,337,221</td>
<td>$ 51.27 billion</td>
<td></td>
</tr>
<tr>
<td>South Dakota</td>
<td>25</td>
<td>92,638</td>
<td>397,903</td>
<td>$ 9.99 billion</td>
<td></td>
</tr>
<tr>
<td>Tennessee</td>
<td>109</td>
<td>801,622</td>
<td>3,782,599</td>
<td>$ 76.17 billion</td>
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</tr>
<tr>
<td>Texas</td>
<td>376</td>
<td>2,532,725</td>
<td>11,995,973</td>
<td>$277.66 billion</td>
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<tr>
<td>Utah</td>
<td>37</td>
<td>210,219</td>
<td>837,282</td>
<td>$ 16.74 billion</td>
<td></td>
</tr>
<tr>
<td>Virginia</td>
<td>92</td>
<td>716,672</td>
<td>3,468,264</td>
<td>$ 70.87 billion</td>
<td></td>
</tr>
<tr>
<td>Vermont</td>
<td>7</td>
<td>39,159</td>
<td>179,641</td>
<td>$ 3.76 billion</td>
<td></td>
</tr>
<tr>
<td>Washington</td>
<td>64</td>
<td>532,958</td>
<td>2,446,541</td>
<td>$ 57.34 billion</td>
<td></td>
</tr>
<tr>
<td>Wisconsin</td>
<td>76</td>
<td>484,270</td>
<td>2,156,346</td>
<td>$ 48.25 billion</td>
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</tr>
<tr>
<td>West Virginia</td>
<td>36</td>
<td>209,653</td>
<td>1,013,324</td>
<td>$ 15.91 billion</td>
<td></td>
</tr>
<tr>
<td>Wyoming</td>
<td>14</td>
<td>33,042</td>
<td>120,130</td>
<td>$ 2.76 billion</td>
<td></td>
</tr>
</tbody>
</table>

According to Hospital Statistics™, hospitals across the U.S. average 2.60 beds per 1,000 population. The average length of stay is 5.4 days. By state, these figures are as follows:

<table>
<thead>
<tr>
<th>State</th>
<th>Beds per 1,000</th>
<th>Avg. Stay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>3.08</td>
<td>5.3</td>
</tr>
<tr>
<td>Alaska</td>
<td>2.22</td>
<td>7.0</td>
</tr>
<tr>
<td>Arizona</td>
<td>1.98</td>
<td>4.6</td>
</tr>
<tr>
<td>State</td>
<td>Value 1</td>
<td>Value 2</td>
</tr>
<tr>
<td>------------------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>Arkansas</td>
<td>3.13</td>
<td>5.1</td>
</tr>
<tr>
<td>California</td>
<td>1.79</td>
<td>5.1</td>
</tr>
<tr>
<td>Colorado</td>
<td>1.96</td>
<td>5.2</td>
</tr>
<tr>
<td>Connecticut</td>
<td>2.17</td>
<td>5.6</td>
</tr>
<tr>
<td>Delaware</td>
<td>2.19</td>
<td>5.3</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>5.38</td>
<td>7.3</td>
</tr>
<tr>
<td>Florida</td>
<td>2.69</td>
<td>5.0</td>
</tr>
<tr>
<td>Georgia</td>
<td>2.42</td>
<td>6.5</td>
</tr>
<tr>
<td>Hawaii</td>
<td>2.02</td>
<td>6.9</td>
</tr>
<tr>
<td>Idaho</td>
<td>2.03</td>
<td>4.9</td>
</tr>
<tr>
<td>Illinois</td>
<td>2.45</td>
<td>5.0</td>
</tr>
<tr>
<td>Indiana</td>
<td>2.61</td>
<td>5.2</td>
</tr>
<tr>
<td>Iowa</td>
<td>3.13</td>
<td>6.1</td>
</tr>
<tr>
<td>Kansas</td>
<td>3.45</td>
<td>6.4</td>
</tr>
<tr>
<td>Kentucky</td>
<td>3.17</td>
<td>5.3</td>
</tr>
<tr>
<td>Louisiana</td>
<td>3.24</td>
<td>5.5</td>
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<tr>
<td>Maine</td>
<td>2.54</td>
<td>5.7</td>
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<tr>
<td>Maryland</td>
<td>2.01</td>
<td>5.0</td>
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<tr>
<td>Massachusetts</td>
<td>2.38</td>
<td>5.5</td>
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<tr>
<td>Michigan</td>
<td>2.46</td>
<td>5.1</td>
</tr>
<tr>
<td>Minnesota</td>
<td>2.67</td>
<td>6.1</td>
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<tr>
<td>Mississippi</td>
<td>4.17</td>
<td>6.7</td>
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<tr>
<td>Missouri</td>
<td>3.07</td>
<td>5.2</td>
</tr>
<tr>
<td>Montana</td>
<td>3.60</td>
<td>8.6</td>
</tr>
<tr>
<td>Nebraska</td>
<td>3.55</td>
<td>6.8</td>
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<tr>
<td>Nevada</td>
<td>1.95</td>
<td>5.5</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>2.14</td>
<td>5.4</td>
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<tr>
<td>New Jersey</td>
<td>2.30</td>
<td>5.2</td>
</tr>
<tr>
<td>New Mexico</td>
<td>1.81</td>
<td>4.7</td>
</tr>
<tr>
<td>New York</td>
<td>2.80</td>
<td>6.9</td>
</tr>
<tr>
<td>North Carolina</td>
<td>2.22</td>
<td>5.5</td>
</tr>
<tr>
<td>North Dakota</td>
<td>4.25</td>
<td>7.0</td>
</tr>
<tr>
<td>Ohio</td>
<td>2.87</td>
<td>5.0</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>2.90</td>
<td>5.5</td>
</tr>
<tr>
<td>Oregon</td>
<td>1.70</td>
<td>4.4</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>2.98</td>
<td>5.5</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>2.13</td>
<td>5.0</td>
</tr>
<tr>
<td>South Carolina</td>
<td>2.53</td>
<td>5.6</td>
</tr>
<tr>
<td>South Dakota</td>
<td>4.79</td>
<td>9.2</td>
</tr>
<tr>
<td>Tennessee</td>
<td>3.06</td>
<td>5.4</td>
</tr>
<tr>
<td>Texas</td>
<td>2.28</td>
<td>5.3</td>
</tr>
<tr>
<td>Utah</td>
<td>1.77</td>
<td>4.3</td>
</tr>
<tr>
<td>Vermont</td>
<td>1.92</td>
<td>6.3</td>
</tr>
<tr>
<td>Virginia</td>
<td>2.19</td>
<td>5.7</td>
</tr>
<tr>
<td>State</td>
<td>Value1</td>
<td>Value2</td>
</tr>
<tr>
<td>--------------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>Washington</td>
<td>1.70</td>
<td>4.7</td>
</tr>
<tr>
<td>West Virginia</td>
<td>3.70</td>
<td>6.0</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>2.20</td>
<td>5.0</td>
</tr>
<tr>
<td>Wyoming</td>
<td>3.30</td>
<td>8.7</td>
</tr>
</tbody>
</table>
33

INFORMATION TECHNOLOGY

33.1 Market Assessment

IDC (www.idc.com) estimates annual healthcare information technology (IT) spending at $54 billion. The estimate includes spending on hardware, software, and services for providers and payers.

The percentage of healthcare organizations’ total operating budget allocated for IT is as follows (source: Modern Healthcare):

- 0.5% or less: 1.8%
- 0.6% to 1.0%: 3.6%
- 1.1% to 1.5%: 3.6%
- 1.6% to 2.0%: 10.0%
- 2.1% to 2.5%: 13.6%
- 2.6% to 3.0%: 11.8%
- 3.1% to 3.5%: 10.9%
- 3.6% to 4.0%: 6.4%
- 4.1% to 4.5%: 5.5%
- 4.6% to 5.0%: 5.5%
- 5.1% to 5.5%: 7.3%
- 5.6% to 6.0%: 5.5%
- More than 6.0%: 14.5%

According to Thales e-Security (www.thalesesecurity.com), 80% of healthcare organizations increased security spending in 2017.

33.2 Assessment of Healthcare IT

The Healthcare Information and Management Systems Society (HIMSS, www.himss.org) has conducted an annual leadership survey since 1989. The following is a summary of the 2017 Annual HIMSS Leadership and Workforce Survey:

- Provider and vendor/consultant respondents were asked to indicate the extent to which each issue would be a priority in the coming year using a seven-point scale (7 = essential priority; 1 = not a priority). Responses were as follows:
  - Privacy, security and cybersecurity: 5.86
  - Quality and patient safety outcomes: 5.83
  - Care coordination, culture of care, and population health: 5.70
  - Electronic health records (EHRs): 5.55
  - Process improvement, workflow, change management: 5.43
  - Compliance, risk management and program integrity: 5.38
  - Clinical informatics and clinician engagement: 5.38
  - Business of healthcare and new payment models: 5.33
  - Health information exchange, interoperability and data access: 5.33
  - Clinical and business intelligence: 5.24
- Consumer and patient engagement: 5.07
- Connected health: 5.03
- Leadership, governance, strategic planning: 5.02
- IT infrastructure, health IT standards, medical device integration: 4.89
- Human factors, user experience and design: 4.62
- Career/workforce development and diversity: 4.23
- Innovation, entrepreneurship and venture investment: 3.98
- Genomics/precision medicine: 3.70

• Provider respondents were asked to identify which of the following three IT executives were employed by their organization. Responses were as follows:
  - Chief Information Officer: 60%
  - Senior clinical IT leader (e.g., CMIO, CNIO): 48%
  - Senior information security leader (e.g., CISO): 32%
  - None of these positions: 20%

• Providers were asked to indicate if their respective organization’s IT operating budget was projected to increase during the next fiscal year. Responses were as follows:
  - Increase: 56%
  - Stay the same: 19%
  - Decrease: 12%

• Providers were asked how the size of their current IT workforce compares to their IT workforce a year prior. Responses were as follows:
  - Increase: 42%
  - Stay the same: 28%
  - Decrease: 12%

• Sixty percent (60%) of healthcare providers indicated their organization outsourced at least some of their IT staffing needs to a vendor or consultant. Among outsourcing providers, types of work outsourced were as follows:
  - Management: 45%
  - Development: 31%
  - Implementation: 50%
  - Support: 82%

33.3 Healthcare Records Security Breaches

Healthcare data breaches have been as follows (sources: Databreaches.net and Identity Theft Resource Center [www.idtheftcenter.org]):

- 2005: 16
- 2006: 44
- 2007: 63
- 2008: 99
- 2009: 70
- 2010: 165
The largest EHR security breach incidents in 2017, ranked by number of individuals affected, were as follows (source: HHS' Office for Civil Rights Breach Portal [https://ocrportal.hhs.gov/ocr/breach/breach_report.jsf]):

- Salina Family Healthcare Center (Salina, KS): 77,337
- Pulmonary Specialists of Louisville (Louisville, KY): 32,000
- Sport and Spine Rehabilitation (Fort Washington, MD): 31,120
- SSM Health (St. Louis, MO): 29,579
- Advanced ENT Head & Neck Surgery (Palmdale, CA): 15,000
- Neurology Foundation (Providence, RI): 12,861
- Advanced Spine & Pain Center (San Antonio, TX): 8,352
- University of Mississippi Medical Center (Jackson, MS): 7,492
- University Healthcare, West Virginia University (Martinsburg, WV): 7,445
- Covenant Medical Center (Saginaw, MI): 6,197
- Valley Women’s Health (Aurora, IL): 5,155
- Daniel Drake Center for Post-Acute Care (Cincinnati, OH): 4,721
- Princeton Pain Management (Plainsboro Township, NJ): 4,668
- Capital Nephrology (Greenbelt, MD): 4,000
- Vanderbilt University Medical Center (Nashville, TN): 3,247
- Virginia Commonwealth University Health System (Richmond, VA): 2,716
- Professional Counseling & Medical Associates (Paris, TN): 2,500
- St. Charles Health System (Bend, OR): 2,459
- Dermatology and Laser Center (Orange Park, FL): 2,000
- Atchafalaya Internal Medicine Associates (Morgan City, LA): 2,000

“One in five U.S. healthcare survey respondents had experienced a data breach [in the prior year], compared with the global average of 26%. Data breaches cost the healthcare field $6.2 billion each year, with the average breach incurring damages of $2.2 million and compromising 3,128 records per incident.”

2018 Environmental Scan
American Hospital Association
33.4 Cybersecurity Survey

The 2017 HIMSS Cybersecurity Survey provides insight into what healthcare organizations are doing to protect their information and assets, as follows:

- What percentage of your organization’s IT budget is allocated to cybersecurity?
  - No allocation: 7%
  - 1% to 2%: 40%
  - 3% to 6%: 32%
  - 7% to 10%: 17%
  - More than 10%: 11%

- What is the approximate ratio of cybersecurity staff to IT users in your organization?
  - No cybersecurity staff: 13%
  - More than 1:1000: 18%
  - 1:1000: 7%
  - 1:500: 19%
  - 1:100: 17%
  - 1:10: 17%
  - Other or do not know: 9%

- Does your organization employ a senior information security leader (e.g., CISO)?
  - Yes: 60%
  - No: 40%

- Does your organization have an insider threat management program?
  - Yes, and there are policies in place: 40%
  - Yes, but it is informal: 35%
  - No: 21%
  - Do not know: 5%

- How frequently are security risk assessments conducted at your organization?
  - Daily: 9%
  - Once a month: 10%
  - Once a quarter: 8%
  - Once every six months: 7%
  - Once every year: 51%
  - Once every 2 years: 1%
  - Once every 3 years: 2%
  - More than every 3 years: 2%
  - No security risk assessments: 6%
  - Do not know: 6%

- How frequently is security awareness training conducted at your organization?
  - Daily: 5%
  - Weekly: 7%
- Monthly: 25%
- Yearly: 50%
- No awareness program: 3%
- Do not know/other: 10%

• How frequently is penetration testing conducted at your organization?
  - Daily: 3%
  - Weekly: 7%
  - Monthly: 18%
  - Yearly: 38%
  - Do not conduct penetration tests: 15%
  - Do not know/other: 19%

• Which of the following security frameworks does your organization use?
  - NIST: 62%
  - ISO: 25%
  - HITRUST: 25%
  - Critical security controls: 33%
  - COBIT: 11%
  - No security framework used: 12%
  - Do not know/other: 10%

• What is your greatest concern about medical device security at your organization?
  - Patient safety: 32%
  - Data breach: 26%
  - Spread of malware: 20%
  - Device loss or theft: 4%
  - Liability concerns: 3%
  - Intellectual property theft: 1%
  - Do not know/other: 15%

• To what extent are the following issues a priority for your organization’s security program (5 = essential; 1 = not a priority)?
  - Incident response: 4.01
  - Risk assessment and management: 3.95
  - Cloud security: 3.92
  - Business continuity and disaster recovery: 3.78
  - Website security: 3.72
  - Awareness training program: 3.63
  - Physical security: 3.62
  - Medical device security: 3.45
  - Information sharing: 3.33
33.5 Market Resources
Healthcare Information and Management Systems Society, 33 West Monroe Street, Suite 1700, Chicago, IL 60603. (312) 664-4467. (www.himss.org)
LABORATORY SERVICES

34.1 Market Assessment

Approximately 5% of each healthcare dollar is spent on laboratory testing. Up to 70% of medical decisions are based on the results of those tests, making medical labs a vital part of the U.S. healthcare system.

_U.S. Clinical Laboratory and Pathology Testing: Market Analysis, Trends, and Forecasts_, a report by G2 Intelligence (www.g2intelligence.com), assessed the U.S. laboratory services industry at $74 billion. Hospital labs make up about 60% of total testing revenue.

_Diagnostic & Medical Laboratories in the U.S._, published in June 2017 by IBISWorld (www.ibisworld.com), estimates annual laboratory revenue at $53 billion, with a 0.9% average annual growth rate.

_________________________________________________________________

“Laboratories are vital to the healthcare sector, as industry operators provide healthcare practitioners with information concerning the onset, severity and cause of patients' ailments and illnesses. The aging population and the movement toward preventive care have stimulated demand for industry services.”

IBISWorld, 6/17

_________________________________________________________________

34.2 Market Leaders

Laboratory Corporation of America (LabCorp, www.labcorp.com) and Quest Diagnostics (www.questdiagnostics.com), the market leaders in the sector, each have slightly less than 25% of the lab services market. The rest of the market is fragmented.

FY2017 revenues for the market leaders were as follows:
• Laboratory Corporation of America: $10.4 billion
• Quest Diagnostics: $ 7.7 billion

There are a handful of privately owned independent lab companies with annual revenue above $100 million. Quest acquired Solstas Lab Partners, one of the largest independent companies, in 2014 for $570 million. Solstas’ revenue was approximately $350 million.

34.3 Medicare Spending
Medicare spends about $7 billion a year for clinical diagnostic laboratory tests. Medicare's fee schedule for lab tests has been largely unchanged since being established in 1984. Each lab determines its own rates based on market prices. Medicare has historically paid 18% to 30% more than other insurers for some tests. The Protecting Access to Medicare Act of 2014 mandated that CMS pay the same rate for tests as private payers. A final rule was released in 2017 and went into effect in January 2018.

34.4 Outsourcing
A survey by Modern Healthcare reported that 27.3% of hospitals outsource laboratory services; 72.7% manage lab testing services in-house.

“Outsourcing of lab services is not always the answer. The hospitals where outsourcing works best are small or mid-size and work with a commercial partner, such as a national lab services provider, to outsource routine lab services. Hospitals of that size can save 8% to 20% on lab services, mainly because large lab companies are more efficient and have the data and analytics tools as well as the capital assets to identify and implement best practices.”

Modern Healthcare

Outside labs have lost some marketshare in recent years as hospitals have increasingly been acquiring physicians groups. When doctors are employed by hospitals, they are likelier to send lab work to the hospital’s lab rather than to outsource.
35.1 Ranking 2018

The 2018 Hospital Systems Survey, an annual ranking by Modern Healthcare, ranks the largest healthcare systems by net patient revenue as follows:

Largest Healthcare Systems (All Types)

- HCA Healthcare: $40.1 billion
- Kaiser Foundation Hospitals: $21.4 billion
- Ascension Health: $20.9 billion
- Providence St. Joseph Health: $17.9 billion
- Tenet Healthcare Corp.: $16.2 billion
- Community Health Systems: $15.4 billion
- Trinity Health: $15.2 billion
- Catholic Health Initiatives: $14.5 billion
- Dignity Health: $11.6 billion
- Sutter Health: $10.8 billion

Largest For-Profit Healthcare Systems

- HCA Healthcare: $40.1 billion
- Tenet Healthcare Corp.: $16.2 billion
- Community Health Systems: $15.4 billion
- Universal Health Services: $10.4 billion
- LifePoint Hospitals: $ 6.3 billion
- Prime Healthcare Services: $ 4.7 billion
- Acadia Healthcare Co.: $ 2.8 billion
- Quorum Health: $ 2.2 billion

Largest Not-for-Profit Healthcare Systems

- Kaiser Foundation Hospitals: $21.4 billion
- Ascension: $20.9 billion
- Providence St. Joseph Health: $17.9 billion
- Trinity Health: $15.2 billion
- Catholic Health Initiatives: $14.5 billion
- Dignity Health: $11.6 billion
- Sutter Health: $10.8 billion
- Mayo Clinic Health System: $ 9.9 billion
- Adventist Health System: $ 9.6 billion
- Partners Healthcare: $ 8.4 billion
### Largest Public Healthcare Systems

- **NYC Health & Hospitals:** $4.9 billion
- **Los Angeles County Health Services:** $3.9 billion
- **Lee Health:** $1.7 billion
- **Huntsville Hospital Health System:** $1.3 billion
- **Jackson Health System:** $1.2 billion
- **MetroHealth System:** $1.1 billion
- **Broward Health:** $951 million
- **Hennepin Healthcare:** $928 million
- **Parkland Health & Hospital System:** $867 million
- **Erlanger Health System:** $848 million

### Largest Catholic Church-Affiliated Healthcare Systems

- **Ascension:** $20.9 billion
- **Providence St. Joseph Health:** $17.9 billion
- **Trinity Health:** $15.2 billion
- **Catholic Health Initiatives:** $14.5 billion
- **Dignity Health:** $11.6 billion
- **Mercy (Missouri):** $5.3 billion
- **Mercy Health (Ohio):** $4.4 billion
- **SSM Health Care:** $4.4 billion
- **Christus Health:** $4.4 billion
- **Bon Secours Health System:** $3.1 billion

### Largest Religious Non-Catholic Healthcare Systems

- **Adventist Health System (Florida):** $9.6 billion
- **Adventist Health (California):** $3.7 billion
- **Baptist Healthcare System (Kentucky):** $2.5 billion
- **Methodist Le Bonheur Healthcare:** $1.8 billion
- **Nebraska Methodist Health:** $797 million
- **Baptist Health (Alabama):** $640 million
- **Covenant Health Systems:** $604 million

### Largest Secular Not-for-Profit Healthcare Systems

- **Kaiser Foundation Hospitals:** $21.4 billion
- **Sutter Health:** $10.8 billion
- **Mayo Clinic Health System:** $9.9 billion
- **Partners HealthCare:** $8.4 billion
- **Northwell Health:** $7.9 billion
- **Baylor Scott & White Health:** $7.7 billion
- **New York-Presbyterian:** $7.7 billion
- **Cleveland Clinic Health System:** $7.5 billion
- **UPMC:** $6.3 billion
- **Banner Health:** $6.3 billion
36.1 Overview
The American Hospital Directory (www.ahd.com) provides data and statistics about more than 7,000 hospitals nationwide. This chapter identifies the largest U.S. hospitals based on statistics from the 2017 American Hospital Directory.
The hospital bed counts reported include all medical/surgical and special care beds in children’s, critical access, and short-term acute care facilities as reported to the Center for Medicare & Medicaid Services (CMS, www.cms.gov).

36.2 Largest Community Hospitals
The following are the largest U.S. hospitals:

- Florida Hospital* (Orlando, FL): 2,473 beds
- New York-Presbyterian Hospital/Weill Cornell Medical Center* (New York, NY): 2,428 beds
- Orlando Health* (Orlando, FL): 2,175 beds
- Jackson Memorial Hospital (Miami, FL): 1,750 beds
- Methodist Hospital* (San Antonio, TX): 1,570 beds
- Baptist Medical Center* (San Antonio, TX): 1,563 beds
- UPMC Presbyterian* (Pittsburgh, PA): 1,540 beds
- Montefiore Hospital-Moses Campus* (New York, NY): 1,526 beds
- Yale-New Haven Hospital* (New Haven, CT): 1,499 beds
- Barnes-Jewish Hospital (St. Louis, MO): 1,394 beds
- Methodist University Hospital* (Memphis, TN): 1,373 beds
- Norton Hospital* (Louisville, KY): 1,362 beds
- The Cleveland Clinic (Cleveland, OH): 1,275 beds
- Indiana University Health Methodist Hospital* (Indianapolis, IN): 1,241 beds
- Memorial Hermann Southwest Hospital* (Houston, TX): 1,220 beds
- Mayo Clinic Hospital - Saint Mary’s Campus* (Rochester, MN): 1,190 beds
- Carolinas Medical Center* (Charlotte, NC): 1,175 beds
- UAB Hospital (Birmingham, AL): 1,155 beds
- The Johns Hopkins Hospital (Baltimore, MD): 1,145 beds
- The Mount Sinai Medical Center* (New York, NY): 1,138 beds
- Beaumont Hospital (Royal Oak, MI): 1,070 beds
- Buffalo General Medical Center* (Buffalo, NY): 1,068 beds
36.3 Largest U.S. Military Hospitals

The following are the largest U.S. military hospitals:

- Naval Medical Center San Diego (San Diego, CA): 285 beds
- Naval Medical Center Portsmouth (Portsmouth, VA): 274 beds
- Walter Reed Army Medical Center (Bethesda, MD): 240 beds
- Madigan Army Medical Center (Tacoma, WA): 235 beds
- San Antonio Military Medical Center (Fort Sam Houston, TX): 226 beds
- William Beaumont Army Medical Center (El Paso, TX): 209 beds
- Tripler Army Medical Center (Honolulu, HI): 198 beds
- Womack Army Medical Center (Fort Bragg, NC): 156 beds
- Dwight D. Eisenhower Army Medical Center (Fort Gordon, GA): 125 beds
- Carl R. Darnall Army Medical Center (Fort Hood, TX): 109 beds

36.4 Largest Academic Medical Centers

The largest academic medical centers, ranked by number of residents and interns, are as follows:

- New York Presbyterian/Weill Cornell Medical Center (New York, NY): 1,463
- Montefiore Medical Center - Moses Division Hospital (New York, NY): 1,120
- Cleveland Clinic (Cleveland, OH): 866
- University of Michigan Health System (Ann Arbor, MI): 864
- Johns Hopkins Hospital (Baltimore, MD): 841
- UPMC Presbyterian (Pittsburgh, PA): 760
- Mount Sinai Hospital (New York, NY): 739
- University of Virginia Medical Center (Charlottesville, VA): 682
- Hospital of the University of Pennsylvania (Philadelphia, PA): 679
- Barnes-Jewish Hospital (St. Louis, MO): 661
- Ronald Reagan UCLA Medical Center (Los Angeles, CA): 649
- LAC/University of Southern California Medical Center (Los Angeles, CA): 642
- Strong Memorial Hospital (Rochester, NY): 622
- Thomas Jefferson University Hospital (Philadelphia, PA): 614
- Duke University Hospital (Durham, NC): 613
- Wake Forest University Baptist Medical Center (Winston-Salem, NC): 610
- University of Maryland Medical Center (Baltimore, MD): 608
- Jackson Memorial Hospital (Miami, FL): 601
- Massachusetts General Hospital (Boston, MA): 599
- Vanderbilt University Medical Center (Nashville, TN): 581
- Henry Ford Hospital (Detroit, MI): 580
• UNC Health Care (Chapel Hill, NC): 573
• Yale-New Haven Hospital (New Haven, CT): 553
• University of Chicago Medical Center (Chicago, IL): 549
• UAB Hospital (Birmingham, AL): 537

36.5 Market Resources
American Hospital Directory, 166 Thierman Lane, Louisville, KY 40207.
(800) 894-8418. (www.ahd.com)
37.1 Market Assessment

A study by researchers from Harvard University, published in *Health Affairs*, estimated medical liability costs as follows:

- Economic, non-economic, and punitive damages: $5.7 billion
- Defendant legal costs and administrative overhead: $4.1 billion

According to *Medical Liability Monitor*, medical liability insurance base-rate premiums experienced an overall average decrease of 1.1% in 2017. Rate changes among medical specialty practices were as follows:

- Internal medicine: -1.1%
- General surgery: -1.0%
- OB/Gyn: -1.0%

Following dramatic increases from 2003 through 2005, rates have been relatively flat since 2006. Changes in overall medical premium rates have been as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>20.4%</td>
</tr>
<tr>
<td>2004</td>
<td>20.5%</td>
</tr>
<tr>
<td>2005</td>
<td>9.1%</td>
</tr>
<tr>
<td>2006</td>
<td>0.7%</td>
</tr>
<tr>
<td>2007</td>
<td>0.4%</td>
</tr>
<tr>
<td>2008</td>
<td>-4.3%</td>
</tr>
<tr>
<td>2009</td>
<td>-2.9%</td>
</tr>
<tr>
<td>2010</td>
<td>-0.5%</td>
</tr>
<tr>
<td>2011</td>
<td>-0.2%</td>
</tr>
<tr>
<td>2012</td>
<td>-1.7%</td>
</tr>
<tr>
<td>2013</td>
<td>-1.9%</td>
</tr>
<tr>
<td>2014</td>
<td>-1.5%</td>
</tr>
<tr>
<td>2015</td>
<td>no change</td>
</tr>
<tr>
<td>2016</td>
<td>-0.1%</td>
</tr>
<tr>
<td>2017</td>
<td>-1.1%</td>
</tr>
</tbody>
</table>

“The trend [of declining premium rates] is partly due to lower numbers of malpractice claims, and partly to the success liability insurers have had in defending against claims. They have been aided by state tort reform laws and juror attitudes, making it tougher for plaintiffs to win cases; 70% to 80% of malpractice cases that make it to trial are decided in favor of the defense.”

Michael Matray, Editor
*Medical Liability Monitor*
According to the *Handbook of Health Economics*, 40¢ of every dollar spent on malpractice insurance premiums goes toward awards; insurers spend much of the rest on legal fees.

Michelle Mello, Ph.D., J.D., a law professor at Stanford University, estimates that defensive medicine costs the healthcare system $45.6 billion each year.

### 37.2 Projected Liability Assessment

*The Hospital Professional Liability and Physician Liability Benchmark Analysis*, by Aon (www.aon.com), provides the following assessment:
- Loss rate for hospital professional liability is $2,870 per occupied bed equivalent (OBE). The frequency of claims is 1.69% per OBE. The severity of claims is $170,000 per claim.
- Loss rate for physician professional liability is $6,230 per class 1 (internal medicine) physician. The frequency of claims is 3.37% per class 1 physician. Severity of claims is $185,000 per claim.
- Loss rate for hospital general liability is $125 per OBE; the average general liability claim is $38,000.
- Loss rate for obstetrics claims is $163 per birth; emergency department is $6.44 per visit.

U.S.-based hospitals face about 40,000 claims annually, with liabilities exceeding $8.5 billion, according to Aon.

### 37.3 Professional Liability Insurance Carriers

According to *Modern Healthcare* (July 2018), the largest insurance carriers, ranked by direct premiums written for medical professional liability, are as follows:
- Berkshire Hathaway Insurance Group ([www.bhhc.com](http://www.bhhc.com)): $1.08 billion
- Doctors Company Insurance Services ([www.thedoctors.com](http://www.thedoctors.com)): $680 million
- ProAssurance ([www.proassurance.com](http://www.proassurance.com)): $476 million
- CNA Insurance Cos. ([www.cna.com](http://www.cna.com)): $474 million
- Coverys ([www.coverys.com](http://www.coverys.com)): $441 million
- Medical Liability Mutual Insurance Co. ([www.mlmic.com](http://www.mlmic.com)): $408 million
- MCIC Vermont ([www.mcicvermont.com](http://www.mcicvermont.com)): $335 million
- NORCAL Mutual Insurance Co. ([www.norcalmutual.com](http://www.norcalmutual.com)): $332 million
- MAG Mutual Group ([www.magmutual.com](http://www.magmutual.com)): $266 million
- Physicians’ Reciprocal Insurers ([www.pri.com](http://www.pri.com)): $186 million
- Hospitals Insurance Co. ([www.hicgroup.com](http://www.hicgroup.com)): $174 million
- Liberty Mutual Insurance Co. ([www.libertymutual.com](http://www.libertymutual.com)): $166 million
- American International Group ([www.aig.com](http://www.aig.com)): $162 million
- ISMIE Mutual Insurance Co. ([www.ismie.com](http://www.ismie.com)): $158 million
37.4 Tort Reform

A number of states have instituted tort reform to limit the size of damages awarded by juries in medical malpractice cases. Tort reform hasn’t necessarily reduced healthcare spending, however.

One reason that liability caps are ineffective in reducing medical spending is because physicians continue with the same defensive practices independent of the amount of their liability. Texas, for example, has not seen healthcare spending drop since instituting award caps in 2003 that limit non-economic damages against physicians to $250,000. Jackson Healthcare (www.jacksonhealthcare.com) reported that 80% of doctors in Texas said they still practice defensive medicine, with 64% reporting no change in their behavior since caps went in effect.

According to Prof. Mello at Stanford University, states with caps have seen premiums grow, on average, 6% to 13% more slowly than states without caps.

As of January 2018, 33 states have caps on non-economic or total damages, as follows:

- Alaska
- California
- Colorado
- Florida
- Georgia
- Hawaii
- Idaho
- Indiana
- Kansas
- Louisiana
- Maine
- Maryland
- Massachusetts
- Michigan
- Mississippi
- Montana
- Nebraska
- Nevada
- New Jersey
- New Mexico
- North Carolina
- North Dakota
- Ohio
- Oklahoma
- Oregon
- South Carolina
- South Dakota
- Tennessee
- Texas
- Utah
- Virginia
- West Virginia
- Wisconsin

37.5 Diagnostic Malpractice Cases

According to Modern Healthcare, diagnostic mistakes are made in the treatment of about 12 million U.S. adults annually.

A report by CRICO Strategies (www.rmf.harvard.edu) found that about 20% medical malpractice cases were related to diagnostic issues. About 73% of these claims alleged lapses in clinical judgment. Issues were as follows:

- Failure or delay in ordering diagnostic tests: 31%
- Misinterpretation of a diagnostic test: 23%
- Failure to establish a differential diagnosis: 22%
- Failure or delay in obtaining a consult or referral: 18%
- Failure to rule out an abnormal finding: 8%
“It’s understandable that physicians fear medical malpractice claims. A recent Medscape survey of nearly 4,000 physicians found that 59% had been sued at least once during their career.”

Modern Healthcare

37.6 Malpractice Awards

According to The Wall Street Journal, an estimated $4 billion is paid out annually to settle malpractice claims against doctors. An exact figure is very difficult to determine, however, since settlements are often kept confidential. The contingent fees charged by plaintiffs’ lawyers vary widely and are often limited by law, but a common rate is 33% of any payment.

Ninety-seven percent (97%) of cases are settled out of court. The average malpractice award is about $325,000, according to the Kaiser Family Foundation (www.kff.org).

According to David Barry Jr., a Partner at Corby & Demetrino, while large jury verdicts get media attention, the average award in malpractice claims has been flat since the late-1990s.

Timothy B. McDonald, M.D., J.D., a professor at the University of Illinois Chicago, estimates expenses to defend a malpractice lawsuit – including attorney fees, expert witness, and court costs – can run between $300,000 and $350,000, even if a case is settled before going to trial.

37.7 Apologizing For Errors

In a survey by the American College of Physician Executives (www.acpe.org), almost 80% of doctors said physicians and hospitals that make mistakes should apologize for errors. In a survey of patients, 57% said they would be less likely to sue if the provider issued an apology after an error; only 25% indicated that they would be more likely to sue.

Since 2001, prominent institutions – from the Dana-Farber Cancer Institute to Johns Hopkins Hospital – have made it a policy to urge their doctors to own up to mistakes and to apologize. Consultants are increasingly in demand for seminars on how best to deliver lawsuit-deflecting apologies. At some medical schools, including Vanderbilt University School of Medicine, courses in communicating errors and apologizing are mandatory for medical students and residents. Even some insurers are
beginning to urge their clients to acknowledge errors and to apologize. Since launching a program in which doctors admit errors and offer payments out of court, the University of Michigan Health System has cut claims in half. The University of Illinois Medical Center at Chicago (UIMC) has seen a similar response. UIMC reports that its litigation costs have been reduced by more than 70%.

“Research has shown that these institutions ... have improved patient safety, lowered liability costs, reduced their number of claims, and improved patients’ experiences.”

Modern Healthcare

37.8 Frivolous Malpractice Lawsuits

The number of frivolous lawsuits has greatly diminished since 2002, which was the peak of the malpractice litigation activity. One reason is the high cost of litigation. Most cases require experts from multiple specialties to establish cause and pre-trial costs often exceed $200,000. Frivolous malpractice cases have virtually disappeared because lawyers have become increasingly selective of the cases they will accept.

The threat of countersuits to frivolous claims is another factor. Companies like Medical Justice Corp. (www.medicaljustice.com), for instance, assist doctors in minimizing ‘get rich quick’ lawsuits by countersuing when lawsuits are considered frivolous. The approach appears to be effective. Of the 1,500 physicians subscribing to the service, only 2% have been sued.

37.9 Market Resources

(www.aon.com/risk-services/thought-leadership/2017-report-hospital-professional-liability-overview.jsp)

American Society for Healthcare Risk Management, One North Franklin, 28th Floor, Chicago, IL 60606. (312) 422-4580. (www.ashrm.org)

Medical Liability Monitor, 1100 Lake Street, P.O. Box 680, Oak Park, IL 60303. (312) 944-7900. (www.medicalliabilitymonitor.com)
38.1 Traveling Abroad For Medical Procedures

Because of the high costs for surgeries in the U.S., some patients look overseas for medical procedures. Compared to $50,000 or more for a heart bypass performed in the U.S., the procedure costs $8,000 to $15,000 in Thailand or India, for example. In addition to excellent medical care, services in Asia typically include limo pick-up and convalescence in a hotel.

A decade ago, great potential for growth in this market was foreseen. The great potential of medical tourism, however, has not materialized.

“In the mid-2000s American insurers set out to find these savings by touring foreign private hospitals. They found that many were as good as their rich-world counterparts, and far cheaper. A big shake-up seemed likely. It did not happen. Industry insiders admit that growth has not matched the initial heady expectations.”

The Economist

McKinsey & Co. estimates the potential market for Americans seeking lower-cost care abroad at 710,000 procedures a year. These 710,000 procedures, currently bringing $35 billion of revenue to U.S. hospitals, could be done overseas at a savings of about $15,000 per procedure. The extent that the overseas healthcare market develops will depend upon whether insurers, employers, and the U.S. government begin encouraging treatment abroad.

The Medical Tourism Association (www.medicaltourismassociation.com) found that 11 million people in 176 countries crossed borders and spent $100 billion for medical care in 2017. Spending on medical services by international visitors was highest in the following countries:
1. United States
2. Thailand
3. Singapore
4. Germany
5. South Korea
6. Spain

38.2 Certified Foreign Hospitals

The Joint Commission International (www.jointcommissioninternational.org), a not-for-profit subsidiary of the Joint Commission, which accredits U.S. hospitals, has certified hospitals and healthcare providers outside the U.S. As of March 2018, there were 1,030 certified organizations.

The countries with the highest number of certified organizations is as follows:

- United Arab Emirates: 189
- Saudi Arabia: 103
- China: 96
- Thailand: 63
- Brazil*: 62
- Turkey: 46
- India: 37
- Spain**: 31
- Israel: 30
- Ireland: 28
- South Korea: 27
- Italy: 23
- Singapore: 23
- Qatar: 15
- Taiwan: 14

* accredited jointly by Joint Commission International and the Consortium for Brazilian Accreditation
** accredited jointly by Joint Commission International and the Fundación Avedis Donabedian

38.3 Market Resources

International Society for Quality in Health Care, 8-11 Lombard Street East, Dublin 2, Ireland. Tel: +353 (0)1 6706750. (www.isqua.org)

Joint Commission International, 1515 West 22nd Street, Suite 1300W, Oak Brook, IL 60523. (630) 268-4800. (www.jointcommissioninternational.org)

Medical Tourism Association and Medical Tourism Magazine, 4371 Northlake Boulevard, Suite 307, West Palm Beach, FL 33410. (561) 791-2000. (www.medicaltourismassociation.com)

Patients Beyond Borders, P.O. Box 17057, Chapel Hill, NC 27516. (919) 924-0636. (www.patientsbeyondborders.com)
39.1 Overview

Micro-hospitals are small-scale, inpatient facilities with eight to 15 short-stay beds. They perform many of the same acute-care and emergency services done at larger hospitals, but are cheaper to operate.

Micro-hospitals perform essentially the same functions as standard-sized hospitals but are scaled to respond to the needs of lower-acuity patients.

The size of micro-hospitals generally falls between 15,000 and 25,000 square feet, though they can be upward of 50,000 or 60,000 square feet in size. They typically include eight to 10 inpatient beds, eight to 10 emergency department treatment bays, a small imaging and diagnostic suite, and support functions like dietary services, environmental services, and materials management.

Besides size, the primary difference between a micro-hospital and a larger community or tertiary care hospital is that micro-hospitals do not provide services like intensive care.

According to Leavitt Partners (www.leavittpartners.com), there were micro-hospitals in 19 states at year-end 2017, mostly in underserved urban locations or areas far away from large hospitals.

39.2 Qualification For Medicare Reimbursement

The Social Security Act requires hospitals billing Medicare to be "primarily engaged" in providing services to inpatients.

The Centers for Medicare & Medicaid Services (CMS, www.cms.gov) requires hospitals to be accredited in order to receive Medicare payments.

The Joint Commission (www.jointcommission.org), the Healthcare Facilities Accreditation Program (www.hfap.org), and DNV (www.dnvglhealthcare.com) won't conduct accreditation surveys at facilities without at least two active inpatients. Micro-hospitals qualify by meeting this requirement.

In September 2017, the Centers for Medicare & Medicaid Services (CMS, www.cms.gov) clarified what constitutes a hospital with respect to what qualifies for medical reimbursement as follows: "Hospitals must have at least two inpatients at the time of the survey in order for surveyors to conduct the survey. However, just because a facility has two inpatients at the time of a survey does not necessarily mean that the facility is primarily engaged in inpatient care and satisfies all of the statutory requirements to be considered a hospital for Medicare purposes. Having two patients
“One of the industry’s fastest-emerging trends, micro-hospitals, could take a hit thanks to new CMS guidance that has hospital accreditors tweaking their policies regarding what counts as a hospital. The new accreditation approach could curtail growth of micro-hospitals.

*Modern Healthcare, 12/18/17*
MOST WIRED HOSPITALS

40.1 Overview

_Hospitals & Health Networks_, published by the American Hospital Association (www.aha.org), identifies annually the Most Wired™ Hospitals based on their use of IT in the following five areas:

**Safety and Quality**
- Reducing errors in prescribing medications, monitoring changes in patient conditions and sending alerts to staff in real time, providing hospital clinicians with patients’ health records in electronic form, and more

**Customer Service**
- Helping patients research illnesses and pre-registering them for hospital admissions

**Business**
- Using software to streamline purchasing operations and to coordinate and track transactions with insurance companies, and similar upgrades

**Workforce**
- Training physicians, nurses, and other clinicians; measuring staff performance, and related matters

**Public Health**
- Safeguarding patient privacy with security measures, participating in cooperative health efforts with other institutions, and improving specific clinical practices

In July 2017, the College of Healthcare Information Management Executives - CHIME (https://chimecentral.org) acquired the Most Wired Hospitals survey from the American Hospital Association.

40.2 Most Wired Hospitals

The following is the 2017 list of the most wired hospitals and healthcare systems:
- Abington Jefferson Health (Abington, PA)
- Abraham Lincoln Memorial Hospital (Lincoln, IL)
- Adirondack Health (Saranac Lake, NY)
- Adventist Health (Roseville, CA)
• Adventist Health System (Altamonte Springs, FL)
• Advocate Health Care (Downers Grove, IL)
• Agnesian HealthCare (Fond du Lac, WI)
• Akron Children’s Hospital (Akron, OH)
• Albany Medical Center (Albany, NY)
• Aleda E. Lutz VA Medical Center (Saginaw, MI)
• Allegheny General Hospital (Pittsburgh, PA)
• Altru Health System (Grand Forks, ND)
• AnMed Health (Anderson, SC)
• Ann & Robert H. Lurie Children’s Hospital (Chicago, IL)
• Aria-Jefferson Health (Philadelphia, PA)
• Ascension Calumet Medical Center (Chilton, WI)
• Ascension Mercy Medical Center (Oshkosh, WI)
• Ascension Saint Clare’s Hospital (Weston, WI)
• Ascension St. Elizabeth Hospital (Appleton, WI)
• Aspirus Iron River Hospital (Iron River, MI)
• Aspirus Ironwood Hospital (Ironwood, MI)
• Aspirus Keweenaw Hospital (Laurium, MI)
• Aspirus Langlade Hospital (Antigo, WI)
• Aspirus Medford Hospital (Aspirus, WI)
• Aspirus Ontonagon Hospital (Ontonagon, MI)
• Aspirus Wausau Hospital (Wausau, WI)
• Atlantic General Hospital (Berlin, MD)
• Auburn Community Hospital (Auburn, NY)
• Aurora Health Care (Milwaukee, WI)
• Avera Health (Sioux Falls, SD)
• Banner Health (Phoenix, AZ)
• Baptist Health South Florida (Coral Gables, FL)
• Battle Creek VA Medical Center (Battle Creek, MI)
• Baystate Health (Springfield, MA)
• Beaufort Memorial Hospital (Beaufort, SC)
• Beaumont Health (Southfield, MI)
• Beebe Healthcare (Lewes, DE)
• Berkshire Health Systems (Pittsfield, MA)
• Beth Israel Deaconess Hospital (Plymouth, MA)
• Blanchard Valley Health System (Findlay, OH)
• Bon Secours Baltimore Health System (Baltimore, MD)
• Bon Secours Health System (Marriottsville, MD)
• Bon Secours St. Francis Health System (Greenville, SC)
• Bon Secours Virginia Health System (Richmond, VA)
• Boone County Health Center (Albion, NE)
• Boston Medical Center (Boston, MA)
• Bristol Hospital (Bristol, CT)
• Broadlawns Medical Center (Des Moines, IA)
• Bronson Battle Creek Hospital (Battle Creek, MI)
• Bronson LakeView Hospital (Paw Paw, MI)
• Bronson Methodist Hospital (Kalamazoo, MI)
• Brooke Army Medical Center (Fort Sam Houston, TX)
• Brookwood Baptist Health (Birmingham, AL)
• Camden Clark Medical Center (Parkersburg, WV)
• Cancer Treatment Centers of America (Boca Raton, FL)
• Canton-Potsdam Hospital (Potsdam, NY)
• Cape Fear Valley Health (Fayetteville, NC)
• Carilion Clinic (Roanoke, VA)
• Carle (Urbana, IL)
• Carle Hoopeston Regional Health Center (Hoopeston, IL)
• Carolinas HealthCare System (Charlotte, NC)
• Carteret Health Care (Morehead City, NC)
• Catholic Health Services of Long Island (Rockville Centre, NY)
• Catskill Regional Medical Center (Harris, NY)
• Cedars-Sinai (Los Angeles, CA)
• Centra Health (Lynchburg, VA)
• CentraCare Health (St. Cloud, MN)
• CentraState Healthcare System (Freehold, NJ)
• Central Maine Healthcare (Lewiston, ME)
• Centura Health (Centennial, CO)
• Cheyenne Regional Medical Center (Cheyenne, WY)
• Children’s Health System of Texas (Dallas, TX)
• Children’s Healthcare of Atlanta (Atlanta, GA)
• Children’s Hospital & Medical Center (Omaha, NE)
• Children’s Hospital Colorado (Aurora, CO)
• Children’s Hospital Los Angeles (Los Angeles, CA)
• Children’s Hospital of Philadelphia (Philadelphia, PA)
• Children’s Mercy Hospital (Kansas City, MO)
• Children’s Specialized Hospital (New Brunswick, NJ)
• CHOC Children’s (Orange, CA)
• Christiana Care Health System (Newark, DE)
• Christus Health (Irving, TX)
• Christus Trinity Mother Frances Health System (Tyler, TX)
• Cibola General Hospital (Grants, NM)
• Cincinnati Children’s Hospital Medical Center (Cincinnati, OH)
• Citizens Memorial Hospital (Bolivar, MO)
• Clara Maass Medical Center (Belleville, NJ)
• Columbia Memorial Hospital (Astoria, OR)
• Columbia St. Mary’s (Milwaukee, WI)
• Community Health Network (Indianapolis, IN)
• Community Hospital (McCook, NE)
• Community Hospital of the Monterey Peninsula (Monterey, CA)
• Community Medical Center (Toms River, NJ)
• Community Memorial Hospital (Burke, SD)
• Concord Hospital (Concord, NH)
• Connecticut Children’s Medical Center (Hartford, CT)
• Cook Children’s Health Care System (Fort Worth, TX)
• Cooper University Health Care (Camden, NJ)
• Coulee Medical Center (Grand Coulee, WA)
• Covenant Health (Knoxville, TN)
• Covenant HealthCare (Saginaw, MI)
• CoxHealth (Springfield, MO)
• Crawford Memorial Hospital (Robinson, IL)
• Danbury Hospital (Danbury, CT)
• Deaconess Health System (Evansville, IN)
• Denver Health (Denver, CO)
• Detroit Medical Center (Detroit, MI)
• Doylestown Hospital (Doylestown, PA)
• Duke University Hospital (Durham, NC)
• Duncan Regional Hospital (Duncan, OK)
• Eastern Maine Healthcare Systems (Brewer, ME)
• Edward-Elmhurst Health (Naperville, IL)
• El Camino Hospital (Mountain View, CA)
• Emerson Hospital (Concord, MA)
• Englewood Hospital and Medical Center (Englewood, NJ)
• Ephraim McDowell Health (Danville, KY)
• ETMC Regional Healthcare System (Tyler, TX)
• Evergreen Medical Center (Evergreen, AL)
• Excela Health (Greensburg, PA)
• Exeter Health Resources (Exeter, NH)
• Faith Regional Health Services (Norfolk, NE)
• FirstHealth of the Carolinas (Pinehurst, NC)
• Fisher-Titus Medical Center (Norwalk, OH)
• Forbes Hospital (Monroeville, PA)
• Forrest General Hospital (Hattiesburg, MS)
• Fort HealthCare (Fort Atkinson, WI)
• Fort Madison Community Hospital (Fort Madison, IA)
• Frederick Memorial Hospital (Frederick, MD)
• Froedtert Health & the Medical College of Wisconsin (Milwaukee, WI)
• Geisinger Health System (Danville, PA)
• General Health System (Baton Rouge, LA)
• Genesis Health System (Davenport, IA)
• Genesis HealthCare System (Zanesville, OH)
• Gottlieb Memorial Hospital (Melrose Park, IL)
• Grady Health System (Atlanta, GA)
• Grand Lake Health System/Joint Township District (Grand Lake region, OH)
• Memorial Hospital (St. Marys, OH)
• Grand View Health (Sellersville, PA)
• Gritman Medical Center (Moscow, ID)
• Grundy County Memorial Hospital (Grundy Center, IA)
• Gundersen Health System (La Crosse, WI)
• Guthrie Clinic (Sayre, PA)
• Hackensack Meridian Health (Edison, NJ)
• Hackensack UMC Palisades (North Bergen, NJ)
• Hallmark Health System (Medford, MA)
• Hancock Regional Hospital (Greenfield, IN)
• Harris Health System (Houston, TX)
• Harrisburg Medical Center (Harrisburg, IL)
• HCA (Nashville, TN)
• HealthPartners (Bloomington, MN)
• Hendrick Health System (Abilene, TX)
• Hendry Regional Medical Center (Clewiston, FL)
• Henry Ford Health System (Detroit, MI)
• Henry Mayo Newhall Hospital (Valencia, CA)
• Heritage Valley Health System (Beaver, PA)
• Highlands Regional Medical Center (Prestonsburg, KY)
• Holy Family Memorial (Manitowoc, WI)
• Holy Name Medical Center (Teaneck, NJ)
• Holy Redeemer Health System (Meadowbrook, PA)
• Hospital of Central Connecticut (New Britain, CT)
• Hospital Sisters Health System (Springfield, IL)
• Houston Methodist (Houston, TX)
• Hugh Chatham Memorial Hospital (Elkin, NC)
• Huntington Hospital (Huntington, NY)
• Huntington Hospital (Pasadena, CA)
• IASIS Healthcare (Franklin, TN)
• Indian River Medical Center (Vero Beach, FL)
• Indiana University Health Blackford Hospital (Hartford City, IN)
• Ingalls Memorial Hospital (Harvey, IL)
• Inspira Health Network (Bridgeport, NJ)
• Intermountain Healthcare (Salt Lake City, UT)
• Jackson Health System (Miami, FL)
• JFK Medical Center (Edison, NJ)
• John D. Dingell VA Medical Center (Detroit, MI)
• Johns Hopkins All Children’s Hospital (St. Petersburg, FL)
• Johns Hopkins Hospital (Baltimore, MD)
• Jupiter Medical Center (Jupiter, FL)
• Kaiser Permanente (Oakland, CA)
• Kaleida Health (Buffalo, NY)
• King's Daughters Health System (Ashland, KY)
• King’s Daughters Medical Center (Brookhaven, MS)
• Kittson Memorial Healthcare Center (Hallock, MN)
• Lafayette General Health (Lafayette, LA)
• Lahey Health (Burlington, MA)
• Lake Chelan Community Hospital (Chelan, WA)
• Lake Regional Health System (Osage Beach, MO)
• Lakeland Health (St. Joseph, MI)
• Lakeland Regional Medical Center (Lakeland, FL)
• Lawrence Memorial Hospital (Lawrence, KS)
• Lee Health (Fort Myers, FL)
• Lehigh Valley Health Network (Allentown, PA)
• Lenox Hill Hospital (New York, NY)
• Lexington Medical Center (West Columbia, SC)
• Licking Memorial Hospital (Newark, OH)
• Lincoln Hospital & North Basin Medical Clinics (Davenport, WA)
• Long Island Jewish Medical Center (New Hyde Park, NY)
• Lowell General Hospital (Lowell, MA)
• Loyola University Medical Center (Maywood, IL)
• Lucile Packard Children’s Hospital Stanford (Palo Alto, CA)
• Madigan Army Medical Center (Tacoma, WA)
• Magruder Memorial Hospital (Port Clinton, OH)
• Mahnomen Health Center (Mahnomen, MN)
• Maimonides Medical Center (Brooklyn, NY)
• Main Line Health (Bryn Mawr, PA)
• Maria Parham Health (Henderson, NC)
• Marion General Hospital (Marion, IN)
• Martin Health System (Stuart, FL)
• Martin Luther King Jr. Community Hospital (Los Angeles, CA)
• Mary Greeley Medical Center (Ames, IA)
• Mary Washington Healthcare (Fredericksburg, VA)
• Mason General Hospital & Family of Clinics (Shelton, WA)
• Massena Memorial Hospital (Massena, NY)
• Mayo Clinic Florida (Jacksonville, FL)
• Mayo Clinic Health System-NWWI (Eau Claire, WI)
• Mayo Clinic Hospital (Rochester, MN)
• Mayo Clinic Hospital-Phoenix (Phoenix, AZ)
• MedStar Health (Columbia, MD)
• Memorial Health System (Marietta, OH)
• Memorial Healthcare (Owosso, MI)
• Memorial Healthcare System (Hollywood, FL)
• Memorial Hermann (Houston, TX)
• Memorial Hospital (Marysville, OH)
• Memorial Hospital and Health Care Center (Jasper, IN)
• Memorial Medical Center (Springfield, IL)
MEMORIAL SLOAN KETTERING CANCER CENTER (NEW YORK, NY)
MERCY (CHESTERFIELD, MO)
MERCY HEALTH (CINCINNATI, OH)
MERCY HEALTH SYSTEM (JANESVILLE, WI)
MERCY MEDICAL CENTER (CEDAR RAPIDS, IA)
MERITUS MEDICAL CENTER (HAGERSTOWN, MD)
METHODIST HEALTH SYSTEM (DALLAS, TX)
METHODIST LE BONHEUR HEALTHCARE (MEMPHIS, TN)
METRO HEALTH (WYOMING, MI)
METROHEALTH SYSTEM (CLEVELAND, OH)
MIDDLESEX HOSPITAL (MIDDLETOWN, CT)
MID-VALLEY HOSPITAL (OMAK, WA)
MILFORD REGIONAL MEDICAL CENTER (MILFORD, MA)
MISSION HEALTH SYSTEM (ASHEVILLE, NC)
MONMOUTH MEDICAL CENTER (LONG BRANCH, NJ)
MONMOUTH MEDICAL CENTER SOUTHERN CAMPUS (LAKEMOOR, NJ)
MONTEFIORE (BRONX, NY)
MOSAIC LIFE CARE (ST. JOSEPH, MO)
MOUNT SINAI HEALTH SYSTEM (NEW YORK, NY)
MOUNT SINAI MEDICAL CENTER (MIAMI BEACH, FL)
MOUNTAIN STATES HEALTH ALLIANCE (JOHNSON CITY, TN)
MT. SAN RAFAEL HOSPITAL (TRINIDAD, CO)
MULTICARE HEALTH SYSTEM (TACOMA, WA)
MUNSON HEALTHCARE (TRAVERSE CITY, MI)
NANTICOKE HEALTH SERVICES (SEAORD, DE)
NATIONAL CHILDREN'S HOSPITAL (COLUMBUS, OH)
NAVICENT HEALTH (MACON, GA)
NCH HEALTHCARE SYSTEM (NAPLES, FL)
NEBRASKA MEDICINE (OMAHA, NE)
NEMAH COUNTY HOSPITAL (AUBURN, NE)
NEMOURS CHILDREN'S HEALTH SYSTEM (JACKSONVILLE, FL)
NEW LONDON HOSPITAL (NEW LONDON, NH)
NEWARK BETH ISRAEL MEDICAL CENTER (NEWARK, NJ)
NEWPORT HOSPITAL & HEALTH SERVICES (NEWPORT, WA)
NEW YORK-PRESBYTERIAN (NEW YORK, NY)
NICKLAUS CHILDREN'S HOSPITAL (MIAMI, FL)
NORTH CYPRESS MEDICAL CENTER CYPRESS, TX)
NORTH MISSISSIPPI HEALTH SERVICES (TUPelo, MS)
NORTH SHORE UNIVERSITY HOSPITAL (MANHASSET, NY)
NORTHEAST GEORGIA HEALTH SYSTEM (GAINESVILLE, GA)
NORTHSHORE UNIVERSITY HEALTHSYSTEM (EVANSTON, IL)
NORTHWESTERN MEDICAL CENTER (ST. ALBANS, VT)
NORTHWESTERN MEMORIAL HEALTHCARE (CHICAGO, IL)
NORTON HEALTHCARE (LOUISVILLE, KY)
• Norwalk Hospital (Norwalk, CT)
• Novant Health (Winston-Salem, NC)
• NYC Health + Hospitals/Elmhurst (New York, NY)
• NYC Health + Hospitals/Harlem (New York, NY)
• NYU Langone Medical Center (New York, NY)
• Ochsner Health System (New Orleans, LA)
• Odessa Memorial Healthcare Center (Odessa, WA)
• Ohio State University Wexner Medical Center (Columbus, OH)
• OhioHealth Doctors Hospital (Columbus, OH)
• OhioHealth Dublin Methodist Hospital (Dublin, OH)
• OhioHealth Grady Memorial Hospital (Delaware, OH)
• OhioHealth Grant Medical Center (Columbus, OH)
• OhioHealth Hardin Memorial Hospital (Kenton, OH)
• OhioHealth Mansfield Hospital (Mansfield, OH)
• OhioHealth Marion General Hospital (Maroon, OH)
• OhioHealth Riverside Methodist Hospital (Columbus, OH)
• OhioHealth Shelby Hospital (Shelby, OH)
• Opelousas General Health System (Opelousas, LA)
• Orange Regional Medical Center (Middletown, NY)
• Orlando Health (Orlando, FL)
• Osceola Medical Center (Osceola, WI)
• OSF HealthCare (Peoria, IL)
• Othello Community Hospital (Othello, WA)
• Otsego Memorial Hospital (Gaylord, MI)
• Our Lady of Bellefonte Hospital (Ashland, KY)
• Overlake Medical Center (Bellevue, WA)
• Palmetto Health (Columbia, SC)
• Palos Community Hospital (Palos Heights, IL)
• Parkland Health & Hospital System (Dallas, TX)
• Parkview Health (Fort Wayne, IN)
• Parkview Medical Center (Pueblo, CO)
• Pelham Medical Center (Greer, SC)
• Peninsula Regional Medical Center (Salisbury, MD)
• Penn Medicine (Philadelphia, PA)
• Penn Medicine/Lancaster General Health (Lancaster, PA)
• Perham Health (Perham, MN)
• Piedmont Healthcare (Atlanta, GA)
• PIH Health Hospital-Whittier (CA)
• Plainview Hospital (Plainview, NY)
• Pomona Valley Hospital Medical Center (Pomona, CA)
• Porter Medical Center (Middlebury, VT)
• Premier Health (Dayton, OH)
• Presbyterian Healthcare Services (Albuquerque, NM)
• ProHealth Care (Waukesha, WI)
• Prospect Waterbury Hospital (Waterbury, CT)
• Providence Health System (Mobile, AL)
• Pullman Regional Hospital (Pullman, WA)
• Reid Health (Richmond, IN)
• Renown Health (Reno, NV)
• Richard L. Roudebush VA Medical Center (Indianapolis, IN)
• Richland Memorial Hospital (Olney, IL)
• Riverside Health System (Newport News, VA)
• Riverside Medical Center (Kankakee, IL)
• Robert Wood Johnson University Hospital (New Brunswick, NJ)
• Robert Wood Johnson University Hospital Hamilton (Hamilton, NJ)
• Robert Wood Johnson University Hospital Rahway (Rahway, NJ)
• Robert Wood Johnson University Hospital Somerset (Somerville, NJ)
• Rochelle Community Hospital (Rochelle, IL)
• Rockford Memorial Hospital (Rockford, IL)
• Ronald Reagan UCLA Medical Center (Los Angeles, CA)
• Rush Memorial Hospital (Rushville, IN)
• Rush Oak Park Hospital (Oak Park, IL)
• Rush University Medical Center (Chicago, IL)
• Rutland Regional Medical Center (Rutland, VT)
• Sacred Heart Health System (Pensacola, FL)
• Saint Barnabas Medical Center (Livingston, NJ)
• Saint Francis Hospital and Medical Center (Hartford, CT)
• Saint Luke’s Health System (Kansas City, MO)
• Saint Peter’s University Hospital (New Brunswick, NJ)
• Saint Vincent Hospital (Erie, PA)
• Salina Regional Health Center (Salina, KS)
• Samaritan Healthcare (Moses Lake, WA)
• Samaritan Medical Center (Watertown, NY)
• Sanford Health (Sioux Falls, SD)
• Sarasota Memorial Hospital (Sarasota, FL)
• Saratoga Hospital (Saratoga Springs, NY)
• SCL Health (Broomfield, CO)
• Sentara Healthcare (Norfolk, VA)
• Seton Healthcare Family (Austin, TX)
• Sharp HealthCare (San Diego, CA)
• Sheridan Memorial Hospital (Sheridan, WY)
• Southern Maine Health Care (Biddeford, ME)
• Southern New Hampshire Medical Center (Nashua, NH)
• Southside Hospital (Bayshore, NY)
• Sparrow Health System (Lansing, MI)
• Spartanburg Regional Healthcare System (Spartanburg, SC)
• SSM Health (St. Louis, MO)
• St. Clair Hospital (Pittsburgh, PA)
• St. Dominic-Jackson Memorial Hospital (Jackson, MS)
• St. Elizabeth Healthcare (Edgewood, KY)
• St. John Health System (Tulsa, OK)
• St. John Providence (Warren, MI)
• St. Joseph Health System (Mishawaka, IN)
• St. Joseph Mercy Oakland (Pontiac, MI)
• St. Joseph’s Health (Syracuse, NY)
• St. Luke’s Cornwall Hospital (Newburgh, NY)
• St. Luke’s Health System (Boise, ID)
• St. Luke’s Rehabilitation Institute (Spokane, WA)
• St. Luke’s University Health Network (Bethlehem, PA)
• St. Mary Mercy Livonia (Livonia, MI)
• St. Mary’s Healthcare (Amsterdam, NY)
• St. Thomas West Hospital (Nashville, TN)
• St. Vincent Health (Indianapolis, IN)
• Stamford Hospital (Stamford, CT)
• Stanford Health Care (Stanford, CA)
• Star Valley Medical Center (Afton, WY)
• Staten Island University Hospital (Staten Island, NY)
• Ste. Genevieve County Memorial Hospital (Ste. Genevieve, MO)
• Stony Brook Medicine (Stony Brook, NY)
• Summa Health (Akron, OH)
• Sunnyside Community Hospital & Clinics (Sunnyside, WA)
• SUNY Upstate Medical University (Syracuse, NY)
• Susquehanna Health (Williamsport, PA)
• Sutter Health (Sacramento, CA)
• Swisher Memorial Healthcare System (Tulia, TX)
• Syosset Hospital (Syosset, NY)
• Syringa Hospital & Clinics (Grangeville, ID)
• Tampa General Hospital (Tampa, FL)
• Taylorville Memorial Hospital (Taylorville, IL)
• Texas Children’s Hospital (Houston, TX)
• Texas Health Resources (Arlington, TX)
• ThedaCare (Appleton, WI)
• TMC Healthcare (Tucson, AZ)
• TriHealth (Cincinnati, OH)
• Trinitas Regional Medical Center (Elizabeth, NJ)
• Tri-State Memorial Hospital (Clarkston, WA)
• Truman Medical Centers (Kansas City, MO)
• UAB Health System (Birmingham, AL)
• UC Davis Health (Sacramento, CA)
• UC Health (Cincinnati, OH)
• UC San Diego Health (San Diego, CA)
• UCSF Medical Center (San Francisco, CA)
• UF Health (Gainesville, FL)
• UMC Health System (Lubbock, TX)
• UNC Health Care (Chapel Hill, NC)
• Union Hospital (Terre Haute, IN)
• United Hospital Center (Bridgeport, WV)
• United Regional Health Care System (Wichita Falls, TX)
• Unity Health (Searcy, AR)
• UnityPoint Health (West Des Moines, IA)
• University Health System (San Antonio, TX)
• University Hospital (Newark, NJ)
• University Hospitals (Cleveland, OH)
• University Medical Center of Princeton (Plainsboro, NJ)
• University of Arkansas for Medical Sciences (Little Rock, AR)
• University of Chicago Medicine (Chicago, IL)
• University of Colorado Health (Aurora, CO)
• University of Illinois Hospital & Health Sciences System (Chicago, IL)
• University of Iowa Hospitals and Clinics (Iowa City, IA)
• University of Kansas Hospital (Kansas City, KS)
• University of Michigan Michigan Medicine (Ann Arbor, MI)
• University of Mississippi Medical Center (Jackson, MS)
• University of Missouri Health Care (Columbia, MO)
• University of New Mexico Hospitals (Albuquerque, NM)
• University of Tennessee Medical Center (Knoxville, TN)
• University of Texas Medical Branch (Galveston, TX)
• University of Texas Southwestern Medical Center (Dallas, TX)
• University of Utah Health Care (Salt Lake City, UT)
• UPMC (Pittsburgh, PA)
• Upper Allegheny Health System (Olean, NY)
• UW Medicine/Valley Medical Center (Renton, WA)
• VA Northern Indiana Health Care System (Fort Wayne, IN)
• Valley Children’s Healthcare (Madera, CA)
• Valley Health (Winchester, VA)
• Valley Health System (Ridgewood, NJ)
• Vanderbilt University Medical Center (Nashville, TN)
• Via Christi Health (Wichita, KS)
• Vidant Health (Greenville, NC)
• Virginia Hospital Center (Arlington, VA)
• Virginia Mason Medical Center (Seattle, WA)
• Virtua (Marlton, NJ)
• Wake Forest Baptist Medical Center (Winston-Salem, NC)
• Watertown Regional Medical Center (Watertown, WI)
• Wellmont Health System (Kingsport, TN)
• Wellstar Health System (Marietta, GA)
• Wellstar West Georgia Medical Center (LaGrange, GA)
• West Park Hospital District (Cody, WY)
• West Tennessee Healthcare (Jackson, TN)
• Western Maryland Health System (Cumberland, MD)
• Western Pennsylvania Hospital (Pittsburgh, PA)
• Whitman Hospital and Medical Center (Colfax, WA)
• William W. Backus Hospital (Norwich, CT)
• Windom Area Hospital (Windom, MN)
• Winner Regional Healthcare Center (Winner, SD)
• Winthrop University Hospital (Mineola, NY)
• Woman’s Hospital (Baton Rouge, LA)
• Wood County Hospital (Bowling Green, OH)
• WVU Medicine Berkeley and Jefferson medical centers (Martinsburg, WV)
• WVU Medicine West Virginia University Hospitals (Morgantown, WV)
• Yale New Haven Health (New Haven, CT)
• Yampa Valley Medical Center (Steamboat Springs, CO)
• Yavapai Regional Medical Center (Prescott, AZ)
• Yuma Regional Medical Center (Yuma, AZ)

Previous winners are listed online at www.hhnmostwired.com.
41.1  Health Literacy

The Institute of Medicine (www.iom.edu) describes health literacy as the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions. An estimated 80 million Americans navigate the complexities of the U.S. health system without sufficient health literacy skills.

“Sometimes hospitalized patients hear clinicians’ instructions but they don’t always understand them. When the patients return home, misunderstandings or confusion can lead to medication mishaps or other missteps that land them back in the hospital.”

*Hospitals & Health Networks*

Health literacy is one of two dozen objectives promulgated by Healthy People 2020 (www.healthypeople.gov/2020), an initiative of the U.S. Department of Health and Human Services (www.hhs.gov).

The Joint Commission (www.jointcommission.org) has increased its focus on patient communication by piloting new and updated standards. Those standards, which involve verbal and written communication, are expected to influence accreditation decisions in the near future.

41.2  Communicating With Patients

The Institute for Healthcare Advancement (www.iha4health.org) has created a list of the most common errors providers make when communicating with patients, as follows:
• Literature that accompanies medications is written at an 11th grade reading level, rather than fifth-grade or lower, the level at which the majority of the country’s population reads. More than 90 million U.S. citizens read no higher than a third-to-fifth grade level.
• There is communication in medical jargon when it is not necessary, including using terms like “otitis media” and “myocardial infarction” instead of “ear ache” and “heart attack” when informing patients of their condition.
• Reading materials are developed in a type size too small. (Providers are urged to use at least 12-point type with plenty of white space.)
• When giving verbal directions, patients are not asked to repeat the instructions back in his or her own words to guarantee that he or she clearly understands the information.
• A patient’s response of “yes” or a simple nod might mean the patient is ashamed to admit he or she doesn’t understand what he or she has been told.
• Mass-produced brochures and bulletins displayed and distributed in doctors’ offices and clinics are not always easy-to-read or kept up-to-date. Some aren’t in line with medical policies and recommendations at the offices.
• Speaking too rapidly does not allow patients time to understand or ask questions in response.
• Directions such as “take with food” should read, “swallow one pill with water and eat some food” for patients who take every direction literally. Some patients have interpreted “take with food” to mean that the medication should be folded into food before trying to swallow it.
• Medical information is not provided in the patient’s primary language.

The Institute estimates that more than $73 billion is spent annually in unnecessary healthcare expenses as a result of patients’ inability to understand what medical providers say to them.

41.3 Communications for Non-English Speaking Patients
Approximately 50 million people in the U.S., or 18% of the population over five years old, speak a language other than English at home, a 46% increase since 1990. Several studies have shown that language barriers can negatively affect health outcomes, patient satisfaction, efficient use of resources, and quality of care. Explaining the proper dosage and mode of administering medication often can be challenging even with English-proficient patients; a language barrier presents more substantial difficulties.

A report by the Heller School for Social Policy and Management at Brandeis University (http://heller.brandeis.edu/phd/profiles/index.html) found that more than one-fourth of limited-English patients without interpreters do not understand medication instructions.
“As the U.S. grows increasingly more linguistically and culturally diverse, some safety experts worry that healthcare providers too often are not making professional interpreter and translator services available to patients and families. Instead, they frequently rely on non-professionals, including patients’ family members, who are not knowledgeable about medical terminology. This increases the risk of medication errors, wrong procedures, avoidable readmissions, and other adverse events. Nearly 9% of the U.S. population is at risk for an adverse event because of language barriers, according to the Agency for Healthcare Research and Quality.”

Modern Healthcare

According to Modern Healthcare, 1,661 community hospitals engage outside services for foreign-language translation.

41.4 Hospital Programs

Ask Me 3, developed by the National Patient Safety Foundation (www.npsf.org), is one tool commonly used by hospitals in patient communications. Ask Me 3 puts focus on a patient’s understanding of three questions: What is my main problem? What do I need to do? Why is it important for me to do this? Another approach is “teach back,” in which patients are asked to explain what they’ve just heard in their own words.

The following are examples of other hospital communications programs:

- Boston University Medical Center has implemented a host of patient-communications strategies, from stripping medical jargon out of brochures and consent forms to revamping hospital signs. The initiative includes Project RED (Re-Engineered Discharge Project), which redesigned the discharge process to make sure every detail in all written materials is clear to all patients, including those with limited literacy skills.
• The Iowa Health System, frequently cited as a literacy leader, launched its Health Literacy Collaborative in 2003. The system has focused on boosting literacy and sensitivity training not just among clinicians, but among all hospital staffers.

“Someone working a transportation job, for example, might hear a patient who is confused about medical instructions and could alert a nurse. Also, sometimes people may feel more comfortable asking or talking to somebody who is not as formal as a doctor or a nurse.”

Mary Ann Abrams, M.D., Director
Health Literacy Collaborative
Iowa Health System

• Twin Rivers Regional Medical Center launched an initiative to help patients better understand medical instructions at discharge. Patients are given a recorded message pertinent to their diagnosis and care responsibilities along with written discharge materials.

“When you look at the cost-benefit analysis, if, by doing this, you could reduce your readmission rates by 2% or 3%, that makes it all worthwhile.”

Steve Pu, M.D., Medical Director
Twin Rivers Regional Medical Center

41.5 Market Resources

PATIENT SATISFACTION

42.1 Overview

Under HCAHPS, a random sample of patients discharged from hospitals across the country are surveyed and asked about their hospital stay. Patient satisfaction focuses on the following elements of their hospital stay:
- How well nurses communicated with patients
- How well doctors communicated with patients
- How responsive hospital staff were to patients’ needs
- How well caregivers managed patients’ pain
- How well caregivers explained patients’ medications to them
- How clean and quiet the hospital was
- How well caregivers explained the steps patients and families need to take to care for themselves outside of the hospital (i.e., discharge instructions)

HCAHPS scores are published on CMS’ Hospital Compare website at (www.hospitalcompare.hhs.gov).

42.2 Top Hospitals In Patient Satisfaction
The CMS implemented a star ratings system in 2015.

With five-star designations for the top hospitals, the star ratings posted on the CMS’ Hospital Compare website are an average of hospitals’ performance on 11 publically reported measures from the HCAHPS survey.

Among 3,685 rated hospitals in 2017, star ratings were as follows:
- ★★★★★: 337
- ★★★★: 1,153
- ★★★: 1,188
- ★★: 748
- ★: 259

Five-star rated hospitals announced in December 2017 were as follows:
- Advocate Condell Medical Center (Libertyville, IL)
- Alvarado Hospital Medical Center (San Diego, CA)
• AMITA Health Adventist Medical Center (Hinsdale, IL)
• AMITA Health Adventist Medical Center (La Grange, IL)
• AMITA Health Alexian Brothers Medical Center (Elk Grove Village, IL)
• AMITA Health St. Alexius Medical Center (Hoffman Estates, IL)
• Arbuckle Memorial Hospital Authority (Sulphur, OK)
• Arkansas Surgical Hospital (North Little Rock, AR)
• Asante Ashland Community Hospital (Ashland, OR)
• Asante Rogue Regional Medical Center (Medford, OR)
• Asante Three Rivers Medical Center (Grants Pass, OR)
• Ascension St. Michael's Hospital (Stevens Point, WI)
• Aspen Valley Hospital (Aspen, CO)
• Aultman Hospital (Canton, OH)
• Aurora Lakeland Medical Center (Elkhorn, WI)
• Aurora Medical Center (Grafton, WI)
• Aurora Medical Center (Kenosha, WI)
• Aurora Medical Center (Oshkosh, WI)
• Aurora Medical Center (Summit, WI)
• Aurora Medical Center Manitowoc County (Two Rivers, WI)
• Aurora Sheboygan Memorial Medical Center (Sheboygan, WI)
• Aurora West Allis Medical Center (West Allis, WI)
• Avera Heart Hospital (Sioux Falls, SD)
• Avera Queen of Peace Hospital (Mitchell, SD)
• Bailey Medical Center (Owasso, OK)
• Banner Boswell Medical Center (Sun City, AZ)
• Banner Heart Hospital (Mesa, AZ)
• Baptist Emergency Hospital (San Antonio, TX)
• Baptist Health Lexington (Lexington, KY)
• Barnes-Jewish West County Hospital (Creve Coeur, MO)
• Barnesville Hospital Association (Barnesville, OH)
• Bay Park Community Hospital (Oregon, OH)
• Baylor Heart and Vascular Hospital (Dallas, TX)
• Baylor Medical Center at Frisco (Frisco, TX)
• Baylor Scott and White All Saints Medical Center (Fort Worth, TX)
• Baylor Scott and White Medical Center (Waxahachie, TX)
• Baylor Scott and White Surgical Hospital (Sherman, TX)
• Baystate Wing Hospital and Medical Centers (Palmer, MA)
• Beacham Memorial Hospital (Magnolia, MS)
• Beatrice Community Hospital and Health Center (Beatrice, NE)
• Beaumont Hospital, Grosse Pointe (Grosse Pointe, MI)
• Bellin Memorial Hospital (Green Bay, WI)
• Blue Ridge Regional Hospital (Spruce Pine, NC)
• Bon Secours-St. Francis Hospital (Charleston, SC)
• Boone Hospital Center (Columbia, MO)
• Brigham and Women's Faulkner Hospital (Boston, MA)
• Bronson Methodist Hospital (Kalamazoo, MI)
• California Pacific Medical Center-Pacific Campus Hospital (San Francisco, CA)
• Cape Cod Hospital (Hyannis, MA)
• CarolinaEast Medical Center (New Bern, NC)
• Carolinas HealthCare System (Kings Mountain, NC)
• Carolinas HealthCare System Pineville (Charlotte, NC)
• Castle Medical Center (Kailua, HI)
• Catholic Medical Center (Manchester, NH)
• Cedars Sinai Medical Center (Los Angeles, CA)
• Centegra Health System-McHenry Hospital (McHenry, IL)
• Centra Health (Lynchburg, VA)
• Central Louisiana Surgical Hospital (Alexandria, LA)
• Central Valley Medical Center (Nephi, UT)
• Chester County Hospital (West Chester, PA)
• CHI Health Nebraska Heart (Lincoln, NE)
• Chino Valley Medical Center (Chino, CA)
• Christiana Care Health Services (Newark, DE)
• Christus Mother Frances Hospital (Tyler, TX)
• Christus St. Michael Health System (Texarkana, TX)
• Cleveland Clinic (Cleveland, OH)
• Coffey County Hospital (Burlington, KS)
• Columbia St. Mary's Hospital Ozaukee (Mequon, WI)
• Community Hospital (Oklahoma City, OK)
• Community Hospital of Bremen (Breman, IN)
• Community Hospital of the Monterey Peninsula (Monterey, CA)
• Copley Memorial Hospital (Aurora, IL)
• Crawford Memorial Hospital (Robinson, IL)
• CrossRidge Community Hospital (Wynne, AR)
• Decatur Memorial Hospital (Decatur, IL)
• Delnor Community Hospital (Geneva, IL)
• Doctors Hospital of Sarasota (Sarasota, FL)
• Douglas County Hospital (Alexandria, MN)
• Doylestown Hospital (Doylestown, PA)
• East Cooper Medical Center (Mount Pleasant, SC)
• Eisenhower Medical Center (Rancho Mirage, CA)
• Emory Johns Creek Hospital (Johns Creek, GA)
• Evanston Hospital (Evanston, IL)
• EvergreenHealth Medical Center (Kirkland, WA)
• Fairview Hospital (Cleveland, OH)
• Fairview Hospital (Great Barrington, MA)
• Fairview Southdale Hospital (Edina, MN)
• FirstHealth Montgomery Memorial Hospital (Troy, NC)
• Flambeau Hospital (Park Falls, WI)
• Fort Memorial Hospital (Fort Atkinson, WI)
• Franciscan Health Carmel (Carmel, IN)
• Franciscan Health Lafayette East (Lafayette, IN)
• Franciscan Health Mooresville (Mooresville, IN)
• Franklin Woods Community Hospital (Johnson City, TN)
• Frederick Memorial Hospital (Frederick, MD)
• Frisbie Memorial Hospital (Rochester, NH)
• Geisinger Jersey Shore Hospital (Jersey Shore, PA)
• GHS Greer Memorial Hospital (Greer, SC)
• GHS Patewood Memorial Hospital (Greenville, SC)
• Glen Rose Medical Center (Glen Rose, TX)
• Goleta Valley Cottage Hospital (Santa Barbara, CA)
• Gordon Hospital (Calhoun, GA)
• Grand Lake Health System (St. Marys, OH)
• Grand View Hospital (Sellersville, PA)
• Gulf Breeze Hospital (Gulf Breeze, FL)
• Gundersen Lutheran Medical Center (La Crosse, WI)
• Hamilton General Hospital (Hamilton, TX)
• Hardin Memorial Hospital (Kenton, OH)
• Harlingen Medical Center (Harlingen, TX)
• Hendricks Regional Health (Danville, IN)
• Henrico Doctors’ Hospital (Richmond, VA)
• Henry County Memorial Hospital (New Castle, IN)
• Hill Country Memorial Hospital (Fredericksburg, TX)
• Hillcrest Hospital (Mayfield Heights, OH)
• Holland Community Hospital (Holland, MI)
• Holy Cross Hospital (Taos, NM)
• Holy Family Memorial (Manitowoc, WI)
• Holy Name Medical Center (Teaneck, NJ)
• HonorHealth Scottsdale Thompson Peak Medical Center (Scottsdale, AZ)
• Hopedale Medical Complex (Hopedale, IL)
• Hospital for Special Surgery (New York, NY)
• Houston Methodist Hospital (Houston, TX)
• Houston Methodist Willowbrook Hospital (Houston, TX)
• HSHS St. Joseph’s Hospital (Breese, IL)
• Huntington Memorial Hospital (Pasadena, CA)
• Indiana University Health Bloomington Hospital (Bloomington, IN)
• Indiana University Health North Hospital (Carmel, IN)
• Indiana University Health Tipton Hospital (Tipton, IN)
• Indiana University Health West Hospital (Avon, IN)
• Inova Fair Oaks Hospital (Fairfax, VA)
• Inova Fairfax Hospital (Falls Church, VA)
• Inova Mount Vernon Hospital (Alexandria, VA)
• Intermountain Medical Center (Murray, UT)
• Iowa Specialty Hospital (Belmond, IA)
• John Muir Medical Center (Concord, CA)
• Kadlec Regional Medical Center (Richland, WA)
• Kaiser Foundation Hospital Orange County (Anaheim, CA)
• Kalispell Regional Medical Center (Kalispell, MT)
• Kansas Heart Hospital (Wichita, KS)
• Kansas Medical Center (Andover, KS)
• Labette Health (Parsons, KS)
• Lakeland Community Hospital (Haleyville, AL)
• Lakeview Medical Center (Rice Lake, WI)
• Lakeview Memorial Hospital (Stillwater, MN)
• Lancaster General Hospital (Pancaster, PA)
• LDS Hospital (Salt Lake City, UT)
• Lexington Medical Center (West Columbia, SC)
• Lincoln County Medical Center (Ruidoso, NM)
• Madison Memorial Hospital (Rexburg, ID)
• Main Line Hospital Bryn Mawr Campus (Bryn Mawr, PA)
• Main Line Hospital Lankenau (Wynnewood, PA)
• Main Line Hospital Paoli (Paoli, PA)
• Maine Coast Memorial Hospital (Ellsworth, ME)
• Maine Medical Center (Portland, ME)
• Manhattan Surgical Hospital (Manhattan, KS)
• Margaret R. Pardee Memorial Hospital (Hendersonville, NC)
• Mariners Hospital (Tavernier, FL)
• Marshall Medical Center (Placerville, CA)
• Martha Jefferson Hospital (Charlottesville, VA)
• Mary Greeley Medical Center (Ames, IA)
• Mayo Clinic Health System Albert Lea (Albert Lea, MN)
• Mayo Clinic Health System Eau Claire (Eau Claire, WI)
• Mayo Clinic Hospital (Phoenix, AZ)
• Mayo Clinic Hospital Rochester (Rochester, MN)
• McBride Orthopedic Hospital (Oklahoma City, OK)
• McLaren Northern Michigan (Petoskey, MI)
• Medical Center of the Rockies (Loveland, CO)
• MedStar Union Memorial Hospital (Baltimore, MD)
• Memorial Hermann Memorial City Medical Center (Houston, TX)
• Memorial Hospital (Fremont, OH)
• Memorial Hospital and Health Care Center (Jasper, IN)
• Memorial Hospital of South Bend (South Bend, IN)
• Memorial Mission Hospital and Asheville Surgery Center (Asheville, NC)
• Mercy Gilbert Medical Center (Gilbert, AZ)
• Mercy Health Anderson Hospital (Cincinnati, OH)
• Mercy Health West Hospital (Cincinnati, OH)
• Mercy Hospital (Iowa City, IA)
• Mercy Hospital (Portland, ME)
• Mercy Hospital (St. Louis, MO)
• Mercy Hospital (Washington, MO)
• Mercy Hospital of Defiance (Defiance, OH)
• Mercy Medical Center of Oshkosh (Oshkosh, WI)
• Mercy Regional Medical Center (Durango, CO)
• Mercy Regional Medical Center (Ville Platte, LA)
• Mercy Tiffin Hospital (Tiffin, OH)
• Mercy Willard Hospital (Willard, OH)
• Methodist Hospital for Surgery (Addison, TX)
• Methodist Hospital of Southern California (Arcadia, CA)
• MidMichigan Medical Center-Gratiot (Alma, MI)
• Midwestern Regional Medical Center (Zion, IL)
• Mills-Peninsula Medical Center (Burlingame, CA)
• Mission Hospital Regional Medical Center (Mission Viejo, CA)
• Morristown Medical Center (Morristown, NJ)
• Mosaic Life Care (St. Joseph, MO)
• Mount Carmel New Albany Surgical Hospital (New Albany, OH)
• Mount Carmel St. Ann's (Westerville, OH)
• Mount Pleasant Hospital (Mount Pleasant, SC)
• Mountain View Hospital (Idaho Falls, ID)
• Munson Healthcare Cadillac Hospital (Monson, MI)
• Murray County Memorial Hospital (Slayton, MN)
• Naples Community Hospital (Naples, FL)
• New England Baptist Hospital (Boston, MA)
• Newton-Wellesley Hospital (Newton, MA)
• North Canyon Medical Center (Gooding, ID)
• North Central Surgical Center (Dallas, TX)
• Northern Maine Medical Center (Fort Kent, ME)
• Northside Medical Center (Columbus, GA)
• Northwest Hills Surgical Hospital (Austin, TX)
• Northwest Specialty Hospital (Post Falls, ID)
• NYU Langone’s Tisch Hospital (New York, NY)
• Oaklawn Hospital (Marshall, MI)
• OakLeaf Surgical Hospital (Altoona, WI)
• Ochsner St. Anne General Hospital (Raceland, LA)
• Ohio State University Hospital (Columbus, OH)
• Ohio Valley Medical Center (Springfield, OH)
• OhioHealth Shelby Hospital (Shelby, OH)
• Oklahoma Center for Orthopedic and Multi-Specialty Surgery (Oklahoma City, OK)
• Oklahoma Heart Hospital (Oklahoma City, OK)
• Oklahoma Surgical Hospital (Tulsa, OK)
• Palos Community Hospital (Palos Heights, IL)
• Park Place Surgical Hospital (Lafayette, LA)
• Parma Community General Hospital (Parma, OH)
• Pelham Medical Center (Greer, SC)
• Peninsula Regional Medical Center (Salisbury, MD)
• Penn Presbyterian Medical Center (Philadelphia, PA)
• Perham Health (Perham, MN)
• Poudre Valley Hospital (Fort Collins, CO)
• Premier Surgical Institute (Galena, KS)
• Providence Medical Center (Kansas City, KS)
• Providence St. Mary Medical Center (Walla Walla, WA)
• Providence St. Vincent Medical Center (Portland, OR)
• Redington Fairview General Hospital (Skowhegan, ME)
• Rex Hospital (Raleigh, NC)
• Roper Hospital (Charleston, SC)
• Rose Medical Center (Denver, CO)
• Round Rock Medical Center (Round Rock, TX)
• Rush University Medical Center (Chicago, IL)
• Saint John Hospital (Leavenworth, KS)
• Saint Joseph Martin (Martin, KY)
• Saint Joseph's Hospital of Atlanta (Atlanta, GA)
• Saint Luke's Hospital (Kansas City, MO)
• Saint Luke's South Hospital (Overland Park, KS)
• Salina Surgical Hospital (Salina, KS)
• Santa Barbara Cottage Hospital (Santa Barbara, CA)
• Santa Monica-UCLA Medical Center and Orthopedic Hospital (Santa Monica, CA)
• Sarasota Memorial Hospital (Sarasota, FL)
• Sauk Prairie Hospital (Prairie du Sac, WI)
• Schneck Medical Center (Seymour, IN)
• Scripps Green Hospital (La Jolla, CA)
• Sentara Leigh Hospital (Norfolk, VA)
• Sentara Williamsburg Regional Medical Center (Williamsburg, VA)
• Sequoia Hospital (Redwood City, CA)
• Seton Edgar B. Davis Hospital (Luling, TX)
• Sharp Chula Vista Medical Center (Chula, CA)
• Sharp Memorial Hospital (San Diego, CA)
• Sherman Hospital (Elgin, IL)
• Silver Cross Hospital and Medical Centers (New Lenox, IL)
• Silver Lake Medical Center (Los Angeles, CA)
• Sioux Falls Specialty Hospital (Sioux Falls, SD)
• Sky Ridge Medical Center (Lone Tree, CO)
• South County Hospital (Wakefield, RI)
• South Pointe Hospital (Warrensville Heights, OH)
• South Texas Surgical Hospital (Corpus Christi, TX)
• Southwest General Health Center (Middleburg Heights, OH)
• Southwestern Vermont Medical Center (Bennington, VT)
• Spectrum Health United Hospital (Greenville, MI)
• Spectrum Health Zeeland Community Hospital (Zeeland, MI)
• SSM Health St. Mary's Hospital (Centralia, IL)
• SSM Health St. Mary's Hospital (Madison, WI)
• St. Anthony Hospital (Pendleton, OR)
• St. Cloud Hospital (St. Cloud, MN)
• St. David's Medical Center (Austin, TX)
• St. Francis Downtown (Greenville, SC)
• St. Francis Hospital (Columbus, GA)
• St. John Broken Arrow (Broken Arrow)
• St. John Medical Center (Westlake, OH)
• St. John’s Medical Center (Jackson, WY)
• St. Joseph Hospital (Nashua, NH)
• St. Joseph Medical Center (Bloomington, IL)
• St. Joseph Mercy Chelsea (Chelsea, MI)
• St. Joseph's Hospital (Chippewa Falls, WI)
• St. Luke's Hospital (Chesterfield, MO)
• St. Luke's Hospital-Anderson Campus (Easton, PA)
• St. Luke’s Miners Memorial Hospital (Coaldale, PA)
• St. Luke's Patients Medical Center (Pasadena, TX)
• St. Luke's Regional Medical Center (Boise, ID)
• St. Luke's Warren Hospital (Phillipsburg, NJ)
• St. Mary's Regional Medical Center (Enid, OK)
• St. Patrick Hospital (Missoula, MT)
• St. Vincent Heart Center of Indiana (Indianapolis, IN)
• Stanislaus Surgical Hospital (Modesto, CA)
• Stillwater Medical Center Authority (Stillwater, OK)
• Straub Clinic and Hospital (Honolulu, HI)
• Sugar Land Surgical Hospital (Sugar Land, TX)
• Summit Healthcare Regional Medical Center (Show Low, AZ)
• Surgical Hospital at Southwoods (Youngstown, OH)
• Surgical Institute of Reading (Wyomissing, PA)
• Sutter Maternity and Surgery Center of Santa Cruz (Santa Cruz, CA)
• Swedish Medical Center (Seattle, WA)
• Texas Health Harris Methodist Hospital Southwest (Fort Worth, TX)
• Texas Orthopedic Hospital (Houston, TX)
• Texas Spine and Joint Hospital (Tyler, TX)
• The Christ Hospital (Cincinnati, OH)
• The Heart Hospital at Deaconess Gateway (Newburgh, IN)
• The Heart Hospital Baylor Denton (Denton, TX)
• The Heart Hospital Baylor Plano (Plano, TX)
• The Jewish Hospital (Cincinnati, OH)
• The McDowell Hospital (Marion, NC)
• The Medical Center of Aurora (Aurora, CO)
• The Monroe Clinic (Monroe, WI)
• The Moses H. Cone Memorial Hospital (Greensboro, NC)
• The Queen's Medical Center (Honolulu, HI)
• The Toledo Hospital (Toldeo, OH)
• Tops Surgical Specialty Hospital (Houston, TX)
• Torrance Memorial Medical Center (Torrance, CA)
• TriHealth Evendale Hospital (Cincinnati, OH)
• UHHS Memorial Hospital of Geneva (Geneva, OH)
• Union General Hospital (Blairsville, GA)
• UnityPoint Health-Meriter (Madison, WI)
• University Hospitals Conneaut Medical Center (Conneaut, OH)
• University of Maryland St. Joseph Medical Center (Towson, MD)
• University of Texas Health Science Center (Tyler, TX)
• University of Utah Hospital (Salt Lake City, UT)
• University of Washington Medical Center (Seattle, WA)
• University of Wisconsin Hospitals and Clinics (Madison, WI)
• Upland Hills Health (Dodgeville, WI)
• USMD Hospital at Arlington (Arlington, TX)
• Utah Valley Hospital (Provo, UT)
• Verde Valley Medical Center (Cottonwood, AZ)
• Vernon Memorial Hospital (Viroqua, WI)
• Virginia Mason Medical Center (Seattle, WA)
• Waukesha Memorial Hospital (Waukesha, WI)
• Waverly Health Center (Waverly, IA)
• Whitman Hospital and Medical Center (Colfax, WA)
• Willis Knighton Medical Center (Shreveport, LA)
• Winchester Hospital (Winchester, MA)
• Woodland Heights Medical Center (Lufkin, TX)

42.3 Satisfaction With Doctor Visits

A survey by The Harris Group (www.theharrisgroup.com) reported satisfaction among adults with their most recent visit to a healthcare provider as follows (percentage of respondents):

• Very satisfied: 53%
• Somewhat satisfied: 35%
• Somewhat dissatisfied: 7%
• Very dissatisfied: 6%

By age, satisfaction was reported as follows:

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Very satisfied</th>
<th>Somewhat satisfied</th>
<th>Somewhat dissatisfied</th>
<th>Very dissatisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-to-35</td>
<td>47%</td>
<td>37%</td>
<td>9%</td>
<td>8%</td>
</tr>
<tr>
<td>36-to-50</td>
<td>46%</td>
<td>42%</td>
<td>7%</td>
<td>4%</td>
</tr>
<tr>
<td>51-to-69</td>
<td>56%</td>
<td>34%</td>
<td>6%</td>
<td>5%</td>
</tr>
<tr>
<td>70 and older</td>
<td>69%</td>
<td>21%</td>
<td>2%</td>
<td>7%</td>
</tr>
</tbody>
</table>
PATIENTS FROM OVERSEAS

43.1 Market Assessment

U.S. hospitals are recognized for providing some of the best medical care in the world and have always attracted wealthy foreigners.

Most hospitals do not disclose their international patient volumes, but analysts estimate the number of foreign patients admitted to U.S. hospitals in the tens of thousands each year. The annual market is estimated at more than $2 billion.

Shannon O’Kelley, executive director of international and corporate care at New York-Presbyterian Hospital, estimates that about 3% of U.S. inpatient admissions at academic medical centers and other specialized facilities come from abroad. Since patients typically bring family with them, each dollar that foreign patients spend on inpatient care is estimated to generate another $3 of spending elsewhere in the U.S. economy, including spending for lodging, hospitality, and shopping.

Until relatively recently, only a handful of high profile U.S. medical centers were active outside the U.S. market. Now several hospitals across the country attract foreign patients.

Baptist Health South Florida, a seven-hospital system, for example, serves about 12,000 patients from Latin America annually. Its Gamma Knife Center, in Coral Gables, draws a large number of patients with inoperable brain tumors.

43.2 International Marketing

Nine hospitals in the Philadelphia area joined to establish Philadelphia International Medicine (www.philadelphiamedicine.com), a group that focuses on attracting foreign patients. The group’s international services center connects patients and their families to interpreters and assists with travel arrangements to the U.S.

The top medical centers continue to expand their reach overseas. The Cleveland Clinic, for example, has a global patient services program that focuses on the markets in India and Japan. And Johns Hopkins Hospital has developed consulting and referral relationships with providers in India, Japan, and Singapore.

43.3 U.S. Hospitals Operating Abroad

Several U.S. hospital systems have partnered with local governments overseas to operate hospitals and clinics abroad. The following are some examples:
• Cleveland Clinic Abu Dhabi, a 360-bed hospital, opened in 2015. Cleveland Clinic also manages Sheikh Khalifa Medical City, a network of healthcare facilities, also in Abu Dhabi.
• Harvard Medical School, through Partners Harvard Medical International, collaborated with Dubai’s Healthcare City to build University Hospital.
• Johns Hopkins Medicine has a 10-year deal with the United Arab Emirates to manage Tawam Hospital in Abu Dhabi.
• Massachusetts General Hospital collaborated with Jiahui Health for a 300-bed hospital that opened in Shanghai in October 2017. Mass General advised on the design and operations of the facility and provided expertise in clinical areas.
• The University of Miami Hospital Miller School of Medicine has clinics in Colombia and in the Caribbean.
• University of Pittsburgh Medical Center (UPMC) has managed a transplant hospital in Palermo, Sicily, since 1997. The hospital treats more than 30,000 patients with severe organ disease annually.

“Big academic medical centers have found partnerships overseas allow them to enhance their brand awareness and provide an added source of revenue.”

Modern Healthcare, 5/22/17

43.4 Market Resources
Partners Harvard Medical International, 100 Cambridge Street, Suite 2002, Boston, MA 02114. (617) 535-6400. (www.partners.org)

Philadelphia International Medicine, 1835 Market Street, 10th Floor, Philadelphia, PA 19103. (215) 563-4733. (www.philadelphiamedicine.com)
44.1 Overview

Population health management (PHM) is defined as caring for the health outcomes of defined groups (or populations) of patients. For a hospital, this population is the community which it serves.

“For many hospitals, especially those in urban centers, improving community health is a necessity due to patient populations with social and economic barriers to healthcare.”

*Trustee, 4/17*

As the industry moves toward reimbursement for value instead of by procedure, hospitals must focus on providing patient-centered PHM.

“As the industry moves toward reimbursement for value instead of by procedure, hospitals and health system executives hope to improve care and reduce costs by working together.”

*Hospitals & Health Networks*
44.2 Federal Requirements
All not-for-profit hospitals are required by the Patient Protection and Affordable Care Act to conduct and publish a community needs assessment once every three years. They also must draft a strategic plan on how they will address identified needs. Under the law, hospitals face a $50,000 penalty per year and the potential loss of their federal tax-exempt status for failing to complete the assessments. The first assessment was required in March 2012.

44.3 PHM Status
A September 2017 survey by Modern Healthcare asked healthcare executives the status of population health management within their organization. Responses were as follows:

• What challenges do you face trying to address social determinants of health and overall health efforts?
  - Lack of data: 25%
  - Patient/community involvement: 24%
  - Developing partnerships: 17%
  - Medical literacy: 7%

• What is your organization’s commitment to population health?
  - Total commitment: 40%
  - Significant: 43%
  - Some commitment: 10%
  - Marginal commitment: 6%
  - No commitment: 1%

• What social determinants of health are of most concern to your community?
  - Shelter: 16%
  - Education/job security: 15%
  - Food insecurity: 12%
  - Transportation: 9%
  - Violence: 8%
  - Other: 41%

• What tools have you used for population health?
  - Claims data: 72%
  - Electronic health records: 72%
  - Other data analytics tools: 67%
  - Smartphone apps: 23%
  - Other: 13%
• Does your healthcare organization have the analytical capability to drive population health efforts?
  - Yes: 72%
  - No: 28%

• What kind of partnerships are you involved in that aim to address population health issues?
  - Local health organizations: 23%
  - Insurers: 15%
  - Not-for-profit organizations: 10%
  - Local municipal/public health offices: 5%
  - Local employees: 2%
  - Retail stores or clinics: 2%
  - Transportation services: 2%
  - Other: 43%

• How are you gauging the success of your population health efforts?
  - Clinical outcomes: 66%
  - Cost: 56%
  - Readmission rates: 54%
  - Quality-of-life surveys: 22%
  - Other: 25%

• Who is in charge of your organization’s population health effort?
  - Dedicated separate unit: 38%
  - Local hospital executive: 17%
  - CEO: 13%
  - Community outreach leaders: 3%
  - Other: 29%

“As providers increase their population health efforts, learning how to identify and sustain relationships with community stakeholders is essential for successful interventions. But many still find establishing such partnerships a challenge.”

Modern Healthcare, 9/18/17
44.2 Alliances

The Future of the Public’s Health in the 21st Century, a report from the Institute of Medicine (IOC, www.iom.edu), calls for “building a new generation of partnerships that draw on the perspectives and resources of diverse communities and actively engage them in health action.” The IOC vision is becoming reality as hospitals are forming alliances to manage the health of the communities they serve.

“A slew of health systems are banding together in different markets, with the goals of improving population health management, bolstering quality, and reducing cost."

Hospitals & Health Networks

The sharing of information among alliance organizations through community health records is the cornerstone of PHM. Interoperability between electronic health records and registries is essential for integrated care models.

“Linking disparate healthcare providers in a community to create a unified health record will not be cheap, but it is essential to population health management.”

Hospitals & Health Networks

44.5 Market Resources

Managing Population Health: The Role Of The Hospital, American Hospital Association. (www.hpoe.org/resources/hpoehretaha-guides/805)

The Role Of Small And Rural Hospitals And Care Systems In Effective Population Health Partnerships, American Hospital Association. (www.hpoe.org/resources/hpoehretaha-guides/1385)
Trends In Hospital-Based Population Health Infrastructure, American Hospital Association. (www.hpoe.org/resources/hpoehretaha-guides/1467)
45.1 Market Assessment

Post-acute care includes services at home health agencies, inpatient rehabilitation hospitals, long-term care hospitals, and skilled nursing facilities. In addition to skilled nursing facilities, long-term care is also provided by assisted living facilities. Home care is assessed in Chapter 28 of this handbook. This chapter assesses all other categories of post-acute and long-term care.

According to the National Clearinghouse For Long-Term Care Information (www.longtermcare.gov), about 9 million Americans over the age of 65 need long-term care services. By 2020, that number will increase to 12 million.

While most people who need long-term care are age 65 or older, 40% of people currently receiving long-term care are adults ages 18-to-64.

Long-term care for seniors has shifted in recent years, with those needing care typically moving into assisted living facilities or continuing-care retirement communities prior to a skilled nursing facility.

“Few people move directly into nursing homes anymore.”

Modern Healthcare

According to Hospitals & Health Networks, 13% of hospital patient discharges, or about 5 million patients each year, are to long-term care or other post-acute facilities. Among these patients, the risk-adjusted rate of potentially avoidable re-hospitalization within 100 days is 18.5%, according to the Medicare Payment Advisory Commission (MedPAC, www.medpac.gov).

45.2 Market Leaders

According to Modern Healthcare (October 2017), the largest post-acute-care companies, ranked by annual net revenue, are as follows:
<table>
<thead>
<tr>
<th>Facilitie</th>
<th>Type</th>
<th>Facilities</th>
<th>States</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindred Healthcare:</td>
<td>LTAC</td>
<td>188</td>
<td>46</td>
<td>$7.22 billion</td>
</tr>
<tr>
<td>Genesis HealthCare Corp.:</td>
<td>SNF</td>
<td>499</td>
<td>34</td>
<td>$5.73 billion</td>
</tr>
<tr>
<td>Brookdale Senior Living:</td>
<td>ALF</td>
<td>1,055</td>
<td>46</td>
<td>$4.98 billion</td>
</tr>
<tr>
<td>Select Medical Holdings Corp.:</td>
<td>LTAC</td>
<td>2,034</td>
<td>46</td>
<td>$4.29 billion</td>
</tr>
<tr>
<td>HealthSouth Corp.:</td>
<td>RH</td>
<td>346</td>
<td>35</td>
<td>$3.71 billion</td>
</tr>
<tr>
<td>Ensign Group:</td>
<td>SNF</td>
<td>210</td>
<td>9</td>
<td>$1.65 billion</td>
</tr>
<tr>
<td>Amedisys:</td>
<td>HH</td>
<td>411</td>
<td>35</td>
<td>$1.44 billion</td>
</tr>
<tr>
<td>Five Star Quality Care:</td>
<td>ALF</td>
<td>283</td>
<td>32</td>
<td>$1.38 billion</td>
</tr>
<tr>
<td>Vitas Healthcare:</td>
<td>HOSP</td>
<td>187</td>
<td>19</td>
<td>$1.23 billion</td>
</tr>
<tr>
<td>National HealthCare Corp:</td>
<td>SNF</td>
<td>100</td>
<td>10</td>
<td>$926 million</td>
</tr>
<tr>
<td>LHCGroup:</td>
<td>HH</td>
<td>376</td>
<td>28</td>
<td>$914 million</td>
</tr>
<tr>
<td>Vibra Healthcare:</td>
<td>LTAC</td>
<td>43</td>
<td>17</td>
<td>$818 million</td>
</tr>
<tr>
<td>UPMC Community Services:</td>
<td>HH</td>
<td>107</td>
<td>1</td>
<td>$730 million</td>
</tr>
<tr>
<td>Athena Health Care Systems:</td>
<td>SNF</td>
<td>49</td>
<td>3</td>
<td>$595 million</td>
</tr>
<tr>
<td>Covenant Care:</td>
<td>SNF</td>
<td>55</td>
<td>7</td>
<td>$561 million</td>
</tr>
<tr>
<td>Capital Senior Living:</td>
<td>SNF</td>
<td>129</td>
<td>23</td>
<td>$447 million</td>
</tr>
<tr>
<td>Diversicare Healthcare Services:</td>
<td>SNF</td>
<td>76</td>
<td>10</td>
<td>$426 million</td>
</tr>
<tr>
<td>New Jewish Home:</td>
<td>SNF</td>
<td>2</td>
<td>1</td>
<td>$255 million</td>
</tr>
<tr>
<td>Nexion Health:</td>
<td>SNF</td>
<td>38</td>
<td>3</td>
<td>$252 million</td>
</tr>
<tr>
<td>Benedictine Health System:</td>
<td>SNF</td>
<td>42</td>
<td>6</td>
<td>$249 million</td>
</tr>
</tbody>
</table>

**ALF = Assisted-living facility**
**CCRC = Continuing-care retirement communities**
**HH = Hospice/home health**
**HOSP = Hospice**
**LTAC = Long-term acute-care hospitals**
**OCF = Outpatient care facilities**
**RH = Rehabilitation hospitals**
**SNF = Skilled nursing facilities**

45.3 Skilled Nursing Facilities

The American Health Care Association ([www.ahcancal.org](http://www.ahcancal.org)) provides the following profile of skilled nursing facilities as of April 2018:

- Number of skilled nursing facilities: 15,655
- Total number of beds: 1.7 million
- Average occupancy: 82%
- Patients served annually: 3.9 million
- Length of stay
  - Short (< 100 days): 22%
  - Long (> 100 days): 78%

According to the Centers for Medicare and Medicaid Services ([www.cms.gov](http://www.cms.gov)), national expenditures for skilled nursing facilities have been, and are projected, as follows:
• 2010: $140.5 billion
• 2011: $145.4 billion
• 2012: $147.4 billion
• 2013: $149.0 billion
• 2014: $152.4 billion
• 2015: $158.1 billion
• 2016: $162.7 billion
• 2017: $168.1 billion
• 2018: $174.6 billion
• 2019: $182.7 billion
• 2020: $191.9 billion

The 2017 Cost of Care Survey, by Genworth (www.genworth.com), reported median nursing home care costs for a semi-private room at $7,148 per month, or $85,775 per year. The median cost for private rooms is $8,121 per month, or $97,455 per year. The five-year average annual growth rates (AAGR) are 3% and 4%, respectively.

By state, nursing home costs are as follows:

<table>
<thead>
<tr>
<th>State</th>
<th>Semi-Private Room</th>
<th>Private Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alaska</td>
<td>$24,333</td>
<td>$24,333</td>
</tr>
<tr>
<td>Alabama</td>
<td>$6,083</td>
<td>$6,464</td>
</tr>
<tr>
<td>Arkansas</td>
<td>$5,171</td>
<td>$5,779</td>
</tr>
<tr>
<td>Arizona</td>
<td>$6,388</td>
<td>$7,604</td>
</tr>
<tr>
<td>California</td>
<td>$8,114</td>
<td>$9,703</td>
</tr>
<tr>
<td>Colorado</td>
<td>$7,663</td>
<td>$8,547</td>
</tr>
<tr>
<td>Connecticut</td>
<td>$12,516</td>
<td>$13,505</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>$9,870</td>
<td>$10,570</td>
</tr>
<tr>
<td>Delaware</td>
<td>$10,646</td>
<td>$10,996</td>
</tr>
<tr>
<td>Florida</td>
<td>$7,908</td>
<td>$8,882</td>
</tr>
<tr>
<td>Georgia</td>
<td>$6,222</td>
<td>$6,707</td>
</tr>
<tr>
<td>Hawaii</td>
<td>$11,437</td>
<td>$13,216</td>
</tr>
<tr>
<td>Iowa</td>
<td>$5,741</td>
<td>$6,235</td>
</tr>
<tr>
<td>Idaho</td>
<td>$7,391</td>
<td>$7,910</td>
</tr>
<tr>
<td>Illinois</td>
<td>$5,688</td>
<td>$6,524</td>
</tr>
<tr>
<td>Indiana</td>
<td>$6,692</td>
<td>$7,817</td>
</tr>
<tr>
<td>Kansas</td>
<td>$5,551</td>
<td>$6,167</td>
</tr>
<tr>
<td>Kentucky</td>
<td>$6,728</td>
<td>$7,346</td>
</tr>
<tr>
<td>Louisiana</td>
<td>$5,171</td>
<td>$5,475</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>$11,710</td>
<td>$12,471</td>
</tr>
<tr>
<td>Maryland</td>
<td>$9,125</td>
<td>$9,916</td>
</tr>
<tr>
<td>Maine</td>
<td>$9,140</td>
<td>$9,764</td>
</tr>
<tr>
<td>Michigan</td>
<td>$7,969</td>
<td>$8,608</td>
</tr>
<tr>
<td>Minnesota</td>
<td>$8,174</td>
<td>$8,988</td>
</tr>
<tr>
<td>Missouri</td>
<td>$4,912</td>
<td>$5,475</td>
</tr>
</tbody>
</table>
- Mississippi: $ 6,494 $ 6,646
- Montana: $ 7,209 $ 7,972
- North Carolina: $ 6,844 $ 7,604
- North Dakota: $10,636 $10,864
- Nebraska: $ 6,334 $ 6,768
- Nevada: $ 7,300 $ 8,289
- New Hampshire: $ 9,657 $10,570
- New Jersey: $10,038 $10,798
- New Mexico: $ 6,349 $ 7,406
- New York: $11,076 $11,701
- Ohio: $ 6,798 $ 7,604
- Oklahoma: $ 4,471 $ 5,293
- Oregon: $ 8,784 $ 9,262
- Pennsylvania: $ 9,277 $10,007
- Rhode Island: $ 8,486 $ 8,669
- South Carolina: $ 6,418 $ 6,844
- South Dakota: $ 6,300 $ 6,813
- Tennessee: $ 6,110 $ 6,600
- Texas: $ 4,563 $ 6,053
- Utah: $ 5,627 $ 6,965
- Virginia: $ 7,148 $ 7,908
- Vermont: $ 8,760 $ 9,292
- Washington: $ 8,578 $ 9,447
- Wisconsin: $ 7,908 $ 8,953
- West Virginia: $ 9,703 $10,235
- Wyoming: $ 7,078 $ 8,060

45.4 Assisted-Living Facilities

Assisted living is defined as a housing option for adults that promotes independence and autonomy while also providing services to assist individuals with daily living. Facilities can range in size from a small house to a large apartment-style complex; most have between 25 and 125 units.

According to the National Center for Assisted Living (www.ahcancal.org/ncal), there are more than 28,000 assisted living residences in the U.S. Collectively they house more than one million people. The average age of assisted living residents is 83.

According to the National Investment Center for the Seniors Housing & Care Industry (www.nic.org), the average length of stay in an assisted-living facility is approximately 28.3 months.

The senior assisted care business is a $20 billion annual industry, according to the Assisted Living Federation of America (ALFA, www.alfa.org).

The 2017 Cost of Care Survey reported median private one-bedroom assisted living facility cost at $3,750 per month, or $45,000 per year.
By state, assisted living facility costs are as follows:

- Alaska: $6,000
- Alabama: $3,057
- Arkansas: $3,013
- Arizona: $3,500
- California: $4,275
- Colorado: $3,850
- Connecticut: $4,600
- Delaware: $6,015
- Florida: $3,100
- Georgia: $2,800
- Hawaii: $4,250
- Iowa: $3,736
- Idaho: $3,150
- Illinois: $3,720
- Indiana: $4,025
- Kansas: $4,250
- Kentucky: $3,445
- Louisiana: $3,293
- Massachusetts: $5,599
- Maryland: $4,150
- Maine: $4,890
- Michigan: $3,500
- Minnesota: $3,585
- Missouri: $2,700
- Mississippi: $3,332
- Montana: $3,650
- North Carolina: $3,250
- North Dakota: $3,018
- Nebraska: $3,785
- Nevada: $3,400
- New Hampshire: $4,855
- New Jersey: $5,811
- New Mexico: $4,000
- New York: $3,988
- Ohio: $4,178
- Oklahoma: $3,033
- Oregon: $4,070
- Pennsylvania: $3,450
- Rhode Island: $5,155
- South Carolina: $2,865
- South Dakota: $3,570
- Tennessee: $3,595
- Texas: $3,500
45.5 Long-Term Acute-Care Hospitals

Long-term acute-care hospitals (LTACHs) are designed to offer a post-acute-care option for patients who need more care than is available at nursing facilities or rehab units and for longer periods of time than at short-term acute-care hospitals. LTACHs are designed to provide extended medical care and rehabilitation. Many patients at LTACHs are extremely sick. While usually in stable condition, they may be on dialysis, need a ventilator, or have wounds that will not heal. If those patients need surgery or suffer serious medical emergencies, they are usually transferred back to general hospitals.

Certification of LTACHs has been required since the inception of the Medicare program in 1965. There are some 415 LTACHs across the U.S., with an average of about 60 beds per facility. Combined, they treat about 200,000 patients a year, including 130,000 Medicare patients. With 89 long-term hospitals, Select Medical Corporation (www.selectmedicalcorp.com) is the largest LTACH system.

LTACHs are usually reimbursed at a higher rate than other post-acute settings. Given that reimbursement rates are highest for LTACHs, the CMS limits the number of patients that LTACHs located inside short-term acute-care hospitals can take from the host hospital. Since 2008, LTACHs have been permitted to accept a maximum of 25% of patients from the host hospital.

Rules exempt LTACHs that aren’t located inside a short-term acute-care hospital, and co-location within SNFs is allowed. Co-locating can achieve some economies of scale because of shared resources, such as caregivers used to treat patients in both settings. The symbiotic relationship can improve the bottom line for both units because it can make the LTACH more efficient and increase revenue at the SNF.

The cost to retrofit a nursing home with a LTACH is about $1 million to $3 million, compared with the $10 million to $20 million price tag to build a freestanding LTACH.

45.6 Rehabilitation Hospitals

Rehabilitation providers treat a wide range of patients, including those with spinal cord injuries, orthopedic problems, arthritis, or cancer. Patients recovering from accidents and sports injuries also use rehabilitation hospitals.
The following are the largest rehabilitation providers (source: *Modern Healthcare* [November 2017]):

<table>
<thead>
<tr>
<th>Rehab Hospitals</th>
<th>Beds</th>
</tr>
</thead>
<tbody>
<tr>
<td>HealthSouth Corp.:</td>
<td>121 8,404</td>
</tr>
<tr>
<td>Select Medical Corporation:</td>
<td>16 1,138</td>
</tr>
<tr>
<td>Kindred Healthcare:</td>
<td>5 919</td>
</tr>
<tr>
<td>Terence Cardinal Cooke Health Care Center:</td>
<td>1 609</td>
</tr>
<tr>
<td>Vibra Healthcare:</td>
<td>8 404</td>
</tr>
<tr>
<td>Memorial Hermann Health System:</td>
<td>7 268</td>
</tr>
<tr>
<td>Brooks Rehabilitation:</td>
<td>2 197</td>
</tr>
<tr>
<td>UPMC Community Provider Services:</td>
<td>8 197</td>
</tr>
<tr>
<td>Rehabilitation Institute of Chicago:</td>
<td>1 182</td>
</tr>
<tr>
<td>Good Shepherd Rehabilitation Network:</td>
<td>5 166</td>
</tr>
</tbody>
</table>

**45.7 Market Resources**


National Center for Assisted Living, 1201 L Street NW, Washington, DC 20005. (202) 842-4444. ([www.ahcancal.org/ncal](http://www.ahcancal.org/ncal))

National Investment Center for the Seniors Housing & Care Industry, 1997 Annapolis Exchange Parkway, Suite 110, Annapolis, MD 21401. (410) 267-0504. ([www.nic.org](http://www.nic.org))

Robert Wood Johnson Foundation, 50 College Road East, Princeton, NJ 08540. (877) 843-7953. ([www.rwjf.org](http://www.rwjf.org))
46.1 Overview

Major natural disasters, pandemic threats, and mass shooting incidents have prompted hospitals to increase their focus on emergency preparedness.

The development of a unified approach to disaster preparedness is based on a fundamental concept in disaster planning: Organizations should deal with all disaster risks and contingencies at once by using the same preparedness and emergency response infrastructure. Even though any disaster is unlikely, the number of possible catastrophes raises the likelihood that at least one will strike.

The best preparedness approach, most experts say, is to plan for all hazards, concentrating on the common elements shared by most disasters, rather than planning separately for an individual event. It doesn’t matter whether it’s a hurricane, terrorist attack, or pandemic.

"Hospitals have started preparing for mass emergencies by conducting frequent drills throughout the year meant to mimic real-life scenarios."

Modern Healthcare, 10/9/17

46.2 State Of Preparedness

The Emergency Management Survey, by Health Facilities Management, reported that 87% of healthcare organizations with one or more events in the last five years have implemented an emergency preparedness plan.

The following are the top features incorporated into emergency department programs to address disasters, terrorism, and mass casualties:

- Computer information system that can track patients and patient records in real time: 56%
- Add more treatment areas to thwart cross-contamination and cross-infection: 45%
• Radiation detection: 43%
• Ability of staff to vary control moving from one unit to another in relation to priorities: 41%
• Modular scalability to serve many patients on a daily basis and then expand for larger numbers in minutes: 39%
• Ability to share encrypted data with sanctioned medical, public safety, military, and governmental agencies: 33%

46.3 Funding

In FY2018, the U.S. Department of Health and Human Services (www.hhs.gov) budget for preparedness and response was $2.9 billion.

The budget invests $1.02 billion into the research and development of medical countermeasures needed during disasters and includes a $207 million investment to respond to the needs of the American people in the event of an influenza pandemic.

46.4 Preparedness for Bioterrorists Threats

The federal government has constructed 27 federal Centers for Public Health Preparedness across the U.S., each focusing on biological threats. The centers are as follows:

• Columbia Mailman Center for Public Health Preparedness
• Emory University - Emory Center for Public Health Preparedness
• Harvard University Center for Public Health Preparedness
• Johns Hopkins University Center for Public Health Preparedness
• Loma Linda University Center for Public Health Preparedness
• Saint Louis University Heartland Center for Public Health Preparedness
• State University of New York at Albany Center for Public Health Preparedness
• Texas A & M Center for Rural Public Health Preparedness
• The Ohio State University - Ohio Center for Public Health Preparedness
• Tulane University - South Central Center for Public Health Preparedness
• University of Alabama at Birmingham - South Central Center for Public Health Preparedness
• University of Arizona, College of Public Health
• University of California at Berkeley-Center for Infectious Disease Preparedness
• University of California at Los Angeles - UCLA Center for Public Health and Disasters
• University of Illinois at Chicago - Illinois Public Health Preparedness Center
• University of Iowa - Upper Midwest Center for Public Health Preparedness
• University of Medicine and Dentistry of New Jersey - New Jersey Center for Public Health Preparedness at UMDNJ
• University of Michigan Center for Public Health Preparedness
• University of Minnesota Center for Public Health Preparedness
• University of North Carolina Center for Public Health Preparedness
The federal government has invested over $20 billion in bioterrorism preparedness. But with only $2 billion of this funding directed to assist healthcare providers at the local level, concerns persist about insufficient medications, vaccines, and distribution systems in the event of a chemical or biological attack. The American Hospital Association (AHA, www.aha.com) estimated that $11.3 billion is needed by U.S. hospitals for bioterrorism preparedness.

46.5 Preparedness for Natural Disasters

Estimated healthcare costs related to floods, heat waves, hurricanes, wildfires, and other natural disasters are about $2 billion each year. The number of major natural disasters in recent years has been as follows (source: Federal Emergency Management Agency [www.fema.gov]):

- 2006: 143
- 2007: 136
- 2008: 143
- 2009: 115
- 2010: 108
- 2011: 242
- 2012: 112
- 2013: 95
- 2014: 84
- 2015: 80
- 2016: 102
- 2017: 137

Preparedness varies by state, depending upon the risks associated with various types of disasters.

Hurricane-related disaster plans are well established in Florida, for example. When hurricanes approach, the state activates its Emergency Operations Center in Tallahassee, and 67 county emergency coordinators have twice-daily telephone briefings. Hospitals and nursing homes have representatives in the state operation center before and during storms.

In California, hospital disaster planning includes seismic design or redesign of building structures. California law required hospitals to ensure by 2013 that their buildings would withstand a major tremblor. By 2030, hospitals must guarantee that their buildings will continue operating after a quake. State officials have estimated that 40% of all hospital buildings need upgrades to meet the standards, which could cost the state’s hospitals up to $41 billion.
47

PRICE TRANSPARENCY

47.1 Overview
In the late 1960s and 1970s, hospital pricing was relatively straightforward. Markup formulas existed; they were generally used to build in a small profit on top of costs. And the government and insurers fully reimbursed what they were billed. That began to change during the 1980s, when the federal Medicare program revamped its reimbursement methods, decreeing that in most cases it would pay hospitals only a flat rate for specific treatments. During the 1990s, health maintenance organizations (HMOs) demanded hospitals give them steep price discounts. (HMOs pay about 60% of the list price, according to The Wall Street Journal.) Trying to balance the demands of HMOs and federal mandates while maintaining a high level of care, each hospital came up with its own pricing formula. Pricing models were not shared with the public, in part, because they were so complex.

For more than a decade, the U.S. Department of Health & Human Services (HHS, www.hhs.gov) has called for price and performance transparency to help consumers make more-informed healthcare-related decisions. But, so far there has been little progress in price transparency.

47.2 Consumer Awareness of Healthcare Costs
Patients generally have little idea of the cost of procedures that are being performed on them.

“For the most part, consumers remain in the dark about what they will be asked to pay after visiting a primary-care doctor or undergoing an inpatient procedure. In that way, healthcare is unlike every other aspect of the consumer experience in America.”

Modern Healthcare, 9/4/17
In study published in August 2017 in *Health Affairs*, 52% of patients said they were aware of price before receiving care. Only 13% searched for an out-of-pocket estimate; 3% compared costs among providers.

In a consumer survey by McKinsey & Co. (www.mckinsey.com), over 80% of respondents said they needed more data and tools to make wise healthcare decisions.

47.3 Chargemasters

Hospitals maintain their prices in chargemasters, books that show thousands of list prices for medical goods and services. At least 20 states require hospitals to make their prices available publically. Hospitals in these states generally comply by opening their chargemasters by appointment, not by posting the data online. Because chargemasters can run hundreds of pages and contain thousands of items, meaningful data is still difficult to ascertain. And they only indicate base prices, not the actual prices insurers are charged.

An examination of chargemasters at several hospitals by *The Wall Street Journal* found that pricing strategies fluctuate wildly – on everything from brain scans to painkillers. Depending on a hospital’s pricing method, the charge for the same commodity or service can vary by as much as 17-fold from one institution to another.

“It’s about leverage. In a sense, that is probably a key reason for variation in pricing. Some providers have much more leverage based on their reputation or their location, and they will be able to command higher prices because of that.”

Paul Ginsburg, Director
Center for Health Policy
Brookings Institution
*Modern Healthcare*, 9/4/17

47.4 Mandating Price Transparency

To procure healthcare price data, states can either compel providers and health plans to report prices, or mandate an all payer claims database (APCD). APCDs collect data from multiple sources, including private health insurers, Medicaid, children’s health insurance, state employee health benefit programs, prescription drug plans, dental insurers, self-insured employer plans, and Medicare (if available to a state). APCDs are
widely considered to be superior data sources because they include actual paid amounts – not charged amounts – which often are significantly lower due to contracted or negotiated rates between payers and providers. When there is no APCD, providers typically only turn over data on charged amounts to states or consumers, making the price information significantly less useful for comparisons.

A transparency law may also direct healthcare providers or insurers to divulge price information to consumers prior to a procedure or other service, which is the very minimum amount of information a consumer would expect in any other transaction. Even with such a mandate, however, providers and insurers may differ in how they calculate and present pricing information, thus making it very difficult to comparison shop effectively.

47.5 Report Card On Price Transparency

Since 2014, the Altarum Center for Payment Innovation (www.altarum.org) has published state report cards on healthcare price transparency and physician quality transparency.

The 2017 report card handed out 43 F’s, three C’s, two B’s, and two A’s. Maine and New Hampshire received A’s. Maryland and Oregon received B’s. Colorado, Vermont, and Virginia received C’s. All other states got F’s.

_________________________________________________________________

“New Hampshire’s comprehensive APCD displays paid amounts, and the state’s consumer website is an excellent resource providing consumers with price information for a variety of healthcare procedures. Maine also continues to set a high standard by collecting data in an APCD that includes a full scope of providers and paid amounts. The state’s price transparency website has clear and easy to understand information on healthcare costs, and also allows consumers to select facilities for comparison purposes.”

Price Transparency & Physician Quality Report Card 2017

_________________________________________________________________
48

PRIMARY CARE

48.1 Primary Care Physicians


Stanford University Clinical Excellence Research Center (http://cerc.stanford.edu) identified the best practices among top-performing primary care physicians' groups as follows:

- Collaboration prevalent
- Easily accessible
- Feedback encouraged
- Follow-up appointments and medications checked
- Invests in people rather than space and equipment
- Pay based on performance
- Referrals made with care and monitoring
- Tests and treatments chosen wisely
- Tests and procedures not outsourced

48.2 Primary Care State-by-State

According to Modern Healthcare, there are 290,396 primary-care physicians in the United States, or a rate of 91.1 per 100,000 population.

By state, the number of primary-care physicians and rate per 100,000 population are as follows:

<table>
<thead>
<tr>
<th>State</th>
<th>Number</th>
<th>Per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>3,600</td>
<td>74.2</td>
</tr>
<tr>
<td>Alaska</td>
<td>772</td>
<td>104.8</td>
</tr>
<tr>
<td>Arizona</td>
<td>5,306</td>
<td>78.8</td>
</tr>
<tr>
<td>Arkansas</td>
<td>2,295</td>
<td>77.4</td>
</tr>
<tr>
<td>California</td>
<td>35,725</td>
<td>92.1</td>
</tr>
<tr>
<td>Colorado</td>
<td>5,051</td>
<td>94.3</td>
</tr>
<tr>
<td>Connecticut</td>
<td>3,737</td>
<td>103.9</td>
</tr>
<tr>
<td>Delaware</td>
<td>896</td>
<td>95.8</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>1,551</td>
<td>235.4</td>
</tr>
<tr>
<td>Florida</td>
<td>17,179</td>
<td>86.4</td>
</tr>
<tr>
<td>State</td>
<td>Population</td>
<td>Healthcare Business</td>
</tr>
<tr>
<td>-------------</td>
<td>------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Georgia</td>
<td>7,854</td>
<td>77.8</td>
</tr>
<tr>
<td>Hawaii</td>
<td>1,603</td>
<td>112.9</td>
</tr>
<tr>
<td>Idaho</td>
<td>1,179</td>
<td>72.1</td>
</tr>
<tr>
<td>Illinois</td>
<td>12,604</td>
<td>97.9</td>
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<tr>
<td>Indiana</td>
<td>5,244</td>
<td>79.5</td>
</tr>
<tr>
<td>Iowa</td>
<td>2,635</td>
<td>84.8</td>
</tr>
<tr>
<td>Kansas</td>
<td>2,452</td>
<td>84.4</td>
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<tr>
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<td>Louisiana</td>
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<tr>
<td>Maine</td>
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<tr>
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<td>Minnesota</td>
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<tr>
<td>Mississippi</td>
<td>1,930</td>
<td>64.5</td>
</tr>
<tr>
<td>Missouri</td>
<td>5,294</td>
<td>87.3</td>
</tr>
<tr>
<td>Montana</td>
<td>901</td>
<td>88.0</td>
</tr>
<tr>
<td>Nebraska</td>
<td>1,605</td>
<td>85.3</td>
</tr>
<tr>
<td>Nevada</td>
<td>1,982</td>
<td>69.8</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>1,425</td>
<td>107.4</td>
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<tr>
<td>New Jersey</td>
<td>8,569</td>
<td>95.9</td>
</tr>
<tr>
<td>New Mexico</td>
<td>1,902</td>
<td>91.2</td>
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<tr>
<td>New York</td>
<td>21,612</td>
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<tr>
<td>North Carolina</td>
<td>8,482</td>
<td>85.3</td>
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<tr>
<td>North Dakota</td>
<td>666</td>
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</tr>
<tr>
<td>Ohio</td>
<td>10,784</td>
<td>93.0</td>
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<tr>
<td>Oklahoma</td>
<td>2,907</td>
<td>75.0</td>
</tr>
<tr>
<td>Oregon</td>
<td>4,264</td>
<td>107.4</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>12,693</td>
<td>99.3</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>1,213</td>
<td>115.0</td>
</tr>
<tr>
<td>South Carolina</td>
<td>3,856</td>
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<tr>
<td>South Dakota</td>
<td>771</td>
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</tr>
<tr>
<td>Tennessee</td>
<td>5,618</td>
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<td>Utah</td>
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<td>Vermont</td>
<td>803</td>
<td>128.2</td>
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<tr>
<td>Virginia</td>
<td>7,529</td>
<td>90.4</td>
</tr>
<tr>
<td>Washington</td>
<td>7,002</td>
<td>99.2</td>
</tr>
<tr>
<td>West Virginia</td>
<td>1,733</td>
<td>95.8</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>5,457</td>
<td>94.8</td>
</tr>
<tr>
<td>Wyoming</td>
<td>444</td>
<td>76.0</td>
</tr>
</tbody>
</table>
48.3 Physician Visits

According to the National Center for Health Statistics (www.cdc.gov/nchs), there are 465 million visits to doctors’ offices each year. Including visits to hospitals and clinics, the total number of visits is 1.1 billion.

Approximately 350 million doctor visits are made each year for acute medical care. The number of doctor visits has increased 26% over the past decade, a rise attributed in large part to the growing elderly population.

A national survey by Rand Corporation (www.rand.com) and the University of Pittsburgh School of Medicine found that 80% of people have a personal doctor.

A survey by Gallup (www.gallup.com) found that 71% of American adults had been to a doctor, nurse practitioner, or physician assistant at least once in the previous six months. The following are percentages among individuals with specific health-related attributes:

- Define their health status as “excellent” or “good”: 76%
- Define health as “fair” or “poor”: 87%
- Aged 50 and older: 81%
- Very/somewhat overweight: 78%
- Smoke every day: 71%

According to IQVIA (www.iqvia.com), the leading diagnoses by total number of patient visits for primary care are as follows:

- Essential hypertension: 86 million
- Diabetes mellitus without complications: 42 million
- Hyperlipidemia: 32 million
- Acute respiratory infection: 27 million
- Otitis media: 22 million
- Depressive disorder: 20 million
- Chronic sinusitis: 17 million
- Asthma: 17 million
- Esophagitis: 17 million
- Allergic rhinitis: 16 million

48.4 Efficient Use Of Primary Care

Primary care is generally the most efficient and cost-effective course of care for most conditions. Yet for a variety of reasons, some go to a hospital emergency room or specialist for their ailments. Trips to the emergency room average $1,500 a visit, more than 10 times the cost of a typical office visit to a primary care physician.

A study directed by Prof. Stephen R. Pitts, M.D., at the Emory University School of Medicine, published in Health Affairs, found that 28% of acute-care visits take place in emergency rooms, including almost all of the visits made on weekends and after office hours. More than half of acute-care visits made by patients without health
insurance are to emergency rooms, which are required by federal law to screen any patient who arrives there.

### 48.5 Strengthening Primary Care

Access to primary care physicians is critical to the healthcare system. According to the American College of Physicians (www.acponline.org), the proportion of primary care doctors in a community is relative to health outcomes and system costs. A study by researchers from the Johns Hopkins University School of Medicine published in the *American Journal of Medicine* assessed that a 15% increase in the number of primary care physicians in a metropolitan area would yield the following benefits:

- Reduced emergency department visits by 10.9%
- Reduced number of surgeries by 7.2%
- Reduced inpatient admissions by 5.5%
- Reduced outpatient visits by 5.0%

In a metropolitan area with a population of 775,000, increasing the proportion of primary care physicians from 35% to 40% would yield the following:

- Reduced emergency department utilization by 15,000 visits a year
- Reduced surgery by about 2,500 cases a year
- Reduced hospital admissions by 2,500 a year, saving an estimated $23 million

### 48.6 Concierge Physician Practices

Concierge practices provide retainer-based primary care to a limited number of patients.

“Services generally include enhanced access to physicians – sometimes even 24-7 – as well as lengthy, in-depth annual physical exams that include diagnostic testing as well as an extensive battery of screening tests. The practices, which can work in conjunction with Medicare and private insurance, often offer same-day or next-day appointments, ready physician access via e-mail and longer visits in general.”

*Modern Healthcare*
Such practices typically cater to affluent clients, with typical retainer fees of $1,500 to $2,000 annually. At the high end, Guardian 24/7 (www.guardian247.com), founded by former White House physicians, charges from $6,000 to $12,000 a month, plus an additional $700,000 for one of the company’s top-of-the-line ‘ready rooms’ installed in a client’s home, yacht, or airplane.

Business models are evolving that make retainer-based care less expensive. In Seattle, for instance, Qliance Medical Group (www.qliance.com) charges monthly fees between $50 and $130, depending on patient age, for such access. Hybrid business models are also emerging. Some practices offer concierge-type services as well as traditional levels of care.

Several chains serve the concierge market, the largest of which are MD2 (www.md2.com), with about 500 affiliated concierge physicians, MDVIP (www.mdvip.com), and Concierge Choice Physicians (www.choice.md).

48.7 Market Resources
American Academy of Family Physicians, 11400 Tomahawk Creek Parkway, Leawood, KS 66211. (800) 274-2237. (www.aafp.org)

American College of Physicians, 190 North Independence Mall West, Philadelphia, PA 19106. (800) 523-1546. (www.acponline.org)
49

PRISON HEALTHCARE

49.1 Market Assessment

The inmate population in state and federal prisons is 1.5 million, according to the U.S. Department of Justice (www.justice.gov); 88% are incarcerated in state facilities. There were 183,355 prisoners in federal facilities as of March 2018.

According to a study by Pew Charitable Trusts (www.pewtrusts.org), states spend $7.7 billion annually on correctional healthcare, about 20% of overall prison expenditures.

There are significant differences in healthcare spending per inmate among state prison systems, as follows:

Highest per inmate
- California: $14,495
- Vermont: $11,761
- Wyoming: $10,870
- New Hampshire: $10,191
- Alaska: $10,160

Lowest per inmate
- Oklahoma: $2,448
- South Carolina: $2,933
- Illinois: $3,051
- Arizona: $3,260
- Mississippi: $3,345

49.2 Characteristics Of Care

The distribution of prison healthcare spending is as follows:

- General medical care: 37%
- Hospitalization: 20%
- Pharmaceuticals: 14%
- Mental healthcare: 14%
- Substance abuse treatment: 5%
- Dental care: 4%
- Healthcare administration: 4%
The Pew study identified three drivers of prison healthcare costs, as follows:

- The distance of prisons from hospitals and other providers
  - The Legislative Analyst’s Office in California reported that medically related guarding and transportation costs for one inmate can exceed $2,000 per day.
- The prevalence of infectious and chronic diseases, mental illness, and substance use disorder among inmates
  - Inmates have a higher incidence of chronic and infectious diseases, such as AIDS and hepatitis C, and mental illness than that of the general population.
  - Roughly 65% of incarcerated adults in prisons or jails meet the medical criteria for an alcohol or drug use disorder; inmates are seven times likelier than individuals in the community to have such a condition.
  - One-third of inmates suffer from mental illness and one-quarter have a co-occurring mental illness and substance use disorder.
  - The rate of hepatitis C among inmates is 17.4%; about 1% of the general population have the disease.
- An aging inmate population
  - Like seniors outside prison walls, older inmates are more susceptible to chronic medical and mental conditions, including dementia, impaired mobility, and loss of hearing and vision.
  - From 1999 to 2012, the number of state and federal prisoners age 55 or older increased 204%. The number of younger inmates increased 9% during the same period.
  - The National Institute of Corrections (www.nicic.gov) estimates the annual cost of incarcerating prisoners age 55 and older with chronic and terminal illnesses at, on average, two to three times that of the expense for all other inmates.

49.3 Market Resources
State Prison Health Care Spending, Pew Charitable Trusts.
(www.pewtrusts.org/~/media/Assets/2014/07/StatePrisonHealthCareSpendingReport.pdf)
50.1 Overview
This chapter presents market leaders in various healthcare professional service sectors. The data includes surveys by Modern Healthcare, American Health Lawyers Association (www.healthlawyers.org), Dealogic (www.dealogic.com), National Association of Physician Recruiters (www.napr.org), and Staffing Industry Analysts (www.staffingindustry.com).

50.2 Banking and Finance*
- CitiGroup (www.citibank.com)
- Bank of America (http://corp.bankofamerica.com)
- JPMorgan Chase & Co. (www.chase.com)
- Wells Fargo Securities (www.wellsfargo.com)
- Barclays (www.barclayscorporate.com)
- Deutsche Bank (www.cbs.db.com)
- Goldman Sachs (www.goldmansachs.com)
- Morgan Stanley (www.morganstanley.com)
- Credit Suisse Group (www.credit-suisse.com)
- RBC Capital Markets (www.rbccm.com)
- Mitsubishi UFJ Financial Group (www.mufg.jp/english/)
* ranked by healthcare loans underwritten in 2017

50.3 Executive Search
- B.E. Smith (www.besmith.com)
- Korn/Ferry International (www.kornferry.com)
- Witt/Kieffer (www.wittkieffer.com)
- Reaction Search International (www.reactionsearch.com)
- Merraine Group (www.merraine.com)
- Diversified Search (www.diversifiedsearch.com)
- Solomon Page Group Healthcare (www.spghealthcare.com)
- Grant Cooper HealthCare (www.grantcooperhealthcare.com)
- Furst Group (www.furstgroup.com)
- Cejka Search (www.cejkaexecutivesearch.com)
- Spencer Stuart (www.spencerstuart.com)
• The HealthCare Initiative (www.thehealthcareinitiative.com)
• DHR International (www.dhrinternational.com)
• Executive Staffing Solutions (www.ess123.com)
• Health Search Partners (www.healthsearchpartners.com)

50.4 Law Firms*
• Morgan, Lewis & Bockius (www.morganlewis.com)
• Hall, Render, Killian, Heath & Lyman (www.hallrender.com)
• Baker, Donelson, Bearman, Caldwell & Berkowitz (www.bakerdonelson.com)
• Reed Smith (www.reedsmith.com/en)
• Jones Day (www.jonesday.com)
• Bass, Berry & Sims (www.bassberry.com)
• Waller Lansdem Dortch & Davis (www.wallerlaw.com)
• Polsinelli (www.polsinelli.com)
• Sheppard Mullin Richter & Hampton (www.sheppardmullin.com)
• Epstein Becker & Green (www.ebglaw.com)
* ranked by number of healthcare attorneys employed

50.5 Revenue-Cycle Management*
• Experian Health/Passport (www.experian.com/healthcare/revenue-cycle-management.html)
• The SSI Group (www.thesigroup.com)
• nThrive (www.nthrive.com)
• Parallon (www.parallon.com)
• Simplee (www.simplee.com)
• Conifer Health Solutions (www.coniferhealth.com)
• ClearBalance (www.clearbalance.org)
• PMMC (www.pmmconline.com)
* ranked by number of contracts

50.6 Staffing Firms
Locum Tenens
• CHG Healthcare Services (www.chghealthcare.com)
• Jackson Healthcare (www.jacksonhealthcare.com)
• AMN Healthcare (www.amnhealthcare.com)
• On Assignment (www.onassignment.com)
• Cross Country Healthcare (www.crosscountryhealthcare.com)

Per Diem Staffing
• Cross Country Healthcare (www.crosscountryhealthcare.com)
• HealthTrust Workforce Solutions (www.healthtrustjobs.com)
• Maxim Healthcare Services (www.maximhealthcare.com)
• Supplemental Health Care (www.supplementalhealthcare.com)
• Accountable Healthcare Staffing (www.ahcstaff.com)

**Physician Staffing**
• Envision Physician Services (www.envisionphysicianservices.com)
• Merritt Hawkins (www.merritthawkins.com)
• Team Health (www.teamhealth.com)
• Delta Companies (www.deltacos.com)
• The Medicus Firm (www.themedicusfirm.com)
• Cejka Search/Cross Country Healthcare (www.cejkasearch.com)
• Fidelis Partners (www.fidelismp.com)
• QTC Management (www.qtcm.com)
• Provenir (www.proveir.com)

**Travel Nursing Staffing Firms**
• AMN Healthcare (www.amnhealthcare.com)
• Cross Country Healthcare (www.crosscountryhealthcare.com)
• Medical Solutions (www.medicalsolutions.com)
• Aya Healthcare (www.ayahealthcare.com)
• HC Staffing Group Holdings - Fallstaff (www.fallstaff.com) and U.S. Nursing (www.usnursing.com)

**50.7 Patient Satisfaction Measurement**
• Press Ganey Associates (www.pressganey.com)
• NRC Health (www.nrchealth.com)
• Sullivan/Luallin (www.sullivanluallingroup.com)
• Patient Approved (www.patientapproved.com)
• HealthStream (www.healthstream.com)
• Pinnacle Quality Insight (www.pinnacleqi.com)
• SPH Analytics (www.sphanalytics.com)
• Axxess (www.axxess.com)
• DSS Research (www.dssresearch.com)
• National Business Research Institute Inc. (www.nbrii.com)

* ranked by total number of clients
PROVIDER RATINGS ONLINE

51.1 Overview
With growing demand for information on healthcare services, such as quality and pricing, an increasing number of online resources provide consumers with such insight.

Types of online ratings of hospitals and doctors include the following:
• The U.S. Department of Health and Human Services (HHS, www.hhs.gov) provides quality measures of all U.S. community hospitals with its Hospital Compare (www.hospitalcompare.hhs.gov) program.
• Several organizations publish online provider ratings as part of their overall healthcare quality initiatives.
• State online healthcare reporting initiatives have been launched by several government agencies and hospital associations.
• Consumer Reports offers several healthcare assessment services.
• Consumers post peer reviews of healthcare services on such sites as RateMDs.
• Hundreds of hospitals post their own quality data for consumers.

This chapter discusses these types of healthcare provider ratings.

51.2 Hospital Compare
Hospital Compare is a consumer-oriented website that provides information on how well hospitals provide care to their patients. The website scores more than 4,200 acute-care hospitals in 26 clinical quality and 10 patient satisfaction areas.

Called “the granddaddy of quality reporting sites” by the American Hospital Association (AHA, www.aha.org), Hospital Compare was launched in 2005 by the Centers for Medicare & Medicaid Services (CMS, www.cms.gov), part of the HHS, and the Hospital Quality Alliance (www.hospitalqualityalliance.org).

The performance ratings for Hospital Compare generally reflect care provided to all U.S. adults. The 30-Day Risk Adjusted Death measures that only include Medicare beneficiaries hospitalized for heart attack, heart failure, and pneumonia are excluded. In 2009, readmission rates were added to Hospital Compare as one of the measurements of hospital performance.

Data from the Hospital Consumer Assessment of Healthcare Providers and System (HCAHPS) survey is available on the Hospital Compare website. HCAHPS provides a standardized instrument and data collection methodology for measuring patient’s perspectives on hospital care.
51.3 Quality Initiatives

Organizations that publish online provider ratings as part of their overall healthcare quality initiatives include The Leapfrog Group (www.leapfroggroup.org), The Commonwealth Fund (www.commonwealthfund.org), HealthGrades (www.healthgrades.com), and the Joint Commission (www.jointcommission.org).

Since 2007, The Leapfrog Group has published results from the Leapfrog Hospital Quality and Safety Survey, a rating system that provides an assessment of a hospital’s quality and safety. Over 1,250 hospitals, or 44% of urban, general acute-care hospitals in the U.S., participate in the voluntary assessment.

The Commonwealth Fund offers the website www.WhyNotTheBest.org that allows providers to conduct side-by-side comparisons of 4,500 hospitals nationwide as well as track performance over time against numerous benchmarks.

HealthGrades offers proprietary reports on 5,000 hospitals, 750,000 physicians, and 16,000 nursing homes on metrics such as cost, quality, and physician disciplinary actions. The site examines rates of mortality and complications for 28 procedures and diagnoses. Approximately seven million people visit the site each month.

Quality Check (www.qualitycheck.org), a website provided by the Joint Commission, lets users search out hospitals based on a variety of categories, such as specific diseases, type of service provided, Joint Commission certified programs, type of provider, and more. The reports provide accreditation status of hospitals, compliance with the Joint Commission’s national patient safety, and quality improvement goals. Patients can download a hospital’s accreditation quality report.

51.4 State Healthcare Agency and Association Sites

There are more than 20 state online healthcare reporting initiatives, most spearheaded by either government agencies or hospital associations.

PricePoint (www.wipricepoint.org), one of the oldest such sites, was launched by the Wisconsin Hospital Association in 2004 with reporting on 10 quality and five safety measures. The site has been expanded several times and now reviews over 50 measures.

The Massachusetts Health Care Quality and Cost Council, a state agency, developed MyHealthCareOptions (http://hcqcc.hcf.state.ma.us). The site allows consumers to compare hospital quality scores and offers details on what insurers pay for 40 procedures.

51.5 Consumer Reports

Consumer Reports offers a feature on its Health Ratings Center that allows consumers to assess overall hospital performance for nine chronic conditions. Data was developed in conjunction with the Dartmouth Atlas Project (www.dartmouthatlas.org).

The Health Ratings Center provides assessments from several sources, including HHS’ Hospital Compare. Massachusetts Health Quality Partners
(www.mhgp.org), a statewide coalition of hospitals, physicians, and health plans, posts annual online ratings for medical groups on the site.  

Consumer Reports also compiles an annual Hospital Safety Report that scores hospitals in five patient-safety categories: infections, patient experience, readmissions, mortality, and appropriate use of CT scans.

51.6 Consumer Reviews

Online peer reviews have become popular among consumers shopping for all kinds of services and products.

A growing number of websites that invite patients to post online ratings and comments about their physicians. With over two million ratings for more than 250,000 physicians, RateMDs (www.ratemds.com) is the largest such site.

“Although online healthcare rating and review services – Vitals, Angie’s List, Yelp, RateMDs and others – continue to proliferate, it is easy to dismiss them because they include so few reviews, their methodology is flawed, or their credibility is suspect. But consumers are being trained to shop for healthcare services, and healthcare executives who ignore their demand for comparative information do so at their peril.”

Hospitals & Health Networks

An assessment published in the Journal of the American Medical Association reported that 35% of online consumers have selected a physician based on positive ratings; 37% have avoided a physician based on negative ratings. Still, 43% of online consumers say they don’t fully trust the information found on physician-rating sites.

WellPoint has teamed with Zagat (www.zagat.com), the publisher of popular restaurant guides, to provide a rating system members can use to grade their experience with their doctor. Zagat reviews are available to about two million WellPoint and Anthem members in California, Connecticut, and Ohio. Zagat reviews are also available to 3.7 million members of Blue Cross and Blue Shield of North Carolina, which is not affiliated with WellPoint.

Other popular consumer healthcare ratings sites include CareSeek.com and TheHealthcareScoop.com.
Some general consumer blog sites have expanded to include reviews of doctors. Angie’s List (www.angieslist.com), which publishes consumer reviews on service providers ranging from fitness centers to home improvement contractors, posts reviews in 150 healthcare categories, including dentistry, dermatology, hospitals, pediatricics, plastic surgery, primary care, and psychiatry. Angie’s List members post some 10,000 reviews a month in more than 200 geographic areas.

Many hospitals and physician practices have programs to monitor what is said online about their medical services. Services such as Reputation Defender (www.reputationdefender.com) work with hospitals to respond to negative posts and to correct inaccuracies.
52

PUBLICLY TRADED HEALTHCARE PROVIDERS

52.1 Largest Publicly Traded Companies

The following are the largest U.S.-based healthcare provider companies (SIC codes 8000 through 8093) based on Form 10-K filed with the Securities and Exchange Commission (www.sec.gov) as of April 2018:

- HCA Holdings (www.hcahealthcare.com)
  - Type of company: Health system
  - Stock symbol: HCA
  - Revenue: $43.6 billion
  - Market capitalization: $35.3 billion

- Fresenius Medical Care (www.fresenius.com)
  - Type of company: Dialysis
  - Stock symbol: FMS
  - Revenue: $17.8 billion
  - Market capitalization: $29.9 billion

- Tenet Healthcare Corporation (www.tenethealth.com)
  - Type of company: Health system
  - Stock symbol: THC
  - Revenue: $19.2 billion
  - Market capitalization: $2.4 billion

- Community Health Systems (www.chs.net)
  - Type of company: Health system
  - Stock symbol: CYH
  - Revenue: $15.3 billion
  - Market capitalization: $556 million

- DaVita Healthcare Partners (www.davita.com)
  - Type of company: Dialysis and physician groups
  - Stock symbol: DVA
  - Revenue: $10.9 billion
  - Market capitalization: $13.1 billion
• Laboratory Corporation of America (www.labcorp.com)
  - Type of company: Diagnostics
  - Stock symbol: LH
  - Revenue: $10.4 billion
  - Market capitalization: $17.5 billion

• Universal Health Services (www.uhsinc.com)
  - Type of company: Health system
  - Stock symbol: UHS
  - Revenue: $10.4 billion
  - Market capitalization: $11.0 billion

• Envision Healthcare Holdings (www.evhc.net)
  - Type of company: Physician services
  - Stock symbol: EVHC
  - Revenue: $7.8 billion
  - Market capitalization: $5.2 billion

• Quest Diagnostics (www.questdiagnostics.com)
  - Type of company: Diagnostics
  - Stock symbol: DGX
  - Revenue: $ 7.7 billion
  - Market capitalization: $14.2 billion

• LifePoint Hospitals (www.lifepointhospitals.com)
  - Type of company: Health system
  - Stock symbol: LPNT
  - Revenue: $6.3 billion
  - Market capitalization: $1.9 billion

• Kindred Healthcare, Inc. (www.kindredhealthcare.com)
  - Type of company: Health system
  - Stock symbol: KND
  - Revenue: $6.0 billion
  - Market capitalization: $ 855 million

• Magellan Health Services (www.magellanhealth.com)
  - Type of company: Behavioral health/diagnostics
  - Stock symbol: MGLN
  - Revenue: $5.8 billion
  - Market capitalization: $2.5 billion
• Brookdale Senior Living (www.brookdale.com)
  - Type of company: Assisted living
  - Stock symbol: BKD
  - Revenue: $4.7 billion
  - Market capitalization: $1.4 billion

• Select Medical Holdings Corporation (www.selectmedical.com)
  - Type of company: Health system
  - Stock symbol: SEM
  - Revenue: $4.4 billion
  - Market capitalization: $2.5 billion

• Mednax Inc. (www.mednax.com)
  - Type of company: Neonatal, maternal-fetal, pediatric physician services
  - Stock symbol: MD
  - Revenue: $3.4 billion
  - Market capitalization: $5.4 billion

• Acadia Healthcare Company (www.acadiahealthcare.com)
  - Type of company: Behavioral healthcare
  - Stock symbol: ACHC
  - Revenue: $2.8 billion
  - Market capitalization: $3.6 billion

• Ensign Group (www.ensigngroup.net)
  - Type of company: Rehabilitation
  - Stock symbol: ENSG
  - Revenue: $1.8 billion
  - Market capitalization: $1.4 billion

• Amedisys (www.amedisys.com)
  - Type of company: Home health and hospice
  - Stock symbol: AMED
  - Revenue: $1.5 billion
  - Market capitalization: $2.0 billion

• Five Star Quality Care (www.fivestarseniorliving.com)
  - Type of company: Assisted living
  - Stock symbol: FVE
  - Revenue: $1.4 billion
  - Market capitalization: $73 million
53

QUALITY & PATIENT SAFETY

53.1 Overview
The quality movement in healthcare was sparked, to a large extent, by the report *To Err is Human: Building a Better Healthcare System*. Published in 1999 by the Institute of Medicine (IOC, www.iom.edu), the report found that between 44,000 to 98,000 people die each year from medical errors – at a total national cost of up to $29 billion.

_________________________________________________________________

“It’s been 19 years since the landmark study *To Err Is Human* shook up the industry. Since then, considerable attention has been paid to reducing medical mistakes, but the industry still has a long way to go.”

*Modern Healthcare*, 3/12/18

_________________________________________________________________

53.2 Quality Reporting
In 2005, the U.S. Department of Health & Human Services (HHS, www.hhs.gov) launched Hospital Compare (www.hospitalcompare.hhs.gov), an online database that reports quality measures from more than 4,200 acute-care hospitals nationwide. Hospitals must provide data for the Hospital Compare assessment to receive full Medicare and Medicaid reimbursement from HHS.

There are also quality reporting systems by non-governmental organizations. HealthGrades (www.healthgrades.com), for example, examines mortality and complication rates for 28 procedures and diagnoses.

In addition, hundreds of hospitals post their own quality data for consumers.
53.3 National Quality Strategy

*National Strategy for Quality Improvement in Health Care*, published in 2011 by the HHS, presents a National Quality Strategy for the U.S. healthcare system. The 23-page plan has three objectives, as follows:

**Better Care**
- Improve the overall quality by making healthcare more patient-centered, reliable, accessible, and safe.

**Healthy People and Communities**
- Improve the health of the U.S. population by supporting proven interventions to address behavioral, social, and environmental determinants of health in addition to delivering higher-quality care.

**Affordable Care**
- Reduce the cost of quality healthcare for individuals, families, employers, and government.

To achieve these aims, the National Quality Strategy established the following priorities to help focus efforts by public and private partners:
- Making care safer by reducing harm caused in the delivery of care
- Ensuring that care engages each person and family as partners
- Promoting the most effective prevention and treatment practices for the leading causes of mortality, starting with cardiovascular disease
- Working with communities to promote wide use of best practices to enable healthy living
- Making quality care more affordable for individuals, families, employers, and governments by developing and spreading new healthcare delivery models

53.4 Sentinel Events

The National Quality Forum (NQF, www.qualityforum.org) has published a list of 28 so-called never events – errors that should never occur in a hospital. Payers have embraced the list and some now withhold payment if a never event happens. The NQF's Never Events are also considered sentinel events by the Joint Commission (www.jointcommission.org).

The NQF Never Events are as follows:

**Surgical Events**
- Surgery performed on the wrong body part
- Surgery performed on the wrong patient
- Wrong surgical procedure on a patient
- Retention of a foreign object in a patient after surgery or other procedure
- Intraoperative or immediately post-operative death in a normal-health patient
Product or Device Events
• Patient death or serious disability associated with the use of contaminated drugs, devices, or biologics provided by the healthcare facility
• Patient death or serious disability associated with the use or function of a device in patient care in which the device is used for functions other than as intended
• Patient death or serious disability associated with intravascular air embolism that occurs while being cared for in a healthcare facility

Care Management Events
• Patient death or serious disability associated with a medication error
• Patient death or serious disability associated with a hemolytic reaction due to the administration of ABO-incompatible blood or blood products
• Maternal death or serious disability associated with labor or delivery on a low-risk pregnancy while being cared for in a healthcare facility
• Patient death or serious disability associated with hypoglycemia, the onset of which occurs while the patient is being cared for in a healthcare facility
• Death or serious disability associated with failure to identify and treat hyperbilirubinemia in neonates
• Stage 3 or 4 pressure ulcers acquired after admission to a healthcare facility
• Patient death or serious disability due to spinal manipulative therapy
• Artificial insemination from the wrong donor

Patient Protection Events
• Infant discharged to the wrong person
• Patient death or serious disability associated with patient elopement (disappearance) for more than four hours
• Patient suicide, or attempted suicide resulting in serious disability, while being cared for in a healthcare facility

Environmental Events
• Patient death or serious disability associated with an electric shock while being cared for in a healthcare facility
• Any incident in which a line designated for oxygen or other gas to be delivered to a patient contains the wrong gas or is contaminated by toxic substances
• Patient death or serious disability associated with a burn incurred from any source while being cared for in a healthcare facility
• Patient death associated with a fall while being cared for in a healthcare facility
• Patient death or serious disability associated with the use of restraints or bed rails while being cared for in a healthcare facility

Criminal Events
• Any instance of care ordered by or provided by someone impersonating a physician, nurse, pharmacist, or other licensed healthcare provider
• Abduction of a patient of any age
• Sexual assault on a patient within or on the grounds of a healthcare facility
• Death or significant injury of a patient or staff member resulting from a physical assault (i.e., battery) that occurs within or on the grounds of a healthcare facility

The Joint Commission reported occurrences of sentinel events as follows:

- 2005: 597
- 2006: 517
- 2007: 748
- 2008: 831
- 2009: 960
- 2010: 807
- 2011: 1,246
- 2012: 900
- 2013: 887
- 2014: 763
- 2015: 934
- 2016: 924
- 2017: 805

The following were the top five reported sentinel events in 2017:

- Unintentional retention of a foreign body: 116
- Fall: 114
- Wrong patient, wrong site, wrong procedure: 95
- Suicide: 89
- Delay in treatment: 86

53.5 Non-Reimbursement For Medical Errors

The Centers for Medicare and Medicaid Services (www.cms.gov) has taken action to reduce medical errors; the following ‘complicating conditions’ have been deemed non-reimbursable:

- Stage III and IV pressure ulcers
- Falls or trauma resulting in fractures, burns, or other serious injuries
- Foreign object accidentally left behind after surgery
- Air embolism
- Blood incompatibility
- Vascular catheter-associated infections
- Catheter-associated urinary tract infections
- Mediastinitis after coronary artery bypass graft, a surgical site infection

Reimbursement policies in several state Medicaid programs followed Medicare in not reimbursing for certain never events, including the following:

- The California Association of Health Plans (www.calhealthplans.org) passed a resolution in favor of the CMS’ list of eight conditions as well as three other
preventable mistakes.
• Massachusetts officials announced the state would no longer pay for care related to
the 28 serious reportable events as defined by the National Quality Forum.
• The New York State Medicaid program (www.health.ny.gov/health_care/medicaid)
has stopped paying for the eight hospital-acquired conditions identified by Medicare.
• Maine and Pennsylvania passed laws that preclude hospitals from billing patients if
an error occurs.
• The Tennessee Hospital Association (www.tha.com) approved a policy for hospitals
not to seek payment from patients or their insurance companies for care related to
serious preventable adverse events.

53.6 Reducing Hospital-Acquired Infections
According to the Centers for Disease Control and Prevention (CDC, www.cdc.gov),
approximately 1.7 million patients contract infections while being treated in a hospital for
a non-susceptible illness or injury each year, and almost 88,000 die because of their
infections. Many victims are elderly, with chronic conditions that weaken their immune
systems. Trauma patients, like victims of car crashes or severe burns, are also
especially vulnerable, as are cancer patients in for radiation or chemotherapy, as well
as newborns. An additional 340,000 infections occur in home healthcare settings and
another 100,000 in long-term care centers, according to the CDC.

“Hospitals have made great strides in reducing
infections, but their incidence is still far too
high, and their costs must remain a top priority
for CEOs and chief financial officers. More than
half of HAIs – as many as 70% – are preventable
with appropriate infection prevention and
control measures.”

Denise Murphy, Vice President
Quality and Patient Safety
Main Line Health
Modern Healthcare

A report by CDC’s National Healthcare Safety Network, published in the JAMA
Internal Medicine, reported that the five most common healthcare-associated infections
cost the U.S. healthcare system $9.8 billion annually. The assessment is as follows:
Most hospitals have implemented programs to aggressively screen patients upon entry who may have problematic infections. And hospitals are also increasingly using diagnostic tests and automated surveillance systems to control infections.

A report by the Agency for Healthcare Research and Quality (AHRQ, www.ahrq.gov) found a 21% decline in overall hospital acquired infections between 2010 and 2015. Central line-associated blood stream infections were reduced 49%.

The decline in hospital-acquired conditions resulted in 125,000 lives saved and $28.2 billion in cost savings, according to AHRQ.

### 53.7 Market Resources

Agency for Healthcare Research and Quality, 540 Gaither Road, Rockville, MD 20850. (301) 427-1364. (www.ahrq.gov)

Association For Professionals In Infection Control and Epidemiology, 1275 K Street NW, Suite 1000, Washington, DC 20005. (202) 789-1890. (www.apic.org)

Committee to Reduce Infection Deaths, 5 Partridge Hollow Road, Greenwich, CT 06831. (212) 369-3329. (www.hospitalinfection.org)

Institute for Healthcare Improvement, 20 University Road, 7th Floor, Cambridge, MA 02138. (617) 301-4800. (www.ihi.org)


The Leapfrog Group, 1660 L Street NW, Suite 308, Washington DC 20036. (202) 292-6713. (www.leapfroggroup.org)
54.1 Market Assessment

Total annual spending on scans performed at imaging centers, including hospital departments, is estimated at more than $100 billion.

Medicare’s annual spending for imaging increased from $6.6 billion in 2000 to $13.7 billion in 2006. After reimbursement rates were cut, spending dropped to about $12 billion, however, the number of advanced-imaging tests has continued to increase.

“Medicare part B spending on medical imaging per beneficiary is down in almost every state since peaking in 2005 and 2006.”

Radiology Business

54.2 CT Scans

An estimated 70 million CT scans are performed annually in the United States, an increase from 3 million in 1980.

According to a study published in a recent issue of Radiology, the number of annual emergency room visits that included CT scans increased from 2.7 million to 16.2 million, or 500%, between 1995 and 2007.

Researchers found that imaging procedures necessitating higher doses of radiation exposure increased at a faster rate than those requiring less radiation. Such scans include abdominal and pelvic scans, which deliver roughly seven times more radiation than cranial scans.

54.3 Magnetic Resonance Imaging

Magnetic resonance imaging uses a powerful magnetic field to visualize soft tissues of the human body. It is useful for imaging the brain, muscles, the heart, and cancers.
Approximately 26 million MRI procedures are performed each year. The cost of an MRI procedure typically ranges between $1,000 to $3,500.

One advantage of an MRI scan is that it does not expose the patient to ionizing radiation as do CT scans and traditional X-rays.

54.4 Positron Emission Tomography

Positron emission tomography, a nuclear medicine imaging technique, produces a three-dimensional image or picture of functional processes in the body. The PET system detects pairs of gamma rays emitted indirectly by a tracer, which is injected into the body. PET scans are used most frequently in cardiology, neurology, and oncology.

Approximately 1.7 million PET scans are performed annually, an increase from approximately 350,000 in 2002. On average, PET imaging costs are about $4,900 for a scan of the whole body, $6,700 for the brain, and $6,800 for the heart. As with all imaging procedures, costs vary widely by geographic location and type of provider; charges can be $20,000 or more.

54.5 Controversy Over Increased Testing

According to the Centers for Disease Control and Prevention (CDC, www.cdc.gov), the number of computed tomography (CT), magnetic resonance imaging (MRI), and positron emission tomography (PET) scans tripled during the past decade to 12.6 scans ordered per 100 persons in physician office or outpatient visits.

Many experts feel much of the increased testing being performed is unnecessary. One such critic is H. Gilbert Welch, M.D., author of Should I Be Tested For Cancer? Maybe Not, And Here’s Why and a Professor at the Dartmouth School of Medicine.

“We find that when we look for diseases we invariably find more people with them than we expected, but some of them may never develop into life-threatening diseases. The paradox is that we cast a net so broadly that we pick up diseases that don’t need treatment.”

Prof. H. Gilbert Welch, M.D.
Dartmouth School Of Medicine
Still, it is not clear which scans are unnecessary.

“A CT scan is the quickest and most definitive way to determine if something is going on. There is no good study which shows which scans shouldn’t have been ordered.”

Prof. Stephen Amis, M.D., Chairman
Department of Radiology
Albert Einstein College of Medicine

The National Council on Radiation Protection and Measurements (www.ncrponline.org) found medical imaging is responsible for about half the total radiation exposure to the typical U.S. resident, up from just 20% in the 1980s.

54.6 Market Resources
Radiology Business, 235 Promenade Street, Suite 298, Providence, RI 02908.
(401) 383-5660. (www.radiologybusiness.com)
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READMISSIONS

55.1 Overview

Responding to federal initiatives, hospitals across the U.S. have made reducing readmission rates a top priority. The industry is being pushed, in part, by the Centers for Medicare and Medicaid Services (CMS, www.cms.gov), which publishes 30-day readmission data at Hospital Compare (www.hospitalcompare.hhs.gov).

The Hospital Readmissions Reduction Program, part of the Patient Protection and Affordable Care Act, began in FY2012. Hospitals are imposed a penalty for excessive readmissions of as much as 3% of their total Medicare billings based on readmissions.

“The program was mandated by the Affordable Care Act as part of a larger effort to curb health costs – readmissions make up about $41 billion in healthcare spending – and to motivate providers to improve outcomes. By and large, the program seemed to work.”

Modern Healthcare, 8/14/17

Medicare assesses readmissions for six conditions: heart attack, heart failure, pneumonia, chronic obstructive pulmonary disease, knee or hip replacement, and coronary artery bypass grafting.

55.2 Readmissions Penalties

CMS reported readmissions penalties as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Penalties</th>
<th>Pct. of Hospitals Penalized</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2013</td>
<td>$290 million</td>
<td>64%</td>
</tr>
<tr>
<td>FY2014</td>
<td>$227 million</td>
<td>66%</td>
</tr>
<tr>
<td>FY2015</td>
<td>$428 million</td>
<td>78%</td>
</tr>
</tbody>
</table>
FY2016: $420 million  78%
FY2017: $528 million  79%
FY2018: $564 million  79%

Penalties by type of hospital in FY2018 were as follows:
- Urban hospitals: 75%
- Non-teaching hospitals: 68%
- Rural hospitals: 25%
- Other teaching hospitals: 22%
- Major teaching hospitals: 9%

Penalties in FY2018 were as follows:

<table>
<thead>
<tr>
<th>Penalty</th>
<th>No. of Hospitals Penalized</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Penalty</td>
<td>668</td>
</tr>
<tr>
<td>0.01% to 0.50%</td>
<td>1,259</td>
</tr>
<tr>
<td>0.51% to 1.00%</td>
<td>637</td>
</tr>
<tr>
<td>1.01% to 1.50%</td>
<td>329</td>
</tr>
<tr>
<td>1.51% to 2.00%</td>
<td>171</td>
</tr>
<tr>
<td>2.01% to 2.50%</td>
<td>89</td>
</tr>
<tr>
<td>2.51% to 3.00%</td>
<td>88</td>
</tr>
</tbody>
</table>

### 55.3 Best Hospitals

CMS reported the hospitals with the lowest readmission rates (within 30 days) in 2017 as follows:

- Hospital for Special Surgery (New York, NY): 10.8%
- Hoag Orthopedic Institute (Irvine, CA): 11.0%
- New England Baptist Hospital (Boston, MA): 11.8%
- OrthoIndy Hospital (Indianapolis, IN): 12.2%
- Mount Carmel New Albany Surgical Hospital (New Albany, OH): 12.3%
- Arkansas Surgical Hospital (North Little Rock, AR): 12.4%
- St. Francis-Downtown (Greenville, SC): 12.8%
- Community Hospital of the Monterey Peninsula (Monterey, CA): 12.9%
- Kansas Spine & Specialty Hospital (Wichita, KS): 12.9%
- Nebraska Orthopaedic Hospital (Omaha, NE): 13.0%
- St. Alexius Medical Center (Bismarck, ND): 13.0%
- Chino Valley Medical Center (Chino, CA): 13.1%
- Sarasota Memorial Hospital (Sarasota, FL): 13.1%
- Kansas Surgery & Recover Center (Wichita, KS): 13.1%
- Texas Orthopedic Hospital (Houston, TX): 13.1%
- Scripps Memorial Hospital La Jolla (La Jolla, CA): 13.2%
- Fresno Surgical Hospital (Fresno, CA): 13.2%
- Parkview Medical Center (Pueblo, CO): 13.2%
- St. Vincent Carmel Hospital (Carmel, IN): 13.2%
• CHI St. Luke's Health-Patients Medical Center (Pasadena, TX): 13.2%
• Providence Alaska Medical Center (Anchorage, AK): 13.3%
• Verde Valley Medical Center (Cottonwood, AZ): 13.3%
• Mercy Medical Center Redding (Redding, CA): 13.3%
• St. Mary's Medical Center (Grand Junction, CO): 13.3%
• The Queen's Medical Center (Honolulu, HI): 13.3%
• Mercy Hospital (Iowa City, IA): 13.3%
• Intermountain Medical Center (Murray, UT): 13.3%
• Nebraska Spine Hospital (Omaha, NE): 13.4%
• Oklahoma Surgical Hospital (Tulsa, OK): 13.4%
• McBride Orthopedic Hospital (Oklahoma City, OK): 13.4%
• St. Joseph Medical Center (Bellingham, WA): 13.4%
• Mayo Clinic Health System Eau Claire Hospital (Eau Claire, WI): 13.4%
• Santa Barbara Cottage Hospital (Santa Barbara, CA): 13.5%
• Maine General Medical Center (Augusta, ME): 13.5%
• Mid Michigan Medical Center (Alpena, MI): 13.5%
• Lincoln Surgical Hospital (Lincoln, NE): 13.5%
• Oklahoma Heart Hospital (Oklahoma City, OK): 13.5%
• Lancaster General Hospital (Lancaster, PA): 13.5%
• Flagstaff Medical Center (Flagstaff, AZ): 13.6%
• Santa Rosa Memorial Hospital (Santa Rosa, CA): 13.6%
• Valley Care Medical Center (Pleasanton, CA): 13.6%
• Sutter Auburn Faith Hospital (Auburn, CA): 13.6%
• Centrua Health-Penrose St. Francis Health Services (Colorado Springs, CO): 13.6%
• Rooks County Health Center (Plainville, KS): 13.6%
• St. Patrick Hospital (Missoula, MT): 13.6%
• St. Vincent Healthcare (Billings, MT): 13.6%
• Integris Bass Baptist Health Center (Enid, OK): 13.6%
• St. Luke's Quakertown Hospital (Quakerstown, PA): 13.6%
• Black Hills Surgical Hospital (Rapid City, SD): 13.6%

55.4 Readmission Rates For Various Conditions

According to the Agency for Healthcare Research and Quality (www.ahrq.gov), readmission rates for select conditions are as follows:

- Heart failure: 29%
- Heart attack: 23%
- Pneumonia: 22%
- Kidney transplant: 22%
- Schizophrenia: 22%
- Amputation of lower extremity: 19%
- Acute and unspecified renal failure: 17%
- Heart valve procedures: 17%
“Some estimates suggest that all-cause readmissions cost $40 billion annually.”

*Modern Healthcare, 11/27/17*

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55.5 Tools For Reducing Readmissions

A key to reducing avoidable readmissions is better engagement of patients. According to an assessment by Stephen Jencks, M.D., published in the *New England Journal of Medicine*, 50.2% of Medicare beneficiaries readmitted within 30 days had not seen a physician between discharge and readmission.

Hospitals use various approaches to enhance engagement. The following are two of the most popular tools:

- **Re-Engineered Discharge** ([www.bu.edu/fammed/projectred](http://www.bu.edu/fammed/projectred)), developed at the Boston University School of Medicine, emphasizes a multipronged approach involving hospitals, primary-care physicians, family caregivers, and community-based groups.
- **The widely adopted Care Transitions Program** ([www.caretransitions.org](http://www.caretransitions.org)), developed at the University of Colorado Denver, incorporates engagement models from quality-improvement organizations, hospital associations, providers, and other groups.

Technology plays an important role in reducing readmissions. Mobile apps are particularly popular. One example is a sensor-equipped inhaler developed by Propeller Health ([www.propellerhealth.com](http://www.propellerhealth.com)) that tracks how often patients use their medication and then sends time and location data to a smartphone. If a patient begins to use more medication or is actively using a rescue inhaler, alerts are sent to a physician or caregiver, who can then intervene in the patient's care.

Predictive analytics tools are also being used by hospitals to help hospitals prevent readmission by analyzing patients’ medical records and helping clinicians predict what type of care would improve outcomes. One example is the predictive analytics software developed at the Parkland Center for Clinical Innovation (PCCI, [www.pccipieces.org](http://www.pccipieces.org)), which identifies which patients are at higher risk for heart failure. The PCCI software scans each patient’s electronic health record within 24 hours of admission, looking at multiple data elements such as blood-pressure readings and blood-glucose levels. In use at Texas Health Harris Methodist Hospital, the software helped the hospital cut its 30-day readmission rate for heart failure nearly in half, from 23% to about 12%.
“Developers say providers are increasingly willing to test and invest in new technologies that aim to keep patients out of the hospital. There is little debate that new tactics or strategies are needed to help hospitals lower their readmission rates. Medicare alone spends at least $26 billion on patients who end up returning to the hospital. Most experts agree that using technology that engages patients ... early in their care is promising.”

Modern Healthcare
56.1 Retail-Based Healthcare

A rising number of pharmacy and retail chains are opening in-store health clinics. These retail health clinics – also referred to as convenient-care clinics – are creating a new model: quick but limited services at lower prices and almost always staffed by nurses or physician assistants. For many consumers the clinics are attractive because of the low cost: most charge less than $65 per visit.

There were 2,400 retail-based clinics in the U.S. as of April 2018, according to the Convenient Care Association (www.ccaclinics.org). Combined, they have served more than 35 million patients.

CVS, Duane Reed, Osco Drug, Rite Aid, and Walgreens are among the drug store chains offering in-store clinics. In other retail segments, Costco, Target, and Walmart also operate clinics at some locations. With 1,100 MinuteClinics operating in its stores in 33 states, CVS is the marketshare leader.

A 2017 assessment by Blue Cross Blue Shield Association (www.bcbs.com) reported a five-year annual growth rate in visits of 19%, compared with less than 1% for doctor’s offices and emergency room visits.

56.2 Patient Profile

A 2017 survey by The Harris Poll (www.theharrispoll.com) found that 19% of adults visited a retail health clinic within the prior 12 months. The demographics of those that had done so was as follows:

**Gender**
- Female: 16%
- Male: 22%

**Age**
- 18-to-34: 26%
- 35-to-44: 20%
- 45-to-54: 16%
- 55-to-65: 11%

**Race/Ethnicity**
- Asian: 15%
- Caucasian: 18%
- Hispanic: 35%
Household
• Married: 21%
• Single: 16%
• Living with children: 29%
• Without children: 13%

Location
• Urban: 26%
• Suburban: 16%
• Rural: 16%

    Reasons for visits were as follows:
• Treatment: 53%
• Flu vaccine: 35%
• Health screening: 32%
• General health assessment: 29%
• General physical: 19%

    Purchases made during or after visit were as follows:
• OTC medication: 36%
• Personal care products: 27%
• Food: 24%

56.3 Patient Satisfaction
    The Harris Poll found that almost all convenient-care clinic patients are very/somewhat satisfied with the quality of the care (90%), cost (86%), and staff qualifications (88%). The biggest driver of satisfaction appears to be convenience, with 93% satisfied with the convenience of these clinics. Although an increasing number say they are satisfied with staff qualifications, 65% have concerns that serious medical problems might not be accurately diagnosed.

    CVS’ in-store MinuteClinics report a 95% customer satisfaction rating.

56.4 Market Resources
Convenient Care Association, 1413 Florence Drive, Gwynedd Valley, PA 19437.
(610) 656-1213. (www.ccaclinics.org)
57.1 Overview

According to Hospital Statistics 2018™, by the American Hospital Association (www.aha.org), there are 1,825 rural hospitals in the U.S., representing 49% of all community hospital locations. This number has declined by 10% over the past decade.

“Twenty percent (20%) of the U.S. population live in what is considered a rural area, and patients in these areas are more likely to have multiple chronic illnesses and higher mortality rates.”

2018 Environmental Scan
American Hospital Association

57.2 Hospitals And Clinics For Rural Areas

A 2018 study by the Center for Outcomes Research and Education (www.medicine.yale.edu/core/about/) and the Bipartisan Policy Center (www.bipartisanpolicy.org) investigated what types of healthcare facilities best serve rural areas. The assessment concluded that not all rural communities need critical-access hospitals. Those hospitals can maintain up to 25 patient beds, but, on average, only three to five of those beds are occupied, a costly proposition for these facilities. Many communities would be better served by hybrid clinics that mix primary care with emergency services.
“There’s no one-size-fits-all that will tackle the challenges in every rural community. Solutions have to be flexible.”

*Modern Healthcare, 1/22/18*

### 57.3 Critical Access Hospitals

A critical access hospital (CAH) is a hospital certified under a set of Medicare Conditions of Participation. Some of the requirements for CAH certification include having no more than 25 inpatient beds; maintaining an annual average length of stay of no more than 96 hours for acute inpatient care; offering 24-hour, 7-day-a-week emergency care; and being located in a rural area, at least a 35 miles drive away from any other hospital or CAH (fewer in some circumstances). The strict criteria for CAHs is meant to support care for common conditions and outpatient care. Other conditions should be referred to larger hospitals. Certification allows CAHs to receive cost-based reimbursement from Medicare, instead of standard fixed reimbursement rates.

As of January 2018, there were 1,333 CAHs with a combined total of 29,894 beds, according to the Centers for Medicare & Medicaid Services (CMS, [www.cms.gov](http://www.cms.gov)). Certified CAHs by state are as follows:

- **Alabama**: 4
- **Alaska**: 14
- **Arizona**: 14
- **Arkansas**: 29
- **California**: 34
- **Colorado**: 31
- **Florida**: 12
- **Georgia**: 30
- **Hawaii**: 9
- **Idaho**: 27
- **Illinois**: 51
- **Indiana**: 35
- **Iowa**: 82
- **Kansas**: 85
- **Kentucky**: 27
- **Louisiana**: 27
- **Maine**: 16
- **Massachusetts**: 3
- **Michigan**: 36
- **Minnesota**: 78
- **Mississippi**: 31
- **Missouri**: 36
- **Montana**: 48
- **Nebraska**: 64
- **Nevada**: 13
- **New Hampshire**: 13
- **New Mexico**: 10
- **New York**: 18
- **North Carolina**: 20
- **North Dakota**: 36
- **Ohio**: 33
- **Oklahoma**: 37
- **Oregon**: 25
- **Pennsylvania**: 15
- **South Carolina**: 5
- **South Dakota**: 38
- **Tennessee**: 14
- **Texas**: 82
There are no critical access hospitals in Connecticut, Delaware, District of Columbia, Maryland, New Jersey, or Rhode Island.

According to the American Hospital Association, the following patient volume is seen by CAHs annually:

- Outpatient visits: 38.0 million
- Emergency department visits: 7.0 million
- Patients admitted: 900,000
- Babies delivered: 86,000

57.4 Rural Hospital Closures
There were 81 rural hospital closures from 2010 to year-end 2017.

“The financial problems plaguing rural hospitals have many causes. The unwillingness so far of 21 states, disproportionately in the South, to expand Medicaid to low-income adults under the Affordable Care Act is a major factor. Roughly three-quarters of hospital closures nationally since 2010 have been in states that didn't expand Medicaid.”

*Modern Healthcare*

57.5 Physician Shortages
The rural population of the U.S. numbers about 20% of the total population, or 62 million people. Less than 9% of physicians practice in non-metropolitan counties. There are also shortages of non-physician providers, including pharmacists, nurses, dentists, radiology and laboratory technicians, and mental health professionals.

A comparison of physician rates in rural areas and in urban areas follows (source: WWAMI Rural Health Research Center, [http://depts.washington.edu/uwrhrc](http://depts.washington.edu/uwrhrc)):
• Urban: 71 per 100,000 population
• Large rural areas: 61 per 100,000 population
• Small rural areas: 59 per 100,000 population
• Isolated small rural areas: 36 per 100,000 population

“... 77% of rural communities are facing a shortage of primary-care physicians and 8% don’t even have a single primary-care physician.”

Modern Healthcare

Rural doctors can be difficult to recruit. The primary reason is that rural doctors generally earn less than those in metro areas. Further, social and cultural isolation deters many physicians from locating in rural areas.

57.6 Market Resources
National Rural Health Association, 4501 College Boulevard, Suite 225, Leawood, KS 66211. (816) 756-3140. (www.ruralhealthweb.org)

National Association of Rural Health Clinics, 2 East Main Street, Fremont, MI 49412. (866) 306-1961. (www.narhc.org)
58.1 Overview

Telemedicine typically involves physicians using interactive video and/or store-and-forward consultations to diagnose or treat patients. Interactive video allows specialists to communicate with patients who are in another location using monitors and specially adapted equipment. Store-and-forward techniques include physicians sending images, x-rays, and other patient information electronically to a remote specialist.

Telemedicine is a valuable tool for real-time physical exams, consults, and education. Overall, patients have responded well to the technology; they feel they are heard, have the physician’s undivided attention, and travel is avoided.

“Telemedicine has been growing rapidly because it offers four fundamental benefits: improved access, cost efficiencies, improved quality, and patient demand.”

American Hospital Association

58.2 Market Drivers

Closing The Telehealth Gap, a 2017 survey by Aviza (www.aviza.com) and Modern Healthcare, found the following objectives are driving providers to launch or expand telehealth initiatives (percentage of respondents):

- Meet patient/consumer demand: 72%
- Improve clinical outcomes: 66%
- Meet the goal of delivering value-based care: 62%
- Increased engagement with current patients: 49%
- Expand service lines: 43%
- Reach new patient populations: 40%
- Keep up with the competition: 28%
- Lower operating costs: 28%
• Lower out-of-pocket costs for patients: 27%
• Increase organizational revenue: 15%

58.3 Telemedicine Program Status
The 2017 Telemedicine and Digital Health Survey, by Foley & Lardner LLC (www.foley.com), asked executives in hospitals and specialty clinics about the telemedicine programs in their organization. Responses were as follows (percentage of respondents):
• Currently offer or are planning to offer telemedicine services: 76%
• Find a lack of third-party reimbursement to be a challenge to implementing telemedicine: 59%
• Cost savings from telemedicine:
  - More than 20%: 29%
  - 1% to 20%: 42%
  - No savings: 29%

58.4 Telemedicine Industry Benchmark Survey
The following are findings of the 2018 U.S. Telemedicine Industry Benchmark Survey, by Reach Health (www.reachhealth.com):
Priority of Telemedicine in Organization (percentage of respondents):
• One of our top priorities: 24%
• A high priority: 46%
• A medium priority: 23%
• A low priority: 7%

Telemedicine Program Objectives (percentage of respondents with high priority in their organization):
• Improving patient outcomes: 86%
• Providing remote or rural patients with access to specialists: 78%
• Increasing patient engagement and satisfaction: 70%
• Improving patient convenience: 66%
• Improving leverage of limited physician resources: 64%
• Reducing unnecessary ED visits: 61%
• Reducing hospital readmissions: 55%
• Reducing cost of care delivery: 53%
• Providing 24x7 access to specialists: 46%
• Improving specialist efficiency: 46%
• Providing access to new specialties: 39%
• Capturing market share from competitive health systems: 38%
• Improving image in the local community: 34%
• Increasing revenue: 33%
Primary Contributors to ROI (percentage of respondents):
• Improved patient satisfaction: 49%
• Keeping patients within our healthcare system: 41%
• Private payor reimbursement: 40%
• Medicaid reimbursement: 38%
• Medicare reimbursement: 35%
• Reduced transportation expenses: 34%
• Reduced cost of care: 32%
• Increased referrals: 30%
• Reduced unnecessary ED visits: 30%
• Greater productivity from physicians and nurses: 30%
• Reduced readmissions: 29%
• Improved reputation: 28%
• Shorter stays: 20%
• Increased post-acute patient follow-up care: 18%
• Reduced EMS bypass: 14%
• Increased fee for service payments: 14%

Maturity By Settings Of Care (percentage of respondents indicating their organization has three or more years of experience):
• Acute/emergency: 35%
• Clinic: 26%
• ICU: 18%
• Remote monitoring: 17%
• E-visits: 14%
• General practice: 12%
• Home health: 12%
• NICU: 11%
• Correctional care: 9%
• Rehab/therapy: 9%
• School-based: 9%
• Discharge follow-ups: 8%
• Long-term care: 6%
• EMS: 6%
• Medical home: 5%
• Skilled nursing facility: 5%
• Kiosk: 1%

Maturity By Specialities and Service Lines (percentage of respondents indicating their organization has three or more years of experience):
• Stroke: 40%
• Psychiatry/behavioral health: 33%
• Radiology: 30%
- Neurology: 29%
- Pediatrics: 20%
- Dermatology: 16%
- Cardiology: 16%
- Primary care: 13%
- Infectious disease management: 12%
- Chronic care: 11%
- Pulmonology: 9%
- Obstetrics/perinatology: 9%
- Burn: 8%
- Oncology: 8%
- Wellness: 8%
- Sleep medicine: 7%
- Orthopedics: 7%

Value of Telemedicine Platform Features (percentage of respondents considering the feature important):
- Integrated audio & video for live patient engagement: 92%
- Ability to produce clinical documentation from each consultation: 81%
- Ability to send clinical documentation to/from EMR: 71%
- Support for standard devices, such as laptops and tablets as clinical endpoints: 67%
- Ability for clinicians to communicate through HIPAA-compliant messaging: 68%
- Ability to analyze telemedicine consult data to assess and improve performance: 66%
- Ability for remote specialists and bedside-clinicians to collaborate in consultations: 58%
- Ability to access patient history directly from the telemedicine system: 56%
- Ability to access lab and test results directly from the telemedicine system: 52%
- Support for peripheral devices such as stethoscopes, otoscopes, etc.: 41%
- Physician scheduling: 41%
- Browser-based system with no software to install or maintain: 38%
- Store-and-Forward capabilities/asynchronous: 37%
- Ability to configure the telemedicine workflow to accommodate individual clinician preferences: 32%
- Specialized workflow and documentation for each specialty (separate from EMR): 30%
- Ability to incorporate patient data from consumer devices/wearables: 25%
Telemedicine Program Challenges (percentage of respondents with unaddressed issues in their organization):

- Inadequate telemedicine parity laws: 40%
- Medicare reimbursement: 39%
- Lack of common EHR/EMR in hub-and-spoke hospitals: 32%
- Medicaid reimbursement: 29%
- Lack of integration with current EHR/EMR: 29%
- Physician compensation: 28%
- Staff turnover: 27%
- Private payor reimbursement: 25%
- Lack of native capabilities in EHR/EMR: 23%
- Potential regulatory liability: 23%
- Determining ROI: 21%
- Partner recruiting: 19%
- Lack of funding: 18%
- Potential malpractice liability: 16%
- Physician credentialing and/or licensing: 16%
- Cost of supporting technology: 15%
- Lack of adequate specialist physician coverage: 14%
- Physician acceptance: 12%
- Patient acceptance: 10%
- Lack of executive support: 10%

58.5 Hospital Use Of Telemedicine

More than half of all U.S. hospitals use some form of telehealth. According to Hospitals & Health Networks, hospitals provide telemedicine services to patients through the following provider channels:

- Hospital: 44%
- Physician’s office: 35%
- Critical access hospital: 24%
- Rural health clinic: 20%

The Connected Health Survey, by the Healthcare Information and Management Systems Society (HIMSS, www.himss.org), reported hospital use of telehealth technologies as follows:

- Apps for patient education/engagement: 48%
- Remote patient monitoring: 37%
- SMS/texting: 33%
- Concierge service: 26%
- Video visits: 34%
“Telemedicine has been growing in popularity, with more and more health systems offering virtual visits as a way to provide healthcare more conveniently and at a lower cost. But a study earlier this year found that telehealth may not actually save money, and providers have been stymied by limited reimbursement for virtual care.”

Modern Healthcare, 12/11/17

58.6 Telemedicine for Emergency Medical Care
Several hospital systems use telemedicine to support emergency care at remote facilities. Such systems electronically link emergency physicians to rural clinics where emergency doctors often are unavailable. The physicians use videoconferencing to help assess a patient’s condition, then advise on how to treat the patient based on the onsite staff’s preliminary physical exam and other data from the remote examination.

One of the first systems was installed at the University of Mississippi Medical Center (UMMC). Called TelEmergency, the system allows nurse practitioners in 21 rural hospital emergency departments in the Delta Regional Health Network to consult with UMMC physicians on critical care cases using bedside videoconferencing systems.

58.7 Telemedicine in Rural Healthcare
Telemedicine offers great potential for enhancing rural healthcare.

“There are about 200 telemedicine networks connecting large health centers to about 3,000 largely rural sites for specialty consultations, continuing medical education, and other services. Many critical-care facilities are using telehealth to bring in neurologists to treat stroke patients and intensivists to look after patients in an ICU.”

Modern Healthcare
In California, the Telehealth Advancement Act, passed in 2011, provides for improved access to healthcare services via telemedicine for rural and inner-city residents.

58.8 Telemedicine for Remote Patients

Telemedicine is now considered essential for remote workplaces like offshore oil rigs, where flying a worker to a hospital by helicopter can cost $10,000 a trip. According to NuPhysicia (www.nuphysicia.com), which provides services for almost two dozen oil rigs around the world, some rigs have saved $500,000 or more a year using telemedicine. NuPhysicia also offers video medical services to land-based employers with 500 or more workers at a site.

Texas has used a telemedicine program in state prisons since the mid-1990s, with more than 600,000 video visits conducted to date. Significant improvement has been seen in inmates' health, including measures of blood pressure and cholesterol, according to a report on the system published in the *Journal of the American Medical Association*.

California has used a telemedicine system as part of a program to improve healthcare at state prisons since 2011. University of California supervises the operation of the telemedicine and electronic medical record systems used within its prison system.

58.9 Electronic Intensive Care Units

Electronic intensive care units (eICU) allow intensivists, critical care nurses, and ancillary staff to monitor patients from a remote location through secure networks of cameras, monitors, and two-way communications links. They assist nurses in the units by continually monitoring patients' vitals, reviewing test results, and alerting nurses when even the slightest change in condition occurs. Early adopters report an immediate improvement in patient outcomes and overall quality of care.

eICU systems complement, rather than replace, intensivist coverage. They do not involve outsourcing – eICUs are almost always staffed by the hospitals' own physicians and nurses.

One example of an effective eICU program is at Mercy Health. Nineteen of its 33 hospitals have less than 50 beds and are in rural regions of Missouri, Oklahoma, Kansas, and Arkansas. Mercy’s eICU program uses cameras and computers to monitor the sickest patients. Patients at risk for sepsis, for instance, are identified through an algorithm in their electronic health record and placed in a virtual sepsis unit for monitoring. The EHR also flags patients who need an IV replacement or are at risk for blood clots. The program has yielded improved outcomes such as a 20% reduction in mortality rates, an 82% reduction in ventilator-acquired pneumonia, and a nearly 50% reduction in deaths from sepsis. The eICU program saves $25 million annually by reducing ICU length of stay.

The most widely used eICU system is eVantage by Visicu (www.visicu.com).
58.10 Market Resources
59

TOP 100 HOSPITALS

59.1 Overview
The Watson Health 100 Top Hospitals study (www.100tophospitals.com), formerly the Truven Health Analytics study, is an annual list of the 100 Top Hospitals based on a comparison of Medicare data for eight measures utilizing the Agency for Healthcare Research and Quality’s public-safety indicators. The assessment compares hospitals’ actual patient-safety performance with expected performance. The study has been conducted since 1992.

59.2 Top Hospitals
The following is the 2018 list of 100 Top Hospitals:

Major Teaching Hospitals
• Advocate Illinois Masonic Medical Center (Chicago, IL)
• Banner - University Medical Center Phoenix (Phoenix, AZ)
• Banner - University Medical Center South (Tucson, AZ)
• Cedars-Sinai Medical Center (Los Angeles, CA)
• Mount Sinai Medical Center (Miami Beach, FL)
• NorthShore University Health System (Evanston, IL)
• Northwestern Memorial Hospital (Chicago, IL)
• Ochsner Medical Center (New Orleans, LA)
• OhioHealth Doctors Hospital (Columbus, OH)
• Penn State Milton S. Hershey Medical Center (Hershey, PA)
• Providence Park Hospital (Southfield, MI)
• SSM Health St. Mary’s Hospital - St. Louis (St. Louis, MO)
• St. Luke’s University Hospital - Bethlehem (Bethlehem, PA)
• UCH Health University of Colorado Hospital (Aurora, CO)
• University of Wisconsin Hospital and Clinics (Madison, WI)

Teaching Hospitals
• Aspirus Wausau Hospital (Wausau, WI)
• Beaumont Hospital - Grosse Pointe (Grosse Pointe, MI)
• Bethesda North Hospital (Cincinnati, OH)
• Bryn Mawr Hospital (Bryn Mawr, PA)
• BSA Health System (Amarillo, TX)
• Cone Health (Greensboro, NC)
• Good Samaritan Hospital (Cincinnati, OH)
• Kettering Medical Center (Kettering, OH)
• Mayo Clinic Hospital (Jacksonville, FL)
• Mercy Hospital St. Louis (St. Louis, MO)
• Miami Valley Hospital (Dayton, OH)
• Mount Carmel St. Ann’s (Westerville, OH)
• PIH Health Hospital - Whittier (Whittier, CA)
• Riverside Medical Center (Kankakee, IL)
• Rose Medical Center (Denver, CO)
• Sentara Leigh Hospital (Norfolk, VA)
• Sky Ridge Medical Center (Lone Tree, CO)
• SSM Health St. Mary's Hospital - Madison (Madison, WI)
• St. Luke's Boise Medical Center (Boise, ID)
• St. Luke's Hospital (Cedar Rapids, IA)
• Sycamore Medical Center (Miamisburg, OH)
• The Christ Hospital Health Network (Cincinnati, OH)
• The Jewish Hospital - Mercy Health (Cincinnati, OH)
• UHealth Poudre Valley Hospital (Fort Collins, CO)
• United Regional Health Care System (Wichita Falls, TX)

Large Community Hospitals
• Advocate Condell Medical Center (Libertyville, IL)
• Advocate Sherman Hospital (Elgin, IL)
• Asante Rogue Regional Medical Center (Medford, OR)
• Butler Memorial Hospital (Butler, PA)
• CaroMont Regional Medical Center (Gastonia, NC)
• Edward Hospital (Naperville, IL)
• Hoag Hospital Newport Beach (Newport Beach, CA)
• Mease Countryside Hospital (Safety Harbor, FL)
• Memorial Hermann Memorial City Medical Center (Houston, TX)
• Mercy Health - St. Rita's Medical (Center Lima, OH)
• Mercy Hospital Oklahoma City (Oklahoma City, OK)
• Northwestern Medicine Central DuPage Hospital (Winfield, IL)
• Rio Grande Regional Hospital (McAllen, TX)
• Scripps Memorial Hospital La Jolla (La Jolla, CA)
• Shawnee Mission Medical Center (Shawnee Mission, KS)
• St. Clair Hospital (Pittsburgh, PA)
• St. David's Medical Center (Austin, TX)
• St. Francis Downtown (Greenville, SC)
• St. Joseph's Hospital (Tampa, FL)
• St. Vincent Evansville (Evansville, IN)
Medium Community Hospitals
• Baylor Scott & White Medical Center - Round Rock (Round Rock, TX)
• Blanchard Valley Hospital (Findlay, OH)
• Bon Secours St. Francis Hospital (Charleston, SC)
• Chester County Hospital (West Chester, PA)
• Cleveland Clinic Florida (Weston, FL)
• Indiana University Health North Hospital (Carmel, IN)
• Kalispell Regional Medical Center (Kalispell, MT)
• Logan Regional Hospital (Logan, UT)
• Mercy Health - Clermont Hospital (Batavia, OH)
• Mercy Medical Center (Cedar Rapids, IA)
• Montclair Hospital Medical Center (Montclair, CA)
• Ochsner Medical Center - Baton Rouge (Baton Rouge, LA)
• OhioHealth Dublin Methodist Hospital (Dublin, OH)
• Saint Alphonsus Medical Center - Nampa (Nampa, ID)
• Sentara Williamsburg Regional Medical Center (Williamsburg, VA)
• Sherman Oaks Hospital (Sherman Oaks, CA)
• Texas Health Harris Methodist Hospital Southwest (Fort Worth, TX)
• UCH Health Medical Center of the Rockies (Loveland, CO)
• West Valley Medical Center (Caldwell, ID)
• Wooster Community Hospital (Wooster, OH)

Small Community Hospitals
• Cedar City Hospital (Cedar City, UT)
• East Liverpool City Hospital (East Liverpool, OH)
• Florida Hospital Wesley Chapel (Wesley Chapel, FL)
• Hawkins County Memorial Hospital (Rogersville, TN)
• Hill Country Memorial Hospital (Fredericksburg, TX)
• HonorHealth Scottsdale Thompson Peak Medical Center (Scottsdale, AZ)
• Lakeview Hospital (Bountiful, UT)
• Lakeview Hospital (Stillwater, MN)
• Lakeview Medical Center (Rice Lake, WI)
• Parkview Huntington Hospital (Huntington, IN)
• Parkview Noble Hospital (Kendallville, IN)
• Saint Luke's South Hospital (Overland Park, KS)
• Spectrum Health United Hospital (Greenville, MI)
• Spectrum Health Zeeland Community Hospital (Zeeland, MI)
• Springhill Medical Center (Springhill, LA)
• St. Anthony Summit Medical Center (Frisco, CO)
• St. John Owasso Hospital (Owasso, OK)
• St. Vincent Fishers Hospital (Fishers, IN)
• Stillwater Medical Center (Stillwater, OK)
60

TOP CARDIOVASCULAR HOSPITALS

60.1 Overview

Watson Health, an IBM company (www.IBM.com), conducts an annual study identifying the 50 U.S. hospitals that set the nation’s benchmarks for inpatient cardiovascular services. The assessment examines the performance of over 950 hospitals by analyzing outcomes for patients with heart failure and heart attacks and for those who received coronary bypass surgery or percutaneous cardiovascular interventions (PCI) such as angioplasties. The study has been conducted since 1998.

Compared with peer hospitals, performance of the 50 Top Cardiovascular Hospitals is as follows:

- Spend $1,333 to $5,745 less per patient case
- Have significantly better 30-day survival
- Maintain lower 30-day readmission rates for heart attack and heart patients
- Return patients to daily life 0.3 day to 0.5 day earlier, on average

The following are projected outcomes if all cardiovascular providers performed at the level of the Top 50:

- More than 8,900 additional lives could be saved
- Nearly 3,700 more heart patients could be complication-free
- More than $1.4 billion could be saved

The top performing hospitals perform over 50% more cardiac surgeries than peer hospitals.

60.2 Top Cardiovascular Hospitals

The following is the 2018 List of Top Cardiovascular Hospitals:

Teaching Hospitals With Cardiovascular Residency Programs

- Aultman Hospital (Canton, OH)
- Baystate Medical Center (Springfield, MA)
- Carilion Roanoke Memorial Hospital (Roanoke, VA)
- Duke University Hospital (Durham, NC)
- Henry Ford Hospital (Detroit, MI)
- Lahey Hospital & Medical Center (Burlington, MA)
- Mayo Clinic Hospital (Jacksonville, FL)
- Providence Park Hospital (Southfield, MI)
- Regions Hospital (Saint Paul, MN)
• Rhode Island Hospital (Providence, RI)
• St. Vincent Indianapolis Hospital (Indianapolis, IN)
• The Christ Hospital Health Network (Cincinnati, OH)
• The Mount Sinai Hospital (New York, NY)
• University of Wisconsin Hospital and Clinics (Madison, WI)
• Wake Forest Baptist Medical Center (Winston-Salem, NC)

Teaching Hospitals Without Cardiovascular Residency Programs
• Aspirus Wausau Hospital (Wausau, WI)
• Bon Secours Maryview Medical Center (Portsmouth, VA)
• Bon Secours St. Mary’s Hospital (Richmond, VA)
• Cape Fear Valley Medical Center (Fayetteville, NC)
• Carolinas Medical Center (Charlotte, NC)
• Centra Health (Lynchburg, VA)
• Decatur Memorial Hospital (Decatur, IL)
• Eisenhower Medical Center (Rancho Mirage, CA)
• Grand Strand Medical Center (Myrtle Beach, SC)
• IU Health Ball Memorial Hospital (Muncie, IN)
• Lee Memorial Hospital and HealthPark Medical Center (Fort Myers, FL)
• Memorial Hospital (South Bend, IN)
• Mission Hospital (Asheville, NC)
• PIH Health Hospital - Whittier (Whittier, CA)
• Providence Sacred Heart Medical Center (Spokane, WA)
• Saint Thomas Midtown Hospital (Nashville, TN)
• Saint Thomas West Hospital (Nashville, TN)
• St. Joseph’s Hospital Health Center (Syracuse, NY)
• St. Luke’s Boise Medical Center (Boise, ID)
• The Moses H. Cone Memorial Hospital (Greensboro, NC)

Community Hospitals
• Adena Regional Medical Center (Chillicothe, OH)
• Banner Heart Hospital (Mesa, AZ)
• Bellin Health (Green Bay, WI)
• Fort Sanders Regional Medical Center (Knoxville, TN)
• Hoag Hospital Newport Beach (Newport Beach, CA)
• Longview Regional Medical Center (Longview, TX)
• McLaren Northern Michigan Hospital (Petoskey, MI)
• Mercy Hospital (Iowa City, IA)
• Nebraska Heart Institute & Heart Hospital (Lincoln, NE)
• Oklahoma Heart Hospital (Oklahoma City, OK)
• Presbyterian Hospital (Albuquerque, NM)
• Salem Hospital (Salem, OR)
• Southwest General Health Center (Middleburg Heights, OH)
• St. Vincent Heart Center of Indiana (Indianapolis, IN)
• University of Maryland St. Joseph Medical Center (Towson, MD)
61

TOP HEALTH SYSTEMS

61.1 Overview
IBM Watson Health (www.ibm.com/watson/health/) evaluated 255 healthcare systems on measures of clinical quality and efficiency. Performance measures used in the assessment are as follows:
- 30-day risk-adjusted mortality rate
- 30-day risk-adjusted readmission rate
- Core measures mean percent
- HCAHPS score (patient rating of overall hospital performance)
- Risk-adjusted complications index
- Risk-adjusted mortality index
- Risk-adjusted patient safety index
- Severity-adjusted average length of stay

61.2 Best-Performing Healthcare Systems
The 2018 list of top-rated healthcare systems is as follows:

Large Health Systems
- Mayo Foundation (Rochester, MN)
- Mercy (Chesterfield, MO)
- Sentara Healthcare (Norfolk, VA)
- St. Luke's Health System (Boise, ID)
- UCHealth (Aurora, CO)

Medium Health Systems
- Aspirus Network (Wausau, WI)
- HealthPartners (Bloomington, MN)
- Mercy Health (Cincinnati, OH)
- Mission Health (Asheville, NC)
- TriHealth (Cincinnati, OH)

Small Health Systems
- Asante (Medford, OR)
- CHI St. Joseph Health (Bryan, TX)
- Maury Regional Health (Columbia, TN)
- Roper St. Francis Healthcare (Charleston, SC)
- UPMC Susquehanna Health System (Williamsport, PA)
TOP ISSUES CONFRONTING HOSPITALS

62.1 ACHE Survey
A February 2018 survey conducted by the American College of Healthcare Executives (ACHE, www.ache.org) found the following top issues confronting hospitals:
1. Financial challenges
2. Governmental mandates
3. Personnel shortages
4. Patient safety and quality
5. Patient satisfaction
6. (tie) Access to care
6. (tie) Physician-hospital relations
8. Technology
9. Population health management
10. Reorganization (e.g., mergers, acquisitions, restructuring, partnerships)

For the three top issues, the ACHE survey asked respondents about specific concerns. These responses are listed in the sections which follow.

62.2 Financial Challenges
Specific concerns related to financial challenges are as follows (based on the percentage of survey respondents indicating that an issue is one of the top three concerns presently confronting their hospital):
• Medicaid reimbursement (including adequacy and timeliness of payment, etc.) 71%
• Increasing costs for staff, supplies, etc. 64%
• Reducing operating costs 57%
• Government funding cuts (other than reduced reimbursement for Medicaid or Medicare) 56%
• Bad debt (including uncollectable ED and other charges) 54%
• Competition from other providers (of any type - inpatient, outpatient, ambulatory care, diagnostic, retail, etc.) 48%
• Transition from volume to value 47%
• Managed care and other commercial insurance payments 46%
• Inadequate funding for capital improvements 42%
• Medicare reimbursement (including adequacy and timeliness of payment, etc.) 42%
• Revenue cycle management (converting charges to cash) 37%
• Moving away from fee-for-service 36%
• Emergency Department overuse 28%
• Pricing and price transparency 24%

62.3 Government Mandates
Specific concerns related to government mandates are as follows:
• CMS regulations 70%
• Regulatory/legislative uncertainty affecting strategic planning 67%
• Cost of demonstrating compliance 54%
• State and local regulations/mandates 51%
• CMS audits (RAC, MAC, CERT) 48%
• Increased government scrutiny of accounting practices (e.g., IRS, Sarbanes-Oxley Act) 17%
• Implementation of ICD-10 11%

62.4 Personnel Shortages
Specific concerns related to personnel shortages are as follows:
• Registered nurses 69%
• Primary care physicians 63%
• Physician specialists 52%
• Physician extenders and specially certified nurses (physician assistants, nurse practitioners, certified nurse midwives, etc.) 36%
• Therapists 30%
• Technicians (e.g., clinical lab scientists, CT/laboratory/radiology/surgery technicians) 7%

62.5 Market Resources
American College of Healthcare Executives, One North Franklin, Chicago, IL 60606. (312) 424-2800. (www.ache.org)
63.1  Top Issues Of 2018
Since 2006, the Health Research Institute of PricewaterhouseCoopers (www.pwc.com/us/healthindustries) has annually identified the top health industry issues facing the health industry.

*Top Health Industry Issues Of 2018* identified issues and their implications as follows:

**Artificial Intelligence**
- Use AI to augment and supplement your workforce
- Data is critical to AI success
- Partner to win

**Health Reform**
- Focus on states
- Scenario plan
- Slim down costs
- Diversify

**Intermediaries Such As Pharmacy Benefits Managers and Wholesalers**
- Diversify how you provide value
- Revisit contracts
- Consider taking on more risk

**Internet Security**
- Hacks are like a 'non-natural' disaster
- Understand the risks to your organization
- Providers should strategically consider how they manage internet-connected devices

**Medicare Advantage**
- Design products locally
- Invest in consumers early
- Be prepared for greater scrutiny
Natural Disasters
• Bolster physical and emergency resources
• Conduct scenario planning well in advance
• Have a public relations plan

Opioid Crisis
• Improve patient management to bridge gaps in care
• Use technology and data sharing to improve healthcare business collaborations
• Make safer treatments for chronic pain available

Patient Experience
• Make every interaction count
• Invest in patient experience tools with operating models
• Marry workforce and patient experience

Price Transparency
• Pricing is both a strategic and operational consideration
• Manage legal and regulatory uncertainty
• Forces other than legislatures will influence future regulations

Social Determinants
• Expect more attention at the federal and state levels
• Focus on sustainability
• You can’t fix what you don’t know

Tax Reform
• Prepare for technology updates
• Continue to model as more information becomes available
• Educate and advocate

Use Of Real-World Data For Pharma
• Align on interests
• Consider who has already built it
• Make your own data by being smart

63.2 Market Resources
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TOP-RANKED HOSPITALS IN SPECIALITY FIELDS

64.1 Overview

Since 1989, *U.S. News & World Reports* has annually ranked the best U.S. hospitals in 16 specialty fields, as follows:

- Cancer
- Diabetes and Endocrinology
- Ear, Nose & Throat
- Gastroenterology & GI Surgery
- Geriatrics
- Gynecology
- Heart and Heart Surgery
- Kidney Disorders
- Neurology and Neurosurgery
- Ophthalmology
- Orthopedics
- Psychiatry
- Pulmonology
- Rehabilitation
- Rheumatology
- Urology

The assessment considers affiliation with a medical school, availability of key technologies such as robotic surgery, performance of a minimum number of specified procedures on Medicare inpatients, reputation, death rate, and care-related factors such as nursing and patient services.

The ranking is based on the assessment of almost 5,000 U.S. hospitals.

64.2 Ranking Of Hospitals

The following are the 2018 top-ranked hospitals in each of the 16 specialty fields:

**Cancer**
- University of Texas M.D. Anderson Cancer Center (Houston, TX)
- Memorial Sloan-Kettering Cancer Center (New York, NY)
- Mayo Clinic (Rochester, MN)
- Dana-Farber/Brigham and Women’s Cancer Center (Boston, MA)
- University of Washington Medical Center (Seattle, WA)
- Johns Hopkins Hospital (Baltimore, MD)
• Cleveland Clinic (Cleveland, OH)
• Hospitals of the University of Pennsylvania and Pennsylvania Presbyterian (Philadelphia, PA)
• Moffitt Cancer Center and Research Institute (Tampa, FL)
• UCSF Medical Center (San Francisco, CA)

**Cardiology and Heart Surgery**
• Cleveland Clinic (Cleveland, OH)
• Mayo Clinic (Rochester, MN)
• New York-Presbyterian University Hospital of Columbia and Cornell (New York, NY)
• Cedars-Sinai Medical Center (Los Angeles, CA)
• Massachusetts General Hospital (Boston, MA)
• Johns Hopkins Hospital (Baltimore, MD)
• Northwestern Memorial Hospital (Chicago, IL)
• Hospitals of the University of Pennsylvania and Pennsylvania Presbyterian (Philadelphia, PA)
• Mount Sinai Medical Center (New York, NY)
• University of Michigan Hospitals and Health Clinics (Ann Arbor, MI)

**Diabetes and Endocrinology**
• Mayo Clinic (Rochester, MN)
• Massachusetts General Hospital (Boston, MA)
• Cleveland Clinic (Cleveland, OH)
• Johns Hopkins Hospital (Baltimore, MD)
• New York-Presbyterian University Hospital of Columbia and Cornell (New York, NY)
• University of Colorado Hospital (Aurora, CO)
• UCSF Medical Center (San Francisco, CA)
• Hospitals of the University of Pennsylvania and Pennsylvania Presbyterian (Philadelphia, PA)
• UPMC Presbyterian Shadydale (Pittsburgh, PA)
• Stanford Health Care - Stanford Hospital (Stanford, CA)

**Ear, Nose & Throat**
• Johns Hopkins Hospital (Baltimore, MD)
• Massachusetts Eye and Ear Infirmary, Massachusetts General Hospital (Boston, MA)
• UCLA Medical Center (Los Angeles, CA)
• Mayo Clinic (Rochester, MN)
• University of Iowa Hospitals and Clinics (Iowa City, IA)
• Ohio State University Wexner Medical Center (Columbus, OH)
• University of Michigan Hospitals and Health Clinics (Ann Arbor, MI)
• Thomas Jefferson University Hospital (Philadelphia, PA)
• Stanford Health Care - Stanford Hospital (Stanford, CA)
• UCSF Medical Center (San Francisco, CA)
Gastroenterology & GI Surgery
• Mayo Clinic (Rochester, MN)
• Cleveland Clinic (Cleveland, OH)
• Johns Hopkins Hospital (Baltimore, MD)
• Cedars-Sinai Medical Center (Los Angeles, CA)
• Massachusetts General Hospital (Boston, MA)
• UPMC-University of Pittsburgh Medical Center (Pittsburgh, PA)
• Mayo Clinic Jacksonville (Jacksonville, FL)
• Mount Sinai Medical Center (New York, NY)
• University of Michigan Hospitals and Health Clinics (Ann Arbor, MI)
• Mayo Clinic (Phoenix, AZ)

Geriatrics
• Mayo Clinic (Rochester, MN)
• Johns Hopkins Hospital (Baltimore, MD)
• Mount Sinai Medical Center (New York, NY)
• UCLA Medical Center (Los Angeles, CA)
• Cleveland Clinic (Cleveland, OH)
• New York-Presbyterian University Hospital of Columbia and Cornell (New York, NY)
• University of Michigan Hospitals and Health Clinics (Ann Arbor, MI)
• Massachusetts General Hospital (Boston, MA)
• Northwestern Memorial Hospital (Chicago, IL)
• UCSF Medical Center (San Francisco, CA)

Gynecology
• Mayo Clinic (Rochester, MN)
• Memorial Sloan-Kettering Cancer Center (New York, NY)
• University of Michigan Hospitals and Health Clinics (Ann Arbor, MI)
• Brigham and Women’s Hospital (Boston, MA)
• Cleveland Clinic (Cleveland, OH)
• Johns Hopkins Hospital (Baltimore, MD)
• Stanford Health Care - Stanford Hospital (Stanford, CA)
• UCSF Medical Center (San Francisco, CA)
• Huntington Memorial Hospital (Pasadena, CA)
• Scripps La Jolla Hospitals (La Jolla, CA)

Nephrology (Kidney Disorders)
• Mayo Clinic (Rochester, MN)
• Johns Hopkins Hospital (Baltimore, MD)
• Massachusetts General Hospital (Boston, MA)
• New York-Presbyterian University Hospital of Columbia and Cornell (New York, NY)
• UCSF Medical Center (San Francisco, CA)
• Cleveland Clinic (Cleveland, OH)
• Barnes-Jewish Hospital/Washington University (St. Louis, MO)
• University of Michigan Hospitals and Health Clinics (Ann Arbor, MI)
• Northwestern Memorial Hospital (Chicago, IL)
• NYU Langone Medical Center (New York, NY)

Neurology and Neurosurgery
• Mayo Clinic (Rochester, MN)
• Johns Hopkins Hospital (Baltimore, MD)
• Massachusetts General Hospital (Boston, MA)
• New York-Presbyterian University Hospital of Columbia and Cornell (New York, NY)
• UCSF Medical Center (San Francisco, CA)
• Cleveland Clinic (Cleveland, OH)
• Barnes-Jewish Hospital/Washington University (St. Louis, MO)
• University of Michigan Hospitals and Health Clinics (Ann Arbor, MI)
• Northwestern Memorial Hospital (Chicago, IL)
• NYU Langone Medical Center (New York, NY)

Ophthalmology
• Bascom Palmer Eye Institute at the University of Miami (Miami, FL)
• Wills Eye Hospital (Philadelphia, PA)
• Wilmer Eye Institute - Johns Hopkins Hospital (Baltimore, MD)
• Massachusetts Eye and Ear Infirmary, Massachusetts General Hospital (Boston, MA)
• Stein and Doheny Institute, UCLA Medical Center (Los Angeles, CA)
• Duke University Medical Center (Durham, NC)
• University of Iowa Hospitals and Clinics (Iowa City, IA)
• W.K. Kellogg Eye Center, University of Michigan, (Ann Arbor, MI)
• Cole Eye Clinic, Cleveland Clinic (Cleveland, OH)
• UCSF Medical Center (San Francisco, CA)

Orthopedics
• Hospital for Special Surgery (New York, NY)
• Mayo Clinic (Rochester, MN)
• Cleveland Clinic (Cleveland, OH)
• Rothman Institute at Thomas Jefferson University Hospitals (Philadelphia, PA)
• Rush University Medical Center (Chicago, IL)
• UCSF Medical Center (San Francisco, CA)
• Massachusetts General Hospital (Boston, MA)
• Hospital for Joint Diseases, NYU Langhorne Medical Center (New York, NY)
• Northwestern Memorial Hospital (Chicago, IL)
• Cedars-Sinai Medical Center (Los Angeles, CA)

Psychiatry
• McLean Hospital (Belmont, MA)
• Massachusetts General Hospital (Boston, MA)
- Menninger Clinic (Houston, TX)
- New York-Presbyterian University Hospital of Columbia and Cornell (New York, NY)
- Johns Hopkins Hospital (Baltimore, MD)
- Sheppard and Enoch Pratt Hospital (Baltimore, MD)
- Mayo Clinic (Rochester, MN)
- Resnick Neuropsychiatric Hospital at UCLA (Los Angeles, CA)
- Austen Riggs Center (Stockbridge, MA)
- UCSF Medical Center (San Francisco, CA)

### Pulmonology
- National Jewish Health, University of Colorado Hospital (Aurora, CO)
- Mayo Clinic (Rochester, MN)
- Cleveland Clinic (Cleveland, OH)
- Massachusetts General Hospital (Boston, MA)
- UPMC Presbyterian Shadydale (Pittsburgh, PA)
- UCSF Medical Center (San Francisco, CA)
- University of Michigan Hospitals and Health Clinics (Ann Arbor, MI)
- Barnes-Jewish Hospital/Washington University (St. Louis, MO)
- Hospitals of the University of Pennsylvania and Pennsylvania Presbyterian (Philadelphia, PA)
- UCLA Medical Center (Los Angeles, CA)

### Rehabilitation
- Shirley Ryan AbilityLab (Chicago, IL)
- TIRR Memorial Hermann (Houston, TX)
- Kessler Institute for Rehabilitation (West Orange, NJ)
- Spaulding Rehabilitation Hospital (Boston, MA)
- University of Washington Medical Center (Seattle, WA)
- Mayo Clinic (Rochester, MN)
- Craig Hospital (Englewood, CO)
- Rusk Institute, NYU Langone Medical Center (New York, NY)
- Shepherd Center (Atlanta, GA)
- Moss Rehab-Albert Einstein Medical Center (Elkins Park, PA)

### Rheumatology
- Johns Hopkins Hospital (Baltimore, MD)
- Cleveland Clinic (Cleveland, OH)
- Hospital for Special Surgery (New York, NY)
- Mayo Clinic (Rochester, MN)
- Brigham and Women’s Hospital (Boston, MA)
- UCLA Medical Center (Los Angeles, CA)
- UCSF Medical Center (San Francisco, CA)
- Massachusetts General Hospital (Boston, MA)
• Hospital for Joint Diseases, NYU Langone Medical Center (New York, NY)
• UPMC-University of Pittsburgh Medical Center (Pittsburgh, PA)

Urology
• Cleveland Clinic (Cleveland, OH)
• Mayo Clinic (Rochester, MN)
• Johns Hopkins Hospital (Baltimore, MD)
• UCLA Medical Center (Los Angeles, CA)
• Memorial Sloan-Kettering Cancer Center (New York, NY)
• UCSF Medical Center (San Francisco, CA)
• University of Michigan Hospitals and Health Clinics (Ann Arbor, MI)
• New York-Presbyterian University Hospital of Columbia and Cornell (New York, NY)
• Vanderbilt University Medical Center (Nashville, TN)
• Duke University Medical Center (Durham, NC)

The U.S. News & World Reports ranking of hospitals is viewable online at http://health.usnews.com/best-hospitals/rankings.

Rankings by metropolitan area are viewable online at http://health.usnews.com/best-hospitals/area.
65.1 Market Assessment

The Urgent Care Association of America (UCAA, www.ucaoa.org) defines urgent care as healthcare provided on a walk-in, no-appointment basis for acute illness or injury that is not life or limb threatening, and is either beyond the scope or availability of the typical primary care practice or retail clinic. Urgent-care centers see an estimated 160 million patient visits each year.

“The business model is simple: Treat many patients as quickly as possible. Urgent care is a low-margin, high-volume proposition. Most people are in and out in about 30 minutes. The national average charge runs about $155 per patient visit. Do 30 or 35 exams a day, and the money starts to add up. Urgent-care clinics have a crucial business advantage over traditional hospital emergency rooms. Most of the centers do not accept Medicaid and turn away the uninsured unless they pay upfront. Hospital E.R.s, by contrast, are legally obligated to treat everyone.”

The New York Times

The American Academy of Urgent Care Medicine (AAUCM, www.aaucm.org), which represents more than 2,700 clinics, estimates there were 9,300 clinics in the United States in 2017. Other estimates are as low as 5,000 to 6,000. One reason for the discrepancies is that the industry is dominated by physician-owned practices with one or two facilities that are not assessed. Also, the industry lacks clear criteria about
what constitutes an urgent-care clinic; the distinction between an urgent-care clinic and primary care physician’s office is often blurred.

The majority of urgent-care centers provide services in episodic primary care, occupational medicine, routine immunization, and school physicals, according to the UCAA. At least half also provide lab tests, x-rays, fracture and laceration care, and intravenous fluids. Urgent-care centers see, on average, 342 patient visits per week. Modern Healthcare estimated the 2017 urgent-care clinic market at $18 billion. A 5.8% growth rate is projected for 2018.

65.2 Cost of Care

Recent studies found that the average cost of an urgent-care visit is slightly below the cost of an average primary care visit: $155 vs. $165.

A survey by Medica Health Plans (www.medicaplans.com) found that urgent care typically costs about 80% less than emergency room visits. The following is a comparison of costs for various ailments:

<table>
<thead>
<tr>
<th>Urgent Care Cost</th>
<th>ER Cost</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>$97</td>
<td>$345</td>
<td>72%</td>
</tr>
<tr>
<td>$127</td>
<td>$595</td>
<td>79%</td>
</tr>
<tr>
<td>$114</td>
<td>$665</td>
<td>83%</td>
</tr>
<tr>
<td>$110</td>
<td>$400</td>
<td>73%</td>
</tr>
<tr>
<td>$94</td>
<td>$525</td>
<td>82%</td>
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<td>$102</td>
<td>$370</td>
<td>72%</td>
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<td>$112</td>
<td>$617</td>
<td>82%</td>
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<tr>
<td>$123</td>
<td>$531</td>
<td>77%</td>
</tr>
<tr>
<td>$111</td>
<td>$486</td>
<td>77%</td>
</tr>
<tr>
<td>$110</td>
<td>$665</td>
<td>83%</td>
</tr>
</tbody>
</table>

According to one estimate, 80% of all ER visits can be treated at an urgent-care clinic.

65.3 Market Leaders

Ranked by number of clinics as of April 2018, the following are the largest urgent-care chains:

- Concentra Urgent Care (www.concentra.com): 530
- MedExpress (www.medexpress.com): 205
- American Family Care (www.americanfamilycare.com): 200
- NextCare (www.nextcare.com): 136

65.4 Hospital-Operated Urgent-Care Clinics

*Modern Healthcare* estimates that hospitals own up to one-fourth of urgent-care clinics.

“Historically, hospitals have tried to increase referrals to their affiliated specialists – and therefore their own bottom lines – by opening primary-care practices. Now, though, more hospitals are looking to drum up business through urgent care, which introduces relatively healthy people to their networks at a fraction of the cost of hiring family docs. Patients avoid the chaos and eye-popping bills associated with the ER, while hospital systems skip paying for high-tech equipment, large buildings and lots of physicians.”

*Modern Healthcare*, 5/15/17

The UCAA reported that emergency visits to hospitals were reduced by 30% in communities where there was access to walk-in, no appointment medical services via urgent-care centers. The cost to care for the same diagnosis in EDs is 10 times higher compared with urgent-care clinics.

“Given these factors ... health systems will continue to invest in urgent-care centers.”

*Modern Healthcare*, 2/19/18

65.5 Market Saturation

Despite the booming market, most cities are not yet approaching saturation.
Merchant Medicine (www.merchantmedicine.com), a management consulting firm with a focus on urgent-care medicine, tracks the number of clinics in an area and then divides it by 100,000 residents. Any city that scores above a 4.5 is deemed highly saturated. Chicago, for example, had a total of 250 stand-alone urgent-care clinics (plus several-hundred retail clinics) and a score of 2.6 in 2017, indicating plenty of room for market growth before saturation. Louisville, Kentucky, with a score of almost 5.0, is among the few major cities that have reached saturation.

65.6 Market Resources
American Academy of Urgent Care Medicine, 2813 S. Hiawassee Road, Suite 206, Orlando, FL 32835. (407) 521-5789. (www.aaucm.org)

Merchant Medicine, 3550 Lexington Avenue N., Suite 302, Shoreview, MN 55126. (651) 483-0450. (www.merchantmedicine.com)

Urgent Care Association of America, 28600 Bella Vista Pkwy, Suite 2010, Warrenville, IL 60555. (877) 698-2262. (www.ucaoa.org)
VALUE-BASED PURCHASING

66.1 Overview

Authorized by the Affordable Care Act, the hospital value-based purchasing (VBP) program is an initiative which rewards hospitals for the quality of care they provide to people with Medicare and measures taken to reduce healthcare costs. With the VBP initiative, 3,500 hospitals across the country will be paid for inpatient acute care services based on care quality, not just the quantity of the services they provide.

“FY2018 is the sixth year of the VBP program, which adjusts Medicare inpatient reimbursements based on hospitals' performance on quality and patient experience measures. Each year, CMS withholds a percentage of inpatient payments from each hospital to fund the program. For FY2018, the withholding percentage was 2%. If a hospital does well by VBP metrics, it can earn back more than the withheld amount, effectively earning a bonus overall. Perform poorly, and the reverse is true.”

Advisory Board, 11/8/17

Member hospitals of the American Hospital Association (www.aha.org) support value-based purchasing.

The American Hospital Association’s 2018 Environmental Scan assesses the impact of value-based care as follows:

- The financial incentives in the Medicare Access and CHIP Reauthorization Act will accelerate the transition to alternative payment models not only in the public sector, but also in the private sector.
- Value-based insurance design will speed patients’ understanding of the variation in
cost and quality of services among providers.

- Providers need the infrastructure to monitor their quality and financial performance in near-real time, so they can afford to take on risk. Currently, many providers do not have the information they need to manage that risk successfully.

**66.2 Incentive Bonuses And Penalties**

The following are milestones in the development of the VBP initiative:

- In February and March 2012, CMS conducted a Dry Run of the FY2013 Hospital VBP Program.
- In November 2012, CMS released its final rule for the FY2014 Hospital VBP Program as part of the Agency’s Outpatient Prospective Payment System.
- The VBP program launched in FY2013. For FY2013, an estimated $850 million was allocated to hospitals based on their overall performance on a set of quality measures that have been shown to improve clinical processes of care and patient satisfaction.
- In FY2015, 1,648 hospitals received value-based improvement bonuses; 1,806 did so in FY2016.
- In FY2016, 475 hospitals moved from bonuses to a penalty; 317 moved from a penalty to bonuses.
- In FY2017, 2,955 hospitals participated in program; 55% earned bonuses and 1,343 experienced reductions.
- In FY2018, 2,808 hospitals participated in the program, with the highest performing hospital in FY2018 seeing a net payment increase of about 3%. CMS made available $1.9 billion for incentive payments for FY2018. Overall, 57% of hospitals, or 1,597 hospitals, received bonuses in FY2018, up from 55% in FY2017; 1,211 hospitals had reductions in FY2018.
- According to *Modern Healthcare*, 1,196 hospitals earned bonuses in both FY2017 and FY2018; 938 hospitals faced penalties in both FY2017 and FY2018.
- CMS announced changes to the program for FY2019, as follows:
  - Remove the patient safety for selected indicators composite from the safety metric
  - Add the risk-standardized elective primary total hip arthroplasty and/or total knee arthroplasty complications measure to the clinical care metric.

**66.3 Implementation**

The VBP program includes 12 clinical quality measures as well as the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) to assess patient experiences with care. The clinical measures account for 70% of a hospital’s VBP score and patient experience-of-care measures for 30%.

Clinical measures are as follows:
• Percent of heart attack patients given fibrinolytic medication within 30 minutes of arrival
• Percent of heart attack patients given pci within 90 minutes of arrival
• Percent of heart failure patients given discharge instructions
• Percent of pneumonia patients whose initial emergency room blood culture was performed prior to the administration of the first hospital dose of antibiotics
• Initial antibiotic selection for cap in immunocompetent patient
• Prophylactic antibiotic received within one hour prior to surgical incision
• Prophylactic antibiotic selection for surgical patients
• Prophylactic antibiotics discontinued within 24 hours after surgery end time
• Cardiac surgery patients with controlled 6am postoperative serum glucose
• Surgery patients on a beta blocker prior to arrival that received a beta blocker during the perioperative period
• Surgery patients with recommended venous thromboembolism prophylaxis ordered
• Surgery patients who received appropriate venous thromboembolism prophylaxis within 24 hours prior to surgery to 24 hours after surgery

Experience-of-care measures, based on the HCAHPS survey system, are as follows:
• How well nurses communicated with patients
• How well doctors communicated with patients
• How responsive hospital staff were to patients’ needs
• How well caregivers managed patients’ pain
• How well caregivers explained patients’ medications to them
• How clean and quiet the hospital was
• How well caregivers explained the steps patients and families need to take to care for themselves outside of the hospital (i.e., discharge instructions)

Hospitals are assessed on their performance relative to their peers on quality and costs as well as their own performance over time. For FY2018, the measures, each worth 25%, were as follows:
• Clinical care
• Safety
• Patient and caregiver-centered experience of care
• Efficiency and cost reduction

66.4 Market Resources
A fact sheet on the Hospital Value-Based Purchasing program is provided online at www.HealthCare.gov/news/factsheets/valuebasedpurchasing04292011a.html.

A primer on Hospital Value-Based Purchasing is provided by the Centers for Medicare and Medicaid Services at www.cms.gov/HospitalQualityInits.
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VETERANS HEALTH ADMINISTRATION

67.1 Overview
The Veterans Health Administration (VHA, www.va.gov/health), a component of the United States Department of Veterans Affairs (VA), is America’s largest integrated healthcare system, with 1,240 healthcare facilities, including 170 medical centers and 1,061 outpatient sites as of April 2018. VHA served 9 million enrolled veterans in 2017. The VHA had 6.9 million patients in FY2018; there were 108.5 million outpatient visits.
The VHA had 366,358 employees as of April 2018.
The 2019 budget request for discretionary funding was $88.9 billion.

67.2 Largest VA Hospitals
Based on the total number of staffed beds, the largest U.S. Veterans Affairs Hospitals are as follows:
• Michael E. DeBakey VA Medical Center (Houston, TX): 397
• James A. Haley Veterans’ Hospital (Tampa, FL): 383
• Lyons Campus of the VA New Jersey (Lyons, NJ): 381
• VA Boston Healthcare System (Boston, MA): 349
• VA Greater Los Angeles Healthcare System (Los Angeles, CA): 316
• VA Long Beach Healthcare System (Long Beach, CA): 304
• Northport VA Medical Center (Northport, NY): 302
• VA Caribbean Healthcare System (San Juan, Puerto Rico): 300
• Malcom Randall VA Medical Center (Gainesville, FL): 291
• Louis Stokes Cleveland VA Medical Center (Cleveland, OH): 276
• VA North Texas Health Care System (Dallas, TX): 276
• Hunter Holmes McGuire VA Medical Center (Richmond, VA): 271

67.3 VHA Services
The VHA implements the medical assistance program of the VA through the administration and operation of VA Medical Centers, Outpatient Clinics, Community Based Outpatient Clinics, and VA Community Living Centers.
The VHA supports veterans by providing benefits and support. Eligibility for benefits is determined by a system of eight Priority Groups. Retirees from military service, veterans with service-connected injuries or conditions rated by VA, and Purple
Heart recipients are within the higher priority groups.

Veterans with a 50% or higher service-connected disability as determined by a VA regional office rating board (e.g., losing a limb in battle, PTSD, etc.) are provided comprehensive care and medication at no charge. Veterans with lesser qualifying factors who exceed a pre-defined income threshold make co-payments for care for non-service-connected ailments and pay $9 per 30-day supply for each prescription medication. VA dental and nursing home care benefits are more restricted. No co-payment is required for VA services for veterans with military-related medical conditions.

67.4 Market Resources
Veterans Health Administration, U.S. Department of Veterans Affairs, 810 Vermont Avenue NW, Washington, DC 20420. (www.va.gov/health)
PART IV: HEALTH INSURANCE
68.1 Overview
The Patient Protection and Affordable Care Act, generally referred to as the Affordable Care Act (ACA), was signed into law in March 2010. The legislation is viewable online at www.healthcare.gov/law/full/index.html. This chapter provides a summary of key health coverage provisions in the law.

The cornerstone of the ACA is the availability of subsidized health insurance through health benefit exchanges, commonly referred to as Obamacare.

68.2 Enrollment
During the open enrollment periods people can enroll, switch plans, and get subsidies. The first general enrollment period was January to March 2014. Enrollment periods have changed throughout the program. For 2019 coverage, open enrollment ran from October 15, 2018, to December 7, 2018.

The U.S. Department of Health & Human Services (HHS, www.hhs.gov) reported that 85% of adults who sign up for Obamacare receive premium subsidies.

At the end of the January 31, 2018 enrollment period, 11.8 million people selected or re-enrolled in the ACA’s state and federal marketplaces, a 3% decrease from the prior year.

68.3 Mandates
The following are the primary mandates of the Affordable Care Act:
• Most individuals were required to have health insurance beginning in 2014.
• Individuals who do not have access to affordable employer coverage are able to purchase coverage through a health insurance exchange with premium and cost-sharing credits available to some people to make coverage more affordable. Small businesses are allowed to purchase coverage through a separate exchange.
• Employers are required to pay penalties if employees receive tax credits for health insurance through the exchange, with exceptions for small employers.
• Regulations are imposed on all health plans to prevent health insurers from denying coverage to people for any reason, including health status, and from charging higher premiums based on health status and gender.
• Medicaid is expanded to those under age 65 who are at 138% of the federal poverty level ($16,242 for an individual and $33,464 for a family of four in 2015).
68.4 Mandate For Individuals

All individuals were required to have health insurance, with some exceptions, as of 2014. Those without coverage were required to pay a penalty of the greater of $695 per person (up to a maximum of $2,085 per family) or 2.5% of household income. The penalty ended in 2018.

68.5 Requirements for Employers

Employers with 50 or more employees are assessed a fee of $2,000 per full-time employee (in excess of 30 employees) if they do not offer coverage and if they have at least one employee who receives a premium credit through an exchange. Employers with 50 or more employees that offer coverage and have at least one employee who receives a premium credit through an exchange are required to pay the lesser of $3,000 for each employee who receives a premium credit or $2,000 for each full-time employee (in excess of 30 employees).

Large employers that offer coverage are required to automatically enroll employees into the employer’s lowest cost premium plan if the employee does not sign up for employer coverage or does not opt out of coverage.

68.6 Requirements For Private Health Insurance

Insurance market regulations under the ACA prevent health insurers from denying coverage to people for any reason, including their current health status, and from charging people more based on their status and gender. These new rules also require that all new health plans provide comprehensive coverage that includes at least a minimum set of services, caps annual out-of-pocket spending, and does not impose cost-sharing for preventive services.

Health plan premiums may vary based on the insured’s age (by a 3 to 1 ratio), geographic area, tobacco use (by a 1.5 to 1 ratio), and the number of family members. Health insurers are prohibited from imposing lifetime limits on coverage and are prohibited from rescinding coverage, except in cases of fraud.

Young adults are allowed to remain on their parent’s health insurance up to age 26.

States are allowed to form healthcare choice compacts that enable insurers to sell policies in any state that participates in the compact.

Existing individual and employer-sponsored insurance plans are allowed to remain essentially the same, except that they are required to extend dependent coverage to age 26, eliminate annual and lifetime limits on coverage, prohibit rescissions of coverage, and eliminate waiting periods for coverage of greater than 90 days.

Increases in health plan premiums are subject to review.
68.7 Cost Sharing Reduction
Cost Sharing Reduction (CSR) payments are federal payments that help to lower co-pays and deductibles for low-income Americans who earn between 100 and 250% of the federal poverty level.

More than 70% of voters support help with out-of-pocket healthcare costs such as deductibles and co-pays, according to the Congressional Budget Office (www.cbo.gov).

CSR payments totaled $7 billion in 2017.

“About 12 million people bought health insurance through the ACA’s insurance markets for 2017, and 7 million of them (58%) qualified for CSR payments.”

2018 Environmental Scan
American Hospital Association

68.8 Expansion of Medicaid
The ACA allows for the expansion of Medicaid by states. This allows Medicaid benefits for individuals under age 65 with incomes up to 138% of the federal poverty level ($16,242 for an individual and $33,464 for a family of four in 2015) based on modified adjusted gross income.

Expansion creates a uniform minimum Medicaid eligibility threshold and eliminates a limitation of the program that prohibited most adults without dependent children from enrolling in the program.

The federal government fully funds the costs of those who become newly eligible for Medicaid for years 2014 through 2016, funds 95% for 2017, 94% for 2018, 93% for 2019, and 90% for 2020 and subsequent years.

As of August 2018, the following 34 states and the District of Columbia had expanded Medicaid programs:

- Alaska
- Arizona
- Arkansas
- California
- Colorado
- Connecticut
- Delaware
- District of Columbia
- Hawaii
- Illinois
- Indiana
- Iowa
- Kentucky
- Louisiana
- Maine
- Maryland
Seventeen (17) states have not expanded their Medicare programs, as follows:

- Alabama
- Florida
- Georgia
- Idaho
- Kansas
- Mississippi
- Missouri
- Nebraska
- North Carolina
- Oklahoma
- South Carolina
- South Dakota
- Tennessee
- Texas
- Utah
- Wisconsin
- Wyoming

### 68.9 Affordable Health Benefit Exchanges

The Affordable Care Act requires the establishment of a health benefit exchange in each state where individuals and small businesses can purchase affordable health insurance plans. As the centerpiece of the reform law, exchanges are the main portals for people without employer-sponsored or public insurance.

To establish an exchange, states must either pass enabling legislation or have an executive order signed by the governor.

States have the option to decline to establish an exchange. In states that elect not to establish an exchange, the ACA requires the HHS to establish and operate an exchange for that state.

The status of health exchanges as of August 2018 was as follows:

- Federally facilitated marketplaces: 28
- State-based marketplaces: 15
- State-partnership marketplaces: 6
- Federally supported marketplaces: 2

The types of exchanges by state are as follows:

- Alabama: Federally facilitated marketplace
- Alaska: Federally facilitated marketplace
- Arizona: Federally facilitated marketplace
- Arkansas: State-based marketplace, federal platform
- California: State-based marketplace
• Colorado: State-based marketplace
• Connecticut: State-based marketplace
• Delaware: State-partnership marketplace
• District of Columbia: State-based marketplace
• Florida: Federally facilitated marketplace
• Georgia: Federally facilitated marketplace
• Hawaii: Federally facilitated marketplace
• Idaho: State-based marketplace
• Illinois: State-partnership marketplace
• Indiana: Federally facilitated marketplace
• Iowa: State-partnership marketplace
• Kansas: Federally facilitated marketplace
• Kentucky: State-based marketplace, federal platform
• Louisiana: Federally facilitated marketplace
• Maine: Federally facilitated marketplace
• Maryland: State-based marketplace
• Massachusetts: State-based marketplace
• Michigan: State-partnership marketplace
• Minnesota: State-based marketplace
• Mississippi: Federally facilitated marketplace
• Missouri: Federally facilitated marketplace
• Montana: Federally facilitated marketplace
• Nebraska: Federally facilitated marketplace
• Nevada: State-based marketplace, federal platform
• New Hampshire: State-partnership marketplace
• New Jersey: Federally facilitated marketplace
• New Mexico: Federally supported marketplace
• New York: State-based marketplace
• North Carolina: Federally facilitated marketplace
• North Dakota: Federally facilitated marketplace
• Ohio: Federally facilitated marketplace
• Oklahoma: Federally facilitated marketplace
• Oregon: Federally supported marketplace
• Pennsylvania: Federally facilitated marketplace
• Rhode Island: State-based marketplace
• South Carolina: Federally facilitated marketplace
• South Dakota: Federally facilitated marketplace
• Tennessee: Federally facilitated marketplace
• Texas: Federally facilitated marketplace
• Utah: Federally facilitated marketplace
• Vermont: State-based marketplace
• Virginia: Federally facilitated marketplace
• Washington: State-based marketplace
• West Virginia: State-partnership marketplace
68.10 Exchange Carriers

While all exchanges offer health policies from at least one health carrier, many do not provide much choice. In 2018, CMS found that 1,524 counties, or 48.5% of all counties in the U.S., had only one carrier. This left 2,698,989 exchange participants (29.3%) without choices.
EMPLOYER-SPONSORED HEALTH INSURANCE

69.1 Overview

This chapter provides a summary of the 19th Kaiser/HRET survey, published in September 2017.

69.2 Premiums For Families And Individuals
Average annual premiums for employee-sponsored health insurance have been as follows (total of employee and employer contributions):

<table>
<thead>
<tr>
<th>Year</th>
<th>Single</th>
<th>Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>$2,471</td>
<td>$ 6,438</td>
</tr>
<tr>
<td>2001</td>
<td>$2,689</td>
<td>$ 7,061</td>
</tr>
<tr>
<td>2002</td>
<td>$3,083</td>
<td>$ 8,003</td>
</tr>
<tr>
<td>2003</td>
<td>$3,383</td>
<td>$ 9,068</td>
</tr>
<tr>
<td>2004</td>
<td>$3,695</td>
<td>$ 9,950</td>
</tr>
<tr>
<td>2005</td>
<td>$4,024</td>
<td>$10,880</td>
</tr>
<tr>
<td>2006</td>
<td>$4,242</td>
<td>$11,480</td>
</tr>
<tr>
<td>2007</td>
<td>$4,479</td>
<td>$12,106</td>
</tr>
<tr>
<td>2008</td>
<td>$4,704</td>
<td>$12,680</td>
</tr>
<tr>
<td>2009</td>
<td>$4,824</td>
<td>$13,375</td>
</tr>
<tr>
<td>2010</td>
<td>$5,049</td>
<td>$13,770</td>
</tr>
<tr>
<td>2011</td>
<td>$5,429</td>
<td>$15,073</td>
</tr>
<tr>
<td>2012</td>
<td>$5,615</td>
<td>$15,745</td>
</tr>
<tr>
<td>2013</td>
<td>$5,884</td>
<td>$16,351</td>
</tr>
<tr>
<td>2014</td>
<td>$6,025</td>
<td>$16,834</td>
</tr>
<tr>
<td>2015</td>
<td>$6,251</td>
<td>$17,545</td>
</tr>
<tr>
<td>2016</td>
<td>$6,435</td>
<td>$18,142</td>
</tr>
<tr>
<td>2017</td>
<td>$6,690</td>
<td>$18,764</td>
</tr>
</tbody>
</table>

Most covered workers make a contribution toward the cost of the premium for their coverage. On average, covered workers contribute 18% of the premium for single coverage and 31% of the premium for family coverage. Workers in small firms
contribute a higher average percentage of the premium for family coverage than workers in large firms (39% vs. 28%).

69.3 Types Of Plans

By type of plan, employee enrollment in 2017 was distributed as follows:

- Preferred provider organizations (PPOs): 48%
- High-deductible health plan/savings option (HDHP/SOs): 28%
- Health maintenance organizations (HMOs): 14%
- Point-of-service (POS) plans: 10%
- Conventional plans: <1%

Average annual total premium by type of policy in 2017 was as follows:

<table>
<thead>
<tr>
<th>Type</th>
<th>Single</th>
<th>Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMO</td>
<td>$7,052</td>
<td>$19,071</td>
</tr>
<tr>
<td>PPO</td>
<td>$6,915</td>
<td>$19,481</td>
</tr>
<tr>
<td>POS</td>
<td>$6,716</td>
<td>$18,146</td>
</tr>
<tr>
<td>HDHP/SO</td>
<td>$6,024</td>
<td>$17,581</td>
</tr>
<tr>
<td>All plans</td>
<td>$6,690</td>
<td>$18,764</td>
</tr>
</tbody>
</table>

69.4 Market Resources

Health Research & Educational Trust, 155 North Wacker, 4th Floor, Chicago, IL 60606. (312) 422-2600. (www.hert.org)

The Henry J. Kaiser Family Foundation, 2400 Sand Hill Road, Menlo Park, CA 94025. (650) 854-9400. (www.kff.org)
70.1 Overview

Until recently, individual-market health insurance plans were designed solely to provide temporary healthcare insurance during unexpected coverage gaps. The Affordable Care Act (ACA) originally required these policies to be renewed every three months. In October 2018, short-term plans became available for periods up to 36 months.

Individual-market health plans do not meet the minimum essential coverage requirements under the ACA. They are also less costly. Modern Healthcare estimated that 500,000 to 1 million people had short-term individual-market plans in early 2018. That number is expected to increased substantially with policy periods extended beyond three months and with the repeal of the penalty for not obtaining ACA-compliant insurance in 2019.

70.2 Policy Limitations

Short-term plans generally offer broader networks and are priced much lower than ACA-compliant plans because they typically exclude coverage for prescription drugs, maternity care, mental healthcare, elective outpatient care, preventive services, and other ACA-required benefits.

According to Kaiser Family Foundation (www.kff.org), short-term policies include coverage is as follows:

- Mental health: 57%
- Substance abuse treatment: 38%
- Prescription drugs: 20%
- Maternity benefits: 0%

Families USA (www.familiesusa.org) found that limitations on the following specific treatments were common in short-term plans:

- Cataract treatment
- Hernia repair surgery
- Immunizations
- Injuries resulting from organized sports
- Joint replacement surgery
- Treatment for acne or moles
- Treatment for any injury incurred while the patient was intoxicated
- Treatment for chronic fatigue or pain
70.3 Policy Economics

Typical short-term plans cover a maximum of $250,000 to $2 million in medical care. And they deny benefits or even rescind policies if enrollees file claims for what insurers deem pre-existing conditions, even if those conditions were not previously diagnosed.

With their limited benefits, short-term plans pay out much less of their premium revenue for medical claims than ACA-compliant plans – 67.4% versus 92.9% in 2016, according to data from the National Association of Insurance Commissioners (www.naic.org).

The national average monthly premium for short-term plans sold through eHealth (www.ehealth.com) in 2017 was $109 for individuals and $264 for families. That compares with the 2017 average unsubsidized monthly premium for ACA-compliant plans sold through eHealth of $378 for individuals and $997 for families.

Not surprisingly, short-term plans attract younger consumers. Sixty percent (60%) of individuals buying short-term plans through eHealth in 2017 were between the ages of 18-and-34 compared with 27% of ACA exchange customers.

________________________________________________________

“The plans are cheaper for a reason: They tend to cover fewer medical services than comprehensive insurance, and they will charge higher prices to people with pre-existing health problems, if they’ll cover them at all. That means that it’s really important to shop carefully.”

The New York Times, 8/1/18

________________________________________________________
PROVIDER-OWNED HEALTH PLANS

71.1 Overview

According to the American Hospital Association (www.aha.org), over 700 hospitals have equity in a health maintenance organization (HMO). The figure includes many hospitals within the same health system.

Currently, there are over 100 provider-owned plans across the United States. They cover more than 26 million enrollees, or about 8% of the population.

“Health policy experts have long touted the benefits of provider-owned insurers like Kaiser Permanente. As insurers, these provider organizations face incentives to control costs. Physicians are salaried, so they do not have incentives to recommend costly tests and procedures when less costly alternatives are available. Integration makes it easier to share information about patients and track quality, which improves the ability of the organization to manage patients with chronic conditions.”

The American Journal of Managed Care, 9/17

According to A.M. Best Co. (www.ambest.com), provider-owned plans have had an average profit margin above 3% since 2010, a figure similar to other insurers. This figure is primarily based on the profitability of established plans; recent entries into the market have struggled for profitability.
“Hospital systems that got into the health plan business after 2010 have yet to see a financial return on their investment, though several believe they are now better able to manage populations under value-based reimbursement.”

*Modern Healthcare, 9/25/17*

**71.2 Largest Provider-Owned Health Plans**

Kaiser Permanente is the most well-known and by far the largest provider-owned HMO.

The largest regional provider-owned HMOs include Sanford Health Plan in the Dakotas and Optima Health in Virginia.

A few commercial plans have attempted to reverse-engineer the provider-owned insurer model by opening clinics. Molina Healthcare, for example, operates primary care practices in 5 states. Oscar Health announced in 2017 that it would partner with Cleveland Clinic to sell plans in 5 Ohio counties. United Healthcare launched a subsidiary, Harken Health, that operates primary care clinics in 6 states.
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LARGEST HEALTH INSURERS

72.1 Ranking By Membership

The largest insurance groups based membership in 2017 were as follows (source: Forbes):

- United Health Group (www.unitedhealthgroup.com): 70.0 million
- Anthem (www.anthem.com): 39.4 million
- Aetna (www.aetna.com): 23.0 million
- Health Care Service Corp. (www.hcsc.com): 15.0 million
- Cigna Corp. (www.cigna.com): 14.7 million
- Humana (www.humana.com): 14.2 million
- Centene Corp. (www.centene.com): 11.0 million
- Kaiser Permanente (www.kaiserpermanente.org): 10.7 million
- Highmark (www.highmark.com): 5.3 million
- WellCare Health Plans (www.wellcare.com): 3.7 million

72.2 Ranking By Revenue

The largest insurance groups based on annual healthcare-related revenue are as follows (sources: Securities and Exchange Commission filings, Modern Healthcare, and Weiss Ratings):

- United Health Group (www.unitedhealthgroup.com): $119.8 billion
- Anthem [formerly WellPoint] (www.anthem.com): $73.9 billion
- Kaiser Foundation (www.kaiserpermanente.org): $60.7 billion
- Aetna (www.aetna.com): $58.0 billion
- Humana (www.humana.com): $48.5 billion
- Cigna Corp. (www.cigna.com): $34.9 billion
- Health Care Service Corp. (www.hcsc.com): $23.4 billion
- Aflac (www.aflac.com): $22.7 billion
- Centene Corp. (www.centene.com): $16.6 billion
- Health Net (www.healthnet.com): $14.0 billion
- Highmark (www.highmark.com): $13.2 billion
- WellCare Health Plans (www.wellcare.com): $12.9 billion
- Blue Shield of California (www.blueshieldca.com): $10.7 billion
- Independence BlueCross (www.ibx.com): $10.1 billion
- EmblemHealth (www.emblemhealth.com): $10.0 billion
- Molina Healthcare (www.molinahealthcare.com): $9.7 billion
• Horizon Blue Cross and Blue Shield of New Jersey (www.horizonblue.com): $ 9.5 billion
• Blue Cross and Blue Shield of Michigan (www.bcbsm.com): $ 9.5 billion
• Blue Cross and Blue Shield of Florida (www.bcbsfl.com): $ 7.8 billion
• CareFirst (www.carefirst.com): $ 7.4 billion
• Lifetime HealthCare Co. (www.lifethc.com): $ 6.4 billion
• Universal American (www.universalamerican.com): $ 2.0 billion
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LONG-TERM CARE INSURANCE

73.1 Overview

Long-term care insurance (LTCI) provides coverage for home care, assisted living, adult daycare, respite care, hospice care, nursing home, and Alzheimer’s facilities. Individuals who require long-term care are generally those unable to perform the basic activities of daily living (ADLs), such as bathing, dressing, eating, toileting, transferring (getting in and out of a bed or chair), and walking. Long-term healthcare is generally not covered by medical insurance, group/employer insurance, or Medicare supplement plans.

For seniors on Medicare, the long-term care benefits are quite limited. About 40% of those receiving long-term care today are younger than age 65. According to the American Association for Long-Term Care Insurance (AALTCA, www.aaltci.org), approximately 8 million Americans have long-term care insurance. The annual renewal lapse rate is between 1% and 1.5%.

Long-term care insurance typically costs $2,065 a year for a person age 55 and $3,725 a year for a couple who are each age 55, according to the AALTCA.

73.2 Market Assessment

According to Conning & Company (www.conning.com), 92 LTC insurers collect a combined $10 billion annually in direct premiums. The 10 largest companies, including Genworth Financial (www.genworth.com), Mutual of Omaha (www.mutualofomaha.com), and Transamerica Corp. (www.transamerica.com), hold a 78% marketshare. The other 22% of the market is shared among 82 small companies.

73.3 Market Challenges

Insurers in the LTCI market have been challenged as the rising cost of care has outpaced premium increases. Genworth Financial, the largest seller of LTC policies, has considered halting the sale of new policies because of underpricing of plans and announced that it would seek rate hikes. Large insurers including Aetna, Humana, Nationwide Financial, and Prudential have exited the LTCI market. Demand has also diminished.
“There is little chance that stand-alone LTCI products for individual consumers will ever again see the growth experienced during the 1980s. One reason is that the LTC insurers’ primary market of upper-middle-income Americans is small and shrinking. Wealthy individuals have the means to pay for their own care, while middle- and lower-income people can’t afford the premiums. They typically rely on Medicaid, spending down their assets until they qualify for nursing home coverage or other long-term care.”

Terence Martin, Director of Research
Conning & Company

73.4 Market Resources
American Association for Long-Term Care Insurance, 3835 East Thousand Oaks Boulevard, Suite 336, Westlake Village, CA 91362. (818) 597-3227. (www.aaltci.org)

MEDICAL SPENDING FOR PPO-COVERED FAMILIES

74.1 Overview
Since 2005, Milliman Inc. (www.milliman.com) has measured average annual medical spending for a typical American family of four covered by an employer-sponsored preferred provider organization (PPO) program. The Milliman assessment, which refers to annual spending as the Milliman Medical Index (MMI), looks at various components of spending, including cost changes for employers and employees. Medical spending figures for 14 metropolitan areas show that medical costs vary widely by region.

74.2 Average Annual Medical Spending
Average medical spending for a family of four has been as follows (increase from the previous year in parenthesis):
- 2005: $12,214 (9.1%)
- 2006: $13,382 (9.6%)
- 2007: $14,500 (8.4%)
- 2008: $15,609 (7.6%)
- 2009: $16,771 (7.4%)
- 2010: $18,074 (7.8%)
- 2011: $19,393 (7.3%)
- 2012: $20,728 (6.9%)
- 2013: $22,030 (6.3%)
- 2014: $23,215 (5.4%)
- 2015: $24,671 (6.3%)
- 2016: $25,826 (4.7%)
- 2017: $26,944 (4.3%)
- 2018: $28,166 (4.5%)

74.3 Components of Spending
The $28,166 in medical costs paid by and on behalf of the typical American family in 2018 was distributed as follows (percent of total in parenthesis):
- Inpatient: $8,631 (31%)
- Professional services: $8,257 (29%)
- Outpatient: $5,395 (19%)
- Pharmacy: $4,888 (17%)
- Other: $995 (4%)

74.4 Share Of Spending
The distribution of employer and employee spending for healthcare in 2018 was
as follows (percent of total in parenthesis):

- Employer contribution: $15,788 (56%)
- Employee contribution: $7,674 (27%)
- Employee out-of-pocket: $4,704 (17%)

74.5 Market Resources

2018 Milliman Medical Index.
(www.milliman.com/uploadedFiles/insight/Periodicals/mmi/2018-milliman-medical-index.pdf)

Milliman, 1301 Fifth Avenue, Suite 3800, Seattle, WA 98101. (206) 624-7940.
(www.milliman.com)
75.1 Medicaid

Created in 1965, Medicaid is the health program for individuals and families with low income and limited resources. Medicaid is the largest source of funding for medical and health-related services for people with limited income in the United States. Jointly funded by states and the federal government, Medicaid is managed by the states.

Among the groups served by Medicaid are low-income people with dependents, seniors, and people with disabilities. Being poor, or even very poor, does not necessarily qualify an individual for Medicaid. It is estimated that approximately 60% of Americans classified as poor are not covered by Medicaid. With the aging population, the fastest-growing aspect of Medicaid is nursing home coverage.


Medicaid enrollment in 2017 was 75,261,944.

__________________________________________________________

“Medicaid covers one in five Americans, accounts for one in six dollars spent on health care in the United States and more than half of all spending for long-term services and support, and is a state budget driver as well as the largest source of federal revenues to states.”

Kaiser Family Foundation, 10/17

__________________________________________________________

According to the 2018 Environmental Scan, by the American Hospital Association (www.aha.org), Medicaid covers the following:

- Sixty-two percent (62%) of residents living in certified nursing facilities
- Forty-five percent (45%) of children and 16% of adults in small towns and rural areas
Thirty-eight percent (38%) of children and 15% of adults in metropolitan areas
Ten percent (10%) of veterans

The majority of the public – regardless of partisanship – hold favorable views of Medicaid, the government health insurance and long-term care program for low-income adults and children. Surveys show that 74% have a favorable view of Medicaid. Only one-third of the public support reducing funding for Medicaid expansion or limiting how much money each state gets from the federal government.

75.2 Medicaid Enrollment
In FY2017, Medicaid enrollment was as follows (source: CMS):

- Alabama: 1,031,957
- Alaska: 163,641
- Arizona: 1,928,112
- Arkansas: 952,156
- California: 12,139,096
- Colorado: 1,332,134
- Connecticut: 887,860
- Delaware: 202,175
- District of Columbia: 244,840
- Florida: 4,054,970
- Georgia: 1,854,507
- Hawaii: 327,291
- Idaho: 316,600
- Illinois: 2,881,733
- Indiana: 1,433,757
- Iowa: 599,175
- Kansas: 408,145
- Kentucky: 1,314,991
- Louisiana: 1,593,231
- Maine: 262,731
- Maryland: 1,167,236
- Massachusetts: 1,858,429
- Michigan: 2,325,960
- Minnesota: 1,153,769
- Mississippi: 715,980
- Missouri: 255,810
- Montana: 220,902
- Nebraska: 239,811
- Nevada: 600,294
- New Hampshire: 15,2014
- New Jersey: 1,685,241
- New Mexico: 884,014
- New York: 6,113,753
- North Carolina: 2,061,283
- North Dakota: 93,661
- Ohio: 3,004,866
- Oklahoma: 675,243
- Oregon: 1,026,271
- Pennsylvania: 2,800,162
- Rhode Island: 286,457
- South Carolina: 1,234,369
- South Dakota: 107,677
- Tennessee: 1,714,182
- Texas: 4,364,753
- Utah: 329,537
- Vermont: 186,489
- Virginia: 999,435
- Washington: 1,830,365
- West Virginia: 572,978
- Wisconsin: 1,190,904
- Wyoming: 62,132

75.3 Medicaid Spending
Medicaid spending has been as follows (source: CMS):

- FY2001: $229.0 billion
- FY2002: $258.2 billion
- FY2003: $276.2 billion
- FY2004: $296.3 billion
Fiscal Year (FY) Spending:

- FY2005: $315.9 billion
- FY2006: $315.1 billion
- FY2007: $332.2 billion
- FY2008: $351.9 billion
- FY2009: $378.6 billion
- FY2010: $401.5 billion
- FY2011: $427.4 billion
- FY2012: $431.2 billion
- FY2013: $455.6 billion
- FY2014: $494.7 billion
- FY2015: $552.3 billion
- FY2016: $575.9 billion
- FY2017: $595.5 billion

75.4 Medicaid Spending By State

Medicaid spending is split between state and federal funds. Total Medicaid spending, by state, and the state share in FY2017 were as follows (source: Kaiser Family Foundation):

<table>
<thead>
<tr>
<th>State</th>
<th>Total Medicaid</th>
<th>State Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>$ 5.46 billion</td>
<td>29.6%</td>
</tr>
<tr>
<td>Alaska</td>
<td>$ 1.80 billion</td>
<td>35.1%</td>
</tr>
<tr>
<td>Arizona</td>
<td>$11.11 billion</td>
<td>24.5%</td>
</tr>
<tr>
<td>Arkansas</td>
<td>$ 6.01 billion</td>
<td>21.7%</td>
</tr>
<tr>
<td>California</td>
<td>$81.93 billion</td>
<td>35.9%</td>
</tr>
<tr>
<td>Colorado</td>
<td>$ 7.93 billion</td>
<td>38.4%</td>
</tr>
<tr>
<td>Connecticut</td>
<td>$ 7.88 billion</td>
<td>41.8%</td>
</tr>
<tr>
<td>Delaware</td>
<td>$ 1.89 billion</td>
<td>37.9%</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>$ 2.77 billion</td>
<td>25.5%</td>
</tr>
<tr>
<td>Florida</td>
<td>$21.84 billion</td>
<td>39.1%</td>
</tr>
<tr>
<td>Georgia</td>
<td>$ 9.84 billion</td>
<td>32.3%</td>
</tr>
<tr>
<td>Hawaii</td>
<td>$ 2.20 billion</td>
<td>34.9%</td>
</tr>
<tr>
<td>Idaho</td>
<td>$ 1.71 billion</td>
<td>28.7%</td>
</tr>
<tr>
<td>Illinois</td>
<td>$19.30 billion</td>
<td>40.2%</td>
</tr>
<tr>
<td>Indiana</td>
<td>$10.45 billion</td>
<td>28.5%</td>
</tr>
<tr>
<td>Iowa</td>
<td>$ 4.80 billion</td>
<td>37.6%</td>
</tr>
<tr>
<td>Kansas</td>
<td>$ 2.27 billion</td>
<td>43.8%</td>
</tr>
<tr>
<td>Kentucky</td>
<td>$ 9.66 billion</td>
<td>21.3%</td>
</tr>
<tr>
<td>Louisiana</td>
<td>$ 8.64 billion</td>
<td>36.4%</td>
</tr>
<tr>
<td>Maine</td>
<td>$ 2.58 billion</td>
<td>37.2%</td>
</tr>
<tr>
<td>Maryland</td>
<td>$10.48 billion</td>
<td>38.9%</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>$17.12 billion</td>
<td>45.9%</td>
</tr>
<tr>
<td>Michigan</td>
<td>$16.88 billion</td>
<td>26.8%</td>
</tr>
<tr>
<td>Minnesota</td>
<td>$11.16 billion</td>
<td>42.6%</td>
</tr>
<tr>
<td>Mississippi</td>
<td>$ 5.41 billion</td>
<td>25.6%</td>
</tr>
<tr>
<td>Missouri</td>
<td>$ 9.90 billion</td>
<td>36.6%</td>
</tr>
<tr>
<td>Montana</td>
<td>$ 1.38 billion</td>
<td>32.8%</td>
</tr>
<tr>
<td>Nebraska</td>
<td>$ 2.01 billion</td>
<td>48.7%</td>
</tr>
<tr>
<td>Nevada</td>
<td>$ 3.36 billion</td>
<td>23.5%</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>$ 1.98 billion</td>
<td>39.8%</td>
</tr>
</tbody>
</table>
75.5 Children's Health Insurance Program

Created in 1997, the Children's Health Insurance Program (CHIP) provides federally matched funds to states for health insurance to families with children. The program is intended to cover uninsured children in families with incomes that are modest but too high to qualify for Medicaid. States are given flexibility in designing their CHIP policies and eligibility requirements within broad federal guidelines.

At the end of FY2017, CHIP enrollment was 6,464,117; 9,460,160 children were enrolled at some point in the fiscal year.

75.6 CHIP Enrollment

In FY2017, CHIP enrollment was as follows (source: CMS):

- Alabama: 220,980
- Alaska: 18,704
- Arizona: 115,400
- Arkansas: 143,618
- California: 2,028,716
- Colorado: 176,426
- Connecticut: 28,889
- Delaware: 13,890
- District of Columbia: 11,771
- Florida: 465,631
- Georgia: 237,011
- Hawaii: 27,589
- Idaho: 36,658
- Illinois: 324,282
- Indiana: 126,317
- Iowa: 91,866
- Kansas: 64,601
- Kentucky: 96,379
- Louisiana: 126,317
- Maine: 27,589
- Maryland: 324,282
- Massachusetts: 465,631
- Michigan: 237,011
- Minnesota: 126,317
- Mississippi: 91,866
- Missouri: 64,601
- Montana: 27,589
- Nebraska: 36,658
- Nevada: 27,589
- New Hampshire: 27,589
- New Jersey: 14.55 billion
- New Mexico: 5.36 billion
- New York: 62.86 billion
- North Carolina: 12.38 billion
- North Dakota: n/a
- Ohio: 21.74 billion
- Oklahoma: 4.81 billion
- Oregon: 8.40 billion
- Pennsylvania: 27.56 billion
- Rhode Island: 2.42 billion
- South Carolina: 6.24 billion
- South Dakota: 839 million
- Tennessee: 9.52 billion
- Texas: 40.33 billion
- Utah: 2.14 billion
- Vermont: 1.68 billion
- Virginia: 8.56 billion
- Washington: 10.94 billion
- West Virginia: 3.69 billion
- Wisconsin: 7.74 billion
- Wyoming: 581 million

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• Louisiana: 158,298
• Maine: 23,318
• Maryland: 141,836
• Massachusetts: 220,128
• Michigan: 79,737
• Minnesota: 4,051
• Mississippi: 90,904
• Missouri: 93,800
• Montana: 44,227
• Nebraska: 56,197
• Nevada: 80,342
• New Hampshire: 17,823
• New Jersey: 239,813
• New Mexico: 13,709
• New York: 762,685
• North Carolina: 273,850
• North Dakota: 2,233
• Ohio: 250,195
• Oklahoma: 201,006
• Oregon: 177,590
• Pennsylvania: 363,323
• Rhode Island: 27,433
• South Carolina: 87,624
• South Dakota: 20,308
• Tennessee: 103,293
• Texas: 1,137,899
• Utah: 62,140
• Vermont: 5,841
• Virginia: 202,974
• Washington: 64,961
• West Virginia: 37,464
• Wisconsin: 179,342
• Wyoming: 7,088

75.7 Medicaid Fraud
The Government Accountability Office (GAO, www.gao.gov) estimated improper Medicaid payments in FY2017 at $37 billion. This represented 26% of all improper payments by the federal government. There were 1,157 convictions for Medicaid fraud in FY2017.


75.8 Market Resources
76

MEDICARE

76.1 Medicare Overview

Created in 1965, Medicare provides health insurance coverage to people who are ages 65 and over and to those who meet other special criteria. Medicare is funded entirely at the federal level. In general, individuals are eligible for Medicare if (1) they are a U.S. citizen or have been a permanent legal resident for five continuous years and are 65 years or older, (2) they are under 65, disabled and have been receiving either Social Security benefits or the Railroad Retirement Board disability benefits for at least 24 months from date of entitlement (first disability payment), (3) they get continuing dialysis for end stage renal disease or need a kidney transplant, or (4) they are eligible for Social Security Disability Insurance and have amyotrophic lateral sclerosis (ALS-Lou Gehrig’s disease). All Medicare benefits are subject to medical necessity.


76.2 Parts A, B, C, and D

The Medicare program has four parts, as follows:

- Part A covers hospital stays (including stays in a skilled-nursing facility) if certain criteria are met.
- Part B helps pay for some services and products not covered by Part A, generally on an outpatient basis. Part B is optional and may be deferred. Part B coverage includes physician and nursing services, x-rays, laboratory and diagnostic tests, influenza and pneumonia vaccinations, blood transfusions, renal dialysis, outpatient hospital procedures, limited ambulance transportation, immunosuppressive drugs for organ transplant recipients, chemotherapy, hormonal treatments such as lupron, and other outpatient medical treatments administered in a doctor’s office.
- In 1997, Medicare beneficiaries were given the option to receive their Medicare benefits through private health insurance plans, instead of through the original Medicare plan (Parts A and B). These programs are known as Medicare+Choice or Part C plans.
- Medicare Part D, prescription drug coverage, went into effect in January 2006 following passage of the Medicare Prescription Drug, Improvement, and Modernization Act. In order to receive this benefit, a person with Medicare must enroll in a stand-alone Prescription Drug Plan (PDP) or Medicare Advantage plan.
with prescription drug coverage (MA-PD). Unlike Parts A and B, Part D coverage is not standardized. Providers choose which drugs or classes of drugs they wish to cover and at what level they wish to provide coverage.

76.3 Medicare Enrollment

Medicare enrollment has been as follows (source: CMS):

- 2010: 48.1 million
- 2011: 48.9 million
- 2012: 50.8 million
- 2013: 52.5 million
- 2014: 54.9 million
- 2015: 55.4 million
- 2016: 57.0 million
- 2017: 58.4 million
- 2018: 59.1 million

By state, Medicare enrollment in August 2018 was as follows (source: CMS):

- Alabama: 1,066,185
- Alaska: 99,412
- Arizona: 1,332,479
- Arkansas: 660,360
- California: 6,377,238
- Colorado: 943,577
- Connecticut: 693,206
- Delaware: 206,910
- District of Columbia: 97,292
- Florida: 4,656,054
- Georgia: 1,773,663
- Hawaii: 274,629
- Idaho: 334,695
- Illinois: 2,283,640
- Indiana: 1,282,672
- Iowa: 636,581
- Kansas: 545,353
- Kentucky: 950,605
- Louisiana: 886,222
- Maine: 344,613
- Maryland: 1,059,036
- Massachusetts: 1,353,928
- Michigan: 2,108,474
- Minnesota: 1,044,574
- Mississippi: 618,872
- Missouri: 1,266,744
The number of Medicare beneficiaries is projected to increase to 80.2 million by 2030.

76.4 Medicare Spending

Total direct Medicare spending has been as follows:

- 2010: $521.2 billion
- 2011: $560.3 billion
- 2012: $550.1 billion
- 2013: $581.7 billion
- 2014: $600.3 billion
- 2015: $638.1 billion
- 2016: $694.5 billion
- 2017: $707.4 billion

Net Medicare benefit payments (i.e., Medicare spending minus income from premiums and other offsetting receipts) are assessed as follows (source: Congressional Budget Office):

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• 2010: $446.0 billion
• 2011: $480.0 billion
• 2012: $466.0 billion
• 2013: $492.0 billion
• 2014: $505.0 billion
• 2015: $527.0 billion
• 2016: $560.0 billion
• 2017: $562.0 billion

Total Medicare benefit payments in 2017 were distributed as follows:
• Medicare Advantage: 26%
• Hospital inpatient services: 23%
• Physician payments: 12%
• Outpatient prescription drugs: 11%
• Hospital outpatient services: 7%
• Skilled nursing facilities: 5%
• Home health: 3%
• Other services: 14%

Spending in 2017 was distributed by Medicare part as follows:
• Part A: 41%
• Part B: 44%
• Part D: 15%

### 76.5 Medicare Advantage Plans

Medicare Advantage enrollment has been as follows (source: CMS):
• 2010: 11.4 million
• 2011: 12.2 million
• 2012: 13.3 million
• 2013: 14.6 million
• 2014: 15.9 million
• 2015: 17.3 million
• 2016: 18.5 million
• 2017: 19.0 million

Approximately one-third of all Medicare beneficiaries are enrolled in Advantage Plans. On average, there are 26 Medicare Advantage plans to choose from in nearly every county across the country, according to the CMS.

Ranked by total enrollment in 2017, the largest Medicare Advantage insurers are as follows (source: Modern Healthcare):
• UnitedHealth: 3.82 million
• Humana: 3.18 million
• Kaiser Foundation Health Plan: 1.37 million
• Aetna: 1.36 million
• Anthem: 601,000
• Cigna: 562,000
• Blue Cross and Blue Shield of Michigan: 421,000
• WellCare Health Plans: 326,000
• Highmark Health: 317,000
• Health Net: 268,000
• Blue Cross and Blue Shield of Minnesota: 199,000
• Medical Card System: 198,000
• InnovaCare: 197,000
• Medica: 196,000
• EmblemHealth: 177,000
• Blue Shield of California: 176,000
• Scan Health Plan: 169,000
• UPMC Health System: 154,000
• Florida Blue: 153,000
• Healthfirst: 135,000

76.6 Market Resources
THE UNINSURED

77.1 Uninsured in the U.S.

According to the U.S. Census Bureau (www.census.gov), measures of the uninsured at year-end have been as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
<th>Pct.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>44.8 million</td>
<td>15.3%</td>
</tr>
<tr>
<td>2006</td>
<td>47.0 million</td>
<td>15.8%</td>
</tr>
<tr>
<td>2007</td>
<td>45.6 million</td>
<td>15.3%</td>
</tr>
<tr>
<td>2008</td>
<td>46.3 million</td>
<td>15.4%</td>
</tr>
<tr>
<td>2009</td>
<td>50.6 million</td>
<td>16.7%</td>
</tr>
<tr>
<td>2010</td>
<td>49.9 million</td>
<td>16.3%</td>
</tr>
<tr>
<td>2011</td>
<td>48.6 million</td>
<td>15.7%</td>
</tr>
<tr>
<td>2012</td>
<td>41.3 million</td>
<td>15.0%</td>
</tr>
<tr>
<td>2013</td>
<td>32.3 million</td>
<td>13.4%</td>
</tr>
<tr>
<td>2014</td>
<td>28.5 million</td>
<td>11.4%</td>
</tr>
<tr>
<td>2015</td>
<td>27.5 million</td>
<td>12.2%</td>
</tr>
</tbody>
</table>

77.2 Uninsured State-by-State

By state, the rates of those uninsured were as follows (source: U.S. Census Bureau):

- Alabama: 9.1%
- Alaska: 14.0%
- Arizona: 10.0%
- Arkansas: 7.9%
- California: 7.3%
- Colorado: 7.5%
- Connecticut: 4.9%
- Delaware: 5.7%
- District of Columbia: 3.9%
- Florida: 12.5%
- Georgia: 12.9%
- Hawaii: 3.5%
- Idaho: 10.1%
- Illinois: 6.5%
- Indiana: 8.1%
- Iowa: 4.3%
- Kansas: 8.7%
- Kentucky: 5.1%
- Louisiana: 10.3%
- Maine: 8.0%
- Maryland: 6.1%
- Massachusetts: 2.5%
- Michigan: 5.3%
- Minnesota: 4.1%
- Mississippi: 11.8%
- Missouri: 8.9%
- Montana: 8.1%
- Nebraska: 8.6%
<table>
<thead>
<tr>
<th>State</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nevada</td>
<td>11.4%</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>5.9%</td>
</tr>
<tr>
<td>New Jersey</td>
<td>8.0%</td>
</tr>
<tr>
<td>New Mexico</td>
<td>9.2%</td>
</tr>
<tr>
<td>New York</td>
<td>6.1%</td>
</tr>
<tr>
<td>North Carolina</td>
<td>10.4%</td>
</tr>
<tr>
<td>North Dakota</td>
<td>7.0%</td>
</tr>
<tr>
<td>Ohio</td>
<td>5.6%</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>14.8%</td>
</tr>
<tr>
<td>Oregon</td>
<td>6.2%</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>5.6%</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>4.3%</td>
</tr>
<tr>
<td>South Carolina</td>
<td>10.0%</td>
</tr>
<tr>
<td>South Dakota</td>
<td>8.7%</td>
</tr>
<tr>
<td>Tennessee</td>
<td>9.0%</td>
</tr>
<tr>
<td>Texas</td>
<td>16.6%</td>
</tr>
<tr>
<td>Utah</td>
<td>8.8%</td>
</tr>
<tr>
<td>Vermont</td>
<td>3.2%</td>
</tr>
<tr>
<td>Virginia</td>
<td>8.7%</td>
</tr>
<tr>
<td>Washington</td>
<td>6.0%</td>
</tr>
<tr>
<td>West Virginia</td>
<td>5.3%</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>5.3%</td>
</tr>
<tr>
<td>Wyoming</td>
<td>11.5%</td>
</tr>
</tbody>
</table>

### 77.3 Characteristics Of The Uninsured

An assessment by the Robert Wood Johnson Foundation (www.rwjf.org) reported the distribution of uninsured adults as follows:

**Age**
- 18-to-30: 36.8%
- 31-to-49: 41.5%
- 54-to-64: 21.7%

**Race or Ethnicity**
- White, non-Hispanic: 44.2%
- Other, non-Hispanic: 18.6%
- Hispanic: 37.1%

**Region**
- Northeast: 9.9%
- Midwest: 17.1%
- South: 48.9%
- West: 24.1%

**Family Income Category**
- At/below 138% of FPL: 65.3%
- 139% to 399% of FLP: 28.5%
- 400% of FLP and higher: 6.1%

FPL = Federal Poverty Level

**State Medicaid Status**
- Expanding Medicaid: 39.4%
- Not expanding Medicaid: 60.9%
77.4 Reasons For Being Uninsured

A survey by the Kaiser Family Foundation Health Tracking Poll (http://kff.org/tag/tracking-poll) asked uninsured adults why they did not have health insurance. Responses were as follows:

- Plan to get health insurance in next few months: 59%
- Don’t think they can find an affordable plan: 18%
- Don’t want to be forced to buy anything: 9%
- Would rather pay the fine than insurance: 3%
- Don’t think they need coverage: 1%
- Other: 6%
- Don’t know: 4%
PART V: PHARMACEUTICALS & MEDICAL TECHNOLOGY
78.1 Overview


78.2 Market Assessment

In 2017, spending for prescription and over-the-counter medications on an invoice basis was $452.6 billion. This amount was reduced by discounts, rebates and other price concessions on brands; net spending was $324.4 billion.

Retail prescription drugs accounted for $212 billion in spending on a net basis in 2017, a 2.1% decline from 2016.

Non-retail medicine spending, including the administration of drugs in outpatient and inpatient settings, are a significant portion of the overall medicine spend. It represented 35% of 2017 net revenues, or 30% on an invoice basis.

In 2017, spending for traditional medicines was 53.5% of total spending; specialty medicines accounted for 46.5% of spending.

Spending for medicines in 2017 was $876 per person.

78.3 Per Capita Spending

Net per capita medicine spending has been as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Traditional</th>
<th>Specialty</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>$602</td>
<td>$198</td>
<td>$800</td>
</tr>
<tr>
<td>2009</td>
<td>$606</td>
<td>$215</td>
<td>$822</td>
</tr>
<tr>
<td>2010</td>
<td>$605</td>
<td>$232</td>
<td>$837</td>
</tr>
<tr>
<td>2011</td>
<td>$579</td>
<td>$239</td>
<td>$818</td>
</tr>
<tr>
<td>2012</td>
<td>$536</td>
<td>$238</td>
<td>$774</td>
</tr>
<tr>
<td>2013</td>
<td>$513</td>
<td>$253</td>
<td>$766</td>
</tr>
<tr>
<td>2014</td>
<td>$512</td>
<td>$310</td>
<td>$823</td>
</tr>
<tr>
<td>2015</td>
<td>$522</td>
<td>$358</td>
<td>$880</td>
</tr>
<tr>
<td>2016</td>
<td>$505</td>
<td>$391</td>
<td>$896</td>
</tr>
<tr>
<td>2017</td>
<td>$469</td>
<td>$407</td>
<td>$876</td>
</tr>
</tbody>
</table>
78.4 Prescriptions By Condition
The number of dispensed prescriptions for select therapy areas in 2017, and for comparison in 2012, were as follows:

<table>
<thead>
<tr>
<th>Condition</th>
<th>2012</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td>1.02 billion</td>
<td>1.11 billion</td>
</tr>
<tr>
<td>Mental health</td>
<td>395 million</td>
<td>489 million</td>
</tr>
<tr>
<td>Pain</td>
<td>498 million</td>
<td>462 million</td>
</tr>
<tr>
<td>Lipid regulators</td>
<td>401 million</td>
<td>424 million</td>
</tr>
<tr>
<td>Diabetes</td>
<td>275 million</td>
<td>338 million</td>
</tr>
<tr>
<td>Antibacterials</td>
<td>262 million</td>
<td>256 million</td>
</tr>
<tr>
<td>Anti-ulcerants</td>
<td>207 million</td>
<td>233 million</td>
</tr>
<tr>
<td>Respiratory</td>
<td>173 million</td>
<td>205 million</td>
</tr>
<tr>
<td>Other central nervous system</td>
<td>194 million</td>
<td>189 million</td>
</tr>
<tr>
<td>Anticoagulants</td>
<td>112 million</td>
<td>131 million</td>
</tr>
</tbody>
</table>

78.5 Dispensed Prescriptions
The number of dispensed prescriptions has been as follows:

- 2013: 5.401 billion
- 2014: 5.525 billion
- 2015: 5.613 billion
- 2016: 5.743 billion
- 2017: 5.843 billion

78.6 Generics
Generic medicines accounted for 90% of prescriptions in 2017 and were dispensed 97% of the time it was possible to do so.

Marketshare of generics has been as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>72%</td>
</tr>
<tr>
<td>2009</td>
<td>75%</td>
</tr>
<tr>
<td>2010</td>
<td>78%</td>
</tr>
<tr>
<td>2011</td>
<td>80%</td>
</tr>
<tr>
<td>2012</td>
<td>84%</td>
</tr>
<tr>
<td>2013</td>
<td>86%</td>
</tr>
<tr>
<td>2014</td>
<td>87%</td>
</tr>
<tr>
<td>2015</td>
<td>88%</td>
</tr>
<tr>
<td>2016</td>
<td>89%</td>
</tr>
<tr>
<td>2017</td>
<td>90%</td>
</tr>
</tbody>
</table>

78.7 Out-of-Pocket Costs
Pharmacy prices have increased by 58% since 2013, while costs for retail prescription drugs of all types have declined by 17%, as a combination of greater generic use and the use of coupons have lowered patient costs.

In 2017, coupon were used for 18% of all branded prescriptions filled under commercial plans and 42% of specialty prescriptions.
Pharmacy prices for brands increased from an average $231 to an average $364, but final out-of-pocket costs were unchanged at around $30 for the past five years.

Almost 31% of prescriptions were dispensed at zero patient out-of-pocket cost; 2.5% cost more than $50.

### 78.8 Distribution Channels

The 5.843 billion prescriptions dispensed in 2017 were distributed by channel as follows:

- Chain stores: 3.381 billion
- Independent pharmacies: 883 million
- Food stores: 726 million
- Mail service: 453 million
- Long-term care: 399 million

Non-discounted spending for medications totaled $452.6 billion in 2017. Spending by distribution channel was as follows:

#### Retail

- Chain stores: $134.1 billion
- Mail service: $109.0 billion
- Independent pharmacies: $ 49.5 billion
- Food stores: $ 26.1 billion

#### Non-Retail

- Clinics: $ 70.4 billion
- Non-federal hospitals: $ 33.9 billion
- Long-term care: $ 16.6 billion
- HMO: $ 5.8 billion
- Home healthcare: $ 4.0 billion
- Federal facilities: $ 2.6 billion
- Other: $ 0.5 billion

### 78.9 New Medicines

The number of New Active Substances (NASs) launched in the U.S. has been as follows:

- 2008: 20
- 2009: 32
- 2010: 23
- 2011: 34
- 2012: 28
- 2013: 36
- 2014: 45
- 2015: 46
- 2016: 19
- 2017: 42
Forty-two (42) NASs were launched in 2017, more than double the number launched in 2016, and higher than all but two of the last 10 years.

Half of NAS launched in 2017 were orphan drugs, and this trend is expected to continue with another 80 to 90 orphan drugs approved through 2022, compared to the 81 orphan drugs launched in the past five years.

Oncology had the most launches for a therapy area with 14 launches, 10 of which were orphan drugs.

The NAS launches included 32 specialty medicines overall, as R&D has increasingly focused on these specialty diseases and orphan drugs.

The 2017 late-phase pipeline included 2,601 novel products. Oncology was the largest therapy area, with 29% of late-phase drugs.

78.10 Market Resources
IQVIA Institute, 4820 Emperor Boulevard, Durham, NC 27703. (919) 998-2000. (www.iqvia.com)

79

TOP MEDICINES

79.1 Top Therapeutic Classes

Ranked by number of prescriptions dispensed, the top therapeutic classes in 2017 were as follows:

- Antihypertensives: 707 million
- Pain: 445 million
- Mental health: 404 million
- Nervous system disorders: 388 million
- Antibacterials: 268 million
- Lipid regulators: 259 million
- Diabetes: 227 million
- Respiratory: 186 million
- Anti-ulcerants: 172 million
- Thyroid therapies: 136 million
- Dermatologics: 112 million
- Hormonal contraceptives: 94 million
- ADHD: 94 million
- Anticoagulants: 82 million
- Corticosteroids: 74 million
- GI products: 68 million
- Ophthalmology: 48 million
- Other cardiovasculars: 48 million
- Nasal preps, topical: 47 million
- Benign prostate hyperplasia: 44 million

Ranked by non-discounted spending, the top therapeutic classes in 2017 were as follows:

- Diabetes: $53.7 billion
- Oncology: $50.7 billion
- Autoimmune: $46.7 billion
- Respiratory: $26.8 billion
- HIV antivirals: $20.4 billion
- Nervous system disorders: $20.1 billion
- Multiple sclerosis: $19.6 billion
- Pain: $17.1 billion
- Mental health: $15.8 billion
- Anticoagulants: $14.2 billion
• Viral hepatitis: $11.5 billion
• Vaccines: $  9.9 billion
• ADHD: $  9.8 billion
• Dermatologics: $  9.6 billion
• GI products: $  8.3 billion
• Other cardiovasculars: $  7.6 billion
• Antihypertensives: $  7.4 billion
• Antibacterials: $  6.3 billion
• Sex hormones: $  6.3 billion
• Lipid regulators: $  6.0 billion

79.2 Top Prescription Drugs

Ranked by number of prescriptions dispensed, the top prescription drugs in 2017 were as follows:
• Levothyroxine: 122 Million
• Atorvastatin: 113 Million
• Lisinopril: 106 Million
• Metoprolol: 89 Million
• Amlodipine: 88 Million
• Metformin: 87 Million
• Acetaminophen/hydrocodone: 81 Million
• Omeprazole: 73 Million
• Salbutamol: 72 Million
• Gabapentin: 68 Million
• Amoxicillin: 58 Million
• Simvastatin: 53 Million
• Sertraline: 51 Million
• Losartan: 50 Million
• Hydrochlorothiazide: 48 Million
• Fluticasone: 47 Million
• Furosemide: 46 Million
• Azithromycin: 45 Million
• Alprazolam: 45 Million
• Prednisone: 45 Million

Ranked by non-discounted spending, the top prescription drugs in 2017 were as follows:
• Humira: $16.9 billion
• Enbrel: $  8.7 billion
• Harvoni: $  6.0 billion
• Remicade: $  5.4 billion
• Januvia: $  5.0 billion
• Lyrica: $  4.9 billion
• Lantus Solostar: $  4.8 billion
• Eliquis: $  4.7 billion
• Advair Diskus: $  4.3 billion
• Neulasta: $  4.3 billion
• Xarelto: $  4.3 billion
• Copaxone: $  4.1 billion
• Rituxan: $  4.0 billion
• Tecfidera: $  3.8 billion
• Stelara: $  3.6 billion
• Genvoya: $  3.6 billion
• Vyvanse: $  3.3 billion
• Novolog Flexpen: $  3.2 billion
• Opdivo: $  3.1 billion
• Symbicort: $  3.1 billion

79.3 Top Single-Source Generic Drugs

Ranked by number of prescriptions filled, the top 25 generic drugs are as follows (source: Chain Drug Review based on data from RelayHealth [www.relayhealth.com]):

• Fluticasone Propionate (Roxane): 25.47 million
• Hydrocodone-Acetaminophen (Mallinckrodt): 20.40 million
• Hydrocodone-Acetaminophen (Qualitest): 17.85 million
• Amoxicillin (Sandoz): 15.60 million
• Omeprazole (Dr. Reddy’s): 14.47 million
• Azithromycin (Greenstone): 13.44 million
• Azithromycin (Teva): 10.57 million
• Levothyroxine Sodium 0301 (Mylan): 10.11 million
• Ibuprofen (Amneal): 9.38 million
• Vitamin D2 (Barr): 9.11 million
• Oxycodeone-Acetaminophen (Mallinckrodt): 9.09 million
• Tramadol HCl (Amneal): 8.78 million
• Lisinopril (Lupin): 8.57 million
• Fluconazole (Ivax): 8.55 million
• Atorvastatin Calcium 7909 (Apotex): 8.54 million
• Levothyroxine Sodium (Mylan): 8.24 million
• Amlodipine Besylate (Camber): 7.78 million
• Metformin HCl (Zydus): 7.68 million
• Cyclobenzaprine HCl (Mylan): 7.52 million
• Tramadol HCl (Teva): 7.46 million
• Levothyroxine Sodium 0901 (Mylan): 7.39 million
• Omeprazole (Mylan): 7.38 million
• Atorvastatin Calcium 8009 (Apotex): 7.30 million
• Meloxicam (Lupin): 7.16 million
• Atorvastatin Calcium 7809 (Apotex): 7.08 million
79.4 Market Resources
IQVIA Institute, 4820 Emperor Boulevard, Durham, NC 27703. (919) 998-2000. (www.iqvia.com)

RelayHealth, 1564 Northeast Expressway, Atlanta, GA 30329. (800) 778-6711. (www.relayhealth.com)
80

DRUG CLASSIFICATION

80.1 ATC Classification System
Pharmaceutical drugs are identified by the Anatomical Therapeutic Chemical (ATC) Classification System, which is controlled by the World Health Organization Collaborating Centre for Drug Statistics Methodology (WHOCC). The classification system divides drugs into different groups according to the organ or system on which they act and/or their therapeutic and chemical characteristics.

Drugs are classified by five-level codes, as follows:
• The first level of the code indicates the anatomical main group and consists of one letter. There are 14 main groups.
• The second level of the code indicates the therapeutic main group and consists of two digits.
• The third level of the code indicates the therapeutic/pharmacological subgroup and consists of one letter.
• The fourth level of the code indicates the chemical/therapeutic/pharmacological subgroup and consists of one letter.
• The fifth level of the code indicates the chemical substance and consists of two digits.

80.2 Primary Drug Groups
The 14 primary drug groups are as follows:

A - Gastrointestinal tract/metabolism
• Anti-diabetics
• Anti-obesity drugs
• Antidiarrhoeals/Antipropulsives
• Antiemetics
• Dietary minerals
• Laxatives
• Stomach acid (Antacids, H₂ antagonists, Proton pump inhibitors)
• Vitamins

B - Blood and Blood Forming Organs
• Antithrombotics (Antiplatelets, Anticoagulants, Thrombolytics/fibrinolytics)
• Antihemorrhagics (Platelets, Coagulants, Antifibrinolytics)
C - Cardiovascular System
- Antihyperlipidemics (Statins, Fibrates, Bile acid sequestrants)
- Antihypertensives
- Beta blockers
- Calcium channel blockers
- Cardiac therapy/antianginals (Cardiac glycosides, Antiarrhythmics, Cardiac stimulants)
- Diuretics
- Renin-angiotensin system (ACE inhibitors, Angiotensin II receptor antagonists, Renin inhibitors)
- Vasodilators

D - Dermatologicals
- Antipruritics
- Antipsoriatics
- Cicatrizants
- Emollients
- Medicated dressings

G - Genito-Urinary System and Sex Hormones
- Hormonal contraception
- Fertility agents
- SERMs
- Sex hormones

H - Systemic Hormonal Preparations (excluding sex hormones) and Insulins
- Corticosteroids (Glucocorticoids, Mineralocorticoids)
- Hypothalamic-pituitary hormones
- Thyroid hormones/Antithyroid agents

J and P - Infections and Infestations
- Antibiotics (Antimycobacterials)
- Antifungals
- Antivirals
- Antiparasitics (Antiprotozoals, Anthelmintics)
- Ectoparasiticides
- Intravenous immunoglobulin
- Vaccines

L - Antineoplastic and Immunomodulating Agents

L01-L02 - Malignant Disease
- Anticancer agents (Antimetabolites, Alkylating, Spindle poisons, Antineoplastic, Topoisomerase inhibitors)
L03-L04 - Immune Disease
• Immunomodulators (Immunostimulants, Immunosuppressants)

M - Musculo-Skeletal System
• Anabolic steroids
• Anti-inflammatories (NSAIDs)
• Antirheumatics
• Bisphosphonates
• Corticosteroids
• Muscle relaxants

N - Brain and Nervous System
• Analgesics
• Anesthetics (general, local)
• Anticonvulsants/Mood stabilizers (Lithium pharmacology)
• Antimigraines
• Anti-Parkinson drugs
• Psycholeptics (Anxiolytics, Antipsychotics, Hypnotics/Sedatives)
• Psychoanaleptics (Antidepressants, Stimulants)

R - Respiratory System
• Bronchodilators
• Cough medicines
• Decongestants
• H₁ antagonists

S - Sensory Organs
• Ophthalmologicals
• Otologicals

V - Other
• Antidotes
• Contrast media
• Dressings
• Radiopharmaceuticals

80.3 Market Resources
World Health Organization (WHO) Collaborating Centre for Drug Statistics
Methodology, Norwegian Institute of Public Health, P.O. Box 4404, Nydalen, 0403
Oslo, Norway. Tel: + 47 21 07 81 60. (www.whoc.n.no)
81.1 Market Assessment

According to The Lewin Group (www.lewin.com), annual sales of medical technology products are $135.9 billion, distributed as follows:

- Surgical appliances and supplies: $35.3 billion
- Surgical and medical instruments: $33.6 billion
- Electromedical and electrotherapeutic apparatus: $27.6 billion
- In vitro diagnostic substances: $12.7 billion
- Irradiation apparatus: $11.6 billion
- Ophthalmic goods: $5.8 billion
- Dental equipment and supplies: $4.7 billion

81.2 Medical Device Tracking

The Food and Drug Administration (FDA, www.fda.gov) established the Unique Device Identification (UDI) system to identify medical devices through their distribution and use. When fully implemented, the label of most devices will include a UDI in human- and machine-readable form. UDI implementation will improve patient safety, modernize device postmarket surveillance, and facilitate medical device innovation.

In 2014, the FDA began requiring that reports on adverse events that led to a patient death and involved high-risk medical devices (such as implants whose malfunction could be life-threatening) include the UDI if the safety failure occurred at a hospital, ambulatory surgery center, or nursing home.

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“About 50,000 serious adverse events related to medical devices are reported to the FDA each year, including about 3,000 deaths. When devices don’t have or hospitals don’t use UDIs, it can be difficult and time-consuming to track down patients who received faulty implants when they are recalled.”

*Modern Healthcare*
UDI codes are now required on device packaging for Class III, or high-risk, devices. Direct labeling on devices was required as of September 2015. UDI requirements for other device classes will be rolled out through 2022.

### 81.3 Interoperability

The typical hospital bed in an intensive-care unit is surrounded by as many as a dozen medical devices that monitor the patient, track blood pressure and heart rate, dispense medications, and perform other vital functions. Few of the devices have the capability to transmit data directly to the patient’s electronic health record. When that information is not transmitted electronically, it has to be manually entered into the EHR by nurses, taking them away from direct patient care and potentially leading to dangerous errors.

“Medical devices now measure and track many types of clinical information about patients. But few of these devices can communicate with others. Instead, healthcare workers must manually transfer data from the devices to patients’ electronic health records. If you're ill, you'll be surrounded by as many as a dozen devices. Each of them focuses as if it's alone.”

*Modern Healthcare*

The Healthcare Information and Management Systems Society (www.himss.org) estimates that less than one-third of U.S. hospitals have integrated their EHR systems with even some of their medical devices.

A study by the West Health Institute (www.westhealth.org) estimated that lack of medical device interoperability costs the healthcare industry more than $30 billion per year. Hospitals bear 97% of that cost. Some studies have found that nurses spend one-third of their shift time on documentation. Reducing the time spent manually entering information and the resulting increase in clinician productivity are projected to yield $12 billion in savings.

There are no requirements for interoperability between medical devices and EHRs.
“There are many barriers to creating interoperability of devices and EHRs, including large upfront costs and lack of industry standards. But experts say some makers of EHR systems and medical devices also tend to limit interoperability because they don’t necessarily see any profit in making their systems interoperable.”

Modern Healthcare

The Center for Medical Interoperability (www.medicalinteroperability.org) was formed in 2013 to bring together hospitals to encourage improvements in device interoperability and utilization of standards.

81.4 Market Resources
Advanced Medical Technology Association, 701 Pennsylvania Avenue NW, Suite 800, Washington, DC 20004. (202) 783-8700. (www.advamed.org)

Center For Medical Interoperability, West Health Institute, 10350 N. Torrey Pines Road, La Jolla, CA 92037. (858) 535-7000. (www.medicalcompatibility.org)

Medical Device Manufacturers Association, 1333 H Street, Suite 400, Washington, DC 20005. (202) 354-7171. (www.medicaldevices.org)

Medical Devices Market Research Reports & Industry Analysis, MarketResearch.com, (www.marketresearch.com/Life-Sciences-c1594/Medical-Devices-c1126)

The Lewin Group, 3130 Fairview Park Drive, Suite 500, Falls Church, VA 22042. (703) 269-5500. (www.lewin.com)
82.1 Legal Use Of Medical Marijuana

As of August 2018, 30 states and the District of Columbia allowed use of the marijuana plant for medical purposes. These states and the year that enacting legislation was passed are as follows:

- Alaska: 1998
- Arizona: 2010
- Arkansas: 2016
- California: 1996
- Colorado: 2000
- Connecticut: 2012
- Delaware: 2011
- District of Columbia: 2010
- Florida: 2016
- Hawaii: 2000
- Illinois: 2013
- Maine: 1999
- Maryland: 2014
- Massachusetts: 2012
- Michigan: 2008
- Minnesota: 2014
- Montana: 2004
- Nevada: 2000
- New Hampshire: 2013
- New Jersey: 2010
- New Mexico: 2007
- New York: 2014
- North Dakota: 2016
- Ohio: 2016
- Oklahoma: 2018
- Oregon: 1998
- Pennsylvania: 2016
- Rhode Island: 2006
- Vermont: 2004
- West Virginia: 2017
82.2 FDA-Approved Cannabinoid Drugs

As of August 2018, four cannabinoid drugs had received FDA approval, as follows:

• Cesamet
• Epidiolex
• Marinol
• Syndros

Chronic pain is the condition for which medical marijuana is most commonly prescribed. The percentage of patients using medical marijuana citing chronic pain as the reason are as follows:

• Arizona: 81%
• Hawaii: 76%
• Colorado: 67%
• Nevada: 63%
• Oregon: 59%

________________________________________

“There is conclusive or substantial evidence that cannabis [is] effective for the treatment of chronic pain in adults.”

National Academies of Science, 2017

________________________________________

82.3 Market Assessment

According to Modern Healthcare (July 2018), 2.13 million patients have used legalized medical marijuana.

Frontier Financial Group (www.newfrontierdata.com) assesses spending for medical marijuana in the U.S. as follows:

• 2016: $4.67 billion
• 2017: $5.32 billion
• 2018: $6.07 billion
83

TOP BIOTECHNOLOGY COMPANIES

83.1 Worldwide Ranking

Annually, *Genetic Engineering & Biotechnology News* ranks the Top 25 biotechnology companies worldwide by market capitalization. The Top 25 companies in 2017 had a combined capitalization of $1.007 trillion. The 2017 list was as follows:

- Amgen: $129.09 billion
- Gilead Sciences: $102.96 billion
- Novo Nordisk: $96.18 billion
- Celgene: $77.35 billion
- Biogen: $66.14 billion
- Allergan: $59.19 billion
- Teva: $48.75 billion
- CSL: $48.30 billion
- Regeneron Pharmaceuticals: $44.83 billion
- Shire: $42.15 billion
- Vertex Pharmaceuticals: $37.03 billion
- Alexion Pharmaceuticals: $28.65 billion
- Jiangsu Hengrui Medicine: $27.90 billion
- Incyte: $24.28 billion
- Samsung Biologics: $21.78 billion
- Mylan: $20.86 billion
- Sun Pharmaceutical Industries: $19.59 billion
- Yunnan Baiyao Group: $16.11 billion
- Kangmei Pharmaceutical: $15.63 billion
- Shanghai Fosun Pharmaceutical Group: $14.95 billion
- BioMarin Pharmaceutical: $14.51 billion
- UCB: $13.97 billion
- Genmab: $12.52 billion
- Sinopharm Group: $12.36 billion
- Perrigo: $11.90 billion

83.2 Market Resources

TOP MEDICAL DEVICE COMPANIES

84.1 Market Leaders

Ranked by annual healthcare equipment revenue, the largest U.S. medical device manufacturers, and the percentage of corporate revenue from segment products, are as follows (sources: S&P Capital IQ and Modern Healthcare):

- **Johnson & Johnson** (www.jnj.com): $28.49 billion
  Medical devices and diagnostics (40%)
- **GE Healthcare** (www.gehealthcare.com): $18.20 billion
  Healthcare (12.6%)
- **Medtronic** (www.medtronic.com): $16.59 billion
  Cardiac and vascular (51.4%); restorative therapies (46.7%)
  Laboratory products and services (48.5%); analytical technologies (31.5%)
- **Abbott Laboratories** (www.abbot.com): $10.13 billion
  Diagnostics (20.9%); vascular (13.8%); other (11.8%)
- **Cardinal Health** (www.cardinal.com): $10.06 billion
  Medical (11%)
- **Stryker Corp.** (www.stryker.com): $9.02 billion
  Reconstructive (44.3%); medical/surgical (37.2%); neurotechnology and spine (18.3%)
- **Danaher Corp.** (www.danaher.com): $8.95 billion
  Live sciences and diagnostics (35.8%); dental (10.9%)
- **Baxter International** (www.baxter.com): $8.70 billion
  Medical products (56.9%)
- **Becton, Dickinson and Co.** (www.bd.com): $8.05 billion
  Medical (52.9%); diagnostics (32.5%); biosciences (13.5%)
- **Quest Diagnostics** (www.questdiagnostics.com): $7.15 billion
  Diagnostic information services (92.7%); other (7.8%)
- **Boston Scientific Corp.** (www.bostonscientific.com): $7.14 billion
  Cardiovascular (39.0%); medical/surgical (31.6%); rhythm management (28.5%)
- **St. Jude Medical** (www.sjm.com): $5.50 billion
  Implantable electronic systems (58.6%); cardiovascular and ablation technologies (41.4%)
- **3M Co.** (www.3m.com): $5.33 billion
  Healthcare (17.2%)
- **Zimmer Holdings** (www.zimmer.com): $4.62 billion
  Orthopaedic reconstructive implants, biologics, dental implants, spinal implants, trauma products, and related surgical products (100%)
• CareFusion Corp. (www.carefusion.com): $ 3.55 billion
  Medical systems (65.4%); procedural solutions (34.3%)
• C.R. Bard (www.crbard.com): $ 3.05 billion
  Oncology (28.3%); vascular (27.4%); urology (25.7%); surgical specialties (16.5%); other (2.9%)
• Alere (www.alere.com): $ 3.00 billion
  Professional diagnostics (78.1%); health information (17.6%); consumer diagnostics (3.4%)
• Dentsply International (www.dentsply.com): $ 2.95 billion
  Dental specialty products (46%); dental consumables (26%); dental laboratory products (16%); consumable medical devices (12%)
• Varian Medical Systems (www.varian.com): $ 2.94 billion
  Oncology systems (75.7%); x-ray products (18.3%); other (4.8%)
• Intuitive Surgical (www.intuitivesurgical.com): $ 2.26 billion
  Surgical robotic system and accessories (100%)
• Hologic (www.hologic.com): $ 2.10 billion
  Diagnostics (47%); breast health (23.4%); GYN surgical (12.4%); skeletal health (2.5%)
• Edwards Lifesciences Corp. (www.edwards.com): $ 2.05 billion
  Advanced cardiovascular disease treatment products (100%)
• Bruker Corp. (www.bruker.com): $ 1.84 billion
  Scientific instruments (92.1%); imaging technologies (7.9%)
• Teleflex (www.teleflex.com): $ 1.70 billion
  Critical care technologies (70.2%); surgical care (18.2%); cardiac care (4.5%); other (7.8%)
85.1 Ranking By Revenue

Annually, *Pharmaceutical Executive* ranks the Top 20 pharmaceutical companies by worldwide revenue. The ranking includes assessment of best-selling drugs and R&D spending for each company.

Ranked by 2017 revenue, the Top 20 pharmaceutical companies were as follows:

- Pfizer (United States; www.pfizer.com): $45.34 billion
- Novartis (Switzerland; www.novartis.com): $41.88 billion
- Roche (Switzerland; www.roche.com): $41.73 billion
- Merck & Co. (United States; www.merck.com): $35.37 billion
- Johnson & Johnson (United States; www.jnj.com): $34.40 billion
- Sanofi (France; www.sanofi.com): $34.08 billion
- GlaxoSmithKline (England; www.gsk.com): $28.67 billion
- AbbVie (United States; www.abbvie.com): $27.74 billion
- Gilead Sciences (United States; www.gilead.com): $25.66 billion
- Amgen Corp. (United States; www.amgen.com): $21.80 billion
- Bristol-Myers Squibb Co. (United States; www.bms.com): $19.26 billion
- Eli Lilly and Company (United States; www.lilly.com): $18.53 billion
- Teva Pharmaceuticals (Israel; www.tevapharm.com): $18.26 billion
- Bayer (Germany; www.bayer.com): $17.54 billion
- Novo Nordisk (Denmark; www.novonordisk.com): $16.97 billion
- Allergan (United States; www.allergan.com): $14.91 billion
- Shire (Ireland; www.shire.com): $14.45 billion
- Boehringer Ingelheim (Germany; www.boehringer-ingelheim.com): $14.26 billion
- Takeda (Japan; www.takeda.com): $13.58 billion

85.2 Best-Selling Drugs

The three best-selling drugs in 2017 for each of the Top 20 pharmaceutical companies were as follows:

**AbbVie**

- Humira: $18.43 billion
- Imbruvica: $2.14 billion
- Creon: $831 million
Allergan
• Botox: $3.17 billion
• Restasis: $1.47 billion
• Linzess: $723 million

Amgen Corp.
• Enbrel: $5.43 billion
• Aeulasta: $4.53 billion
• Aranesp: $2.05 billion

AstraZeneca
• Symbicort Turbuhaler: $2.80 billion
• Crestor: $2.36 billion
• Nexium: $1.95 billion

Bayer
• Xarelto: $3.14 billion
• Eylea: $2.12 billion
• Mirena: $1.27 billion

Boehringer Ingelheim
• Spiriva: $3.19 billion
• Pradaxa: $1.62 billion
• Tradjenta: $3.51 billion

Bristol-Myers Squibb Co.
• Opdivo: $4.95 billion
• Eliquis: $4.87 billion
• Sprycel: $2.00 billion

Eli Lilly and Company
• Humalog: $2.86 billion
• Cialis: $2.30 billion
• Alimta: $2.06 billion

Gilead Sciences
• Harvoni: $4.37 billion
• Genvoya: $3.67 billion
• Epcluse: $3.51 billion

GlaxoSmithKline
• Advair: $4.04 billion
• Triumeq: $3.17 billion
• Tivicay: $1.81 billion
Johnson & Johnson
• Remicade: $5.75 billion
• Stekara: $4.01 billion
• Zytiga: $2.50 billion

Merck & Co.
• Keytruda: $3.81 billion
• Januvia: $3.74 billion
• Gardasil: $2.31 billion

Novartis
• Gilenya: $3.18 billion
• Cosentyx: $2.07 billion
• Gleevec: $1.94 billion

Novo Nordisk
• Victoza: $3.52 billion
• NovoRapid: $3.04 billion
• Levemir: $2.14 billion

Pfizer
• Prevnar 13: $5.60 billion
• Lyrica: $5.06 billion
• Ibrance: $3.13 billion

Roche
• Rituxan: $7.51 billion
• Herceptin: $7.71 billion
• Avastin: $6.80 billion

Sanofi
• Lantus: $5.22 billion
• Pentacel: $2.06 billion
• Fluzone: $1.80 billion

Shire
• Advate: $2.26 billion
• Vyvanse: $2.16 billion
• Gammagard Liquid: $2.11 billion

Takeda
• Entvyio: $1.80 billion
• Velcade: $994 million
• Azilva: $650 million
Teva Pharmaceuticals

- Copaxone: $3.80 billion
- Methylenidate hydrochloride: $674 million
- Bendeka: $658 million

85.3 R&D Spending

Research and development spending in 2017 for the Top 20 pharmaceutical companies was as follows:

- Roche: $9.18 billion
- Johnson & Johnson: $8.36 billion
- Novartis: $7.82 billion
- Pfizer: $7.63 billion
- Merck & Co.: $7.56 billion
- Sanofi: $6.18 billion
- AstraZeneca: $5.41 billion
- GlaxoSmithKline: $4.98 billion
- Eli Lilly and Company: $4.97 billion
- AbbVie: $4.83 billion
- Bristol-Myers Squibb Co.: $4.82 billion
- Gilead Sciences: $3.52 billion
- Amgen Corp.: $3.48 billion
- Bayer: $3.26 billion
- Boehringer Ingelheim: $3.07 billion
- Takeda: $2.94 billion
- Novo Nordisk: $2.13 billion
- Teva Pharmaceuticals: $1.85 billion
- Allergan: $1.60 billion
- Shire: $1.56 billion

85.4 Market Resources

Pharmaceutical Executive, 545 Boylston Street, Boston, MA 02116. (617) 267-6500. (www.pharmaexec.com)
PART VI: GENOMIC & REGENERATIVE MEDICINE
86.1 Overview

The natural variations found in a person’s genes can influence their risk of developing a certain disease, as well as how their body responds to that disease. Personalized medicine uses methods of molecular analysis to better manage a patient’s disease or determine predisposition toward a disease. It is used to achieve optimal medical outcomes by helping physicians and patients choose the disease management approaches likely to work best in the context of a patient’s individual genetic and environmental profile. Such approaches may include genetic screening programs that more precisely diagnose diseases and their sub-types or may aid physicians select the type and dose of medication best suited to a certain group of patients.

“Now personalized genetic medicine offers tests to avoid dangerous drug reactions. (For example], a doctor tried to prescribe clopidogrel, a drug to prevent blood clots, to a woman. When he typed the medication into her electronic medical record, however, an alert said gene tests indicated she would metabolize the drug poorly.”

*Scientific American, 10/17*

The FDA’s Center for Drug Evaluation and Research (CDER, www.fda.gov/drugs) approves a wide range of new drugs and biological products. Those that are innovative new products that have never before been used in clinical practice are called Novel New Drugs.

Among the Novel New Drugs now being approved by CDER, about 205 are personalized medicines.
86.2 The Potential Of Personalized Medicine

Personalized medicine is poised to transform healthcare over the next several decades. New diagnostic and prognostic tools will increase the capability to predict the likely outcomes of drug therapy, while the expanded use of biomarkers – biological molecules that indicate a particular disease state – could result in more focused and targeted drug development.

Experts say that most drugs, whatever the disease, are effective for only about half the people who take them. Jerel Davis, an analyst at McKinsey & Co. (www.mckinsey.com), estimates that of the $300 billion spent annually on prescription drugs, as much as $145 billion goes to medications that aren’t effective. The potential of genetic screening would allow doctors to prescribe only those medications that are applicable to patients.

“Patients are holding out hope that someday physicians will be able to personalize medical treatment more precisely than they’ve been able to in the past. For people with cancer, for instance, this might mean taking a quick biopsy, studying the genetic profile of a tumor and then tailoring interventions to target the cancer effectively, with as few side effects as possible.”

Los Angeles Times

86.3 Linking Genes To Diseases

Genetic research has begun to unravel the root causes of more than 100 common diseases; several genes are generally linked to each disease. An analysis conducted by researchers at Columbia University reported that 24 genes could be linked to autism, 23 could be implicated in bipolar disorder, and 25 in schizophrenia, for example.

The following are some genes that have been linked to various diseases (source: Scripps Translational Science Institute [www.stsiweb.org]):

- Alzheimer’s disease: CALHM1, PCDH11X, others
- Asthma, childhood: ORMDL3, others
- Autism: CDH10, others
- Bipolar disorder: 16p12, ANK3, CACNA1C, others
- Bladder cancer: 8q24, PSCA, others
- Breast cancer: 3P24, FGFr2, [ER+], ESR1, others
- Coronary artery disease: 6q25, 2q36, others
- Diabetes, Type I: 12q24, 4q27, IF1H1, IL10, others
- Diabetes, Type II: CDKAL1, JA2F1, KCNC1, MTNR1B, others
- Glaucoma: LOXL1, others
- Gout: SLC2A9, SLC17A3, others
- Hepatitis B: HLA-DR, others
- Male pattern baldness: 20p11, others
- Obesity: FTO, MAF, NPC1, PCSK1, PTER, others
- Prostate cancer: HNF1B, TCF2, 2p15, Xp11.22, 8q24, others
- Rheumatoid arthritis: CD40, TRAF1-C5, others
- Schizophrenia: 1q21, 15q13, 6p22, ERBB4, others
- Stroke: NINJ2, others
- Testicular cancer: KITLG, SPRY4, others

86.4 Pharmacogenomics
Pharmacogenomics focuses on matching drugs to the individual genome. This helps doctors select the right drugs to treat disease in a given patient. Pharmacogenomics can also help doctors to foresee adverse reactions to drugs that have proved safe for some people but dangerous for others.

Pharmacogenomics could be a boon for patients and drug companies alike. It allows prescriptions to be safer and more effective, and enables firms that want to take molecules through clinical trials to restrict the tests to people who are likely to respond well. That makes trials cheaper and more likely to succeed. It also ensures that the drug, once approved, is given only to those who will benefit from it.

“The greatest potential for genetic medicine right now is using DNA profiles to determine how people might react to different drugs or doses, a field called pharmacogenomics.”

*Bloomberg Businessweek*

There are over 100 commercially available personalized medicine products (e.g., drugs with pharmacogenomic tests), according to the Personalized Medicine Coalition (www.personalizedmedicinecoalition.org). Conditions for which there are personalized-medicine drugs and diagnostic tests include arthritis, cancer, cardiovascular disease, infectious diseases, organ transplants, and psychiatric disorders.
The following are drugs with pharmacogenomic tests (source: *MIT Technology Review*):

**Atomoxetine HCI (Strattera)**
- Purpose: ADHD treatment. Patients with a mutation in the CYP2D6 gene are at risk of suffering serious liver damage.

**Clopidogrel (Plavix)**
- Purpose: Prevents heart attacks by inhibiting blood clots. A variation of the CYP2C19 gene interferes with the way the drug is metabolized, rendering it ineffective.

**Cetuximab (Erbitux) and Panitumumab (Vectibix)**
- Purpose: Colorectal cancer drug. The drugs work only in people whose tumors have a normal KRAS gene.

**Gefitinib (Iressa)**
- Purpose: Lung cancer drug. Works best on people whose tumors have a mutation in the EGFR gene.

**Irinotecan (Camptosar)**
- Purpose: Colorectal cancer drug. People with a genetic variant suffer side effects because they have fewer liver enzymes to break down the drug.

**Tamoxifen (Nolvadex)**
- Purpose: Breast cancer drug. Variations in the CYP2D6 gene can make a person metabolize the drug too quickly or not at all.

**Warfarin (Coumadin)**
- Purpose: Blood thinner. In patients with either or both of two genetic variations, the drug can cause excessive bleeding rather than help prevent blood clots. Genetic testing can reveal the right dose.

### 86.5 Current Status

Though sometimes described as a phenomenon of the future, personalized medicine is already having an impact on how patients are treated. Molecular testing is being used to identify those breast cancer and colon cancer patients likely to benefit from new treatments, and patients newly diagnosed with early stage invasive breast cancer can now be tested for the likelihood of recurrence. In another example, a genetic test for patients with an inherited cardiac condition can help physicians determine which course of hypertension treatment to prescribe in order to avoid serious side effects.

Kaiser Permanente has launched the Research Program on Genes, Environment and Health, a multi-year project that seeks to collect blood, saliva, and...
DNA samples from roughly 500,000 Kaiser Permanente members in the Northern California region for the purpose of studying the genetic causes and, ultimately, to develop potential screening exams, cures, and treatments for common diseases such as diabetes, heart disease, cancer, asthma, and Alzheimer’s disease.

86.6 Market Resources
Personalized Medicine Coalition, 1710 Rhode Island Avenue NW, Suite 700, Washington, DC 20036. (202) 589-1770. (www.personalizedmedicinecoalition.org)

87

GENETIC TESTING

87.1 Overview

Researchers have established that people with certain diseases often have genetic markers not shared by the rest of the population. Genetic screening and other tests can give doctors key information needed for tailoring treatments to each individual patient.

The number of tested conditions, tested genes, and genetic testing labs have been as follows (sources: Genetic Testing Registry, National Center for Biotechnology Information, National Library of Medicine, and Modern Healthcare):

<table>
<thead>
<tr>
<th>Year</th>
<th>Conditions</th>
<th>Tested Genes</th>
<th>Labs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>785</td>
<td>966</td>
<td>n/a</td>
</tr>
<tr>
<td>2013</td>
<td>3,823</td>
<td>2,515</td>
<td>393</td>
</tr>
<tr>
<td>2014</td>
<td>5,157</td>
<td>3,657</td>
<td>429</td>
</tr>
<tr>
<td>2015</td>
<td>5,985</td>
<td>4,073</td>
<td>461</td>
</tr>
<tr>
<td>2016</td>
<td>9,729</td>
<td>16,207</td>
<td>481</td>
</tr>
<tr>
<td>2017</td>
<td>9,811</td>
<td>16,210</td>
<td>483</td>
</tr>
</tbody>
</table>

Most major U.S. hospitals have genetic clinics.

87.2 Databases

There are three primary databases of genetic tests and disorders, as follows:

GeneTests

- GeneTests (www.genetests.org) is an online medical genetics information resource developed for physicians, other healthcare providers, and researchers. By providing current, authoritative information on genetic testing and its use in diagnosis, management, and genetic counseling, GeneTests promotes the appropriate use of genetic services in patient care and personal decision making.

Genetic Testing Registry

- The National Institutes of Health (www.nih.gov) launched the Genetic Testing Registry (GTR, www.ncbi.nlm.nih.gov/gtr) to provide information about the availability of genetic tests, indications for testing, test accuracy, validity, and utility. The intended audience for the GTR is healthcare providers and researchers.
87.3 Direct-to-Consumer Genetic Testing

Until recently several companies offered direct-to-consumer (DTC) genetic testing services. This caused controversy because of the potential for consumers to misinterpret the findings. At least 24 states prohibit or limit genetic testing without a doctor’s involvement.

The Food and Drug Administration (www.fda.gov) informed companies offering DTC services that it considers their genetic tests to be medical devices and, as such, approval is required for their sale. This halted the DTC genetic testing market in the U.S. 23andMe (www.23andme.com), the largest company in the field, stopped offering health-related DNA testing in early 2014. In 2015, the FDA approved 23andMe’s test to detect whether people carry the gene for Bloom syndrome, a rare genetic disorder. The company has since added other approved uses to determine if people carry inheritable mutations.

“23andMe, the Alphabet-backed Silicon Valley startup, became the first company allowed to sell genetic tests for 10 different diseases directly to consumers without a prescription. That includes conditions like Parkinson’s, Alzheimer’s, and celiac disease.”

Fortune, 5/1/17

Several companies still offer genetic testing services for consumers, but only with the involvement of physicians. Among these companies are Counsyl (www.counsyl.com), deCODE Genetics (www.decode.com), Knome (www.knome.com), and Illumina (www.illumina.com).
87.4 Market Resources
American College of Medical Genetics, 7220 Wisconsin Avenue, Suite 300, Bethesda, MD 20814. (301) 718-9603. (www.acmg.net)


National Society of Genetic Counselors, 330 N. Wabash Avenue, Suite 2000, Chicago, IL 60611. (312) 321-6834. (www.nsga.org)

The Genetics and Public Policy Center at Johns Hopkins University, 1779 Massachusetts Avenue NW, Suite 605, Washington, DC 20036. (202) 265-5180. (www.dnapolicy.org)
88.1 Overview

Genes contain instructions for cells to make proteins that carry out chemical reactions in the body and help the immune system fight infections. When a gene is defective and can’t make the correct protein, disease can occur. While conventional drugs use natural substances or chemicals to fight illness, gene therapy treats disease by replacing malfunctioning genes with healthy ones.

The following are the three primary approaches to gene therapy:

- Replacing a mutated gene that causes disease with a healthy copy of the gene
- Inactivating, or “knocking out,” a mutated gene that is functioning improperly
- Introducing a new gene into the body to help fight a disease

“In the future, this technique may allow doctors to treat a disorder by inserting a gene into a patient’s cells instead of using drugs or surgery. Although gene therapy is a promising treatment option for a number of diseases including inherited disorders, some types of cancer, and certain viral infections, the technique remains risky and is still under study to make sure that it will be safe and effective. Gene therapy is currently only being tested for the treatment of diseases that have no other cures.”

National Institutes of Health

Genzyme (www.genzyme.com) and Pfizer (www.pfizer.com) in the U.S. and Novartis (www.novartis.com) in Europe are recognized leaders in the field.
88.2 Current Research
Since 1990, when the FDA approved the first gene therapy experiment, over 1,700 clinical trials have been conducted using a number of techniques for gene therapy.

According to Scientific American, over 350 studies employing gene manipulation have been conducted or are currently under way in the U.S.

Gene therapy scored a major advance in 2017 with the successful experimental treatment of 15 boys with adrenoleukodystrophy, or ALD. The rare disorder, which strikes about one in 20,000 boys (the disease strikes males almost exclusively), occurs in children who inherited a mutated gene that causes nerve cells in the brain to die. In a few short years, children lose the ability to walk or talk, to see, and to hear or think. They usually die within five years of diagnosis. The research, published in October 2017 in the New England Journal of Medicine, indicates that gene therapy can hold off ALD without side effects if it is begun when the only signs of deterioration are changes in brain scans. The study involved 17 boys, ages 4 to 13. All got gene therapy. Two years later, 15 were functioning normally without obvious symptoms. In one of the other patients, the disease progressed so rapidly that gene therapy could not stop it; the other withdrew from the study in order to have a bone-marrow transplant.

“For the first time, doctors have used gene therapy to stave off a fatal degenerative brain disease, an achievement that some experts had thought impossible. The study opens new avenues for using gene therapy to treat brain diseases.”

The New York Times, 10/5/17

88.3 Approvals For Gene Therapies
The first approval of gene therapy in the European Union occurred in November 2012 with Glybera, a drug developed by Dutch-based UniQure that treats a rare metabolic disease. Patients with the disease, called lipoprotein lipase deficiency, or LPL, have defective copies of the gene and are unable to process fat particles, which can lead to potentially lethal inflammation of the pancreas, as well as early onset of diabetes and cardiovascular disease. Glybera contains a gene that helps the body produce an enzyme that breaks down harmful fats in the blood. A one-time injection of Glybera costs $1.6 million, a price UniQure says is justified in part because of the very
small market; only about one or two people per million have the extremely rare disease that Glybera treats.

China has approved gene therapies for medical use; the first applications are for two types of cancers.

As of September 2018, the U.S. Food and Drug Administration (FDA, www.fda.gov) had not approved any gene therapy treatments.

88.4 CRISPR

A new technology, CRISPR-Cas9, or just CRISPR, promises to make it possible to edit genetic information quickly and cheaply. CRISPR involves a piece of RNA, a chemical messenger, designed to target a section of DNA; and an enzyme, called a nuclease, that can snip unwanted genes out and paste new ones in. Other ways of editing DNA exist, but CRISPR holds the promise of doing so with unprecedented simplicity, speed, and precision.

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“CRISPR could correct terrible genetic defects that blight lives. A dizzying range of applications has researchers turning to CRISPR to develop therapies for everything from Alzheimer’s to cancer to HIV. By allowing doctors to put just the right cancer-hunting genes into a patient’s immune system, the technology could lead to new approaches to oncology. It may also accelerate the progress of gene therapy, where doctors put normal genes into the cells of people who suffer from genetic diseases such as Tay Sachs or cystic fibrosis.”

The Economist

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88.5 Market Resources

American Society of Gene & Cell Therapy, 555 East Wells Street, Suite 1100, Milwaukee, WI 53202. (414) 278-1341. (www.asgct.org)
California Institute for Regenerative Medicine, 1999 Harrison Street, Suite 1650
Oakland, CA 94612. (510) 340-9101. (www.cirm.ca.gov)

Gene Therapy News Network (www.genetherapy.me)

Gene Therapy Review (www.genetherapyreview.com)
89

STEM CELLS

89.1 Overview

Regenerative medicine uses stem cells to replace or regenerate human cells, tissues, or organs. By regenerating damaged tissues and organs in the body by replacing the damaged tissue or by stimulating the body’s own repair mechanisms to heal previously irreparable tissues or organs, stem cell therapy has the potential to dramatically change the treatment of disease.

Approximately 1 in 3 Americans could benefit from regenerative medicine during their lifetime, according to one estimate.

There are two broad types of stem cells: embryonic stem cells, which differentiate into all the specialized cells in a newborn, and adult stem cells, which are found in various tissues. Autologous adult stem cells are obtained from four sources, as follows:

• Bone marrow, which requires extraction by harvesting (e.g., drilling into bone, the femur or iliac crest)
• Adipose tissue (lipid cells) extracted by liposuction
• Blood, which is drawn from the donor (similar to a blood donation), passed through a machine that extracts the stem cells
• Umbilical cord blood

Autologous harvesting (e.g., stem cells derived from a patient’s own body) avoids the risk of the immune system rejecting transplanted cells.

A primer on stem cells from the National Institutes of Health is viewable online at http://stemcells.nih.gov/info/basics.

89.2 Stem Cell Research

In 2001, President George W. Bush announced a federal policy that restricted funds for certain types of stem cell research. This policy was reversed in 2009 when President Barack Obama issued Executive Order 13505.

The National Institutes of Health (http://stemcells.nih.gov/research/nihresearch) is the federal government’s leading biomedical research organization and primary supporter of stem cell research.

With annual funding of about $1.5 billion, the NIH has 4,630 projects related to stem cell research. The objectives and findings of NIH-funded research are provided online at http://clinicaltrials.gov/search/term=stem+cells?term=stem+cells.
The California Institute for Regenerative Medicine (CIRM, www.cirm.ca.gov) was established in 2004 with the passage of Proposition 71, the California Stem Cell Research and Cures Act. The statewide ballot measure provided $3 billion in funding for stem cell research at California universities and research institutions.

An overview of CIRM research funding is presented at www.cirm.ca.gov/about/where-cirm-funding-goes.

## 89.3 Stem Cell Therapy

Several adult stem cell therapies already exist. One example is treatment for multiple sclerosis (MS), a disease where the body’s immune system learns to attack its own nerve fibres in the same way that it learns to attack invading pathogens. In this therapy, stem cells are extracted from a patient, stored until after chemotherapy, then infused back into the patient. The total cost of a stem-cell transplant is roughly $120,000. This is comparable with the conventional treatments, where MS drugs alone cost about $60,000 and there are added costs for doctors, MRI scans, and lab work.

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“This should give drug companies some pause for thought. They are already facing criticism for the high prices of MS drugs. Moreover, though such drugs can slow the progression of the disease, they cannot do what the stem-cell therapy seems able to, which is to reverse it and improve patients’ quality of life – for example by allowing them to walk again. More broadly, this is good news for proponents of stem-cell therapies in general. Leukemia is mostly treated these days with hematopoietic stem cells.”

The Economist

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Another example is bone marrow transplants that are used to treat leukemia.
“Leukemia is mostly treated these days with hematopoietic stem cells.”

The Economist

Therapy regimens that use cord blood include treatment for patients with cancer, sickle-cell anemia, marrow failure, and genetic diseases that call for transplants. Medical researchers anticipate that in the future, stem cell therapy will treat a wider variety of diseases, including congestive heart failure, multiple sclerosis, Parkinson’s disease, and spinal cord injuries, among other diseases and impairments.

Researchers from Ocata Therapeutics (www.ocata.com) and the University of California Los Angeles announced the successful treatment of eye diseases using stem cell therapy. Patients who were legally blind from age-related macular degeneration and macular dystrophy reported improved vision and had no serious side effects.

89.4 Bone Marrow and Blood Stem Cell Transplants

The National Marrow Donor Program (NMDP, www.marrow.org) facilitates marrow transplants from volunteer donors to patients with leukemia, aplastic anemia, and other potentially life-threatening diseases.

Since its founding in 1987, the NMDP has assisted approximately 50,000 unrelated transplants for patients with blood disorders, as well as certain immune system and genetic disorders. The NMDP is the only organization that offers a single point of access for all sources of stem cells used in transplantation: marrow, peripheral blood, and umbilical cord blood.

Through an extensive network of national and international affiliates, the NMDP facilitates more than 5,500 transplants each year. The network includes apheresis centers, collection centers, cooperative registries, cord blood banks, donor centers, laboratories, recruitment groups, repositories, and transplant centers.

The NMDP global transplant network has more than 465 centers worldwide, including transplant centers, cooperative registries, and cord blood banks.

Approximately 40% of the transplants facilitated by the NMDP involve either a U.S. patient receiving stem cells from an international donor or an international patient receiving stem cells from a U.S. donor.

The NMDP registry, called the Be The Match Registry, includes 30 million potential donors and more than 750,000 umbilical cord blood units.

As of August 2018, NMDP had facilitated more than 86,000 marrow and cord blood transplants.
**89.5 Cord Blood Storage**

Umbilical cord blood contains stem cells which can be used to treat hematopoietic and genetic disorders. Growing public awareness has increased interest among new parents in draining and storing cord blood from their newborn. Children and adults that are treated with their own cord blood stem cells avoid the risk of their immune system rejecting the cells.

Cord blood is stored by public and private cord blood banks. Public cord blood banks store cord blood for the benefit of the general public, and coordinate matches of cord blood to patients through the NMDP.

Private cord blood banks are usually for-profit organizations that store cord blood for the exclusive use of the donor or donor’s relatives.

Cord Blood Registry (www.cordblood.com), the nation’s largest private cord-blood bank, charges $1,500 for collecting, shipping, and processing the blood and an annual fee of $150 for storage.

**89.6 Market Resources**

California Institute for Regenerative Medicine, 1999 Harrison Street, Suite 1650
Oakland, CA 94612. (510) 340-9101. (www.cirm.ca.gov)

Cord Blood Registry, 611 Gateway Boulevard, Suite 820, South San Francisco, CA 94080. (888) 932-6568. (www.cordblood.com)

Regenerative Medicine Foundation, 9314 Forest Hill Boulevard, Suite 2, Wellington, FL 33411. (888) 238-1423. (www.genmedfoundation.org)

National Institutes of Health, Stem Cell Unit, 9000 Rockville Pike, Bethesda, MD 20892. (301) 496-5787. (http://stemcells.nih.gov/research/nihresearch)

National Marrow Donor Program, 3001 Broadway Street NE, Suite 100, Minneapolis, MN 55413. (800) 627-7692. (www.bethematch.org)

Save the Cord Foundation, 120 S. Houghton Road, Suite 138, Tucson, AZ 85748. (520) 240-9021. (www.savethecordfoundation.org)
PART VII: DISEASES, CONDITIONS & TREATMENTS
ACID REFLUX

90.1 Overview
Gastroesophageal reflux disease (GERD), commonly called acid reflux, is a condition which develops when the reflux of stomach contents (including acid) causes discomfort and/or complications including damage to the lining of the esophagus.

There are many theories about the underlying cause of GERD. Most center around the function of the valve-like tissue which is located at the junction of the esophagus and stomach and is supposed to prevent stomach contents from refluxing into the esophagus.

Many people with acid reflux disease also have a syndrome called dyspepsia, a general term for stomach discomfort.

The most common symptoms are heartburn, indigestion, and regurgitation. Reflux symptoms may also include postnasal drip, hoarseness, difficulty swallowing, chronic throat clearing, coughing and asthma.

Reflux can lead to esophageal cancer, which has increased by about 500% since the 1970s.

Poor diet and obesity are linked to the frequency of symptoms and development of GERD.

90.2 Incidence
GERD affects up to 40% of U.S. adults; approximately 20% experience symptoms on a daily to weekly basis.

The number of people with acid reflux has grown significantly in recent decades.

90.3 Treatment
Many people with mild GERD experience relief with over-the-counter medications such as antacids or acid-suppression drugs. Those with more severe GERD generally seek medical treatment, the most common of which is prescription medication. These include histamine 2-receptor antagonists (H2RAs) and proton pump inhibitors (PPIs). Proton pump inhibitors decrease gastric acid secretion more completely and are used more often in patients with severe GERD. Most drug treatments are not designed to stop reflux and instead focus on reducing stomach acid so that irritation of the esophagus is minimized.

Sales of prescribed and over-the-counter anti-reflux medications exceed $15 billion per year.
Treatment for anti-reflux also typically includes lifestyle modifications and dietary changes. Elevating the head and refraining from eating at least two hours before bedtime can be helpful for those with nighttime symptoms. Dietary changes include avoiding overeating, particularly acidic and fat-laden foods, eating dinner earlier in the evening, and eliminating or reducing smoking and alcohol consumption.

Obesity is strongly associated with both GERD and its complications, and weight loss is often recommended to help with the problem.

Surgical therapy is available for those who do not respond to lifestyle and medication therapy or who do not wish to remain on medications. This type of surgery, called a fundoplication, consists of wrapping the top of the stomach to reform the natural acid barrier and fixing the defect in the diaphragm and hiatal hernia if present.

There are also several endoscopic treatments for GERD, however these are still relatively new and, for the most part, unproven or still investigational.

### 90.4 Market Resources

- **American Society for Gastrointestinal Endoscopy**, 3300 Woodcreek Drive, Downers Grove, IL 60515. (630) 573-0600. ([www.asge.org](http://www.asge.org))

- **The Society of Thoracic Surgeons**, 633 North Saint Clair Street, Chicago, IL 60611. (312) 202-5800. ([www.sts.org](http://www.sts.org))
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ALLERGIES

91.1 Prevalence and Economic Impact

According to the Asthma and Allergy Foundation of America (AAFA, www.aafa.org), more than 60 million people in America (about one of every five adults and children) have allergies. Annual direct costs for treating allergies are $6 billion ($5.7 billion in medications and $300 million in office visits).

A study published in *JAMA Pediatrics* reported direct medical costs for U.S. children with food allergies at $4.3 billion.

Among adults, allergies are the fifth-leading chronic disease and a major cause of work absenteeism, resulting in nearly four million missed or lost workdays each year and accounting for more than $700 million in total lost productivity. An estimated two million school days are lost each year due to allergies.

The AAFA provides the following additional facts about the impact of allergies:

- Allergies have a genetic component. If one parent has allergies, chances are one in three that each child will have an allergy. If both parents have allergies, it is even more likely (7 in 10) that their children will have allergies.
- Allergies are the most frequently reported chronic condition in children, limiting activities for more than 40% of them.
- Each year, allergies account for more than 17 million outpatient office visits, primarily in the spring and fall; seasonal allergies account for more than half of all allergy visits.

There are no cures for allergies, however, they can be managed through prevention and treatment.

91.2 Types of Allergies

AAFA classifies allergies as follows:

**Indoor and Outdoor Allergies**

- Indoor and outdoor allergies include allergic rhinitis, hay fever, nasal allergies, and seasonal/perennial allergies.
- The most common indoor/outdoor allergy triggers are tree, grass and weed pollen; mold spores; dust mite and cockroach allergen; and cat, dog, and rodent dander.
- Approximately 75% of all allergy sufferers have indoor/outdoor allergies as their primary allergy.
- Approximately 10 million people are allergic to cat dander, the most common pet allergy.
Skin Allergies
• Skin allergies include atopic dermatitis, contact allergies, eczema, hives, and urticaria.
• Approximately 7% of allergy sufferers have skin allergies as their primary allergy. Plants such as poison ivy, oak, and sumac are the most common skin allergy triggers. However, skin contact with cockroach and dust mite allergen, certain foods, or latex may also trigger symptoms of skin allergy.
• Skin allergies alone account for more than 7 million outpatient visits each year.

Food and Drug Allergies
• Approximately 6% of allergy sufferers have food/drug allergies as their primary allergy.
• Food allergy is more common among children than adults.
• Ninety percent (90%) of all food allergy reactions are cause by eight foods: milk, soy, eggs, wheat, peanuts, tree nuts, fish, and shellfish.
• Food allergies account for 30,000 visits to the emergency room each year.
• More than 200 deaths occur each year due to food allergies.
• For drug allergies, penicillin is the most common allergy trigger. Nearly 400 Americans die each year due to allergic reactions from penicillin.

Latex Allergy
• Approximately 4% of allergy sufferers have latex allergy as their primary allergy.
• An estimated 10% of healthcare workers suffer from latex allergy.
• Exposure to latex allergen alone is responsible for over 200 cases of anaphylaxis (severe allergic reactions) each year.
• An average of 10 deaths each year are attributed to severe reactions to latex allergy.

Insect Allergies
• Approximately 4% of allergy sufferers have insect allergies (bee/wasp stings and venomous ant bites, cockroach, allergen) as their primary allergy.
• Each year nearly 100 Americans die due to insect allergies.

Eye Allergies
• Eye allergies include allergic conjunctivitis and ocular allergies.
• Approximately 4% of allergy sufferers have eye allergies as their primary allergy, often caused by many of the same triggers as indoor/outdoor allergies.

91.3 Allergy Capitals
The Asthma and Allergy Foundation of America publishes an annual list of the top 100 American cities dubbed ‘Allergy Capitals’ (www.allergycapitals.com), where allergies are most severe for sufferers. The rankings are based on analysis of three factors, as follows:
• Pollen scores (airborne grass/tree/weed pollen and mold spores)
• Number of allergy medications used per patient
• Number of allergy specialists per patient

The lists are part of the organization’s nationwide Allergy Action Plan, created to help consumers recognize, prevent, and safely relieve allergy symptoms.

The following were the Spring Allergy Capitals in 2018:
• McAllen, TX
• Louisville, KY
• Jackson, MS
• Memphis, TN
• San Antonio, TX
• Providence, RI
• Dayton, OH
• Syracuse, NY
• Oklahoma City, OK
• Knoxville, TN

The cities with the lowest pollen scores were as follows:
• Daytona Beach, FL
• Denver, CO
• Provo, UT
• San Diego, CA
• Palm Bay, FL

91.4 Market Resources
Asthma and Allergy Foundation of America, 8201 Corporate Drive, Suite 1000, Landover, MD 20785. (800) 727-8462. (www.aafa.org)
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ALZHEIMER’S DISEASE & DEMENTIA

92.1 Prevalence

2018 Alzheimer’s Disease Facts and Figures, by the Alzheimer’s Association (www.alz.org), estimates 5.7 million Americans of all ages have Alzheimer’s disease. This figure includes 5.5 million people age 65 and over and 200,000 individuals under age 65 who have younger-onset Alzheimer’s. Another 300,000 Americans under age 65 have a dementia other than Alzheimer’s disease.

“One in 10 people age 65 and older (10%) has Alzheimer’s disease. About one-third of people age 85 and older have Alzheimer’s disease.”

2018 Alzheimer’s Disease Facts & Figures
Alzheimer’s Association, 7/18

These figures will escalate as Baby Boomers age. The Alzheimer’s Association estimates that 10 million Baby Boomers will develop Alzheimer’s.

Alzheimer’s disease is the most frequent cause of dementia, accounting for 70% of all cases of dementia in Americans age 71 and over. Vascular dementia accounts for 17% of cases of dementia. Other diseases and conditions, including Parkinson’s disease, Lewy body disease, frontotemporal dementia, and normal pressure hydrocephalus, account for the remaining 13%.

By age, the percentage of people with dementia is as follows:

- 65-to-69: 3.6%
- 70-to-74: 4.8%
- 75-to-79: 9.9%
- 80-to-84: 15.3%
- 85-to-89: 24.0%
- 90 and older: 36.2%

According to a study by the Center for the Study of Aging at the Rand Corporation (www.rand.org) and published in The New England Journal of Medicine, 22% of people ages 71 and older, or about 5.4 million people, have mild cognitive impairment that does not reach the threshold for dementia. About 12% of this group develop dementia each year.
According to the Alzheimer’s Association, about 30% of people with dementia are living in long-term care settings. The other 70% are cared for by home and community-services providers such as personal care and adult day centers. An estimated 800,000 individuals with Alzheimer’s (or one in seven) live alone. People with Alzheimer’s and other dementias who live alone are exposed to higher risks – including inadequate self-care, malnutrition, untreated medical conditions, falls, wandering from home unattended and accidental deaths – compared to those who do not live alone. Of those who have Alzheimer's and live alone, up to half do not have a designated caregiver.

Drugs help manage symptoms but no treatment can stop the progression of Alzheimer’s, which can start with vague memory loss and confusion before progressing to complete disability and death.

_________________________________________________________________

"Of the leading causes of death, Alzheimer’s Disease is the only one for which there is no way to prevent it, cure it, or slow its progression."

Fortune, 4/27/18

_________________________________________________________________

92.2 Cost of Care

2018 Alzheimer’s Disease Facts and Figures reports the direct costs of caring for those with Alzheimer’s Disease at roughly $277 billion, distributed as follows:

- Medicare: $140 billion
- Medicaid: $47 billion
- Out-of-pocket: $60 billion
- Other: $30 billion

This figure does not include the over $50 billion in indirect costs to businesses for employees who are caregivers. Also not included are the costs of treating the many other chronic conditions Alzheimer’s patients often have. For example, a senior with Alzheimer’s and diabetes costs Medicare 81% more than a senior citizen who only has diabetes.

In 2017, over 15 million family and friends provided 18.4 billion hours of unpaid care to those with Alzheimer’s and other dementias – care valued at $232 billion. More than 60% of Alzheimer’s and dementia caregivers rate the emotional stress of caregiving as high or very high; one-third report symptoms of depression.

At its current pace, costs related to Alzheimer’s will top $1.1 trillion (in today’s dollars) by 2050. Costs to Medicare and Medicaid will increase nearly 500%. 

HEALTHCARE BUSINESS MARKET RESEARCH HANDBOOK 2019-2020

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92.3 Coexisting Conditions

Most people with Alzheimer’s and dementia have one or more other serious medical conditions. Among those diagnosed with dementia, the following percentages have coexisting medical conditions:

- Hypertension: 60%
- Coronary heart disease: 26%
- Stroke late effects: 25%
- Diabetes: 23%
- Osteoporosis: 18%
- Congestive heart failure: 16%
- COPD: 15%
- Cancer: 13%
- Parkinson’s disease: 8%

Further, people with Alzheimer’s disease and other dementias have more than three times as many hospital stays as other older people. Total Medicare costs for their hospital care are more than three times higher than those of other Medicare beneficiaries.

Treatment of these patients poses a challenge for hospitals because the patients often aren’t able to effectively communicate when they’re feeling pain, and they generally cannot participate in their own care.

92.4 Early Detection

Researchers are exploring ways to detect Alzheimer’s long before there are symptoms. Early detection is important because Alzheimer’s starts a decade or more before symptoms appear.

Researchers use PET scans of the brain to identify the telltale amyloid plaques that are a unique feature of the disease. In 2011, the Food and Drug Administration (www.fda.gov) approved a brain scan that can show the characteristic plaques of Alzheimer’s disease in the brain.

“No single, simple test exists to diagnose Alzheimer’s disease. Instead, one’s physician, often with the help of a neurologist, will use a variety of approaches and tools to help make a diagnosis.”

2018 Alzheimer’s Disease Facts & Figures
Alzheimer’s Association, 7/18
92.5 Research For Treatments

The category of Alzheimer’s medications is a $1.4 billion business, according to IQVIA (www.iqvia.com), despite the fact that treatment only acts on the symptoms not the underlying disease.

According to Todd Golde, M.D., professor of neuroscience at the Mayo Clinic, the large expenditures reflect the desperation to treat the disease and suggests the huge market potential should an effective treatment be developed.

The Pharmaceutical Research and Manufacturers Of America (www.pharma.org) reported 94 medicines in development in the U.S. for Alzheimer’s. Since 1998 there have been 101 unsuccessful attempts to create Alzheimer’s drugs. The New York Times reported that one pharmaceutical company alone has spent $450 million on research efforts. In all, only three drugs were approved, and they have had very modest impact on the progression of the disease.

It has been known since 1995 that the APOE gene greatly increases the risk for the disease – by 400% if a person inherits a copy from one parent, by 1,000% if from both parents. The International Genomics of Alzheimer’s Project (IGAP) is currently working to discover and map the genes that contribute to Alzheimer’s disease. The long-range hope is that genetic screening and pharmaceutical remedies combined will eventually lead to prevention of dementia.

“The New York Times

92.6 Influence of Physical and Mental Activity

Research has consistently shown that physical activity has a positive influence
on preventing or delaying the onset of Alzheimer’s, although the extent of this influence has yet to be quantified.

Medical research studies have produced sometimes conflicting conclusions, but experts increasingly say lifestyle factors such as physical activity, challenging hobbies, and lots of social engagements might help keep the brain more nimble and fit as it ages.

In a recent editorial in the *Journal of the American Medical Association*, Sally Shumaker, M.D., a professor of public health sciences and associate dean for research at Wake Forest University, said that she foresees programs that include exercise, cognition, and, possibly, meditation being combined with drug programs to treat dementia.

### 92.7 Mortality


“Alzheimer’s disease is officially listed as the sixth-leading cause of death in the United States. It is the fifth leading cause of death for those age 65 and older. However, it may cause even more deaths than official sources recognize. Alzheimer’s is also a leading cause of disability and poor health (morbidity). Before a person with Alzheimer’s dies, he or she lives through years of morbidity as the disease progresses.”

2018 Alzheimer’s Disease Facts & Figures
Alzheimer’s Association, 7/18

### 92.8 Market Resources


Alzheimer’s Association, 225 North Michigan Avenue, 17th Floor, Chicago, IL  60601. (800) 272-3900. ([www.alz.org](http://www.alz.org))
93.1 Prevalence

Arthritis is the number one cause of disability in America, according to the Centers for Disease Control and Prevention (CDC, www.cdc.gov). As a cause of disability, it affects more people than back pain, heart or lung conditions, diabetes, or cancer. According to an August 2018 estimate by CDC, 54.4 million U.S. adults have been told by a doctor that they had some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia.

People with arthritis are significantly more likely to be physically inactive than those without the disease. Approximately one-third of inactive adults have arthritis. The prevalence of no leisure-time physical activity is 53% higher among those with arthritis than among those without arthritis.

“Arthritis and related conditions are a common source of chronic pain. More than one in five Americans, including 300,000 children, has arthritis. Multiply that by family members and caregivers, and the number of people affected by arthritis and the chronic pain associated with it is staggering.”

Ann Palmer, President
Arthritis Foundation

Arthritis can affect any age. Seventy-nine percent (79%) of arthritis sufferers are over age 45. However, approximately 285,000 children and 8.4 million Americans age 17-to-44 are affected by arthritis. Almost all juvenile arthritis is rheumatoid arthritis, a systemic immune condition. With arthritis, early diagnosis and treatment are very effective, especially with children.

The CDC found that females have a higher prevalence of the disease. Women are more likely to cite arthritis as the cause of their disability than men (6.4 million women vs. 2.2 million men). More African-Americans than whites say it limits their activities. It is less prevalent among Hispanics.
As the senior population increases, the prevalence of arthritis will increase significantly. By 2030, an estimated 67 million Americans will have arthritis.

### 93.2 Economic Impact
Arthritis costs the U.S. economy $140 billion per year in medical care and $164 billion in lost wages. It is responsible for 427 million days of restricted activity, 156 million days in bed, and 45 million days lost from work each year, according to the Arthritis Foundation (www.arthritis.org).

The Arthritis Foundation estimates an annual cost of $5,700 per person living with the disease.

### 93.3 Types of Arthritis
There are more than 100 types of arthritis, with osteoarthritis affecting approximately 50% of the sufferers. Other serious and common forms of arthritis include gout, lupus, scleroderma, and fibromyalgia.

Nearly 27 million Americans have osteoarthritis, arthritis that causes a progressive degeneration of the cartilage, and their ranks are expected to explode with the increasing aging population. The joint disease often hits people 65 years of age and older, but it can appear in those who are decades younger. By 2030, when 70 million people will be 65 and older, the number of people with osteoarthritis is projected by the CDC at 41.1 million.

Rheumatoid arthritis, an autoimmune disease, affects approximately 2.5 million people in the United States. Patients’ own immune systems go awry and attack joints, causing inflammation and stiffness as rogue immune cells eat away cartilage and eventually erode bone. Many factors influence this breakdown of cartilage, including genetic defects; sports injuries, especially in young people; the stresses associated with being overweight, which strain the weight-bearing joints; and some metabolic conditions. The disease strikes mainly women, usually ages 25-to-50. Within 10 years of incurring the disease, approximately 50% of patients are too disabled to work. No cures are available, only treatments to relieve symptoms.

Unlike arthritis, in which joint pain is aggravated by movement, the symptoms of fibromyalgia are always present, even at rest. In addition to pain, individuals with fibromyalgia suffer from constant fatigue. They tend to wake repeatedly during the night and awaken in the morning still tired. They are also more likely to suffer from depression, and many suffer from a nervous stomach. Other symptoms include sore throat; diarrhea or constipation; sensitivity to changes in temperature, bright light, odors and loud sounds; and mottled skin. Fibromyalgia affects an estimated six million Americans, or 2% of the population. The most effective treatment for fibromyalgia is regular exercise. Some medications relieve the symptoms.
93.4 Treatment

According to the CDC, there are approximately 44 million arthritis-related outpatient visits and 992,000 hospitalizations annually.

Health experts believe that a combination of proper diet, weight control, exercise, and regular medical treatment are effective in controlling both the prevalence and severity of arthritis.

The annual arthritis drug market is $6.6 billion. The current drugs used to treat arthritis are aimed only at symptomatic relief. There are more than 40 approaches to treatment nearing or already in clinical trials.

Stem cell therapy is showing promise in the repair of damaged cartilage, a leading cause of osteoarthritis. Prof. Constance Chu, M.D., at the Cartilage Restoration Center at the University of Pittsburgh, is testing stem cell procedures to determine if they are more effective than microfracture, a more commonly used cartilage repair treatment.

93.5 Market Resources

Arthritis Foundation, 1330 West Peachtree Street NW, Suite 100, Atlanta, GA 30309.
(404) 872-7100. (www.arthritis.org)
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ASTHMA

94.1 Prevalence and Mortality

According to the Centers for Disease Control and Prevention (CDC, www.cdc.gov), 20.4 million adults (8.3% of all adults) suffer from asthma. An additional 6.1 million children have the disease.

Approximately 1.7 million emergency room visits per year are for asthma. Asthma results in approximately 500,000 hospitalizations each year. The hospitalization rate from asthma is 38% higher for females than for males.

“Asthma affects 20 million American adults. There is still much research that needs to be done to fully understand how to prevent, treat and cure asthma. But, with proper management, people can live healthy and active lives.”

Asthma and Allergy Foundation of America

For adults, asthma is the fourth-leading cause of work loss, resulting in nine million lost workdays each year. Asthma attacks also result in uncommonly high rates of missed school days.

Approximately 3,500 people die each year from asthma. There are 3.5 average annual deaths from asthma per million among 5-to-34 year olds. Blacks are twice as likely as whites to die from the disease. The death rate from asthma has increased 6% each year since the late 1970s.

Asthma is commonly divided into two types: allergic (extrinsic) asthma and non-allergic (intrinsic) asthma.
“Studies now suggest that half of asthma cases have an allergic component.”

Scientific American

Asthma rates have more than doubled in the U.S. since 1980, hitting particularly hard inner-city areas.

“Asthma rates have skyrocketed in urban areas in the U.S. that are not particularly clean.”

Scientific American

### 94.2 Cost

The total annual cost for asthma management is $56 billion, according to the CDC. According to the American Thoracic Society (www.thoracic.org), the annual per-person medical cost of asthma is $3,266. Of that, $1,830 is for prescriptions, $640 for office visits, $529 for hospitalizations, $176 for hospital outpatient visits, and $105 for emergency room care.

Missed work and school days combined cost $3 billion per year, representing 8.7 million workdays and 5.2 million school days lost due to asthma.

### 94.3 Asthma Capitals

While no place is free from asthma triggers, some cities are more challenging places to live for those with the disease than others.

The Asthma and Allergy Foundation of America (www.aafa.org) conducts an annual assessment of major U.S. cities and ranks the 100 most challenging places to live with asthma as Asthma Capitals (www.asthmacapitals.com). Factors that contribute to such designation include higher than average annual pollen levels, high air pollution, and lack of 100%-smoke-free laws.
The following were the Asthma Capitals for 2018:

- Springfield, MA
- Richmond, VA
- Dayton, OH
- Philadelphia, PA
- Louisville, KY
- Cincinnati, OH
- Youngstown, OH
- Birmingham, AL
- Greensboro, NC
- Toledo, OH

### 94.4 Asthma In Children

The CDC estimates that 8.3% of children in America have asthma, a figure that has doubled since 1980. Experts can provide no specific explanation for the dramatic rise. The estimated cost of treating people under the age of 18 with asthma is $3.2 billion a year.

Fall is the most severe season for asthma attacks in children. Researchers speculate that the increase in asthma attacks has to do with kids gathering in small indoor spaces, as they do in school classrooms, and passing around viruses. Getting a respiratory virus such as the flu or a cold can trigger an asthma attack. Increased exposure to pollutants – from mold growing on classroom ceiling tiles to diesel-powered school bus exhaust fumes – is also a factor. For millions of children with asthma, the start of the school year can bring a rise in severe attacks and trips to the emergency room. More than six times as many asthmatic children of elementary school age are admitted to the hospital in early fall, compared with the hot, smoggy days of summer.

According to a five-year federally financed study conducted at eight medical centers in seven cities, as experts had long suspected, children are at high risk of asthma attacks if they are allergic to cockroaches and their homes show high levels of the insects’ body parts and droppings. Dr. David Rosenstreich, an allergy specialist at Albert Einstein College of Medicine in the Bronx and the senior investigator of the study, estimated that cockroaches cause about 25% of all asthma in inner-city areas.

### 94.5 Treatment

There are more than 17 million physician visits for asthma each year. Americans spend approximately $5 billion annually on inhaled steroids and other daily asthma drugs. The top-selling respiratory drug is Singulair (Merck), with annual U.S. sales of $3.5 billion, according to IQVIA (www.iqvia.com).

Getting patients to take prescribed medications is a challenge in the treatment of asthma. More than half of adults with serious asthma believe they only have asthma when they experience symptoms, and many forgo using medications when they feel symptom-free, according to researchers at Mount Sinai School of Medicine. Patients
who have this “no symptoms, no asthma” belief are one-third less likely to take their asthma medication daily. Male patients, those over 65 years old, and patients with no consistent place of care are most likely to have the “no symptoms, no asthma” belief. The study also found that 20% of the patients feel they will not always have asthma, and 15% expect their doctor to cure them of the disease.

94.6 Market Resources
American Academy of Allergy, Asthma and Immunology, 555 East Wells Street, Suite 1100, Milwaukee, WI 53202. (414) 272-6071. (www.aaaai.org)

American Association for Respiratory Care, 9425 North MacArthur Boulevard, Suite 100, Irving, TX 75063. (972) 243-2272. (www.aarc.org)

American Lung Association, 1301 Pennsylvania Avenue NW, Suite 800, Washington, DC 20004. (202) 785-3355. (www.lungusa.org)

Asthma and Allergy Foundation of America, 8201 Corporate Drive, Suite 1000, Landover, MD 20785. (800) 727-8462. (www.aafa.org)
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AUTISM

95.1 Overview

Autism spectrum disorder (ASD) is a range of complex neurodevelopment disorders characterized by social impairments, communication difficulties, and restricted, repetitive, and stereotyped patterns of behavior. Autistic disorder, sometimes called autism or classical ASD, is the most severe form of ASD, while other conditions along the spectrum include a milder form known as Asperger syndrome, and childhood disintegrative disorder and pervasive developmental disorder not otherwise specified (usually referred to as PDD-NOS). Although ASD varies significantly in character and severity, it occurs in all ethnic and socioeconomic groups and affects every age group.

The Centers for Disease Control and Prevention (CDC, www.cdc.gov) estimates that 1 in 68 children ages 8 and under have an ASD, a rate that has been rising for decades. The rate in males is about 1.6 times that of females.

“In America in 1970, one child in 14,000 was reckoned to be autistic. The current estimate is one in 68 – or one in 42 among boys.”

*The Economist*

Researchers are not certain about what causes ASD, but it’s likely that both genetics and environment play a role. Also, a number of genes associated with the disorder have been identified. Studies of people with ASD have found irregularities in several regions of the brain. Other studies suggest that people with ASD have abnormal levels of serotonin or other neurotransmitters in the brain. These abnormalities suggest that ASD could result from the disruption of normal brain development early in fetal development caused by defects in genes that control brain growth and that regulate how brain cells communicate with each other, possibly due to the influence of environmental factors on gene function. While these findings are intriguing, they are preliminary and require further study.
A study of identical twins found that if one twin is affected, there is up to a 90% chance the other twin will be affected. There are a number of studies in progress to determine the specific genetic factors associated with the development of ASD.

In another analysis involving twins, researchers at McMaster University (Hamilton, Ontario, Canada) found that four factors may account for as much as 55% of the risk of autism: multiple births, older parents, exposures to medications, or infection during pregnancy.

A study published in *JAMA Pediatrics* estimated the lifetime cost to provide support for a person with ASD at $1.4 million to $2.4 million.

### 95.2 Treatment

There is no cure for ASDs. Therapies and behavioral interventions are designed to remedy specific symptoms and can bring about substantial improvement.

Therapists use highly structured and intensive skill-oriented training sessions, such as Applied Behavioral Analysis, to help children develop social and language skills. Family counseling for the parents and siblings of children with an ASD often helps families to cope with the particular challenges of living with a child with an ASD.

Doctors may prescribe medications for treatment of specific autism-related symptoms, such as anxiety, depression, or obsessive-compulsive disorder. Antipsychotic medications are used to treat severe behavioral problems.

There are a number of controversial therapies or interventions available, but few, if any, are supported by scientific studies.

### 95.3 Market Resources

Autism Research Institute, 4182 Adams Avenue, San Diego, CA 92116. (619) 281-7165. (www.autismresearchinstitute.com)

Autism Science Foundation, 29 West 39th Street, Suite 502, New York, NY 10018. (212) 391-3913. (www.autismsciencefoundation.org)


Autism Speaks, 1 East 33rd Street, 4th Floor, New York, NY 10016. (212) 252-8584. (www.autismspeaks.org)
96.1 Incidence Of Back Pain

Nationwide, people visit doctors’ offices for back pain 14 million times a year, making it the second most common reason people see a doctor. Those who receive medical attention represent less than half of the over 30 million Americans who suffer from back pain.

The World Health Organization (www.who.int) has declared lower back pain an official epidemic.

“Researchers say lower back pain results in more than 100 million lost work days a year.”

Hospitals & Health Networks

96.2 Cost

According to data compiled by researchers from the University of Washington School of Medicine, annual spending on spine problems is approximately $85 billion. Workers’ compensation pays for a higher proportion of spine surgeries than for any other condition.

96.3 Back Surgery

Although it might seem counterintuitive for a degenerative disease, the middle-aged are more likely to have back operations than the elderly. The median age for spine surgery is 42.

The number of incidences of back surgery actually declines after age 60. This is not because back pain stops in the elderly, according to Dr. Scott Blumenthal of the Texas Back Institute, but because the body takes so much stress that back pain just appears earlier in life than other arthritic types of pain.

Many acute back problems resolve themselves on their own or with physical therapy.
A large-scale randomized trial comparing having surgery vs. delaying surgery as a remedy for sciatica, directed by James N. Weinstein, M.D., chairman of orthopedics at Dartmouth Medical School, found that people with ruptured discs in their lower backs usually recover whether or not they have surgery. Patients who have surgery often report immediate relief. But by three to six months, patients in both groups report marked improvement. After two years, about 70% of both groups report a major improvement in their symptoms. None of the patients who waited for treatment had serious consequences, and none who had surgery had a seriously adverse result.

For some back problems, however, surgery is recognized as the best solution. Researchers at Dartmouth Medical School reported that surgery for spinal stenosis and degenerative spondylolisthesis, two common spinal problems, results in significantly reduced back pain and better physical function than treatment with drugs and physical therapy.

96.4 Surgical Procedures
For sufferers of back pain who need surgery, the most accepted procedures are discectomy (removal of part of the disc) and spinal fusion combined with discography. About 90% of spinal procedures are fusion-based. Approximately 500,000 fusion operations are performed annually in the U.S., according to the Agency for Healthcare Research and Quality.

96.5 Insurance Coverage
After seeing a 50% jump in costs for spinal fusion surgery over a five-year period, Blue Cross and Blue Shield of North Carolina recently tightened its coverage policy for the procedure, excluding coverage for degenerative disc disease. After finding that more than half the patients who had undergone spinal fusions had never seen a physical therapist before surgery, the insurer began recommending three months of non-surgical treatment before surgery can be approved. Within one year of the new policy, it saw a 30% decrease in procedures.

Cigna also changed how it covers lumbar fusion, requiring that patients participate in a physician-supervised program including exercise, physical therapy, and behavioral therapy for six months before they can be authorized for surgery.

96.6 Market Resources
American Academy of Orthopedic Surgeons, 9400 West Higgins Road, Rosemont, IL 60018. (847) 823-7186. (www.aaos.org)
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BARIATRIC SURGERY

97.1 Overview

According to the National Center for Health Statistics (www.cdc.gov/nchs), approximately one-third of adults in the U.S. are obese.

The National Institutes of Health (NIH, www.nih.gov) has endorsed bariatric surgery as the only proven surgical procedure for weight loss in severely obese patients. As with any surgery, there are associated risks, which may be compounded by the health problems of the morbidly obese patient. When a person becomes morbidly obese, however, the risk of doing nothing may exceed the risk of surgery, making surgery a reasonable option.

The American Society for Metabolic & Bariatric Surgery (ASMBS, www.asmbs.org) estimates that there are about 200,000 bariatric surgeries each year.

People considered medically eligible for bariatric surgery are those with a body mass index (BMI) over 40, or a BMI of 35 to 40 with an obesity-related disease such as Type II diabetes, heart disease, or sleep apnea, criteria established by the NIH. Among the 15 million people in the U.S. meeting this criteria, less than 1% actually get the surgery.

Clinical studies show that most bariatric surgery patients lose weight quickly and continue to lose weight 18-to-24 months after the procedure. Patients may lose 30% to 50% of their excess weight in the first six months and 77% of excess weight as early as 12 months after surgery. Studies have also shown that patients should be able to maintain a 50% to 60% loss of excess weight 10 to 14 years after weight loss surgery.

Four types of operations are commonly offered in the United States:

• Roux-en-Y gastric bypass
• Biliopancreatic diversion with a duodenal switch
• Sleeve gastrectomy
• Adjustable gastric banding

Bariatric surgeries, on average, cost from $20,000 to $25,000, according to the National Institutes of Health. Insurance coverage varies.

97.2 Impact On Obesity-Related Diseases

Studies comparing lifespans of patients with bariatric surgery vs. no procedure show the following (source: ASMBS):

• Patients may improve life expectancy by 89%
• Patients may reduce their risk of premature death by 30% to 40%
• Risk of death from diabetes down 92%, from cancer down 60%, and from coronary artery disease down 56%

A study published in the *Journal of the American Medical Association* reported that bariatric surgery patients showed improvements in the following obesity-related conditions:
• Hypertension eliminated in 62% of patients and improved in 78%
• Obstructive sleep apnea or sleep-disordered breathing eliminated in 86% of patients
• High cholesterol levels or hyperlipidemia decreased in more than 70% of patients

Most noteworthy about bariatric surgery is that in some cases it appears to cure diabetes, a disease otherwise considered incurable. Studies have shown that patients who have bariatric surgery are five times more likely to see their diabetes symptoms disappear over the following two years than are patients who have standard diabetes care. Gastric bypass alleviates Type II diabetes in nearly 90% of patients; gastric band surgery resolves the disease in 73% of patients. According to Prof. David Cummings, M.D., at the University of Washington, increasingly, bariatric surgery is being seen not as a last resort but as a preferred treatment option for those with diabetes.

### 97.3 Risks

The Longitudinal Assessment of Bariatric Surgery (LABS) Consortium ([http://win.niddk.nih.gov/publications/labs.htm](http://win.niddk.nih.gov/publications/labs.htm)), a NIH-funded consortium of six clinical centers, reported the following on the safety of bariatric surgery:
• Risks of bariatric surgery have dropped dramatically and now are no greater than those with gallbladder or hip replacement surgery.
• Risks are lower than the longer-term risk of dying from heart disease, diabetes, and other consequences of carrying more weight than a person’s organs can tolerate.
• At 30 days post-surgery, researchers found the mortality rate among patients who underwent a Roux-en-Y gastric bypass or laparoscopic adjustable gastric banding to be 0.3%; a total of 4.3% of patients had at least one major adverse outcome.

### 97.4 Accreditation


### 97.5 Market Resources

American Society for Metabolic & Bariatric Surgery, 100 SW 75th Street, Suite 201, Gainesville, FL 32607. (352) 331-4900. ([www.asmbs.org](http://www.asmbs.org))
CANCER

98.1 Prevalence And Mortality
Cancer is the second-leading cause of death in the United States, exceeded only by heart disease. There are about 15.5 million Americans with a history of cancer. Cancer Facts and Figures 2018, by the American Cancer Society (www.cancer.org), projects that 1.64 million people in the U.S. will be diagnosed with cancer in 2018; about 609,640 are expected to die of cancer.

As the senior population increases, incidences of cancer are likely to increase since cancer is much more common in the elderly than in the young. As diagnostic technology improves and more treatment options become available, however, survival rates will continue to improve. The 5-year survival rate for all cancers combined is 66%, according to the American Cancer Society.

98.2 Cancer In Men
The American Cancer Society projects 856,370 new cancer cases among men in 2018. The following are the leading types:

- Prostate: 164,690
- Lung and bronchus: 121,680
- Colon and rectum: 75,610
- Urinary bladder: 62,380
- Melanoma of the skin: 55,150
- Kidney and renal pelvis: 42,680
- Non-Hodgkin’s lymphoma: 41,730
- Oral cavity and pharynx: 37,160
- Leukemia: 35,030
- Liver and intrahepatic bile duct: 30,610

The American Cancer Society projects that 323,630 men will die from cancer in 2018. The following are the leading types:

- Lung and bronchus: 83,550
- Prostate: 29,430
- Colon and rectum: 27,390
- Pancreas: 23,020
The American Cancer Society projects 878,980 new cancer cases among women in 2018. The following are the leading types:

- Liver and intrahepatic bile duct: 20,540
- Leukemia: 14,270
- Esophagus: 12,850
- Urinary bladder: 12,520
- Non-Hodgkin lymphoma: 11,510
- Kidney and renal pelvis: 10,010

98.3 Cancer In Women

The American Cancer Society projects that 286,010 women will die from cancer in 2018. The following are the leading types:

- Breast: 266,120
- Lung and bronchus: 112,350
- Colon and rectum: 64,640
- Uterine corpus: 63,230
- Thyroid: 40,900
- Melanoma of the skin: 36,120
- Non-Hodgkin lymphoma: 32,950
- Pancreas: 26,240
- Leukemia: 25,270
- Kidney and renal pelvis: 22,660

98.4 Trends In Incidence And Mortality

The Annual Report to the Nation on the Status of Cancer, published in January 2018, reported trends in cancer incidence and mortality as follows:

- Overall cancer incidence rates from 2008 to 2014 decreased by 2.2% per year among men but were stable among women.
- Overall cancer death rates from 1999 to 2015 decreased by 1.8% per year among men.
men and by 1.4% per year among women.

- Among men, incidence rates during the most recent 5-year period (2010-2014) decreased for 7 of the 17 most common cancer types, and death rates (2011-2015) decreased for 11 of the 18 most common types.
- Among women, incidence rates declined for 7 of the 18 most common cancers, and death rates declined for 14 of the 20 most common cancers.
- Death rates decreased for cancer sites, including lung and bronchus (men and women), colorectal (men and women), female breast, and prostate.
- Death rates increased for cancers of the liver (men and women); pancreas (men and women); brain and other nervous system (men and women); oral cavity and pharynx (men only); soft tissue, including heart (men only); nonmelanoma skin (men only); and uterus.
- Incidence and death rates were higher among men than among women for all racial and ethnic groups.
- For all cancer sites combined, black men and white women had the highest incidence rates compared with other racial groups, and black men and black women had the highest death rates compared with other racial groups.
- Non-Hispanic men and women had higher incidence and mortality rates than those of Hispanic ethnicity.
- Five-year survival for cases diagnosed from 2007 through 2013 ranged from 100% (stage I) to 26.5% (stage IV) for female breast cancer, from 88.1% (stage I) to 12.6% (stage IV) for colorectal cancer, from 55.1% (stage I) to 4.2% (stage IV) for lung and bronchus cancer, and from 99.5% (stage I) to 16% (stage IV) for melanoma of the skin.
- Among children, overall cancer incidence rates increased by 0.8% per year from 2010 to 2014.
- Overall cancer death rates decreased by 1.5% per year from 2011 to 2015.


The report can be accessed online at http://seer.cancer.gov/report_to_nation/.

98.5 The Medical Treatment Marketplace

The Agency for Healthcare Research and Quality (www.ahrq.gov) estimates direct medical costs for cancer in the U.S. at $80.2 billion. Fifty-two percent (52%) of those costs are for hospital outpatient or office-based provider visits; 38% are for inpatient hospital stays.

According to the National Center for Health Statistics (www.cdc.gov/nchs) and the National Institutes of Health (www.nih.gov), cancer care in the U.S. is distributed as follows:
**Inpatient care**
- Number of discharges: 1.2 million
- Length of stay: 6.6 days

**Ambulatory care**
- Number of visits to office-based physicians: 27.7 million
- Number of hospital outpatient visits: 2.5 million

Approximately 85% of cancer care is delivered in community-based centers or at physicians’ offices. According to one estimate, there are over 1,000 outpatient ambulatory-care cancer centers in the U.S. Driven by increasing demand, for-profit chains continue to add facilities.

Changes in reimbursement and advances in drug therapy, which has made it easier for oncologists to administer care in their offices, have prompted hospitals to push cancer care into the outpatient setting, according to Lee Mortenson of the Association of Community Cancer Centers (www.accc-cancer.org). The shift to outpatient settings began increasing in the mid- and late-1990s.

With 90 outpatient centers nationwide, U.S. Oncology (www.usoncology.com) is the largest for-profit company in outpatient cancer services. Another key player is Aptium Oncology (www.aptimoncology.com), which partners with hospitals. Hospitals maintain their own brand in centers co-developed and operated by Aptium.

**98.6 Cancer Drugs**

New drug treatments for cancer are effective but expensive. Nearly a third of the approximately 30 drugs now being approved each year by the Food and Drug Administration (www.fda.gov) are cancer treatments. Most cost more than $5,500 a month.

“Affordability of cancer drugs, especially those that have recently come to market, is a huge concern for healthcare providers and insurers. It’s also a growing concern for many patients who face high cost-sharing bills.”

*Modern Healthcare*
It is estimated that one-half or more of drugs used for cancer are prescribed off-label. (Off-label refers to uses that have not received approval from the FDA.)

“Among cancer drugs – the latest versions of which cost $150,000 a year or more – an estimated 50% to 75% are prescribed off-label, often to patients with metastatic disease who are desperate for anything that might give them hope.”

*Modern Healthcare*

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**98.7 Prevention**

The American Cancer Society estimates that more than 168,000 cancer deaths are caused annually by tobacco use alone, all of which could be prevented.

“Half of all those who continue to smoke will die from smoking-related diseases. Smoking accounts for at least 30% of all cancer deaths and 80% of lung cancer deaths. The risk of developing lung cancer is about 23 times higher in male smokers and 13 times higher in female smokers, compared to lifelong nonsmokers.”

*Cancer Facts & Figures 2018*

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The combination of poor nutrition, lack of physical activity, and obesity is blamed for 35% of cancer deaths. In the U.S., obesity contributes to 14% to 20% of all cancer-related mortality.
“Maintaining a healthy body weight, being physically active on a regular basis, and eating a healthy diet are as important as not using tobacco products in reducing cancer risk.”

_Cancer Facts & Figures 2018_

Heredity factors, which account for 20% to 25% of cancer deaths, present a greater challenge for prevention, but can be minimized through screening.

Certain cancers are related to infectious exposures (e.g., hepatitis B virus [HBV], human papillomavirus [HPV], human immunodeficiency virus [HIV], helicobacter, and others) and could be prevented through behavioral changes, vaccines, or antibiotics. In addition, many of the occurrences of skin cancer could be prevented with proper sun protection, according to the American Cancer Society.

Improving general health and reducing the number of adults with chronic conditions also serves to reduce cancer rates. A study by Gallup-Healthways (www.gallup.com) reported that people diagnosed with chronic conditions are twice as likely to report a cancer diagnosis as those who have not been diagnosed with these conditions. The relationship between cancer diagnosis and other health conditions is as follows:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Diagnosed with Condition</th>
<th>No Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart attack</td>
<td>18.1%</td>
<td>6.5%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>12.7%</td>
<td>6.4%</td>
</tr>
<tr>
<td>High blood pressure</td>
<td>11.8%</td>
<td>5.0%</td>
</tr>
<tr>
<td>High cholesterol</td>
<td>11.7%</td>
<td>5.3%</td>
</tr>
</tbody>
</table>

Screenings and examinations by a healthcare professional can lead to detection of cancers of the breast, colon, rectum, cervix, prostate, oral cavity, and skin at earlier stages, when treatment is more likely to be successful. A heightened awareness of breast changes or skin changes may also result in detection of tumors at earlier stages. Cancers that can be detected earlier by screening account for about half of all new cancer cases. The five-year relative survival rate for these cancers is about 84%. If each of these cancers were to be diagnosed at a localized stage through regular cancer screenings, five-year survival would increase to about 95%.
98.8 Market Resources
American Cancer Society, 250 Williams Street NW, Atlanta, GA 30303. (800) 227-2345. (www.cancer.org)

American Society of Clinical Oncology, 2318 Mill Road, Suite 800, Alexandria, VA 22314. (571) 483-1300. (www.asco.org)

Association of Community Cancer Centers, 1801 Research Boulevard, Suite 400, Rockville, MD 20850. (301) 984-9496. (www.accc-cancer.org)

National Cancer Institute, 6116 Executive Boulevard, Bethesda, MD 20892. (800) 442-6237. (www.cancer.gov)

99.1 Overview

Approximately six million U.S. patients show up in emergency rooms or doctors’ offices each year complaining of chest pain. Only 10% to 15% are actually having a heart attack. An additional 30% to 40% have some other cardiac ailment. Approximately 50% of patients with chest pain likely have no heart problems. Heartburn, joint inflammation, pleurisy (a little-understood condition called chest-all pain), and a blood clot in the lung are among the problems whose symptoms mimic a heart attack.

There are approximately 60 million physician office visits and six million outpatient department visits with a primary diagnosis of cardiovascular disease (CVD). Regardless of its size or scope of services, cardiovascular services can account for up to 40% of the net revenue of an acute care hospital, according to the Healthcare Financial Management Association (www.hfma.org). Successful cardiovascular programs can help make up for revenue declines in a hospital’s other service areas.

99.2 Prevalence And Mortality

According to 2018 Heart Disease and Stroke Statistics, by the American Heart Association (www.heart.org), 92.1 million Americans have one or more type of CVD. Of them, 48% are male and 52% are female; 38% are age 65 or older.

Incidences of specific cardiovascular diseases are as follows:

- Coronary heart disease, total: 15.5 million
  - Angina pectoris: 8.2 million
  - Myocardial infarction: 7.6 million
  - Heart failure: 5.7 million
- Stroke: 6.6 million
- Congenital cardiovascular defects: 650,000 to 1.3 million

2018 Heart Disease and Stroke Statistics reports 836,546 annual deaths in the U.S. attributed to CVD: 414,191 women and 422,355 men. The following is the distribution of mortality by type of CVD:

- Coronary heart disease: 44%
- Stroke: 17%
- High blood pressure: 9%
“Heart disease strikes someone in the U.S. about once every 43 seconds. Cardiovascular diseases claim more lives than all forms of cancer combined. About 2,150 Americans die each day from heart disease, stroke and other cardiovascular diseases, one every 40 seconds. That’s about one of every three deaths in America.”

2018 Heart Disease and Stroke Statistics

99.3 Cost

According to 2018 Heart Disease and Stroke Statistics, direct costs of cardiovascular diseases and stroke are $199.2 billion, distributed as follows:

- Hospital inpatient stays: $90.3 billion
- Hospital outpatient or office-based provider visits: $46.3 billion
- Prescribed medications: $32.3 billion
- Home healthcare: $19.6 billion
- Hospital emergency department visits: $10.6 billion

The distribution of direct costs by type of cardiovascular disease is as follows:

- Coronary heart disease: $100.9 billion
- Hypertensive disease: $ 48.9 billion
- Stroke: $23.6 billion
- Other circulatory conditions: $25.7 billion

Indirect costs (i.e., lost productivity from morbidity and mortality) are estimated at $130.5 billion. Total direct and indirect costs are $329.7 billion.

99.4 Cardiac Surgery

2018 Heart Disease and Stroke Statistics reports the following number of inpatient cardiovascular procedures:
• Diagnostic cardiac catheterizations:  1,016,000  
• Coronary Angioplasty (PCI):  914,000  
  - Stenting (in conjunction with angioplasty):  434,000  
• Coronary artery bypass graft:  371,000  
• Pacemakers:  351,000  
• Valve procedures:  156,000  
• Endarterectomy:  86,000  
• Implantable defibrillators:  60,000  

Mean hospital charges for procedures are as follows:  
• Heart transplantation: $808,770  
• Valve procedures: $201,557  
• Implantable defibrillators: $171,476  
• Cardiovascular revascularization (bypass): $168,541  
• Coronary Angioplasty (PCI): $  84,813  
• Pacemakers: $  83,521  
• Diagnostic cardiac catheterizations: $  57,494  
• Endarterectomy: $  43,484  

In the past decade, angioplasty has displaced bypass surgery as the primary treatment for blocked coronary arteries. One reason is that angioplasty is a minimally invasive procedure requiring a mere slit in the groin and a one night in the hospital. Approximately one million angioplasties are performed in the U.S. annually. Virtually all are performed in hospitals with cardiovascular surgical capabilities.  

Recent studies, however, indicate that using the procedure to open blocked arteries to treat chest pain, or angina, may be riskier and no more beneficial than medication. The research suggests angioplasty is used too often, and in many cases the modest benefits don’t justify the procedure’s cost, which ranges from $10,000 to $12,000.  

According to an analysis by Qforma (www.qforma.com), using data from IQVIA (www.iqvia.com), the number of angioplasty procedures performed each year has declined by 10% to 15% since 2006.  

99.5 Prevention  
Recent studies have confirmed that four risk factors – high blood pressure, bad cholesterol numbers, diabetes, and smoking – are linked to at least 80% to 90% of all heart disease. While these root causes of cardiovascular and other health conditions are well known – by both the medical community and general public – a high percentage of the population in these risk categories continues to ignore necessary lifestyle changes and/or medical treatments.  

Several recent studies have confirmed how well statins work in helping patients avoid heart attacks after undergoing angioplasty procedures that clear out diseased
coronary arteries. Statins are assessed in section 100.2 of this handbook.

The risk for first-time stroke could be cut by 80% if people maintain a healthy lifestyle, according to guidelines published jointly by the American Heart Association and the American Stroke Association (www.americanstroke.org). A healthy lifestyle includes not smoking, maintaining a healthy weight, exercising, and eating a diet rich in fruits and vegetables.

99.6 Market Resources
2018 Heart Disease and Stroke Statistics, American Heart Association, 2018. (www.ahajournals.org/doi/10.1161/CIR.0000000000000558)

American College of Cardiology, 2400 N Street NW, Washington, DC 20037. (202) 375-6000. (www.acc.org)

American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231. (800) 242-8721. (www.heart.org)

American Stroke Association, 7272 Greenville Avenue, Dallas, TX 75231. (888) 478-7653. (www.strokeassociation.org)
100

CHOLESTEROL LEVELS

100.1 Overview

The National Institutes of Health (www.nih.gov) recommends that everyone age 20 and older should have his or her cholesterol measured using a blood test called a lipoprotein panel at least once every five years. The test can help show whether a person is at risk for coronary heart disease. The test provides four primary measures, as follows:

- Total cholesterol, a measure of the total amount of cholesterol in the blood, including low-density lipoprotein (LDL) cholesterol and high-density lipoprotein (HDL) cholesterol
- LDL (bad) cholesterol, the main source of cholesterol buildup and blockage in the arteries
- HDL (good) cholesterol, which helps remove cholesterol from arteries
- Triglycerides, another form of fat in blood that can raise the risk for heart disease

Five risk factors affect LDL levels, as follows:

- Cigarette smoking
- High blood pressure (140/90 mmHg or higher or on blood pressure medication)
- Low HDL cholesterol (less than 40 mg/dL)
- Family history of early heart disease (heart disease in father or brother before age 55; heart disease in mother or sister before age 65)
- Age (men 45 years or older; women 55 years or older)

According to the Centers for Disease Control and Prevention (www.cdc.gov), 38.4% of adults have had their blood cholesterol checked and have been told it was high.

100.2 Statins

Statins are a class of drugs used to lower cholesterol levels by inhibiting the enzyme HMG-CoA reductase, which plays a central role in the production of cholesterol in the liver, which produces about 70% of total cholesterol in the body.

Statins are the second-largest therapeutic class in the U.S., with annual sales of $14 billion. Due to patent expirations, several statins are now available as less expensive generics.
While primarily prescribed to people with elevated LDL levels, several studies have suggested that patients benefit from statins regardless of how high their cholesterol is.
101

CHRONIC CONDITIONS

101.1 Overview

The U.S. health system spends billions of dollars each year trying to treat, manage, and avoid an array of conditions that continue to grow in prevalence.

“The numbers are staggering: Nearly two-thirds of all deaths annually are attributable to chronic conditions. Patients with chronic conditions account for 81% of all hospital admissions, 91% of all prescriptions filled and 76% of all physician visits. Roughly 86% of spending on healthcare is related to chronic disease.”

Modern Healthcare, 5/27/17

101.2 Prevalence

According to the Institute of Medicine (IOM, www.iom.edu), 133 million people have multiple (two or more) chronic illnesses.

More than 190 million Americans (58% of the population) have at least one chronic condition, while more than 30 million have three or more. Projections are that the number of people living with multiple chronic illnesses will more than double by 2050 to 83 million if current trends continue.

According to the Agency for Healthcare Research and Quality (www.ahrq.gov), 60% of Americans have at least one chronic condition. By age, the percentages with chronic disease are as follows:

<table>
<thead>
<tr>
<th>Age Group</th>
<th>None</th>
<th>One</th>
<th>Two +</th>
</tr>
</thead>
<tbody>
<tr>
<td>All adults</td>
<td>40.0%</td>
<td>21.6%</td>
<td>38.2%</td>
</tr>
<tr>
<td>18-to-34</td>
<td>63.6%</td>
<td>22.0%</td>
<td>14.4%</td>
</tr>
</tbody>
</table>
Healthcare Performance Benchmarks, by the Healthcare Intelligence Network (www.hin.com), found that 77.4% of individuals who receive both Medicare and Medicaid coverage have chronic conditions.

Among Medicare beneficiaries, 32% of these patients have two or three chronic conditions, 23% have four or five, and 14% have six or more chronic conditions.

“In the Medicare program, about 80% of the growth in spending is due to the increase in the share of Medicare patients who have chronic illness.”

Prof. Kenneth Thorpe, Chairman
Dept. of Health Policy and Management
Emory University

101.3 Mortality

According to the Dartmouth Institute for Health Policy and Clinical Practice (www.tdi.dartmouth.edu), seven of 10 Americans die of a chronic disease.

Among Medicare participants, about 90% of deaths are associated with nine chronic diseases. Annual deaths among the Medicare population caused by chronic illness are as follows (source: Dartmouth Atlas of Health):

- Congestive heart failure: 243,664
- Malignant cancer/leukemia: 151,287
- Dementia: 138,748
- Chronic pulmonary disease: 121,722
- Chronic renal failure: 70,421
- Coronary artery disease: 68,082
- Peripheral vascular disease: 20,077
- Diabetes: 7,978
- Chronic liver disease: 7,848


101.4 **Healthcare Spending**

Treatment of patients with chronic illnesses accounts for the bulk of U.S. healthcare spending.

“Eighty-six percent (86%) of the nation’s healthcare spending is for patients with one or more chronic conditions; 71% is for patients with multiple chronic conditions.”

*2018 Environmental Scan*

American Hospital Association

Just 1% of Americans account for 22% of healthcare costs, or more than $90,000 per person. Five percent (5%) account for 50% of healthcare costs, at more than $36,000 each.

The IOM reported the following characteristics of patients in the top 10% of healthcare spenders:
- Sixty percent (60%) are women
- Forty-five percent (45%) are 65 or older
- Only 3% are ages 18-to-29

According to the American Hospital Association (www.aha.org), people with chronic conditions spend six times more per year on healthcare than do healthy people; those who have function limitation in addition to a chronic condition spend 16 times more on healthcare.

The 5% of the U.S. population with the highest medical expenditures account for half of medical expenditures. The half of the population with the lowest medical expenditures represent 3% of overall national medical expenses. The following is a distribution of healthcare expenditures by age (source: Agency for Healthcare Research and Quality):

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Top 5% of spenders</th>
<th>Bottom 50% of spenders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth-to-18:</td>
<td>5%</td>
<td>37%</td>
</tr>
<tr>
<td>19-to-34:</td>
<td>9%</td>
<td>27%</td>
</tr>
<tr>
<td>35-to-44:</td>
<td>10%</td>
<td>16%</td>
</tr>
<tr>
<td>45-to-54:</td>
<td>15%</td>
<td>11%</td>
</tr>
<tr>
<td>55-to-64:</td>
<td>18%</td>
<td>5%</td>
</tr>
</tbody>
</table>
Dartmouth researchers found that people with chronic illness account for about 32% of total Medicare spending during the last two years of life.

**101.5 Financial Burden**

While problems paying medical bills are especially acute and still rising for uninsured people with chronic conditions, problems also are significant and growing among people with chronic conditions who have private insurance and higher incomes. Among the working-age population with at least one chronic health condition – 39%, or 72 million people – 62% are within families with problems paying medical bills, according to the Center for Studying Health System Change (www.hschange.com).
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CHRONIC OBSTRUCTIVE PULMONARY DISEASE

102.1 Overview

Chronic obstructive pulmonary disease (COPD) encompasses a group of lung disorders including chronic bronchitis, emphysema, and asthmatic bronchitis. Each of these conditions is characterized by a narrowing of the airways (bronchi) and loss of the lungs’ elasticity. This airway narrowing, most often caused by smoking, develops slowly; however, early detection of COPD can help slow the progress of the disease and allow those diagnosed to maintain active lives.

Approximately 80% to 90% of COPD deaths are caused by smoking. Smokers are about 12 times more likely to die from COPD than those who have never smoked.

102.2 Prevalence And Mortality

The National Center for Health Statistics (www.cdc.gov/nchs/) provides the following assessment of COPD:

Morbidity
- Number of adults with diagnosed chronic bronchitis in the past year: 8.9 million
- Percent of adults with diagnosed chronic bronchitis in the past year: 3.7%
- Number of adults who have ever been diagnosed with emphysema: 3.5 million
- Percent of adults who have ever been diagnosed with emphysema: 1.4%

Mortality
- Number of deaths from chronic lower respiratory diseases (including asthma): 155,041
- Chronic lower respiratory diseases (including asthma) deaths per 100,000 population: 48.2
- Number of deaths from other chronic lower respiratory diseases (excluding asthma): 143,560
- Other chronic lower respiratory diseases (excluding asthma) deaths per 100,000 population: 44.7
- Number of bronchitis (chronic and unspecified) deaths: 617
- Bronchitis (chronic and unspecified) deaths per 100,000 population: 0.2
- Number of emphysema deaths: 7,249
- Emphysema deaths per 100,000 population: 2.3
- Cause of death rank: 3
Visits: Hospital Emergency Departments
• Number of visits to emergency departments with COPD: 7.3 million

Visits: Physician Offices
• Percent of visits to office-based physicians with COPD indicated on the medical record: 3.2%

The American Association for Respiratory Care (www.aarc.org) estimates that there are as many as 15 million people in the United States with undiagnosed COPD. The majority of these people will lose 20% to 40% of their lung function before they show any signs of the illness.

102.3 Cost
According to the American Lung Association (www.lung.org), the annual cost to the nation for COPD is approximately $37.2 billion, including direct healthcare expenditures of $20.9 billion, $7.4 billion in indirect morbidity costs, and $8.9 billion in indirect mortality costs.

According to the Agency for Healthcare Research and Quality (www.ahrq.gov), $10.3 billion is spent on treatment of chronic COPD biannually, distributed as follows:
• Medicare: $6.6 billion
• Medicaid: $2.0 billion
• Commercial: $1.3 billion
• Other: $0.4 billion

102.4 Treatment
Medications are used to treat COPD as follows:
• Bronchodilators relax the muscles around the airways.
• Anti-inflammatory medicines, also called corticosteroids or steroids, help by reducing the swelling and mucus production inside the airways.
• Combination medicines commix inhaled bronchodilators and inhaled corticosteroids.
• Antibiotics treat flare-ups that may be caused by bacterial or viral infections.

With severe COPD, lung function is reduced to the extent that supplemental oxygen, also called oxygen therapy, is needed for normal bodily functions to continue. Pulmonary rehabilitation teaches patients to manage COPD through exercise, which allows them to become more active with less shortness of breath. Medicare began reimbursing for pulmonary rehabilitation in 2010.
Quitting smoking is the single most important thing a person can do to prevent COPD, along with a host of other diseases. Avoiding exposure to secondhand smoke, chemicals, dust and fumes, and polluted air is also very important.

102.5 Market Resources
American Association for Respiratory Care, 9425 North MacArthur Boulevard, Suite 100, Irving, TX 75063. (972) 243-2272. (www.aarc.org)

American Lung Association, 55 W. Wacker Drive, Suite 1150, Chicago, IL 60601. (800) 586-4872. (www.lung.org)
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COLDS

103.1 Prevalence

The common cold is caused by not one common virus but five different viral families encompassing a couple hundred unique viral strains among them. The strains are sufficiently different from one another that even after catching one, people can later be infected by all the others. In total, Americans get about 1.4 billion colds each year.

“It is called the ‘common cold’ for good reason. You and your children will probably have more colds than any other type of illness. Colds are the most common reason that children miss school and parents miss work. Parents often get colds from their children. Children typically get up to eight colds every year.”

National Institutes of Health

An adult catches an average of two to four colds each year.

103.2 Costs

University of Michigan Medical School (http://medicine.umich.edu/medschool) researchers estimated that cold-related costs top $40 billion a year in the United States. The researchers excluded viral respiratory tract infections related to the flu. Over 55% of the cost of colds, or $22.5 billion, is a result of missed workdays. Much of the rest of the cost stems from ineffective medical care, mainly doctors’ visits and antibiotic prescriptions. The researchers assessed that colds lead to 110 million doctor visits and six million emergency room visits annually.
Prof. Mark Fendrick, M.D., at the School of Public Health at the University of Michigan, estimates that more than $1.1 billion is spent annually on 41 million antibiotic prescriptions for colds. An additional $5 billion is spent annually on over-the-counter cold remedies. There are approximately 800 different over-the-counter cold remedies, most with the same basic ingredients.

103.3 Diagnosis And Treatment

Distinguishing between colds and flu can be tough, even for doctors. A recent study by researchers from Vanderbilt University found only 28% of children hospitalized and 17% of those treated in clinics who had lab-confirmed flu had been accurately diagnosed by their doctors; most had colds. It’s not that doctors can’t make an accurate diagnosis, but rather it’s not easy to get a rapid diagnosis that is specific and accurate. Rapid tests are available but not widely used, according to the researchers. Even still, they are only 75% to 80% accurate.

Clearly, patients need to be better informed about colds. A recent survey by Boston’s Children’s Hospital of parents with children under age six found that nearly all of the families knew that viruses cause colds, but more than half thought antibiotics are needed to treat them. Nearly two-thirds of parents said they would take their child to the doctor if the child had a cold, while nearly a quarter said they’d take their child to the emergency room.

A cure for colds is not on the horizon.
104 COSMETIC & RECONSTRUCTIVE SURGERY

104.1 Market Assessment

According to the American Society of Plastic Surgeons (www.plasticsurgery.org, ASPS), 17.5 million cosmetic procedures were performed in 2017, a 2% increase over 2016. Of the 17.5 million procedures, 15.7 million were minimally invasive; 1.8 million were surgical.

Reconstructive plastic surgery improves function and appearance to abnormal structures. There were 5.8 million procedures performed in 2017, unchanged from 2016.

Total spending for cosmetic surgery in 2017 was $16.7 billion.

104.2 Procedures

Cosmetic and reconstructive procedures performed in 2017 were as follows (change from 2016 in parenthesis):

**Cosmetic Surgical Procedures**
- Breast augmentation: 300,000 (3%)
- Liposuction: 246,000 (5%)
- Nose reshaping: 218,000 (-2%)
- Eyelid surgery: 209,000 (no change)
- Tummy tuck: 129,000 (2%)

**Cosmetic Minimally Invasive Procedures**
- Botulinum toxin type A: 7.2 million (2%)
- Soft tissue fillers: 2.7 million (3%)
- Chemical peel: 1.4 million (1%)
- Laser hair removal: 1.0 million (-2%)
- Microdermabrasion: 740,000 (-4%)

**Reconstructive Procedures**
- Tumor removal: 4.5 million (no change)
- Laceration repair: 253,000 (no change)
- Maxillofacial surgery: 204,000 (1%)
- Scar revision: 182,000 (1%)
- Hand surgery: 138,000 (2%)
104.3 Assessment by Gender

Women account for 91% of all cosmetic procedures; men account for 9%.

The following are the top surgical procedures by gender:

Women
Surgical
• Breast augmentation
• Nose reshaping
• Liposuction
• Eyelid surgery
• Facelift

Minimally Invasive
• Botox injection
• Soft tissue fillers
• Chemical peel
• Laser hair removal
• Microdermabrasion

Men
Surgical
• Nose reshaping
• Eyelid surgery
• Liposuction
• Breast reduction
• Facelift

Minimally Invasive
• Botox injection
• Laser hair removal
• Microdermabrasion
• Chemical peel
• Soft tissue fillers

104.4 Market Resources
American Society of Plastic Surgeons, 444 E. Algonquin Road, Arlington Heights, IL 60005. (847) 288-9900. (www.plasticsurgery.org)
105.1 **Prevalence And Mortality**

According to a 2017 report by the Centers for Disease Control and Prevention (CDC, [www.cdc.gov](http://www.cdc.gov)), 30.3 million Americans have diabetes, and an estimated 84.1 million U.S. adults have prediabetes. Diabetes affects 9.4% of all Americans and 12.8% among those ages 20 and older. About 1.5 million Americans are diagnosed with diabetes each year. An estimated 7.2 million Americans with diabetes do not know they have the disease.

By age, the percent diagnosed with diabetes are as follows (National Center for Health Statistics [www.cdc.gov/nchs/]):

- 18-to-44: 2.8%
- 45-to-54: 9.6%
- 55-to-65: 15.7%
- 65 and older: 19.6%

Other conditions common among adults diagnosed with diabetes are as follows (source: CDC):

- Mobility limitation: 63%
- Heart disease: 22%
- Visual impairment: 19%
- Stroke: 9%

Diabetes is the leading cause of kidney failure leading to end-stage renal disease (i.e., dialysis), according to the United States Renal Data System ([www.usrds.org](http://www.usrds.org)).

A study by the Robert Wood Johnson Foundation ([www.rwjf.org](http://www.rwjf.org)) reported a dramatic increase in diabetes among children, a condition brought about almost entirely by the increasing rate of youth obesity.

By 2030, the total number of Americans with diabetes could reach 50 million, with at least 300 million cases worldwide.

Diabetes is the seventh-highest cause of death in the U.S., after heart disease, cancer, stroke, and respiratory illness. *Deaths: Leading Causes for 2015*, published in November 2017 by the National Center for Health Statistics ([www.cdc.gov/nchs](http://www.cdc.gov/nchs)), listed 79,535 deaths with diabetes as the primary cause. It is estimated that double that number die each year from related complications.
There is no recognized cure for diabetes, although Type II diabetes symptoms disappear in many patients who undergo bariatric surgery.

105.2 Type I And Type II Diabetes

Type I diabetes, formerly called juvenile diabetes, is the most common chronic childhood disease, less common than Type II and imminently life-threatening. It mainly strikes children and young adults. It affects an estimated 700,000 to one million Americans. With these diabetics, the body’s immune system destroys the insulin-producing beta cells in the pancreas. Type I diabetics require daily insulin, either by injection or a pump, to keep blood sugar from increasing to dangerous levels. The medical cost to raise a child with diabetes through adulthood is $600,000. Type I diabetes typically reduces life expectancy by 15 years.

“For reasons that are completely mysterious, the incidence of Type I diabetes has been increasing at rates that range from 3% to 5% a year. No one knows exactly why Type I diabetes is rising.”

Scientific American

Type II diabetes, formerly called adult-onset diabetes, is the most common form of diabetes. It affects 15 million Americans. Experts estimate only half of all cases have actually been diagnosed. Type II is caused by a combination of insulin resistance and the improper secretion of insulin. Approximately 80% of people with Type II diabetes are overweight; there are other causative factors. Type II usually can be controlled with diet, exercise, and oral drugs in the early stages. Typically, 40% of Type II diabetics eventually require insulin injections.

Prenatal factors, such as gestational (pregnancy-induced) diabetes, which increase the risk of Type II diabetes in mother and child, can also play a role.

Recent research shows that 20% of Type II diabetes has a genetic cause.

105.3 Economic Impact

According to the American Diabetes Association (ADA, www.diabetes.org), annual direct medical expenditures related to diabetes treatment are $244 billion, including physician’s office and hospital visits, prescription drugs, and health conditions
such as hypertension and renal complications. Approximately 44% of those costs are attributed to inpatient hospital stays.

Based on the CDC’s growth estimates of the number of people affected by the disease, spending may increase to $336 billion by 2035.

According to the National Changing Diabetes Program (www.ncdp.com), diabetes accounts for 12% of federal healthcare spending. Treatment for people with diabetes costs nearly $80 billion more than treatment for those without it.

According to *Economic Costs of Diabetes in the U.S.*, published in April 2018 by the American Diabetes Association, people with diagnosed diabetes incur average medical expenditures of $16,752 per year, of which about $9,601 is attributed to diabetes. People with diagnosed diabetes, on average, have medical expenditures approximately 2.3 times higher than what expenditures would be in the absence of diabetes.

### 105.4 Treatment

Most Type II diabetes patients take one or more drugs to control blood sugar, spending an estimated $12.5 billion annually on medication. (That figure does not including drugs that diabetics are often prescribed for related health conditions like high blood pressure and high cholesterol.) Most diabetics will have to eventually take more than one drug to keep blood sugar under control.

*Action to Control Cardiovascular Risk in Diabetes*, a study by the National Heart, Lung, and Blood Institute (www.nhlbi.nih.gov) and the Veterans Affairs Diabetes Trial (VADT) shaped current views on the optimal treatment for diabetes. The studies suggest that intensively lowering blood sugar in the early years of diabetes may reduce the chance of heart problems and premature death, but the same aggressive treatment does not appear to yield similar benefits in longtime Type II diabetics. In general, the data show that intensive treatment within the first 15 years of diagnosis has an increased chance of yielding improved health, while intensive treatment 20 years after the onset of diabetes has an increased chance of doing harm.

### 105.5 Gastrointestinal Tract Surgery

Weight-loss surgery, which changes the anatomy of the gastrointestinal tract, has been found to be successful treatment for Type II diabetes.

At least a dozen randomized, controlled clinical trials involving hundreds of people have explored the effectiveness and have begun to identify the mechanisms through which an operation can improve blood glucose control. In one trial, 89% of surgery patients with diabetes were not taking insulin five years after their operation.
“Numerous clinical trials show that surgery controls diabetes better, faster and longer than diet changes and drugs do. Surgical success links diabetes to the intestines. Operating may work because it changes gut hormones, bile acids, or gut bacteria or removes a disease cause.”

Scientific American, 7/17

Forty-five medical organizations now recommend operations originally intended for weight loss as standard treatment options for Type II diabetes.

105.6 Market Resources
American Diabetes Association, 2451 Crystal Drive, Suite 900, Arlington, VA 22202. (800) 342-2383. (www.diabetes.org)

Naomi Berrie Diabetes Center at Columbia University Medical Center, 1150 St. Nicholas Avenue, New York, NY 10032. (212) 851-5494 (http://nbdiabetes.org/)

National Heart, Lung, and Blood Institute, P.O. Box 30105, Bethesda, MD 20824. (301) 592-8573. (www.nhlbi.nih.gov)

National Institute of Diabetes and Digestive and Kidney Diseases, 31 Center Drive, MSC 2560, Bethesda, MD 20892. (301) 496-3583. (www.niddk.nih.gov)
106

END-OF-LIFE CARE

106.1 Overview
Approximately 70% of Americans say that if they were terminally ill they would prefer to die at home; only about 25% do so.
Approximately one-quarter of Medicare funds is spent on patients in the last year of life, and about one-third goes for care of patients in their last two years. Concerns have risen because much of this spending is without benefit to patients and, in some cases, is not consistent with patients’ own wishes.

“It’s not about rationing care – the real problem is unnecessary and unwanted care.”
Prof. Elliott Fisher, M.D.
Center for Health Policy Research
Dartmouth Medical School

106.2 End-of-Life Spending
A recent CBS News analysis reported that Medicare pays more than $55 billion annually for care during the last two months of patients’ lives.
The Dartmouth Atlas Project (www.dartmouthatlas.org) estimates average spending per chronically ill Medicare patient in the last two years of life at $80,000, a figure that is increasing at about 5% per year.
Dartmouth Medical School researchers found spending disparities of more than 2-to-1 throughout the U.S. for end-of-life care. The average cost in Los Angeles exceeds $125,000, while in Minot, North Dakota, it is about $50,000.

106.3 Hospice And Palliative Care
Hospice and palliative care, which is further assessed in Chapter 29, is on the rise, in large part because of their focus on pain management and emotional support.
In a survey by researchers from Brown University, reported in the Journal of the American Medical Association, some 70% of family members rated the care in hospice as excellent, while more than one-third reported receiving insufficient emotional support or inadequate treatment in a hospital or nursing home.

Hospice and palliative care are also more cost-effective. A recent study of 40,000 Medicare beneficiaries by researchers from Duke University, published in Social Science & Medicine, found that hospice use reduced Medicare program spending by an average of $2,309 per beneficiary.

106.4 Psychological Support

Some hospitals have found that psychological support through added nursing attention or counseling improves care while reducing costs.

A program at Massachusetts General Hospital, for example, assigns nurses to the hospital’s 2,600 sickest – and costliest – Medicare patients. Along with providing basic care, such as making sure the patients take their medications, nurses also act as gatekeepers, deciding if a visit to the doctor is really necessary. The program has cut costs by 5% while at the same time provided patients with increased personal attention.

Counseling initiatives about end-of-life issues also provide patients with support. An assessment published in the Archives of Internal Medicine reported that increased communications between doctors and patients can decrease costs by about 35% while also improving the quality of life at the end.

106.5 Advance Directives

Advance directives, or living wills, are instructions given by individuals specifying what actions should be taken in the event that they are no longer able to make decisions because of illness or incapacity. As well as providing guidance for family members, they can be useful for healthcare providers with end-of-life treatment. As such, many long-term care facilities request that patients complete an edict for end-of-life care.

An HHS report to Congress estimated that only 18% to 36% of Americans have advance directives.

106.6 Market Resources

National Hospice and Palliative Care Organization, 1731 King Street, Suite 100, Alexandria, VA 22314. (703) 837-1500. (www.nhpco.org)
GERIATRIC MEDICINE

107.1 Overview
Geriatric medicine, or geriatrics, is a specialty that focuses on healthcare for elderly people. This population has a unique set of needs owing to the effects of aging, some of which make them particularly prone to postoperative complications and a prolonged recovery. Geriatrics focuses on the prevention and treatment of diseases and disabilities in older adults.

Those over age 65 represented 17% of the U.S. population in 2018, a figure that is projected to rise to 22% by 2040.

According to the Agency for Healthcare Research and Quality (AHRQ, www.ahrq.gov), 21% of total healthcare spending in the U.S. is on the elderly population, an increase from 13% in 1996.

Geriatricians are primary-care physicians (D.O. or M.D.) who are board-certified in either family medicine or internal medicine and who have also acquired the additional training necessary to obtain the Certificate of Added Qualifications (CAQ) in geriatric medicine.

Hospitals are creating departments and service lines to meet the needs of aging patients.

107.2 Healthcare Needs Of The Elderly
Hospital & Health Networks provides the following assessment of healthcare needs of the elderly:

- Fifteen percent (15%) of people ages 65 and older had one or more hospital stays in the past year; 22% of those ages 85 and older did so.
- Twenty-one percent (21%) of people ages 65 and older visited an emergency department in the past year.
- People ages 65 and older make 22.5 million visits to hospital outpatient departments each year.
- Twenty percent (20%) of people ages 65-to-74 and 27% of people ages 75 and older report that they are in fair or poor health.

Individuals with chronic conditions account for 93% of total Medicare spending; those with multiple chronic conditions account for the bulk of this amount.
“Twenty-five percent (25%) of seniors on Medicare have four or more chronic conditions. One-quarter had made at least three visits annually to the emergency department; two-thirds had been hospitalized; nearly one-half required a post-acute care stay.”

2018 Environmental Scan
American Hospital Association

107.3 Delirium
Delirium, the sudden onset of stress and confusion which often occurs during a hospital stay, is a frequent condition among elderly patients. Delirium is caused by many risk factors, including old age, certain medications, dehydration, and vision impairment. It’s associated with increased complication rates, higher mortality, and longer hospital stays.

Delirium affects 30% to 50% of older general medical-surgical patients and 80% to 90% of ICU patients over age 70. A delirium episode in an elderly patient can double or triple mortality risk over the following year. Patients who experience delirium are more likely to need nursing-home care after a hospital stay. And the effects of delirium can linger for weeks and months. One-quarter of patients over 70 with delirium do not return to their baseline cognition within three months.

“Awareness of the issue has grown in recent years as new research showed the spiraling financial costs of delirium, estimated to be as much as $100 billion annually when additional post-discharge costs are taken into account.”

Modern Healthcare
107.4 In-Home Care

Most seniors prefer to remain in their own homes despite the onset of debilitating health conditions. The Independence At Home Demonstration Project, launched by the Centers for Medicare & Medicaid Services (CMS, www.cms.gov) in 2015, found that providing healthcare to seniors at their home can be more economical than moving seniors to assisted-living residences and nursing homes.

The program targeted seniors with at least two chronic conditions or disabilities who had at least one hospital admission in the prior year. The participating physician practices created teams that delivered in-home care, starting with monthly visits by a nurse to ensure that minor changes in a person's condition were treated before they led to an event that required hospitalization. The program saved Medicare more than $3,000 per beneficiary in its first performance year.

“It sounds expensive. But the demonstration is proving that coordinated in-home care delivery can be cheaper in the long run.”

*Modern Healthcare*

Medicare and Medicaid pay for home healthcare for patients who are recovering from an acute-care episode. The Medicare Payment Advisory Commission estimated that Medicare spends about $17 billion annually on home healthcare; Medicaid spends about $6 billion.

“At present, this care is largely disconnected from the acute-care delivery system or even local physician practices. Also, little is known about the quality of that care.”

*Modern Healthcare*
107.5 Age-Friendly Health Systems

In 2017, the John A. Hartford Foundation (www.johnahartford.org), Institute for Healthcare Improvement (www.ihi.org), and the American Hospital Association (www.aha.org), along with other partners, launched an Age-Friendly Health Systems initiative to meet the complex needs of aging adults.

The Age-Friendly Health Systems model is based on four principles, as follows:

• Medication – getting medicines right, reviewing the medication, de-escalating therapy and looking at medications as a whole as a big risk area
• Mobility - getting people up, keeping them moving to make sure they can perform activities for independence and prevent functional decline
• Mentation – improving care for patients with depression, dementia and delirium
• What matters – unless caregivers know what matters to older people, they cannot do what matters for older people

The goal is to introduce the Age-Friendly Health Systems model to 20% of hospitals and health systems in the U.S. by 2020.

107.6 Market Resources

American Geriatrics Society, 40 Fulton Street, 18th Floor, New York, NY 10038.
(212) 308-1414. (www.americangeriatrics.org)
108

HEADACHES & MIGRAINES

108.1 Prevalence And Cost

As many as 50 million Americans suffer from chronic headaches. The following are several types of chronic headaches (source: National Headache Foundation, [www.headaches.org]):

• Tension headache is the most common, accounting for more than 75% of all headaches.
• Migraine is the second most common form of primary headache, affecting an estimated 30 million Americans; 18% of all women and 6% of all men.

“Almost 30 million Americans suffer from migraines, severe, recurring headaches that may occur along with symptoms of nausea, light sensitivity or weakness. Women are three times more likely than men to have this type of headache, and treatment for migraines varies widely – from traditional pain medications to preventatives to alternative remedies and exercise.”

The New York Times, 3/14/18

• Cluster headaches are a variant of a migraine. They are not as common and occur almost exclusively in men who smoke or drink heavily. They are called cluster headaches because after the first one, headaches usually keep coming back for the next few weeks, or even months. Each attack lasts no more than a couple of hours and is associated with severe pain in one eye.
• Rebound headaches occur when a person experiences one of the above-mentioned headaches and becomes dependent on pain killers for relief. When the last dose
begins to wear off, the headache comes back.

- Seventy-three percent (73%) of headache sufferers report experiencing more than one type of headache. For this majority, it is essential to determine the headache type in order to develop the best treatment regimen.

Headaches and migraines are one of the leading health-related causes of work absenteeism. Prof. David W. Dodick, M.D., at Mayo Clinic, estimates that they cost the U.S. economy an estimated $17 billion a year in lost work, disability payments, and healthcare expenses.

Researchers from the University of Michigan Health System reported in the *Journal of the American Medical Association* that about 30 million people visit a doctor each year for headaches. Among these patients, 12% receive an MRI or CT scan at a total annual cost of over $4 billion.

### 108.2 Treatment

With recent developments physicians now have at their disposal a growing arsenal of headache drugs – medications that can stop an accelerating migraine in its tracks, reduce the risk of recurrence, or, in some cases, keep one from happening in the first place. Scientists are starting to uncover subtle defects in brain chemistry and electrophysiology that lead not just to migraines but to all kinds of headaches. Many neurologists now believe that the most severely disabling headaches are actually migraines in disguise and so are more likely to respond to migraine medications than to standard analgesics such as aspirin, ibuprofen, or acetaminophen.

Treatment of headaches and migraines is complicated by the fact that sufferers react in varied ways to medications.

_________________________________

“What might be a miracle drug for one person could be a dud for another. There is no universally effective therapy.”

Joel Saper, M.D., Director
Michigan Headache and Neurological Institute

_________________________________

Migraine sufferers have long been told to treat their headaches at the onset. Many doctors now are prescribing daily drugs to prevent migraines from ever starting at all. Prevention therapy typically provides significant relief only for about half of the people who try it. While it may reduce the frequency of migraines, it rarely eliminates
them. And some doctors question whether the benefit is always worth the potentially high cost and the range of side effects that can be caused by some daily drugs. Patients with one or two attacks a month are likely better off with one-dose treatments rather than preventive therapy.

108.3 Headache Clinics

There are over 80 headache clinics across the U.S., many of which are affiliated with hospitals. A few clinics specialize further by patient demographic. The Headache Clinic at the Children’s Hospital of Pittsburgh, for example, focuses on the treatment of juvenile headaches. The Women’s Headache Center at Somerville (Massachusetts) Hospital, the first solely for women, opened in 2006.

A directory of headache specialists and clinics provided by the National Migraine Association is available online at www.migraines.org/help/helpclin.htm.

108.4 Market Resources

American Migraine Foundation, 19 Mantua Road, Mount Royal, NJ 08061. (856) 423-0043. (www.americanmigrainefoundation.org)

Michigan Headache and Neurological Institute, 3120 Professional Drive, Ann Arbor, MI 48104. (734) 677-6000. (www.mhni.com)

National Headache Foundation, 820 North Orleans, Suite 411, Chicago, IL 60610. (312) 274-2650. (www.headaches.org)
109

HIV & AIDS

109.1 Prevalence And Mortality


According to the 27th edition, published in November 2017, which reported on prevalence in 2016, 973,846 persons ages 13 years and older are living with diagnosed HIV infection. The number of people infected with AIDS is 552,283. The rates for people living with diagnosed HIV and AIDS are 303.5 per 100,000 and 162.8 per 100,000, respectively.

The *HIV Surveillance Report* reported diagnosis as follows:

### HIV

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<th>Rate</th>
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<td>2016</td>
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### AIDS

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</tr>
<tr>
<td>2016</td>
<td>18,160</td>
<td>5.6 per 100,000</td>
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</table>

The *HIV Surveillance Report* reported 11,638 deaths from HIV.

109.2 Living With Diagnosed HIV

By state, the number of people and rate (per 100,000) living with diagnosed HIV is as follows:
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<thead>
<tr>
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<th>Rate</th>
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<td>Alaska</td>
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<td>Arizona</td>
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<td>Arkansas</td>
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<td>California</td>
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<td>District of Columbia</td>
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<td>Florida</td>
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<td>Georgia</td>
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<td>Idaho</td>
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<td>Iowa</td>
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<td>Kansas</td>
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<td>Kentucky</td>
<td>6,644</td>
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<td>Louisiana</td>
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<td>Maine</td>
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<td>Mississippi</td>
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<td>New Jersey</td>
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<td>New Mexico</td>
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<td>New York</td>
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<tr>
<td>North Carolina</td>
<td>29,814</td>
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<td>North Dakota</td>
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<tr>
<td>Oklahoma</td>
<td>5,774</td>
<td>179.9</td>
</tr>
<tr>
<td>Oregon</td>
<td>6,598</td>
<td>193.7</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>34,233</td>
<td>314.4</td>
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<tr>
<td>Rhode Island</td>
<td>2,357</td>
<td>259.5</td>
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<tr>
<td>South Carolina</td>
<td>16,224</td>
<td>394.6</td>
</tr>
<tr>
<td>South Dakota</td>
<td>514</td>
<td>73.3</td>
</tr>
</tbody>
</table>
• Tennessee: 16,425  297.4
• Texas: 81,873  368.9
• Utah: 2,702  116.4
• Vermont: 671  123.7
• Virginia: 21,607  307.7
• Washington: 12,484  208.3
• West Virginia: 1,781  113.3
• Wisconsin: 5,916  122.0
• Wyoming: 289  59.7

109.3 Cost

The estimated annual cost of HIV infections in the U.S. is approximately $30 billion, roughly evenly split between direct and indirect costs.

According to the Henry J. Kaiser Family Foundation (www.kff.org), federal, state, and local governments spend $14 billion domestically on HIV/AIDS annually, distributed as follows:
• Care and assistance:  75%
• Research:  18%
• Prevention:  7%

An additional $4 billion is spent by the U.S. government for funding in developing nations, particularly in sub-Saharan Africa. This aid provides life-extending drugs to 1.3 million people and palliative care for another three million.

109.4 The AIDS Epidemic

America’s AIDS epidemic has changed dramatically since the late 1990s. Three decades ago the U.S. epidemic looked “simple” and homogenous; AIDS was a problem for gay men some felt. Today, about one-third of new infections are transmitted through heterosexual intercourse, up from 3% in 1985.

According to the CDC, 53% of new infections have occurred in gay and bisexual men. Black/African-American men and women are also strongly affected – estimated to have an incidence rate 7 times as high as the incidence rate among Caucasians. Women now account for 26% of newly diagnosed AIDS cases – nearly four times the proportion they made up in 1986 – and girls account for the majority of new HIV infections among teens.

In 1990, as many as 2,000 babies born in the U.S. were infected with HIV. As of 2018 that number had been reduced to approximately 100. The Elizabeth Glaser Pediatric AIDS Foundation (www.pedaids.org), founded in 1988, has been credited with nearly wiping out pediatric AIDS in the United States.
109.5 Treatment

Antiretroviral (ARV) treatment reduces both the mortality and the morbidity of HIV infection, but does not provide a cure.

“Drug cocktails can lower levels of the AIDS virus to undetectable levels, reducing the risk of spread. But 20% of those with HIV don’t know they have the disease and only 36% get these drugs.”

USA Today

According to IQVIA (www.iqvia.com), annual HIV antiviral (J5C) sales are approximately $7 billion globally. The top 10 products, which hold a combined marketshare of 86%, are as follows:

- Combivir (GlaxoSmithKline)
- Crixivan (Merck & Co.)
- Epivir (GlaxoSmithKline)
- Kaletra (Abbott)
- Serit (Bristol-Myers Squibb)
- Sustiva (Bristol-Myers Squibb)
- Trizivir (GlaxoSmithKline)
- Viracept (Pfizer)
- Viramune (Boehringer Ingelheim)
- Ziagen (GlaxoSmithKline)

The Food & Drug Administration (FDA, www.fda.gov) approved in 2003 Fuzeon (Roche), the first fusion inhibitor that works against AIDS. At roughly $20,000 a year, Fuzeon costs three times as much as most AIDS medicines.

In 2006, FDA approved Atripla, the first HIV treatment that packs a triple-drug cocktail. The pill includes doses of Bristol-Myers Squibb’s Sustiva and Gilead Pharmaceutical’s Truvada, itself a combo of Viread and Emtriva. The single-dose pill vastly simplifies AIDS treatment, which once was a regimen of 20 or 30 tablets.

Since 1987, AIDS Drug Assistance Programs (ADAPs), which are federally and state-funded but administered by the states, have made treatments available to patients without insurance or the resources to purchase drugs. These programs are often a last resort for people who are HIV-positive and don’t qualify for Medicaid. Today, ADAPs buy 20% of the HIV drugs prescribed in the U.S., enough for 92,000 people; the remaining 80% are paid for by insurance or are covered by federal programs.
109.6 Prevention Strategies
Since there is no known cure, preventing infection is the key to controlling HIV/AIDS.

Prevention strategies such as intensive counseling, needle exchanges, and treatment for drug addiction cost $5,000 to $40,000 per infection averted. This is very cost effective compared to the costs of AIDS therapies, especially since addiction treatment also pays off in decreased crime and higher employment among the at-risk population, according to Dr. James G. Kahn, University of California at San Francisco.

Early detection, which helps prevent the spread of HIV/AIDS, is being enhanced by the availability of rapid point-of-care test products. The OraQuick Advance Rapid HIV-1/2 Antibody Test, which provides 99% accuracy in the detection of HIV using an oral swab, is FDA-approved.

Early treatment is also an important preventive measure. While ARV treatment does not cure HIV, it can reduce the level of the virus in people’s bodies to a level that stops them from infecting others, a phenomenon called “treatment as prevention.”

Truvada, developed by Gilead Sciences and approved by the FDA in 2012, has been shown to prevent infection with the virus that causes AIDS.

In 2014, the CDC issued guidelines telling doctors to consider a drug regimen incorporating Truvada for patients with a high risk of AIDS infection.

_________________________________________________________________
“If broadly followed, the advice could transform AIDS prevention in the United States – from reliance on condoms, which are effective but unpopular with many men, to a regimen that relies on an antiretroviral drug. It would mean a 50-fold increase in the number of prescriptions for the drug, Truvada – to 500,000 a year from fewer than 10,000. The drug costs $13,000 a year, and most insurers already cover it.”

The New York Times

_________________________________________________________________

109.7 Market Resources
National Center for AIDS/HIV, Centers for Disease Control and Prevention, 1600 Clifton Road, Atlanta, GA 30329. (800) 232-4636. (www.cdc.gov/nchhstp)
110.1 Overview
High blood pressure, or hypertension, is a condition when a person's systolic level is above 140 and diastolic pressure is above 90 most of the time. Uncontrolled high blood pressure increases the risk of serious health problems, including heart attack and stroke.

“High blood pressure generally develops over many years, and it affects nearly everyone eventually. Fortunately, high blood pressure can be easily detected and treated.”

Mayo Clinic, 5/18

110.2 Incidence
According to the Behavioral Risk Factor Surveillance System (BRFSS) of the Centers for Disease Control and Prevention (CDC, www.cdc.gov/brfss), 31.4% of adults have been told they have high blood pressure. Up to 20% of adults with high blood pressure are not aware of their condition.

110.3 Treatment
Lifestyle changes including reducing sodium intake, physical exercise, weight loss, and stress reduction are the first line of treatment for hypertension. The Dietary Approach to Stop Hypertension (DASH) is a diet rich in nuts, whole grains, fish, poultry, fruits and vegetables that can be effective in lowering blood pressure.
Doctors generally recommend medications for high-level or persistent hypertension. Several classes of medications, collectively referred to as antihypertensive drugs, are available for treating hypertension.

According to one study, reduction of the blood pressure by 5 mmHg can decrease the risk of stroke by 34%, of ischaemic heart disease by 21%, and reduce the likelihood of dementia, heart failure, and mortality from cardiovascular disease.

Many people require more than one drug to control hypertension. For adults with a systolic blood pressure greater than 160 mmHg or a diastolic blood pressure greater than 100 mmHg, the American Heart Association (www.americanheart.org) recommends starting both a thiazide-based diuretic and an angiotensin converting enzyme inhibitors (ACE-I), angiotensin II receptor blockers (ARB), or calcium channel blockers (CCB).

The Centers for Disease Control and Prevention (CDC, www.cdc.gov) estimates roughly $8 billion a year is spent in direct medical expenditures for the treatment of high blood pressure.

### 110.4 Recent Developments

Hypertension can be difficult to assess. Many variables such as a recently smoked cigarette or cup of coffee can lead to an inaccurate elevated blood pressure reading. The application of electronic health records to evaluate blood pressure readings has been shown to be effective in overcoming variables than can prevent a proper hypertension diagnosis.

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“Hypertension, known as the silent killer because of its asymptomatic ability to cause heart attacks and strokes, has not always been diagnosed easily or accurately by healthcare providers. The silent killer is now easier to identify through the use of electronic health records.”

_Hospitals & Health Networks_

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According to the CDC, nearly 8 million people, or 64% of patients ages 18-to-85 with hypertension, have their blood pressure under control. The rate was an improvement compared to 2010, but still falls short of the goal that HHS set in its
national “Million Hearts” campaign of getting 70% of hypertension patients to lower their blood pressure to recommended levels.

“More Americans with high blood pressure appear to be doing a better job of controlling their condition, according to a new government report, but more needs to be done to meet national goals.”

Modern Healthcare
INFECTIONS

111.1 Antibiotic-Resistant Infections

Antibiotic resistance occurs when a bacteria and thus its progeny acquires a genetic mutation rendering it resistant to the effects of antibiotics.

According to the Centers for Disease Control and Prevention (CDC, www.cdc.gov), at least 2 million people become infected with bacteria that are resistant to antibiotics each year in the U.S., and at least 23,000 people die as a direct result of these infections. Many more people die from other conditions that were complicated by an antibiotic-resistant infection.

Antibiotic-resistant infections can happen anywhere. Most happen in the general community, according to the CDC; however, most deaths related to antibiotic resistance happen in healthcare settings such as hospitals and nursing homes. The high mortality is, in part, because patients being treated for chronic conditions often have weakened immune systems that make them especially vulnerable.

According to The BMJ (www.bmj.com), the five most common hospital-acquired infections cost U.S. healthcare systems $10 billion every year.

Hospitals have taken steps to prevent drug-resistant infections, and the number of those types of infections occurring outside the healthcare setting has outstripped the number acquired in hospitals.


“A 21% decline in hospital-acquired conditions from 2010 to 2015 saved 125,000 lives and [resulted in] $28.2 billion in cost savings.”

2018 Environmental Scan
American Hospital Association
**111.2 Drug-Resistant Bacteria**

The CDC reports that most drug-resistant bacterial infections are caused by 17 drug-resistant bacteria and one fungus. Common types of drug-resistant bacteria include MRSA (methicillin-resistant *Staphylococcus aureus*), VRSA (vancomycin-resistant *S. aureus*), ESBL (extended spectrum beta-lactamase), VRE (vancomycin-resistant *Enterococcus*), and MRAB (multidrug-resistant *A. baumannii*).

The more resistant to commonly used antibiotics that bacteria become, the greater the threat. In 1974, only 2% of *staphylococcus aureus* infections were MRSA (methicillin-resistant). That figure has now soared to over 70%, according to the CDC.

**111.3 Clostridium Difficile**

One of the most problematic infections is *clostridium difficile*, or C. diff. For those affected, problems usually start when they are being treated with antibiotics for some other infection, which can kill off many of the healthful bacteria in the intestines, thus allowing C. diff to take over.

There are 337,000 hospitalizations for C. diff annually in the United States and C. diff is linked to about 14,000 deaths. The occurrences add at least $1 billion to healthcare costs, according to the Centers for Disease Control and Prevention.

Fecal transplants have been shown to be effective in treating C. diff, with many physicians reporting success rates of 80% to 95%. The FDA, however, imposed restrictions on this procedure in 2013, curtailing the measure in many clinics.


**111.4 Sepsis**

Sepsis occurs when an infection, such as pneumonia, triggers a cascading, whole-body inflammatory response that, if left untreated, can rapidly lead to progressive organ failure and death. The potentially lethal condition affects more than 750,000 people in the U.S. each year and 220,000 of them die. It is the leading cause of hospital death in intensive-care units and the tenth leading cause of death in the United States overall.

National cost estimates related to sepsis total nearly $17 billion annually.

Hospitals struggle with early detection, monitoring, and intensive treatment to combat sepsis because it is difficult to spot. The symptoms—chills, fever, a rapid pulse—can mimic those of other conditions.

Initiatives targeting sepsis have been launched. The STOP Sepsis Collaborative of the 57-member Greater New York Hospital Association (www.gnyha.org), for instance, reported a 23% drop in mortality from severe sepsis, or sepsis with associated organ failure.
111.5 Market Resources
Association for Professionals in Infection Control and Epidemiology, 1275 K Street NW, Suite 1000, Washington, DC, 20005. (202) 789-1890. (www.apic.org)
112

INFECTIOUS DISEASES

112.1 Overview

Various infectious diseases are assessed in this handbook, as follows:

• Colds: Chapter 103
• HIV/AIDS: Chapter 109
• Influenza: Chapter 113

Other infectious diseases are assessed in this chapter.

112.2 Prevalence

The National Center for Health Statistics (NCHS, www.cdc.gov/nchs) reports the following number of cases for common infectious diseases (most recent data available; reporting year varies by disease):

• Salmonellosis: 51,455
• Whooping cough (pertussis): 48,277
• Lyme Disease (confirmed): 33,461
• Chickenpox (Varicella): 13,447
• Tuberculosis: 9,421
• West Nile virus: 5,673
• Rabies (animal): 4,541
• Spotted fever: 4,470 (118 confirmed)
• Legionellosis: 3,688
• Hepatitis B: 2,895
• Hepatitis C: 1,782
• Hepatitis A: 1,562
• Malaria: 1,503
• Meningococcal disease: 433
• Measles: 118

NCHS reports annual visits for infectious and parasitic diseases as follows:

• Physician office visits: 16.8 million
• Hospital outpatient department visits: 3.9 million
112.3 Mortality

Deaths: Leading Causes, by the NCHS, reported infectious diseases as the cause of 127,723 deaths, or 4.9% of all deaths occurring in the U.S. The following were the most fatal infectious diseases:

- Influenza and pneumonia: 56,979
- Septicemia or sepsis (blood infection): 38,156
- Viral hepatitis: 8,157
- Human immunodeficiency virus (HIV/AIDS) disease: 6,955
- Tuberculosis: 555
- Meningococcal infection: 59
- Syphilis: 49
- Salmonella infections: 40
- Other intestinal infections: 6,007
- Other and unspecified infectious and parasitic diseases: 10,766

112.4 Hepatitis C

More than 170 million people worldwide are infected with hepatitis C. Most of the estimated four million Americans with hepatitis C are not aware they have the disease. Most often there are no symptoms, but when they do occur they include fatigue, abdominal pain, loss of appetite, nausea, and vomiting. As many as 10,000 of those infected die each year. People most at risk are intravenous drug users, but healthcare workers, hemodialysis patients, and multi-partnered sexually active individuals also are at risk.

According to the CDC, hepatitis C, or HCV, is the most common chronic blood-borne infection in the United States. Doctors call it the ‘Baby Boomer Disease’ because many victims contracted it as teens in the 1960s and 1970s while injecting or inhaling drugs. The damage it does to the liver, typically for 10-to-20 years before symptoms develop, is the biggest reason for undergoing liver transplants.

Over the next 10 years, annual deaths linked to hepatitis C are expected to at least double, perhaps triple. And cases of liver failure and cancer, the two most serious complications of hepatitis C, are rising and will probably climb faster.

In 2013, the FDA approved Sovaldi (sofosbuvir) and Harvoni® (ledipasvir/sofosbuvir), drugs for hepatitis C from Gilead Sciences (www.gilead.com). The cost is $1,000 per pill and about $84,000 for a typical treatment. Trials showed a cure rate of 99% after 24 weeks of treatment. Sales were $10.3 billion in 2014, making it the most successful drug launch in U.S. pharmaceutical history. Sales have since leveled off at about $8 billion per year.

112.5 Lyme Disease

Lyme disease is an infectious disease transmitted by the bite of an infected tick. Symptoms may include fever, headache, and fatigue. A painful rash generally occurs
within a week, but often not for a month. Left untreated, later symptoms may involve the joints, heart, and central nervous system.

Lyme disease is one of the fastest-growing infectious diseases in the United States. In most cases, the infection and its symptoms are eliminated by antibiotics.

The CDC estimates that more than 300,000 cases of Lyme disease occur each year, although only about 30,000 of these are actually reported to the CDC.

In 2016, there were 26,203 confirmed Lyme disease cases; 96% were reported from 14 states, as follows:

- Connecticut
- Delaware
- Maine
- Maryland
- Massachusetts
- Minnesota
- New Hampshire
- New Jersey
- New York
- Pennsylvania
- Rhode Island
- Vermont
- Virginia
- Wisconsin

112.6 Measles

The United States declared measles was eradicated in 2000, meaning that the virus is no longer native to the country. There were an average of 83 confirmed cases annually from 2001 through 2011, however, from infected travelers bringing measles virus into the United States. Globally, an estimated 20 million measles cases occur each year.

Following a low of 55 cases reported in 2012, several outbreaks were reported in 2013 through 2014. There were 667 reported cases in 2014, 397 during the first six months of the year.

The CDC has reported confirmed cases of measles as follows:

- 2015: 188
- 2016: 86
- 2017: 118

112.7 Norovirus

Norovirus (better known to the public as stomach flu or Norwalk virus) is the most common cause of gastrointestinal illness in North America, affecting an estimated 23 million Americans each year. No treatment exists. Those infected generally recover on their own over two to three days.

Though often associated with cruise ships because it thrives in closed environments and because cruise lines are required by law to report all gastrointestinal illnesses, the virus can be found many places. The number of ships calling at U.S. ports reporting gastrointestinal outbreaks has been as follows:

- 2006: 34
- 2007: 21
- 2008: 15
- 2009: 15
According to the CDC, norovirus outbreaks are common in healthcare settings. Standard infection-control procedures are not adequate enough in hospitals to curb the highly contagious Norwalk virus, researchers say. Moreover, an outbreak places hospital staffs at extreme risk and the costs involved are significant. A report on a three-month norovirus outbreak at one hospital found that total hospital costs – including extra cleaning supplies, staff sick leave, diagnostic tests, replacement staff, salaries, and lost revenue from closed beds – exceeded $650,000.

112.8 Pneumonia And Pneumococcal Disease

Because of antibiotics, pneumonia is no longer the leading cause of death in the United States. However, death rates due to pneumonia have increased dramatically in recent years. Up to three million cases of infectious pneumonia occur annually, resulting in approximately 61,000 deaths.

More than 100 different organisms can cause pneumonia, an acute or chronic inflammation of the lungs. Depending on the kind of pneumonia, symptoms range from a chronic cough (due to mycoplasma pneumonia, or walking pneumonia) to a fever and shortness of breath (associated with bacterial pneumonia).

Pneumonia is not a single disease. It can have over 30 different causes, the most common of which are bacteria, viruses, and mycoplasma. Viral and mycoplasma pneumonia are not as serious as bacterial pneumonia, which can be life-threatening.

Pneumococcal, among the deadliest bacteria in the U.S., kills approximately 40,000 people annually. The microbe causes 500,000 cases of pneumonia yearly as well as an estimated seven million to 10 million middle-ear infections in children and thousands of cases of brain (meningitis) and bloodstream (bacteremia) infections.

Pneumococcal pneumonia kills about one out of 20 people who get it. Bacteremia kills about one person in five and meningitis about three people in 10.

112.9 Sexually Transmitted Diseases

According to the CDC, 20 million Americans become infected every year with a STD, 50% of which are incurable viral infections such as herpes or human papilloma virus (HPV), the cause of genital warts and cervical cancer. Such incurable STDs affect a total of 65 million Americans. Some STDs, such as syphilis, have been brought to all-time lows. Others, however, such as genital herpes, gonorrhea, and chlamydia, continue to surge and spread through the population. Genital herpes alone affects a total of 20 million Americans.

The number of cases and incidence rates (per 100,000 population) in 2016 for
STDs are as follows:

<table>
<thead>
<tr>
<th></th>
<th>Cases</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlamydia</td>
<td>1,598,354</td>
<td>497.1</td>
</tr>
<tr>
<td>Gonorrhea</td>
<td>468,514</td>
<td>146.0</td>
</tr>
<tr>
<td>Syphilis, all stages</td>
<td>27,814</td>
<td>8.9</td>
</tr>
</tbody>
</table>

STDs account for almost $16 billion in healthcare costs annually, according to the CDC.

112.10 Tuberculosis

According to the CDC, there were 9,272 tuberculosis (TB) cases reported in the U.S. in 2016, a 0.2% decline from the prior year, to 2.9 cases per 100,000 population.

There has been a decline of more than 50% from the peak of TB resurgence in 1992. TB among foreign-born persons accounted for the majority (55%) of cases in the United States; the TB rate in foreign-born persons in the United States is 10 times higher than in U.S.-born persons.

The U.S.-Mexico Binational TB Referral and Case Management Project, initiated by the American Lung Association in Texas (www.lung.org/associations/states/texas) in 2003, is credited with helping improve treatment completion by TB patients who cross between the two nations. Approximately 1,100 TB cases are identified each year among people preparing to enter the U.S.

112.11 West Nile Virus

The effects of West Nile virus, which is spread through bites of infected mosquitoes, range from flu-like symptoms to more serious conditions that result in encephalitis and meningitis. About 10% of the more serious cases are fatal, according to the CDC.

The number of cases and deaths in recent years has been as follows:

<table>
<thead>
<tr>
<th></th>
<th>Cases</th>
<th>Deaths</th>
<th></th>
<th>Cases</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>4,269</td>
<td>177</td>
<td>2012</td>
<td>5,674</td>
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<tr>
<td>2007</td>
<td>3,630</td>
<td>124</td>
<td>2013</td>
<td>2,469</td>
<td>119</td>
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<tr>
<td>2008</td>
<td>1,356</td>
<td>44</td>
<td>2014</td>
<td>2,204</td>
<td>97</td>
</tr>
<tr>
<td>2009</td>
<td>720</td>
<td>32</td>
<td>2015</td>
<td>2,175</td>
<td>146</td>
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<tr>
<td>2010</td>
<td>981</td>
<td>45</td>
<td>2016</td>
<td>2,149</td>
<td>106</td>
</tr>
<tr>
<td>2011</td>
<td>690</td>
<td>43</td>
<td>2017</td>
<td>2,002</td>
<td>n/a</td>
</tr>
</tbody>
</table>

112.12 Whooping Cough

Pertussis (whooping cough) is a highly contagious bacterial disease that causes uncontrollable coughing that makes breathing difficult.

Cases of pertussis have soared from less than 10,000 per year during the
The growth in pertussis cases can be traced to the 1990s when the whole cell vaccine, or DTP, was replaced by the acellular pertussis vaccine, DTaP. It is believed the DTaP vaccine does not provide protection for as long as the DTP vaccine does.

The CDC has reported confirmed cases of pertussis as follows:

- 2013: 28,639
- 2014: 32,971
- 2015: 20,762
- 2016: 17,972
- 2017: 15,808

### 112.13 Market Resources

Infectious Diseases Society of America, 1300 Wilson Boulevard, Suite 300, Arlington, VA 22209. (703) 299-0200. (www.idsociety.org)

National Center for Infectious Diseases, Centers for Disease Control and Prevention, 1600 Clifton Road, Atlanta, GA 30333. (404) 639-3311. (www.cdc.gov/ncidod)

National Center for Health Statistics, 3311 Toledo Road, Hyattsville, MD 20782. (800) 232-4636. (www.cdc.gov/ncds)
113

INFLUENZA

113.1 Overview
Influenza, commonly called the flu, is a contagious lung disease caused by a virus.

The hospital sector anticipates, monitors, and analyzes the flu season regularly. Hospitals factor into their planning when the flu season will arrive, how long outbreaks will last, and how severe they will be.

Clinicians say only the most fragile patients – the very young and the very old – are typically hospitalized for flu.

The most serious public health threat associated with influenza is the rise of a pandemic. This can occur when a new strain of the influenza virus is transmitted to humans from another animal species. In contrast to regular seasonal epidemics of influenza, pandemics occur irregularly. The 1918 Spanish flu epidemic, which originated among birds and then mutated and spread to humans, was the root cause of 50 million deaths and is the most severe pandemic in recent history. More recent pandemics were the Asian Flu in 1957, the Hong Kong Flu in 1968, and the H1N1 pandemic in 2009-2010.

113.2 Prevalence, Mortality and Cost
Approximately 40 million Americans catch the flu each year, resulting in 15 million lost work days, 200,000 hospitalizations, and about 50,000 deaths. Influenza healthcare direct costs are $10.4 billion each year, according to the Centers for Disease Control and Prevention (CDC, www.cdc.gov).

Annual productivity losses associated with influenza are $77 billion.

113.3 Flu Seasons
The severity of flu seasons depends upon how well matched flu vaccines are to the circulating flu viruses. Flu vaccines are typically 70% to 90% effective. But the vaccine-virus match is not good in some years and effectiveness drops. For instance in the 2007-2008 season, one of the most severe of the past decade, the vaccine was only 44% effective.
“With influenza, every year it’s a crap shoot what will show up.”

Michael Osterholm, M.D., Director
Center for Infectious Disease Research and Policy
University of Minnesota

While the onset of flu season varies, the third week of January is generally in the middle of the flu season and is taken as a representative point for comparisons. The CDC reported the rate of flu-related hospitalizations for the third week of January as follows:

• 2009-2010: 27.5 per 100,000
• 2010-2011: 6.0 per 100,000
• 2011-2012: 0.7 per 100,000
• 2012-2013: 27.5 per 100,000
• 2013-2014: 19.7 per 100,000
• 2014-2015: 45.5 per 100,000
• 2015-2016: 20.5 per 100,000
• 2016-2017: 19.9 per 100,000
• 2017-2018: 41.9 per 100,000

The number of pediatric deaths (i.e., among those ages 0-to-17) has been as follows (source: CDC):

• 2014-2015: 148
• 2015-2016: 92
• 2016-2017: 106
• 2017-2018: 172

Pediatric deaths during the 2017-2018 flu season were the most in any non-pandemic year on record.

113.4 Flu Vaccination

Flu shots are considered most essential for school-age children, the elderly, and healthcare workers. In recent years, the Advisory Committee on Immunization Practices (ACIP, www.immunize.org/acip) has gradually expanded its recommendation for flu shots. ACIP now recommends that everyone except babies younger than six
months and those with egg allergies or other unusual conditions be inoculated. This recommendation includes approximately 85% of Americans.

On average, getting a flu vaccine reduces a child’s risk of flu-related intensive care hospitalization by 74% according to the CDC.

An estimated 166 million doses of injectable flu vaccine were available for the 2017-2018 flu season. As of September 30, 73 million doses had been administered.

### 113.5 Hospitalizations

The number of flu-related hospitalizations averages about 200,000, but the number varies significantly.

While it may seem counterintuitive, severe flu seasons are generally less profitable for hospitals.

The surge of the 2017-2018 flu season, for instance, left many hospitals overwhelmed, forcing some to set up triage tents outside of emergency departments. Others resorted to emergency protocols such as postponing elective surgeries and limiting the number of visitors. Such activity hurts the bottom line, even though volume increases.

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“Medical admissions tend to reimburse at lower rates than surgical admissions. While increased volume usually results in a net positive for providers, having an increase of patients with lower-acuity ailments such as the flu often results in hospitals incurring a net loss for their treatment.”

*Modern Healthcare, 2/5/18*

_________________________________________________________________
INJURIES

114.1 Incidence

The Centers for Disease Control and Prevention (CDC, www.cdc.gov) reported 29,845,316 admissions to U.S. hospital emergency departments in 2016 (most recent data available) due to unintentional injury.

Injury admissions by cause were as follows:

- **Non-Transportation:** 24,931,203
  - Fall: 9,194,403
  - Struck by/against: 4,043,802
  - Overexertion: 2,968,273
  - Cut/pierce: 1,994,265
  - Poisoning: 1,711,836
  - Bites (other than dog)/stings: 1,154,289
  - Foreign body: 565,580
  - Fire/burn: 385,145
  - Dog bite: 365,621
  - Machinery: 179,704
  - Natural/environment: 98,274
  - Inhalation/suffocation: 45,462
  - Firearm: 21,219
  - Pellet/BB gun: 13,622
  - Drowning/submersion: 7,418
  - Other specified: 2,182,292

- **Transportation:** 4,113,394
  - Motor vehicle occupant: 2,723,012
  - Pedal cyclist (bicyclist, etc.): 404,346
  - Motorcyclist: 240,613
  - Pedestrian: 185,775
  - Other: 559,649

- **Unknown/unspecified:** 800,719
Emergency rooms also reported 2,228,954 admissions in 2016 (most recent data available) for non-fatal violence-related injuries.

### 114.2 Fatalities
The CDC reported 231,991 deaths in 2016 (most recent data available) due to unintentional injury.

Injury deaths by cause were as follows:

- **Non-Transportation**: 176,494
  - Drug poisoning: 63,632
  - Firearm: 38,658
  - Fall: 35,862
  - Suffocation: 18,924
  - Poisoning, non-drug: 5,363
  - Drowning: 4,628
  - Fire/burn (non-residential fire): 3,284
  - Cut/pierce: 2,823
  - Natural/environment: 1,678
  - Fire, residential: 1,382
  - Struck by/against: 1,020
  - Machinery: 610

- **Transportation**: 42,436
  - Motor vehicle occupant/unspecified: 17,906
  - Pedestrian: 7,330
  - Motorcyclist: 4,780
  - Pedal cyclist (bicyclist, etc.): 1,015
  - Other/unspecified: 11,405

- **Unknown/unspecified**: 13,061

### 114.3 Motor Vehicle Crash Injuries
According to *Motor Vehicle Crash Injuries*, by the CDC, Americans spend more than 1 million days in the hospital each year from motor vehicle crash injuries.

More than 2.5 million Americans go to the emergency department and about 200,000 are then hospitalized for crash injuries each year. On average, each crash-related ED visit costs about $3,300, and each hospitalization costs about $57,000 over a person’s lifetime.

Lifetime medical costs due to crash injuries totals $18 billion annually. More than 75% of costs occur during the first 18 months following the crash injury.

Work lost because of crash injuries costs an estimated $33 billion annually.
114.4 Child and Teen Injuries

According to the CDC, approximately 7.5 million children and teens ages 19 and younger are treated for an injury in an emergency department each year; more than 9,000 children die from these injuries.

Motor vehicle crashes, suffocation, drowning, poisoning, fires, and falls are the most common ways children are hurt or killed. The number of children dying from injury dropped nearly 30% over the last decade. However, injury is still the leading cause of death among children.

114.5 Sports Injuries

According to the National Center for Health Statistics (www.cdc.gov/nchs), 8.5 million injuries occurred in 2016 to people while playing sports or participating in recreational injuries. The distribution of those injured was as follows:

**Gender**
- Male: 61%
- Female: 39%

**Age**
- 5-to-14: 37%
- 15-to-24: 28%
- 25 and older: 35%

The most common activities causing injury are as follows:

**Among Males**
- Football: 12%
- Basketball: 12%
- Aerobics/exercising/weight training: 8%

**Among Females**
- Gymnastics/cheerleading: 11%
- Aerobics/exercising/weight training: 8%
- Cycling: 7%

Most injuries occur at sport facility/athletic field/playground (35%). followed by school (23%).

Falling is the most common cause of injury (28%), followed by overexertion (17%).

Sprains/strains are the most common injury (41%), followed by fractures (20%).
114.6 Injury Control Research Centers

The CDC funds 11 centers designated as an Injury Control Research Center (ICRC).

ICRCs conduct research in all three core phases of injury control – prevention, acute care, and rehabilitation – and serve as academic training centers for students from high school through post-graduate levels.

The following are designated ICRCs:

• Columbia University (New York, NY)
• Emory University (Atlanta, GA)
• Icahn School of Medicine at Mount Sinai (New York, NY)
• Johns Hopkins University (Baltimore, MD)
• Nationwide Children’s Hospital (Columbus, OH)
• University of Iowa (Iowa City, IA)
• University of Michigan (Ann Arbor, MI)
• University of North Carolina (Chapel Hill, NC)
• University of Rochester Medical Center (Rochester, NY)
• Washington University (St. Louis, MO)
• West Virginia University (Morgantown, WV)

Trans-disciplinary research conducted at ICRCs includes the fields of medicine, public health, epidemiology, law and criminal justice, behavioral and social sciences, biostatistics, biomechanics, ergonomics, and economics.

114.7 Market Resources


National Center for Injury Prevention and Control, 4770 Buford Highway NE, Mail Stop MS F-63, Atlanta, GA 30341. (800) 232-4636. (www.cdc.gov/injury)


WISQARS™ (Web-based Injury Statistics Query and Reporting System), CDC. (www.cdc.gov/injury/wisqars)
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JOINT REPLACEMENT

115.1 Overview

Joint replacement surgery is one of the more profitable and fastest-growing areas for many hospitals. As the Baby Boomer generation ages, more patients are seeking joint replacements.

“More than 1 million joint replacements are performed every year in the U.S., and by 2030 that number is expected to increase to more than 4 million as the number of seniors grows.”

Modern Healthcare, 5/28/18

115.2 Hip Replacement

Surgeons in the U.S. perform about 340,000 total and partial hip replacements each year, making it the second most common joint surgery, following knees and ahead of shoulders. Of these procedures, over 285,000 are total hip replacements. With patients typically achieving relatively pain-free mobility after a recovery period of a few months, the success rate is higher than 90%.

A study by the Blue Cross and Blue Shield Association (www.bcbs.com) found a $30,124 average total hip replacement cost in 64 major metropolitan areas. Costs ranged from $73,987 in Boston, Massachusetts, to $11,327 in Birmingham, Alabama.

In traditional hip replacements, doctors replace the top of the femur with a metal ball after removing portions of the damaged hip socket. Approximately 5% of artificial hip implants are ceramic.

Anterior hip replacement, a minimally invasive technique, is gaining popularity because it helps patients recover more quickly. In this procedure, the surgeon makes the incision at the front of the hip instead of through the buttocks or the side of the hip. This approach permits the doctor to reach the hip socket without cutting through major...
muscle groups. Proponents claim that the procedure results in less pain and fewer complications for patients than standard hip replacement.

“As many as 26% of member surgeons performing hip replacements in the U.S. use the anterior method, according to a survey by the American Association of Hip and Knee Surgeons. The technique is considered harder to master partly because the surgeon has less room to maneuver around the joint than with the posterior approach.”

_The Wall Street Journal, 2/1/16_

Approximately 2.5 million people in the U.S., or about 0.8% of the population, have an artificial hip, according to the American Orthopaedic Foot & Ankle Society (AOFAS, www.aofas.org).

**115.3 Knee Replacement**

Injuries to the knee are among the most common types of injury. About 35% of Americans over 50 have torn the meniscus cartilage of their knee.

“Arthroscopic surgery on the meniscus is the most common orthopedic procedure in the United States, performed about 700,000 times a year at an estimated cost of $4 billion.”

_The New York Times_

Surgeons in the U.S. perform approximately 750,000 knee replacements annually. Medicare paid for 243,802 primary knee replacements in 2010 (most recent data available).
Blue Cross and Blue Shield Association found in its 2015 study a $31,124 average total knee replacement cost in 64 major metropolitan areas. Costs ranged from $69,654 in New York City to $11,217 in Montgomery, Alabama.

In knee replacements, the most common joint-replacement procedure, doctors cut into the joint and remove the damaged portions of the tibia (the lower leg bone), patella (kneecap), and femur (thigh bone), which are replaced with metal and plastic components. A National Institutes of Health (www.nih.org) study reported that 90% of people with knee replacements report fast pain relief, increased mobility, and a better quality of life.

Patients receiving total knee replacements are trending younger. John Callaghan, M.D., past president of the American Academy of Orthopaedic Surgeons (www.aaos.org), reports that his average patient now is around 60 years old; a decade ago this figure was 71.

More than 9 million people in the U.S. have osteoarthritis of the knee. Arthroscopic knee surgery had been a popular treatment for people with this condition. The minimally invasive procedure flushes out debris in the joint and smooths bone surfaces. But a surprising study, published in the New England Journal of Medicine, showed that the operation is no more effective than a placebo. Prior to the study, more than 200,000 Americans had arthroscopic knee surgery annually, with a typical cost of $5,000. The prevailing opinion now is that patients may generally be better off doing strengthening exercises and taking off a few pounds to ease the burden on their aching knees, or having total knee replacement if warranted.

A study published in The New England Journal of Medicine reported that meniscal surgery should be aimed at a narrower group of patients; that for many, options like physical therapy may be as good. The study does not indicate that surgery never helps; there is consensus that it should be performed in some circumstances, especially for younger patients and for tears from acute sports injuries. But about 80% of tears develop from wear and aging, and some researchers believe surgery in those cases should be significantly limited.

Approximately 4.7 million people in the U.S., or about 1.5% of the population, have an artificial knee, according to the AOFAS.

### 115.4 Implant Device And Procedure Costs

Hip and knee implant devices constitute up to 40% of the total cost of replacement procedures.

Hospitals pay an average of $4,320 for a knee implant device, according to the PriceGuide service of ECRI Institute (www.ecri.org); the cost varies from $2,100 to $6,600. Costs range from $1,000 to $8,000 for a hip implant; the average price is $4,820.

An assessment by Anthem found that prices for knee replacement surgery ranged from $15,000 to $110,000. With some of its corporate partners, Anthem negotiates a maximum price for hip and knee replacements in its contracts with
hospitals. Anthem and the California Public Employees’ Retirement System (CalPERS), for instance, set a reference price of $30,000.

115.5 Bundled Payments
Medicare, which spends over $7 billion annually on hip and knee replacements, implemented bundled payments for these surgeries in 67 metropolitan areas in April 2016. Under the bundled payment model, providers are paid a single payment for all the services performed to treat a patient undergoing joint replacement. Hospitals receive gain-sharing payments and quality bonuses as part of the program.

The bundled-payment program has spurred hospitals to cut costs of joint replacement procedures by negotiating lower prices for implant devices, reducing the need for post-surgical stays at rehabilitation and skilled-nursing facilities, and better coordination with patients.

In 2017, 47.8% of participating hospitals received gain-sharing payments that averaged $1,134 per episode. Among hospitals that received bonuses, 39.3% scored excellent on quality measures.

“In the first 21 months of the Bundled Payments for Care Improvement Initiative (BPCI), Medicare payments declined more for lower extremity, joint replacement episodes provided in BPCI-participating hospitals than for those provided in comparison hospitals, without a significant change in quality outcomes.”

2018 Environmental Scan
American Hospital Association

115.6 Market Resources
American Association of Hip and Knee Surgeons, 9400 W. Higgins Road, Rosemont, IL 60018. (847) 698-1200. (www.aahks.org)
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KIDNEY DISEASE

116.1 Prevalence And Treatment Modalities

According to the National Kidney Foundation (NKF, www.kidney.org), approximately 30 million Americans – or 1 in 10 adults – suffer from chronic kidney disease (CKD). Another 20 million are susceptible due to risk factors such as diabetes, high blood pressure, cardiovascular disease, family history of kidney disease, and racial or ethnic heritage. African-Americans and Native-Americans have a significantly higher risk of developing CKD; rates are also elevated among Hispanics, Asians, and Pacific Islanders. Most with CKD are not aware of it.

According to the 2017 Annual Data Report, by the U.S. Renal Data System (www.usrds.org), part of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK, www.niddk.nih.gov), there were 703,243 prevalent (i.e., previously diagnosed) patients with end-stage renal disease (ESRD). There were 124,114 incident (i.e., newly diagnosed) people with ESRD.

Among prevalent ESRD patients, 63.2% were receiving hemodialysis (HD) therapy, 7.0% were treated with peritoneal dialysis (PD), and 29.6% had a functioning kidney transplant. Among HD cases, 98.0% used in-center HD, and 1.9% used home HD.

Among incident individuals, 87.3% of began renal replacement therapy with HD, 9.6% started with PD, and 2.5% received a preemptive kidney transplant.

Hemodialysis, commonly called kidney dialysis or simply dialysis, purifies the blood of a person with ESRD using a dialysis machine. Peritoneal dialysis is a type of dialysis which uses the peritoneum in a person’s abdomen as the membrane through which fluid and dissolved substances are exchanged with the blood.

Compared to Caucasians, ESRD prevalence is about 9.5 times greater in Native Hawaiians/Pacific Islanders, 3.7 times greater in Blacks, 1.5 times greater in American Indians/Alaska Natives, and 1.3 times greater in Asians.

About 48,000 people die each year of kidney disease.

116.2 Kidney Transplants

In 2017, 19,849 kidney transplants were performed in the U.S., according to the Organ Procurement and Transplantation Network (http://optn.transplant.hrsa.gov).

According to Milliman (www.milliman.com), the average billed charge for a kidney transplant in 2017 was $414,800.
As of August 2018, 94,888 people were on a wait list for a kidney transplant. Organ transplants are assessed in Chapter 120 of this handbook. More and more people with failing kidneys are skipping dialysis and going directly to transplant. Pre-emptive kidney transplants represent 15% of all transplants, according to the U.S. Renal Data System, an increase from 9% in the early 1990s.

116.3 Renal Dialysis Services

While awaiting a kidney transplant, patients undergo dialysis to cleanse their blood. This typically involves a three-hour treatment three times per week. Approximately 450,000 people in the United States are receiving hemodialysis treatment.

For dialysis patients, Medicare pays a composite rate that covers dialysis treatment costs and certain routine ESRD-related drugs, laboratory tests, and supplies. Medicare pays 80% of all dialysis costs for patients of all ages, independent of their ability to pay or rate of imminent survival.

The federal government pays $40 billion annually for dialysis treatment, according to the U.S. Renal Data System. This represents about 6% of all Medicare spending.

Medicare expenditures per person per year for hemodialysis patients is $87,945; for peritoneal dialysis patients expenditures are $65,825.

There are 6,000 dialysis facilities in the U.S., 500 of which are hospital-based. The largest providers of renal dialysis services are Fresenius Medical Care (www.fmcna.com) and DaVita (www.davita.com), with revenues of $17.8 billion and $11.4 billion, respectively, in 2017.

116.4 Daily At-Home Dialysis

New technology – including hemodialysis machines the size of a suitcase instead of a refrigerator – makes daily at-home dialysis possible for a growing number of patients. Home dialysis gives patients the ability to have treatment more frequently, even daily, and for shorter periods, rather than the typical three hours per session. Kaiser Permanente statistics indicate that home dialysis users require less hospitalization, which potentially saves $10,000 to $20,000 in annual healthcare costs per patient.

Medicare reimburses the same amount for at-home or dialysis center care.

116.5 ESCOs

The CMS has developed a model similar to the accountable care organizations that established ESRD seamless care organizations, or ESCOs, for kidney failure patients.
The aim is to investigate new payment and delivery models that would rein in costs while encouraging higher quality, better coordinated, and more patient-centered care for the more than 500,000 beneficiaries with ESRD. Pilot programs are underway.

“The CMS, the largest payer for dialysis services in the U.S., has been moving to cut dialysis costs and pay providers based on outcomes. As a result, the dialysis industry now faces a major transformation as it moves from niche providers offering a profitable service to what insurers view as a cost center under the emerging population health-management approach. Insurers and providers increasingly are looking for ways to prevent people from progressing to end-stage renal disease and needing dialysis.”

Modern Healthcare

116.6 Five-Star Rating System

In 2015, the CMS launched a five-star rating system for kidney dialysis providers to help Medicare beneficiaries compare quality of care at centers across the country. The rating system is similar to that implemented by CMS for nursing homes in 2008 and in 2014 for physician groups. The same rating system will ultimately be added for hospitals and home-care providers.

The five-star methodology relies on currently reported quality measures and assigns stars based on how providers rank overall. The measures include standardized ratios for transfusions, mortality and hospitalizations, and percentages for KtV values, which show whether enough waste was removed from the patient’s blood during dialysis. There also are percentages for the number of adult dialysis patients with high calcium levels.
116.7 Market Resources
National Institute of Diabetes and Digestive and Kidney Diseases, 31 Center Drive, MSC 2560, Bethesda, MD 20892. (301) 496-3583. (www.niddk.nih.gov)

National Kidney Foundation, 30 East 33rd Street, New York, NY 10016. (800) 622-9010. (www.kidney.org)
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OBESITY

117.1 Classification As A Disease

Obesity has long been recognized as a serious health problem in the United States. In 2013, the American Medical Association (www.ama.org) reclassified obesity as a disease from its designation of ‘condition’ or ‘disorder.’

The classification is expected to increase medical interventions for obesity and reimbursement by insurance companies for treatment.

According to Samuel Klein, M.D., director of the Center for Human Nutrition at Washington University School of Medicine in St. Louis, the AMA’s classification will influence policy makers who are in a position to do more to support interventions and research to prevent and treat obesity.

117.2 Prevalence

The Body Mass Index (BMI), which is calculated from a person’s weight and height, provides a reliable indicator to screen for weight categories that may lead to health problems.

According to the Centers for Disease Control and Prevention (CDC, www.cdc.gov), adults are classified by BMI as follows:

- Obese - BMI > 30: 29.4%
- Overweight - 25 > BMI < 30: 35.4%
- BMI < 25: 35.2%

117.3 Health Impact

Being overweight increases the risk of diabetes, heart disease, cancer, arthritis, and other health problems.

About 112,000 deaths annually are blamed on obesity, according to a study from scientists at the CDC and the National Institutes of Health (www.nih.gov). Other estimates are higher and assess the toll associated with obesity, poor diet, and inactivity at up to 400,000 deaths annually.

Scientists say it is increasingly clear that weighing too much is linked to about a dozen cancers, including some of the most common types, such as cancer of the colon and breast cancer. The American Cancer Society (www.cancer.org) estimates that excess weight is a factor in at least 90,000 cancer deaths annually.
A study by researchers at Columbia University reported that people who are obese have life expectancy three years shorter than those of normal weight – approximately the same as those who smoke. They are also more likely to suffer from pain and illnesses.

Overweight and obese conditions are contributing from $147 billion to $210 billion to the nation’s medical bill every year.

Obesity is responsible for $61.8 billion in Medicare and Medicaid spending annually.

117.4 Hospital Programs

Hospitals are increasingly offering programs that assess and guide control of obesity in the communities they serve. The Affordable Care Act drives such initiatives with its requirement that not-for-profit hospitals conduct community health needs assessments every three years and develop implementation strategies to maintain their federal tax-exempt status.

One group leading the effort and providing guidance to hospitals is STOP (Strategies to Overcome and Prevent) Obesity Alliance (www.stopobesityalliance.org), a coalition of nearly 70 consumer, provider, government, business, and other organizations.

“The reasons for the dearth of obesity programs are many. They include hospitals’ tendency to focus on the condition’s complications, such as heart disease and diabetes, rather than on the underlying obesity; lack of reimbursement for services; and a shortage of clinicians with obesity training. However, recent developments could spur more hospitals to address obesity in more depth.”

Scott Kahan, M.D., Director
STOP Obesity Alliance
Hospitals & Health Networks
117.5 Obesity Medicine

Obesity medicine is a specialize field in the medical profession, with activities marshaled by the American Board of Obesity Medicine (ABOM, www.abom.org). In 2013, ABOM launched a certification program and collaborates with the National Board of Medical Examiners (NBME, www.nbme.org) to administer an annual credentialing exam. As of August 2018, 2,656 physicians had been certified.

117.6 Market Resources

American Board of Obesity Medicine, 2696 S. Colorado Boulevard, Suite 340, Denver, CO 80222. (303) 770-9100. (www.abom.org)

Obesity Action Coalition, 4511 North Himes Avenue, Suite 250, Tampa, FL 33614. (800) 717-3117. (www.obesityaction.org)


STOP Obesity Alliance, c/o Milken Institute School of Public Health, George Washington University, 950 New Hampshire Avenue NW, 7th Floor, Washington, DC 20052. (www.stopobesityalliance.org)

The Obesity Society, 1110 Bonifant Street, Suite 500, Silver Spring, MD 20910. (301) 563-6526. (www.obesity.org)
118.1 Childbirth

Childbirth is the most common reason for hospitalization in the United States, with live-born accounting for almost 4 million hospitalizations, or 10% of stays.

According to the National Center for Health Statistics (www.cdc.gov/nchs), there were 3,853,472 live births in 2017, a birth rate of rate 12.0 per 1,000 population. This was a 2% drop from the prior year, the lowest level since 1987, and 8% below the all-time high of 4,316,233 in 2007.

118.2 Infant and Maternal Mortality

The U.S. infant mortality rate fell by 1.5% in 2017 to a historic low of 590.1 infant deaths per 100,000 live births, according to the Centers for Disease Control and Prevention (CDC, www.cdc.gov).

There were 18.8 maternal deaths per 100,000 live births in the U.S. in 2017, according to the CDC, an increase from 12.4 in 1990. According to the Centers for Disease Control and Prevention Foundation 2018 Report, 60% of maternal deaths are preventable.

CDC’s Pregnancy Mortality Surveillance System reports causes of pregnancy-related death as follows:

- Cardiovascular disease: 14.6%
- Cardiomyopathy: 12.4%
- Non-cardiovascular disease: 11.9%
- Hemorrhage: 11.5%
- Infection/sepsis: 11.1%
- Hypertensive disorders of pregnancy: 10.5%
- Thrombotic pulmonary embolism: 10.3%
- Amniotic fluid embolism: 5.9%
- Cerebrovascular accidents: 5.7%
- Anesthesia complications: 0.6%
- Unknown: 5.5%
118.3 Prenatal Care

Prenatal care includes regular check-ups that allow obstetricians-gynecologists or midwives to detect, treat, and prevent potential health problems during the course of pregnancy. This includes promoting healthy lifestyles that benefit both mother and child. The Office of Women’s Health, U.S. Department of Health and Human Services (www.womenshealth.gov) recommends the following prenatal care:

- Monthly visits during the first two trimesters (from weeks 1-to-128)
- Fortnightly visits from 28th week to 36th week of pregnancy
- Weekly visits after 36th week until delivery (delivery at weeks 38-to-42)
- Assessment of parental needs and family dynamic

Approximately 70% of pregnant women in the U.S. now receive recommended prenatal care. HHS’ 2020 Healthy People (www.healthypeople.gov) goal for prenatal care is that 77.6% of pregnant females receive early and adequate prenatal care.

118.4 Early Elective Delivery

Research has shown that inducing labor prematurely increases complications for babies and their mothers. Healthcare payment reform, driven by the Accountable Care Act, is pushing doctors and hospitals to improve care quality while reducing costs. These two forces have sparked a nationwide effort by providers and insurers to prevent early elective deliveries before 39 weeks. The results have been quick and dramatic.

As recently as 2010, the average rate of early elective deliveries was found to be 17% among 757 hospitals surveyed by The Leapfrog Group (www.leapfrog.org). The average rate varied widely by state, from 6% to 26% of deliveries.

The drop in early deliveries since 2010 has been dramatic. About 900 hospitals with labor and delivery units are participating in the Hospital Engagement Network project launched in 2012 by the American Hospital Association (www.aha.org). One of the initiative’s objectives is to reduce obstetrical adverse events by promoting the prevention of elective deliveries before 39 weeks. Of the more than 400 hospitals reporting on this metric, the volume of such early deliveries dropped by 42% in the first year of the initiative.

The American College of Obstetricians and Gynecologists (ACOG, www.acog.org) reports that two-thirds of hospitals with labor and delivery units have instituted policies to eliminate non-medically induced deliveries before 39 weeks of gestation. Of those, 69% have a “hard-stop” policy, under which early deliveries that don’t meet medical criteria are not allowed.

118.5 Cesarean Section Delivery

The rate of cesarean section (C-section) delivery increased to 33% of all deliveries in 2010 from less than 20% a decade prior, according to the CDC. The increase occurred as more and more doctors began to acquiesce to patient
demands to perform a C-section. Patient requests for a C-section were generally to give them scheduling control of their delivery. An estimated one-fourth of cesarean deliveries were for non-medical reasons.

About eight of every 100 mothers who choose to have a C-section develop at least one major complication, such as hemorrhaging, infection, or a surgical wound problem, according to a study reported by Health Grades (www.healthgrades.com). C-section delivery also increases the risk of serious complications in future pregnancies. Moreover, C-sections are more expensive and result in longer hospital stays.

In 2013, the American College of Obstetricians and Gynecologists issued a recommendation against on-demand C-sections without a medical reason.

The ACOG recommendation has had little impact on the cesarean delivery rate. Almost a third of U.S. births in 2017 were by cesarean delivery. By state, the portion of cesarean deliveries ranged from a high of 37.8% in Mississippi to a low of 22.5% in Alaska.

“High and wildly varying rates of C-sections across the U.S. – and the reasons for both – are well-established. Insurers pay more for C-sections than vaginal births, which take more time in hospitals that are often pressed for space. Doctors also fear malpractice suits stemming from natural births, even though C-sections are considered riskier than vaginal births unless medically necessary.”

Modern Healthcare, 3/13/17

118.6 Birth Centers

An birth center is a healthcare facility for childbirth where care is provided in the midwifery and wellness model. The birth center is freestanding and not a hospital.

The American Association of Birth Centers (www.birthcenters.org) reported that there were 363 birthing centers in the U.S. at year-end 2017, an increase from 240 five years prior.
“There’s been an increasing number of babies delivered in birth centers — a more homelike care setting utilizing midwives and emphasizing wellness – in recent years. Both consumer-minded mothers seeking comfort and convenience, along with the Affordable Care Act requiring state Medicaid programs to pay a facility fee to such centers, have fueled that trend.”

_Hospitals & Health Networks_

**118.7 Market Resources**

American Association of Birth Centers, 3123 Gottschall Road, Perkiomenville, PA 18074. (215) 234-8068. (www.birthcenters.org)

American College of Obstetricians and Gynecologists, 409 12th Street SW, Washington, DC 20024. (800) 673-8444. (www.acog.org)
119.1 Prevalence In Adults

There are no generally accepted definitions for “visually impaired,” “low vision,” or “vision loss.”

The National Federation of the Blind (www.nfb.org) considers people as visually impaired or blind if their sight is bad enough – even with corrective lenses – that they must use alternative methods to engage in any activity that persons with normal vision would do using their eyes.

The U.S. Census Bureau (www.census.gov) encompasses both total or near-total blindness and those with trouble seeing even when wearing glasses or contact lenses when classifying people as having a vision disability.

The American Community Survey, by the Census Bureau, reported that 7,297,100 people, including 6,833,000 age 16 and older, have a vision disability.

Among people age 16 and older, the demographics of those with a vision disability are as follows:

Gender
- Female: 3,738,400 (2.87%)
- Male: 3,094,600 (2.53%)

Age
- 16-to-64: 3,847,100 (1.9%)
- 65 and older: 2,985,900 (6.4%)

Race/Ethnicity
- Caucasian: 5,270,600 (2.3%)
- African-American: 1,154,900 (2.9%)
- Hispanic: 1,174,400 (2.1%)
- Asian: 230,300 (1.3%)
- American Indian: 102,500 (4.0%)
- Other race(s): 538,900 (2.1%)

Approximately 30% of the U.S. population are near-sighted, and must use glasses for activities such as driving and schoolwork. About 60% of Americans are far-sighted; they have trouble reading or sewing without glasses, but can focus well at a distance.
119.2 Prevalence In Children
The American Community Survey reported 678,000 people ages 20 and younger with a visual disability. This represents 0.78% of those in this age group. The distribution by gender is as follows:

- Boys: 354,000 (0.8%)
- Girls: 324,000 (0.76%)

The National Health Interview Survey, by the Centers for Disease Control and Prevention (CDC, www.cdc.gov), reported 36% of girls and 29% of boys wear glasses or contact lenses. By age, the percentages are as follows:

**Boys**
- 6-to-9: 14.9%
- 10-to-13: 33.5%
- 14-to-17: 38.8%

**Girls**
- 6-to-9: 20.2%
- 10-to-13: 35.9%
- 14-to-17: 51.9%

119.3 Cost
According to a study published by Prevent Blindness (www.preventblindness.org), based on an assessment by the National Opinion Research Center at the University of Chicago (www.norc.org), the annual cost of eye and vision disorders is about $140 billion. Spending is distributed as follows:

- Patient out-of-pocket: $71.6 billion
- Medicare, Medicaid, and other governmental: $47.4 billion
- Insurance: $22.2 billion

The bulk of Medicare spending stems from long-term care in older patients with diseases such as glaucoma.

119.4 Eye Disease
The NEI identified age-related macular degeneration (AMD), glaucoma, cataracts, and diabetic retinopathy as the most common eye diseases in Americans ages 40 and older. The leading cause of blindness among white Americans is AMD, accounting for 54% of all blindness. Among African-Americans, the leading causes of blindness are cataract and glaucoma. Among Hispanics, glaucoma is the most common cause of blindness.
The following is an assessment of the most common eye diseases:

**Age-Related Macular Degeneration**
- Approximately nine million Americans suffer from AMD, the leading cause of blindness in people over 50. By 2020, three million Americans will have advanced cases, an increase from almost two million in 2009.
- Eight out of 10 people with AMD have the milder, ‘dry’ form of the disease, but that can develop into the more serious, ‘wet’ form of AMD that accounts for 90% of the afflicted population’s vision loss. AMD can distort and block central vision within days of its onset, or take its toll slowly over years. Sufferers can still see well from the periphery and may be affected in only one eye.
- The NEI estimates that every year 260,000 people will develop the disease, and the rate will increase as the population ages.
- Until recently, the only AMD treatment on the market was Visudyne, a laser-activated drug from QLT Inc. (www.qltinc.com) and Novartis (www.novartis.com) that stops blood vessels from leaking. Approved in 2000 by the FDA, Visudyne treats only a particular type of macular degeneration, one that afflicts 25% of all wet-AMD patients. Though it generates $350 million in annual sales, Visudyne hasn’t lived up to original expectations, with most patients continuing to lose their vision.
- A breakthrough drug from Genentech (www.genentech.com) offers hope for patients with the wet form of AMD. Lucentis, approved in June 2006, is essentially a fragment of the monoclonal antibody that was used to make the company’s colon cancer drug Avastin. Lucentis halts blood-vessel growth when injected into the side of the eye. In two large-scale trials it stopped vision loss in 95% of patients and improved vision in one-third. The downside of Lucentis is its cost: $1,950 per monthly dose.
- At least 18 companies are pursuing treatments for macular degeneration, including stem-cell treatments, anti-inflammatory medicines, and implants that slowly release protective proteins to stave off cell damage.

**Cataracts**
- A cataract is a clouding of the lens in the eye that results in blurred vision. Cataracts are formed when proteins that comprise the lens clump together and start to cloud a small area of the lens. Over time, the cataract can enlarge, cloud more of the lens, and impair vision.
- Approximately 1.3 million cataract surgeries are performed annually in the U.S.
- Medicare pays about $3.4 billion a year to treat cataracts.
- Researchers at the Harvard School of Public Health recently found that people with high lead concentrations in their bodies have a much higher risk of developing cataracts; lead may contribute to an estimated 42% of cataract cases.

**Diabetic Retinopathy**
- Diabetic retinopathy (DR) is a complication of diabetes that results from damage to retina blood vessels. Initially, DR may cause no symptoms or only mild vision...
problems. Eventually, however, DR can result in blindness.

- The NEI estimates that 4.1 million adults have diabetic retinopathy.
- Up to 45% of adults diagnosed with diabetes in the United States have some degree of diabetic retinopathy, according to the NEI.

**Glaucoma**

- Glaucoma, the leading cause of preventable blindness, is an eye disease that causes vision loss by damaging the optic nerve.
- Prevent Blindness America (www.preventblindness.org) estimates that more than 3 million people in the U.S. have glaucoma. Less than half know it.
- The only known treatment for glaucoma is a method of lowering eye pressure, usually with prescription eye drops.

To increase public awareness of eye diseases, the American Academy of Ophthalmology (AAO, www.aao.org) has launched EyeSmart, a campaign focusing on five major eye diseases: age-related macular degeneration, cataracts, diabetic retinopathy, dry eye, and glaucoma.

**119.5 Vision Correction**

According to the Vision Council of America (www.thevisioncouncil.org), approximately 75% of adults use some sort of vision correction. About 64% wear eyeglasses and about 11% wear contact lenses, either exclusively or with glasses. Over half of all women and about 42% of men wear glasses. Similarly, more women than men, 18% and 14% respectively, wear contacts. Of those who use both contacts and eyeglasses, 62% wear contact lenses more often.

Fourteen percent (14%) of adults use non-prescription glasses for reading. About 85% of the U.S. population wears sunglasses.

Jobson Healthcare Information (www.jhihealth.com) estimates that 180 million U.S. adults use vision correction devices and spend $32 billion annually for primary eyecare.

The market is distributed as follows:

<table>
<thead>
<tr>
<th></th>
<th>Pct. of Patients</th>
<th>Pct. of Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent ODs:</td>
<td>53%</td>
<td>42%</td>
</tr>
<tr>
<td>Independent MDs:</td>
<td>15%</td>
<td>12%</td>
</tr>
<tr>
<td>Eyecare chains:</td>
<td>32%</td>
<td>46%</td>
</tr>
</tbody>
</table>
“The general public visits optometrist offices more frequently than any other part of the healthcare system.”

*Modern Healthcare, 6/22/15*

An estimated 95 million to 100 million people wear prescription eyeglasses and 41 million use contact lenses to correct myopia and hyperopia.

Eye infections are not uncommon among those who wear contact lenses. According to the CDC, there are 930,000 visits to doctors’ offices and outpatient clinics and 58,000 visits to hospital emergency departments due to eye infections.

According to a 2015 report by the CDC, 99% of the 41 million people who wear contact lenses report at least one behavior known to increase the risk of eye infection. The most common among these practices are keeping contact lens cases longer than recommended (82%), adding new solution to existing solution instead of emptying the case completely (55%), and wearing lenses while sleeping (50%).

**119.6 Myopia And Hyperopia Correction Options**

Along with prescription eyeglasses and contact lenses, other medical options to correct myopia and hyperopia are as follows:

**Refractive Surgery**

- Over 10 million Americans have had successful LASIK (laser assisted in situ keratomileusis) surgery for correcting myopia, hyperopia, and astigmatism; about one million are treated annually.
- Photorefractive keratectomy (PRK), an alternative laser surgery, is used for patients where LASIK is not feasible, such as for those with a thin cornea. Most patients prefer LASIK because of the initial irritation and long healing time associated with PRK.
- LASIK accounts for 87% of laser procedures, according to Market Scope (www.market-scope.com).

**Corneal Refractive Therapy**

- Corneal refractive therapy (CRT), or corneal reshaping, was approved in 2002 by the FDA. No surgery is involved. Doctors use computers to map the surface of the eye, then make lenses that patients wear while they sleep that work to correct the problem. The lenses reshape the epithelium, the surface of the cornea, redistributing cells from the center to the periphery to compensate for refractive
errors and astigmatism. Vision is improved after only a week although patients need to wear the lenses at least every other night or the effect subsides, according to Paragon Vision Sciences (www.paragoncrt.com), maker of CRT lenses.

- Fitting the lenses and treating both eyes costs $1,000 to $1,500, with an additional $300 to $500 in later years for replacement lenses. CRT is marketed as an alternative to LASIK.
- Studies show that 93% of CRT patients achieve 20/32 vision or better; 67% improve to 20/20 vision.

Intraocular Lenses

- Intraocular lenses are emerging to become a preferred solution for nearsightedness. In 2004, the FDA approved the Verisyse lens, the U.S. market's first intraocular lens. Although more than 150,000 lenses have been implanted worldwide over the past 17 years, the popularity of laser surgery in the U.S. had for many years discouraged the developer from the arduous testing needed to obtain FDA approval. The approval was the culmination of seven years of U.S. tests.
- Unlike LASIK, the intraocular lenses are completely reversible. And implantable contact lenses tend to provide better quality of vision than LASIK. The lenses can be designed to provide optimal vision whereas with laser treatment vision adjusts by the way the person heals.

119.7 Market Resources

American Academy of Ophthalmology, P.O. Box 7424, San Francisco, CA 94120. (415) 561-8500. (www.aaao.org)

American Optometric Association, 243 N. Lindbergh Boulevard, First Floor, St. Louis, MO 63141. (800) 365-2219. (www.aoa.org)

Market Scope, 9859 Big Bend Boulevard, Suite 202, St. Louis, MO 63122. (314) 835-0600. (www.market-scope.com)

National Eye Institute, 31 Center Drive, MSC 2510, Bethesda, MD 20892. (301) 496-5248. (www.nei.nih.gov)

National Federation of the Blind, 200 East Wells Street, Baltimore, MD 21230. (410) 659-9314. (www.nfb.org)

Vision Council of America, 225 Reinekers Lane, Suite 700, Alexandria, VA 22314. (703) 548-4560. (www.thevisioncouncil.org)
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ORGAN TRANSPLANTS

120.1 Overview

The Health Resources and Services Administration, Office of Donation and Transplantation (www.hrsa.gov/gethealthcare/conditions/donation.html), administers and oversees two contracts to facilitate the nation’s allocation system for organ transplantation. They are as follows:

• The Organ Procurement and Transplantation Network (OPTN, http://optn.transplant.hrsa.gov), contracted by the United Network for Organ Sharing (UNOS, www.unos.org), is responsible for operating the national network for organ procurement and allocation and works to promote organ donation. Under federal law, all U.S. transplant centers and organ procurement organizations must be members of OPTN to receive funds through Medicare.

• The Scientific Registry of Transplant Recipients (SRTR, www.ustransplant.org), contracted by the Arbor Research Collaborative for Health (www.arborresearch.org), provides analytical support for the ongoing evaluation of scientific and clinical status of solid organ transplantation.

120.2 Organ Transplant Centers

There are approximately 320,000 organ transplant centers in the United States. The number of organ-specific transplant programs, of which there are several at some centers, is approximately 1,000. There are 134 centers that perform heart transplants.

The SRTR website provides statistics and outcomes data for each program.

120.3 Transplants And Donors

Rates of organ donation in the United States have increased in recent years. But this growth lags far behind the increasing need.

According to OPTN, the number of transplants in recent years have been as follows:

• 2006: 28,938
• 2007: 28,361
• 2008: 27,961
• 2009: 28,463
• 2010: 28,662
• 2011: 28,537

• 2012: 28,051
• 2013: 28,955
• 2014: 29,535
• 2015: 30,974
• 2016: 33,611
• 2017: 34,770
Of transplants in 2017, 28,588 were through deceased donors; 6,182 from living donors.

The number of transplants in 2017 by organ were as follows (source: OPTN):

- Kidney: 19,849
- Liver: 8,082
- Heart: 3,244
- Lung: 2,449
- Pancreas: 213
- Intestine: 109

120.4 Wait List

There were 114,399 candidates* waiting on organs as of August 2018. The wait list by organ was as follows (source: OPTN):

- Kidney: 94,888
- Liver: 13,729
- Heart: 3,939
- Heart/pancreas: 1,627
- Lung: 1,449
- Pancreas: 874
- Intestine: 253
- Heart/lung: 48

* The total number of candidates is less than the sum due to candidates waiting for multiple organs.

120.5 Cost Of Transplants

Average billed charges for organ transplants in 2017 were as follows (source: Milliman [www.milliman.com]):

- Heart: $1,382,400
- Lungs, double: $1,190,700
- Intestine: $1,147,300
- Lungs, single: $861,700
- Liver: $812,500
- Kidney: $414,800
- Pancreas: $347,000

120.6 Organ Procurement

A single individual can help as many as 50 patients by donating tissue and organs. It is possible to transplant 25 different parts of the body, including the corneas, the heart, heart valves, the liver, kidneys, bone and cartilage, marrow, skin, and the pancreas.
Medical studies estimate that organs could be obtained from 10,500 to 26,000 brain-dead victims each year if more people consented to the donations.

In spite of numerous campaigns aimed at educating healthy Americans about donating their organs after they die, a donor shortage persists. A recent survey from Donate Life America (www.shareyourlife.org) found that 90% of Americans support organ and tissue donation. Roughly one-half say they are registered as an organ donor, however only about 30% have actually signed on to be a donor. One recent survey found 66% of people were not clear on how to sign up to become a donor.

Laws that govern donation vary from state to state. Donate Life America offers state-specific guidelines at www.donatelife.net.

Americans who want to become organ donors opt in, that is they indicate on a driver's license, for example, that when they die their organs should be made available. Many European and Asian countries take the opposite approach. In Singapore, for example, all residents receive a letter when they come of age informing them that their organs may be harvested unless they explicitly object. In Belgium, which adopted a similar presumed-consent system in 2000, less than 2% of the population has opted out.

In the U.S., surviving relatives have the final say on allowing donation and can override organ donation. With nearly half of donations, relatives step in and veto the wishes of the deceased.

Organ procurement organizations (OPOs), of which there are 58 across the U.S., often facilitate donation by counseling families.

_________________________________________________________________

"An OPO representative, known as a family-care coordinator, is there to comfort the families of the victim in their time of grief, to offer whatever assistance they might request, and, when it appears appropriate, to seek permission for donation. This ... makes it unnecessary for the doctor to mention donation, which is usually regarded as an unpleasant task or possibly a conflict of interest."

Thomas Mone, CEO
OneLegacy

_________________________________________________________________
According to the Department of Health and Human Services (www.hhs.gov), the nation's organ transplantation system needs to be reformed to ensure allocation of scarce organs will be based on common medical criteria, not geography. Under the current system, organs are first offered to the region in which they become available. Federal regulations dictate that organs go to the sickest patients first, ranking patients based on the severity of their disease. For example, when a liver suitable for transplant is identified, local Status One patients – those who are near death – are considered first. If no Status One patients are in the local area or if the organ is not a biological match, the search for a recipient then expands to the organ transplant region, which can include several states. If no Status One patient in the region is a match, the transplant surgeons in the city where the liver was recovered can give the organ to the patient ranked highest by the disease severity score, known as the Model for End-stage Liver Disease. If no match is found, the organ is then offered nationwide. The emphasis on treating local transplant patients means less-ill patients may receive a transplant while patients with more urgent medical needs continue to wait. Revised criteria could provide for wider sharing to ensure organs are made available to patients with greatest medical need.

A number of state legislatures are passing laws to bar donated hearts, lungs, kidneys, livers, and pancreases from being shipped beyond their state to people elsewhere in the country. Wisconsin was the first. Four other states (Louisiana, Oklahoma, South Carolina, and Florida) adopted laws similar to that of Wisconsin.

120.7 Incentives For Organ Donation

The American Medical Association (www.ama-assn.org) and the American Society of Transplant Surgeons (www.asts.org) have called for Congress to authorize tests of financial incentives to see whether such incentives would increase organ donations. So, too, has the United Network for Organ Sharing.

A survey by researchers from the University of Pennsylvania Center for Bioethics and the Philadelphia Veterans Affairs Medical Center found that the possibility of receiving a payment nearly doubled the number of people who said they would donate a kidney to a stranger. According to Prof. Scott Halpern, M.D., Ph.D., one of the study's authors, the possibility of payment had no more influence on those with lower income levels than on those with higher incomes.

While federal law clearly bans the sale of organs, kidney swaps are becoming an accepted practice. Such exchanges are an option in cases where there are willing but mismatched donors (because of blood type). Since the first kidney exchange at Rhode Island Hospital in 2000, there have been about 250 such exchanges. Congress is expected to pass a law clarifying that such arrangements are legal, codifying a recent Justice Department ruling.

The following are some organ donation incentive ideas under consideration or already underway:
- There have been several proposals to offer the families of brain-dead donors a "death benefit" of $5,000 to $10,000 for the use of healthy organs. Organ would go
Financial incentives for organ donation have been effective in other countries. In Iran, for example, because the government pays $2,000 to anyone willing to donate a kidney; there is no wait list. Other countries don’t subsidize donation but tacitly permit payment for organs. U.S. federal law, like that of most other countries, absolutely forbids paying for or receiving payment for organs.

120.8 Policy Change For Liver Transplants

Under the existing system managed by UNOS, donated livers are prioritized for use in the regions from which they come. In places where the organs are relatively plentiful – the South, for instance, where death rates are higher – they sometimes go to people who could easily wait longer for a transplant, rather than to sicker patients who may die without them. As a result, the death rate for patients on a liver wait list can vary by a factor of 10 from one part of the U.S. to another.

A UNOS committee has proposed redrawing the liver-donation map to create four regions in place of the 11 currently used. A UNOS assessment suggests that sharing livers within these zones would save 554 lives over five years.

Public opinion appears to support the change. In a recent survey, 82% of respondents said they would prefer their organ go to the person in greatest medical need, regardless of location.
120.9 Market Resources
American Society of Transplant Surgeons, 2461 South Clark Street, Suite 640, Arlington, VA 22202. (703) 414-7870. (www.astts.org)

Arbor Research Collaborative for Health, 340 West Huron Street, Suite 300, Ann Arbor, MI 48104. (734) 665-4108. (www.arborresearch.org)

Donate Life America, 701 Byrd Street, 16th Floor, Richmond, VA 23219. (804) 377-3580. (www.donatelife.net)

Health Resources and Services Administration, Healthcare Systems Bureau, Division of Transplantation, 5600 Fishers Lane, Rockville, MD 20857. (www.health.gov/nhic)

Organ Procurement and Transplantation Network (http://optn.transplant.hrsa.gov)

OrganDonor.gov, the U.S. government website for organ and tissue donation and transplantation.

Scientific Registry of Transplant Recipients, 701 Park Avenue, Suite S-4.100, Minneapolis, MN 55415. (877) 970-7787. (www.srtr.org)

United Network for Organ Sharing, 700 N. 4th Street, Richmond, VA 23219. (804) 782-4800. (www.unos.org)
OSTEOPOROSIS

121.1 Prevalence and Diagnosis

According to the National Osteoporosis Foundation (NOF, www.nof.org), an estimated 10 million individuals in the U.S. have osteoporosis, and 44 million more have low bone mass, which places them at increased risk for osteoporosis. Eighty percent (80%) of those affected by osteoporosis are women. Osteoporosis-related fractures are responsible for an estimated two million bone fractures and $25 billion in medical costs each year.

“Osteoporosis is responsible for two million broken bones every year in the U.S. and causes 75,000 deaths, yet too many people neglect their bone health until after they suffer a debilitating fracture.”

Elizabeth Thompson, CEO
NOF, 5/1/18

According to the Office of the Surgeon General (www.surgeongeneral.gov), unless more older Americans start getting the calcium, vitamin D, and physical activity needed, an osteoporosis epidemic is inevitable.

NOF recommends that a comprehensive approach to the diagnosis and management of osteoporosis should include a detailed history and physical examination together with Bone Mineral Density (BMD) assessment and, where appropriate, the World Health Organization 10-year estimated fracture probability to establish an individual patient’s fracture risk.
121.2 Treatment

The cause of osteoporosis is unknown; however for women the body’s rapid drop in estrogen that occurs during menopause is a risk factor. Other risk factors include a thin body build, low bone mass, smoking, Caucasian or Asian descent, and a family history of the disease. Although there is no cure for osteoporosis, there are several medications available to halt bone loss, increase bone density, and reduce risk of fracture.

Osteoporosis patients typically take Fosamax (Merck) or Actonel (Sanofi-Aventis) – drugs in the bisphosphonate family – once a week to reduce the risk of fractures. Other options include Evista (Eli Lilly), a selective estrogen receptor modulator, which reduces bone loss, and the injectable drug Forteo (Eli Lilly), one of a new class of drugs to stimulate bone-forming cells known as osteoblasts. Fosamax, which garnered 55% of the $7 billion market in 2007, became generic in 2008.

For those who have suffered an osteoporosis-related fracture, a follow-up osteoporosis program is important to reduce the possibility of recurring fractures. According to Adrianne Feldstein, M.D., a researcher at the Kaiser Permanente Center for Health Research (www.kpchr.org), such programs targeted to patients with a previous fracture lead to improvements in 13% to 44% of patients being evaluated and/or tested for the disease.

A recent study found that bisphosphonate medications may actually increase the risk of certain fractures. The study of nearly 4,300 Canadian women ages 68 or older found that long-term bisphosphonate use does indeed prevent the typical osteoporosis-related breaks in the hip, wrist, and spine. But it also found that women who take bone drugs for more than five years have a slightly higher risk of atypical fractures in the femur than those using the drugs for a shorter period. For most women, the risk of developing osteoporosis outweighs the chance they may suffer such an unusual fracture.

121.3 Prevention

Osteoporosis is largely preventable for most people. There are four steps to prevent osteoporosis, as follows (source: National Osteoporosis Foundation):

- A balanced diet rich in calcium and vitamin D
- Weight-bearing exercise
- A healthy lifestyle with no smoking or excessive alcohol use
- Bone density testing and medications when appropriate

Medicare Part B covers a bone mass measurement once every 24 months when prescribed by a doctor or other qualified provider.
“Every year, more Americans are diagnosed with osteoporosis, a disease that causes bones to weaken and become more likely to break. In fact, many people don’t know they have osteoporosis until they break a bone.”

Centers for Medicare & Medicaid Services, 5/31/18

121.4 Market Resources
122.1 Prevalence

Pain is a protective warning in the central nervous system that something is wrong in the human body.

The American Pain Society (APS, www.ampainsoc.org) estimates that 45% of the population seek medical help for persistent pain at some point.

An estimated 25 million U.S. adults suffer from pain daily, while 126 adults reported some pain in the previous three months, according to a study published in the Journal of Pain.

Lower back pain is by far the most common complaint, affecting 70% to 85% of adults at some point and leaving 7 million either partially or severely disabled. Arthritis pain affects 40 to 50 million Americans. And 50 million suffer from chronic headaches.

According to the American Chronic Pain Association (www.theacpa.org), 85% of all patients who seek care from doctors do so for pain-related complaints. About 17% of adult Americans, or 34 million people, experience mild to moderate chronic pain to the degree that they seek relief from a physician.

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“Chronic pain – commonly defined as pain persisting longer than six months – is a tragically overlooked public health problem.”

CDC

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122.2 Economic Impact

Medical economists estimate pain results in 515 million lost workdays and 40 million doctor visits annually. Lower-back pain alone accounts for 93 million workdays lost every year. Pain accounts for 25% of all sick days taken in the United States.

Chronic pain is the leading cause of disability in America and costs employers more than $60 billion in lost time and productivity annually.
“All told, chronic pain affects more Americans than diabetes, cancer, and heart disease combined and costs more, too: as much as $635 billion a year in medical care and lost labor. The toll in suffering is incalculable.”

Scientific American

122.3 Pain Management In Hospitals

Pain is the number one reason people seek medical attention, and it is the leading complaint that goes unresolved. Hospitals are looking for ways to assess, record, and treat pain more aggressively.

Unrelieved pain causes waste and yields excessive costs in the healthcare system. Significant costs are borne by patients, health plans, and healthcare institutions. For example, a study at the University of Michigan Medical School found that of the one in five adults who had significant chronic pain, 29% used emergency departments for treatment. A study by the University of Pittsburgh Medical Center found that implementing a post-operative clinical pathway for outpatient orthopedic surgery significantly decreased the number of unscheduled post-op admissions for refractory pain, nausea, and vomiting. The pathway reduced the unscheduled admissions from more than 10% of orthopedic outpatients to less than 2%.

Beginning in 2001, 20,000 hospitals, healthcare networks, long-term and assisted-living facilities, behavioral health centers, and other health services certified by the Joint Commission were mandated to make pain assessment a priority. Joint Commission standards require organizations to recognize and address patients’ rights to appropriate pain assessment and management.

Pain management is now a metric in reimbursement for hospitals. The Medicare Hospital Value-Based Purchasing program, which began in 2012, includes Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores which include assessment of pain management as one of the metrics used to calculate incentive payments.

122.4 Pain Management In Children’s Hospitals

There are an estimated 10 million Americans age 18 and younger with chronic or recurrent pain. They suffer from a variety of conditions: migraines, cancer, cystic
fibrosis, sickle-cell anemia, and nerve injuries from accidents or fractures. Doctors estimate that of the 72 million Americans under age 18, 5% suffer from back pain, 5% endure facial pain, 10% suffer from migraines and severe headaches, and 12% experience significant abdominal pain.

New methods of measuring pain and discomfort in children are now being utilized. Doctors are also rethinking the treatment of acute pain for children who go to emergency rooms for more common injuries like broken limbs or cuts that need stitches.

Still, too few hospitals offer comprehensive pain programs for children, and pediatric pain units are expensive to run.

122.5 Pain Medications

Over $20 billion worth of pain relief medications are sold annually in the U.S., not surprising when over 30 million Americans take a nonsteroidal anti-inflammatory drug, or NSAID, every day.

The millions of Americans living with chronic pain face a dilemma regarding how to manage symptoms with narcotic drugs and other therapies. The chronic use of opioids can result in physical dependence and addiction. Because of this and concerns about side effects, many people are confused about prescription pain relievers.

Opioid addiction is assessed in Chapter 136 of this handbook.

122.6 National Pain Strategy

The National Pain Strategy, released by the Department of Health & Human Services (www.hhs.gov) in 2017, outlines three objectives the healthcare delivery and payment system must tackle to improve pain care, as follows:

- Define and evaluate integrated, multimodal and interdisciplinary care for people with acute, chronic and end-of-life pain, which begins with a comprehensive assessment; create an integrated, coordinated, evidence-based care plan in accord with individual needs, preferences and patient-centered outcomes; and support the efforts by appropriate payment incentives.
- Enhance the evidence base for pain care and integrate it into clinical practice through defined incentives and payment strategies to ensure that the delivery of treatment is based on the highest level of evidence, is population based and represents real-world experience.
- Tailor payment to promote and incentivize high-quality, coordinated pain care through an integrated biopsychosocial approach that is cost-effective, value-based, patient-centered, comprehensive and improves outcomes for people with pain.
122.7 Market Resources
American Chronic Pain Association, P.O. Box 850, Rocklin, CA 95677. (800) 533-3231. (www.theacpa.org)

American Pain Society, 8735 W. Higgins Road, Suite 300, Chicago, IL 60631. (847) 375-4715. (www.americanpainsociety.org)

Mayday Fund, Special Committee on Pain and the Practice of Medicine, 127 West 26th Street, Suite 800, New York, NY 10011. (www.maydayfund.org)

The Joint Commission, One Renaissance Boulevard, Oakbrook Terrace, IL 60181. (630) 792-5000. (www.jointcommission.org)
123.1 Prevalence And Cost
In the U.S., 630,000 people have diagnosed Parkinson’s disease, a number expected to double by 2040. The disease is a complex, progressive neurodegenerative condition with no known cure. Associated with more than 20 motor and nonmotor manifestations, Parkinson’s presents differently in every patient, and its manifestations change over time.

Parkinson’s disease is the second-most common neurodegenerative disorder in the U.S. after Alzheimer’s disease, yet it is still a rare condition relative to other chronic illnesses.

The combined direct and indirect cost of Parkinson’s disease, including treatment, Social Security payments, and lost income, is estimated to be nearly $25 billion per year in the U.S.

123.2 Hospitalization
People with Parkinson’s disease are admitted to the hospital 50% more than their peers. Once admitted, people with Parkinson’s disease typically have longer hospital stays than their hospitalized peers.

The following are common reasons for Parkinson’s patients’ hospitalization (source: Parkinsonism & Related Disorders):
• Falls/fractures
• Motor complications/reduced mobility
• Encephalopathy/drug-induced psychosis
• Cardiac issues/syncope
• Pneumonia
• Motor and psychiatric issues combined
• Genitourinary infections
• Cancer
• General medical problems
• Gastrointestinal issues
• Dementia with or without psychosis
• Stroke
• Other pulmonary problems
• Elective surgery/deep brain stimulation
123.3 Parkinson’s Outcomes Project

Nineteen centers of excellence are participating in the Parkinson’s Outcomes Project (www.parkinson.org/expert-care-research/parkinsons-outcomes-project). The program tracks the care and outcomes of 10,000 patients seen at the centers. The goal is to find which medications and therapies work the best and for whom.

The project focuses on six domains: Hospitalization, caregiver strain, cognition, falls, mobility, and patient-reported health status, including mental health. In addition to conducting prospective analyses, the program analyzes its data to identify areas where care could be improved. For example, the project found that participating centers have varying success using dopamine agonists, a class of drugs commonly used in Parkinson’s treatment.

123.4 ParkinsonNet

Over 2,700 medical and allied health professionals worldwide collaborate in ParkinsonNet (www.parkinsonnet.info), an effort to provide the best possible care for people suffering from Parkinson’s disease. The program was developed by Radboud University in the Netherlands and Kaiser Permanente.

ParkinsonNet has resulted in a 55% reduction in hip fractures among Parkinson’s patients and a 28% increase in the number of patients getting physical therapy.

123.5 Market Resources

American Parkinson Disease Association, 135 Parkinson Avenue, Staten Island, NY 10305. (800) 223-2732. (www.apdaparkinson.org)

National Parkinson Foundation, 200 SE 1st Street, Suite 800, Miami, FL 33131. (800) 473-4636. (www.parkinson.org)
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RARE DISEASES

124.1 Overview
The Rare Diseases Act of 2002, which authorized funding for the development of treatments for patients with rare diseases, defines rare disease as any disease or condition that affects less than 200,000 people in the United States, or about 1 in 1,500 people. The Orphan Drug Act of 1983 (ODA), a federal law that was written to encourage research into rare diseases and possible cures, incorporated a similar definition.

The database of the National Institutes of Health’s Office of Rare Diseases Research (http://rarediseases.info.nih.gov) lists more than 7,400 rare diseases.

Rare Diseases Europe (www.eurodis.org) estimates that at least 80% of rare diseases have known genetic origins. The rest are the result of infections and allergies or due to degenerative and proliferative causes.

All forms of cancer in children are considered rare diseases because so few children develop cancer.

124.2 Orphan Drugs
An orphan drug is a pharmaceutical agent developed specifically to treat a rare medical condition.

The ODA reduces statistical burdens associated with Food and Drug Administration (FDA, www.fda.gov) approval. This provision was necessary because it is often not possible to test 1,000 patients in a phase III clinical trial, as fewer than that number may be afflicted with the disease in question. Otherwise orphan drugs generally follow the same regulatory development path as any other pharmaceutical product.

ODA allows companies that develop an orphan drug to sell it in the U.S. without competition for seven years. Clinical trial tax incentives are also provided.

Approximately 350 orphan therapies drugs have been approved by the FDA, 30% of which are cancer treatments. Annual sales are estimated at $40 billion. More than 600 orphan drugs are in clinical trials.

Pharmaceutical companies have incentives to develop orphan drugs because they generally command a high price. Once approved, orphan drugs are sometimes expanded to treat other conditions. One example is Johnson & Johnson’s Remicade, which was approved in 1998 to treat Crohn’s disease, a chronic bowel disorder that
“Faced with expiring patents on many of its biggest-selling drugs, the pharmaceutical industry came up with several alternative blockbuster strategies a few years ago. One involved slapping high prices on specialty drugs that treat rare diseases and then expanding their use to more common conditions. It has paid off handsomely for many companies despite recent pushback by insurers and healthcare providers.”

Modern Healthcare

124.3 Top-Selling Orphan Drugs

The Orphan Drug Report 2018, by Evaluate Pharma (www.evaluategroup.com), reported the top-selling U.S. orphan drugs as follows:

- Revlimid (Celgene): $5.4 billion
- Rituxan (Roche): $4.2 billion
- Copaxone (Teva Pharmaceuticals): $3.1 billion
- Opdivo (Bristol-Myers Squibb): $3.1 billion
- Keytruda (Merck & Co): $2.3 billion
- Imbruvica (AbbVie): $2.1 billion
- Avonex (Biogen): $1.6 billion
- Sensipar (Amgen): $1.4 billion
- Soliris (Alexion Pharmaceuticals): $1.2 billion
- Xyrem (Jazz Pharmaceuticals): $1.2 billion

124.4 Research

Funding for rare disease research by the National Institutes for Health (NIH) has been as follows:
The largest NIH grant recipients for rare disease research are as follows:

<table>
<thead>
<tr>
<th>Institution</th>
<th>Grant Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of California system</td>
<td>$251.5 million</td>
</tr>
<tr>
<td>Partners HealthCare system</td>
<td>$158.5 million</td>
</tr>
<tr>
<td>University of Texas system</td>
<td>$99.5 million</td>
</tr>
<tr>
<td>Johns Hopkins University</td>
<td>$93.5 million</td>
</tr>
<tr>
<td>University of Michigan</td>
<td>$76.9 million</td>
</tr>
<tr>
<td>Fred Hutchinson Cancer Research Center</td>
<td>$75.3 million</td>
</tr>
<tr>
<td>Yale University</td>
<td>$69.6 million</td>
</tr>
<tr>
<td>Washington University</td>
<td>$65.9 million</td>
</tr>
<tr>
<td>Stanford University</td>
<td>$64.0 million</td>
</tr>
<tr>
<td>University of Pittsburgh</td>
<td>$63.2 million</td>
</tr>
</tbody>
</table>

**124.5 Market Resources**

Center for Orphan Drug Research, University of Minnesota College of Pharmacy, 4-208 McGuire Translational Research Facility, 2001 - 6th Street SE, Minneapolis, MN 55455. (www.pharmacy.umn.edu/codr)

Center for Rare Disease Therapies, Keck Graduate Institute, 535 Watson Drive, Claremont, CA 91711. (909) 607-0120. (www.kgi.edu/faculty-and-research/kgi-centers/center-for-rare-disease-therapies.html)

National Organization for Rare Disorders, 55 Kenosia Avenue, Danbury, CT 06810. (203) 744-0100. (www.rarediseases.org)

Office of Rare Diseases Research, National Institutes of Health, 6701 Democracy Boulevard, Suite 1001, MSC 4874, Bethesda, MD 20892. (301) 402-4336. (http://rarediseases.info.nih.gov)


Rare Genomics Institute, 4100 Forest Park Avenue, Suite 204, St. Louis, MO 63108. (www.raregenomics.org)
ROBOTIC SURGERY

125.1 Overview

Considered the leading edge technology in surgery, more than 500,000 robotic procedures are performed in U.S. hospitals each year.

Robotic surgery procedures are now routinely performed for a wide range of conditions in specialties including cardiac, thoracic, urologic, gynecologic, pediatric, general, and transoral surgery.

Because different specialists use the same robotic system to assist in various types of procedures, many hospitals end up with several robots. Hackensack University Medical Center, for example, has six.

The da Vinci surgical system by Intuitive Surgical (www.intuitivesurgical.com), approved by the FDA in 2000, was the first general-purpose surgical robot to receive approval and, by far, the marketshare leader. Intuitive Surgical reports over 1,500 U.S. hospitals use the da Vinci system.

The RIO Robotic Arm Interactive Orthopedic System, from MAKO Surgical Corporation (www.makosurgical.com), is used by orthopedic surgeons for knee and hip joint replacement procedures.

Also available is the AVRA Surgical Robotics System (ASRS) by AVRA Surgical (www.avrasurgical.com). Under development is the SPORT (Single Port Orifice Robotic Technology) Surgical System by Titan Medical Inc. (www.titianmedicalinc.com).

125.2 Benefits Of Robotic Surgery

Surgeons who use the system have found that patients have less blood loss and pain, lower risk of complications, shorter hospital stays, and quicker recovery times than those who have open surgery and, in many cases, laparoscopic procedures. The robotic system has already transformed the field of prostate surgery, for which it was approved in May 2001. Almost 90% of prostate surgeries are now robot-assisted operations. Acceptance of robotic-assisted procedures has been positive among both physicians and patients.

Northwestern Memorial Hospital (Chicago) reported the number of hospital days among oncology patients was down 60% to 65% following the introduction of robotic procedures.
125.3 Economic Considerations

The per unit cost for the da Vinci system ranges from $1.0 million to $2.3 million. Annual service costs range from $100,000 to $170,000. Consumables cost $1,200 to $2,000 per procedure more than a laparoscopic operation because of the need for single-use tools. Insurers pay the same rates for robotic and laparoscopic procedures.

“To make buying a da Vinci financially viable, hospitals generally need to perform 150 to 300 procedures annually for six years to offset the upfront and ongoing costs of acquiring it.”

Vijay Kumar, Assoc. Managing Director
ISI Group
Modern Healthcare

Offering robotic surgery sends a signal that a hospital is cutting edge, which can be attractive for patients. Research shows that the first hospital in a market to incorporate robotic surgery systems generally sees a favorable return on investment.

“Analysts say smaller hospitals face pressure to buy the da Vinci system because many new surgeons in training, particularly those in urology and gynecology, receive robotic surgical training as residents and want to work at hospitals that have the technology. And patients may choose a hospital with a da Vinci system based on the perception that it’s a state-of-the-art facility.”

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Despite their relatively lower volume of surgical procedures, about 150 hospitals with 200 of fewer beds have installed da Vinci systems.

**125.4 Training**

The use of surgical robots requires specialized training. Training centers serve this need.

There are 21 training centers for robotic surgery in the U.S., as follows:

- Boston Children’s Hospital (Boston, MA)
- Clarian North (Carmel, IN)
- East Carolina University Hospital (Greenville, NC)
- Ethicon Endosurgery Institute (Cincinnati, OH)
- Florida Hospital, Celebration (Orlando, FL)
- Good Samaritan Hospital (Cincinnati, OH)
- Hackensack University Medical Center (Hackensack, NJ)
- University of Pennsylvania Hospital (Philadelphia, PA)
- Intuitive Surgical Headquarters (Sunnyvale, CA)
- Johns Hopkins University Hospital (Baltimore, MD)
- Memorial Hermann Medical Center (Houston, TX)
- Methodist Hospital (Houston, TX)
- Newark Beth Israel Medical Center (Newark, NJ)
- Ochsner Hospital (New Orleans, LA)
- Ohio State University Hospital (Columbus, OH)
- Oklahoma University (Tulsa, OK)
- St. Joseph’s Hospital (Atlanta, GA)
- Uniformed Services University of the Health Sciences (Bethesda, MD)
- University of California, Irvine (Irvine, CA)
- University of California, San Diego (San Diego, CA)
- University of Illinois, Chicago (Chicago, IL)

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"Training and credentialing are a big concern because there is a steep learning curve in using the da Vinci system, with a risk of serious injuries to patients if surgical mistakes are made."

*Modern Healthcare*
126.1 Overview
The U.S. Preventive Services Task Force (USPSTF), part of the Agency for Healthcare Research and Quality (www.ahrq.gov), was convened by the Public Health Service (www.usphs.gov) to rigorously evaluate clinical research in order to assess the merits of preventive measures, including screening tests, counseling, immunizations, and preventive medications.

The following section provides USPSTF recommendations for general health screening (excluding screening recommendations for infants, adolescents, and pregnant women) as of March 2018:

126.2 USPSTF Recommendations

Abdominal Aortic Aneurysm
- The USPSTF recommends one-time screening for abdominal aortic aneurysm (AAA) by ultrasonography in men ages 65-to-75 who have ever smoked.
- The USPSTF makes no recommendation for or against screening for AAA in men ages 65-to-75 who have never smoked.
- The USPSTF recommends against routine screening for AAA in women.

Alcohol Misuse
- The USPSTF recommends screening and behavioral counseling interventions to reduce alcohol misuse by adults, including pregnant women, in primary care settings.

Alzheimer’s Disease and Dementia
- The USPSTF concludes that the evidence is insufficient to recommend for or against routine screening for dementia in older adults.

Bladder Cancer
- The USPSTF recommends against routine screening for bladder cancer in adults.

Blood Pressure in Adults (Hypertension)
- The USPSTF recommends screening for high blood pressure in adults ages 18 and older.
Breast Cancer
• The USPSTF recommends biennial screening mammography for women ages 50-to-74.
• The decision to start regular, biennial screening mammography before the age of 50 should be an individual one and take patient context into account, including the patient’s values regarding specific benefits and harms.

Carotid Artery Stenosis
• The USPSTF recommends against screening for asymptomatic carotid artery stenosis (CAS) in the general adult population.

Cervical Cancer (Pap Smear)
• The USPSTF strongly recommends screening for cervical cancer in women who have been sexually active and who have a cervix.
• The USPSTF recommends against routinely screening women older than age 65 for cervical cancer if they have had adequate recent screening with normal Pap smears and are not otherwise at high risk for cervical cancer.
• The USPSTF recommends against routine Pap smear screening in women who have had a total hysterectomy for benign disease.
• The USPSTF concludes that the evidence is insufficient to recommend for or against the routine use of new technologies to screen for cervical cancer.
• The USPSTF concludes that the evidence is insufficient to recommend for or against the routine use of human papillomavirus (HPV) testing as a primary screening test for cervical cancer.

Chlamydial Infection
• The USPSTF recommends screening for chlamydial infection for all sexually active non-pregnant young women ages 24 and younger and for older non-pregnant women who are at increased risk.
• The USPSTF recommends screening for chlamydial infection for all pregnant women ages 24 and younger and for older pregnant women who are at increased risk.
• The USPSTF recommends against routinely providing screening for chlamydial infection for women ages 25 and older, whether or not they are pregnant, if they are not at increased risk.
• The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for chlamydial infection for men.

Cholesterol Abnormalities in Adults (Dyslipidemia, Lipid Disorders)
Screening Men
• The USPSTF strongly recommends screening men ages 35 and older for lipid disorders.
• The USPSTF recommends screening men ages 20-to-35 for lipid disorders if they are at increased risk for coronary heart disease.

Screening Women at Increased Risk
• The USPSTF strongly recommends screening women ages 45 and older for lipid disorders if they are at increased risk for coronary heart disease.
• The USPSTF recommends screening women ages 20-to-45 for lipid disorders if they are at increased risk for coronary heart disease.

Screening Young Men and All Women Not at Increased Risk
• The USPSTF makes no recommendation for or against routine screening for lipid disorders in men ages 20-to-35, or in women ages 20 and older who are not at increased risk for coronary heart disease.

Chronic Obstructive Pulmonary Disease
• The USPSTF recommends against screening adults for chronic obstructive pulmonary disease (COPD) using spirometry.

Colorectal Cancer
• The USPSTF recommends screening for colorectal cancer (CRC) using fecal occult blood testing, sigmoidoscopy, or colonoscopy in adults, beginning at age 50 and continuing until age 75. The risks and benefits of these screening methods vary.
• The USPSTF recommends against routine screening for colorectal cancer in adults age 76-to-85. There may be considerations that support colorectal cancer screening in an individual patient.
• The USPSTF recommends against screening for colorectal cancer in adults older than age 85.
• The USPSTF concludes that the evidence is insufficient to assess the benefits and harms of computed tomographic colonography and fecal DNA testing as screening modalities for colorectal cancer.

Coronary Heart Disease
• The USPSTF recommends against routine screening with resting electrocardiography (ECG), exercise treadmill test (ETT), or electron-beam computerized tomography (EBCT) scanning for coronary calcium for either the presence of severe coronary artery stenosis (CAS) or the prediction of coronary heart disease (CHD) events in adults at low risk for CHD events.
• The USPSTF found insufficient evidence to recommend for or against routine screening with ECG, ETT, or EBCT scanning for coronary calcium for either the presence of severe CAS or the prediction of CHD events in adults at increased risk for CHD events.
Depression in Adults
• The USPSTF recommends screening adults for depression when staff-assisted depression care supports are in place to assure accurate diagnosis, effective treatment, and follow-up.
• The USPTF recommends against routinely screening adults for depression when staff-assisted depression care supports are not in place. There may be considerations that support screening for depression in an individual patient.

Diabetes Mellitus
• The USPSTF recommends screening for Type II diabetes in asymptomatic adults with sustained blood pressure (either treated or untreated) greater than 135/80 mm Hg.
• The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for Type II diabetes in asymptomatic adults with blood pressure of 135/80 mm Hg or lower.

Drug Use, Illicit
• The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening adolescents, adults, and pregnant women for illicit drug use.

Dyslipidemia in Adults (Cholesterol Abnormalities, Lipid Disorders)
Screening Men
• The USPSTF strongly recommends screening men ages 35 and older for lipid disorders.
• The USPSTF recommends screening men ages 20-to-35 for lipid disorders if they are at increased risk for coronary heart disease.

Screening Women at Increased Risk
• The USPSTF strongly recommends screening women ages 45 and older for lipid disorders if they are at increased risk for coronary heart disease.
• The USPSTF recommends screening women ages 20-to-45 for lipid disorders if they are at increased risk for coronary heart disease.

Screening Young Men and All Women Not at Increased Risk
• The USPSTF makes no recommendation for or against routine screening for lipid disorders in men ages 20-to-35, or in women ages 20 and older who are not at increased risk for coronary heart disease.

Gestational Diabetes
• The USPSTF concludes that the evidence is insufficient to recommend for or against routine screening for gestational diabetes.
Glaucoma
• The USPSTF found insufficient evidence to recommend for or against screening adults for glaucoma.

Gonorrhea
• The USPSTF recommends that clinicians screen all sexually active women, including those who are pregnant, for gonorrhea infection if they are at increased risk for infection.
• The USPSTF found insufficient evidence to recommend for or against routine screening for gonorrhea infection in men at increased risk for infection.
• The USPSTF recommends against routine screening for gonorrhea infection in men and women who are at low risk for infection.
• The USPSTF found insufficient evidence to recommend for or against routine screening for gonorrhea infection in pregnant women who are not at increased risk for infection.

Hearing Impairment, Older Adults
• The USPSTF is currently updating its screening recommendation.

Hemochromatosis
• The USPSTF recommends against routine genetic screening for hereditary hemochromatosis in the asymptomatic general population.

Hepatitis B Virus Infection
• The USPSTF recommends against routinely screening the general asymptomatic population for chronic hepatitis B virus infection.

Hepatitis C Virus Infection
• The USPSTF recommends against routine screening for hepatitis C virus (HCV) infection in asymptomatic adults who are not at increased risk for infection.
• The USPSTF found insufficient evidence to recommend for or against routine screening for HCV infection in adults at high risk for infection.

Herpes Simplex, Genital
• The USPSTF recommends against routine serological screening for herpes simplex virus (HSV) in asymptomatic pregnant women at any time during pregnancy to prevent neonatal HSV infection.
• The USPSTF recommends against routine serological screening for HSV in asymptomatic adolescents and adults.

Human Immunodeficiency Virus (HIV) Infection
• The USPSTF strongly recommends that clinicians screen for human
immunodeficiency virus (HIV) all adolescents and adults at increased risk for HIV infection.

• The USPSTF makes no recommendation for or against routinely screening for HIV adolescents and adults who are not at increased risk for HIV infection.

**Hypertension in Adults** *(Blood Pressure)*

• The USPSTF recommends screening for high blood pressure in adults ages 18 and older.

**Illicit Drug Use**

• The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening adolescents, adults, and pregnant women for illicit drug use.

**Impaired Visual Acuity in Older Adults**

• The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for visual acuity for the improvement of outcomes in older adults.

**Lipid Disorders in Adults** *(Cholesterol Abnormalities, Dyslipidemia)*

**Screening Men**

• The USPSTF strongly recommends screening men ages 35 and older for lipid disorders.

• The USPSTF recommends screening men ages 20-to-35 for lipid disorders if they are at increased risk for coronary heart disease.

**Screening Women at Increased Risk**

• The USPSTF strongly recommends screening women ages 45 and older for lipid disorders if they are at increased risk for coronary heart disease.

• The USPSTF recommends screening women ages 20-to-45 for lipid disorders if they are at increased risk for coronary heart disease.

**Screening Young Men and All Women Not at Increased Risk**

• The USPSTF makes no recommendation for or against routine screening for lipid disorders in men ages 20-to-35, or in women ages 20 and older who are not at increased risk for coronary heart disease.

**Lung Cancer**

• The USPSTF concludes that the evidence is insufficient to recommend for or against screening asymptomatic persons for lung cancer with either low dose computerized tomography (LDCT), chest x-ray (CXR), sputum cytology, or a combination of these tests.
Obesity in Adults
• The USPSTF recommends that clinicians screen all adult patients for obesity and offer intensive counseling and behavioral interventions to promote sustained weight loss for obese adults.

Oral Cancer
• The USPSTF concludes that the evidence is insufficient to recommend for or against routinely screening adults for oral cancer.

Osteoporosis
• The USPSTF recommends that women ages 65 and older be screened routinely for osteoporosis. The USPSTF recommends that routine screening begin at age 60 for women at increased risk for osteoporotic fractures.
• The USPSTF makes no recommendation for or against routine osteoporosis screening in postmenopausal women who are younger than 60 or in women ages 60-to-64 who are not at increased risk for osteoporotic fractures.

Ovarian Cancer
• The USPSTF recommends against routine screening for ovarian cancer.

Pancreatic Cancer
• The USPSTF recommends against routine screening for pancreatic cancer in asymptomatic adults using abdominal palpation, ultrasonography, or serologic markers.

Peripheral Arterial Disease
• The USPSTF recommends against routine screening for peripheral arterial disease (PAD).

Prostate Cancer
• The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of prostate cancer screening in men younger than age 75.
• The USPSTF recommends against screening for prostate cancer in men age 75 or older.

Skin Cancer
• The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of using a whole-body skin examination by a primary care clinician or patient skin self-examination for the early detection of cutaneous melanoma, basal cell cancer, or squamous cell skin cancer in the adult general population.
Suicide Risk
• The USPSTF concludes that the evidence is insufficient to recommend for or against routine screening by primary care clinicians to detect suicide risk in the general population.

Syphilis
• The USPSTF strongly recommends that clinicians screen persons at increased risk for syphilis infection.
• The USPSTF strongly recommends that clinicians screen all pregnant women for syphilis infection.
• The USPSTF recommends against routine screening of asymptomatic persons who are not at increased risk for syphilis infection.

Testicular Cancer
• The USPSTF recommends against routine screening for testicular cancer in asymptomatic adolescent and adult males.

Thyroid Disease
• The USPSTF concludes the evidence is insufficient to recommend for or against routine screening for thyroid disease in adults.
SHARED DECISION MAKING

127.1 Overview
There is a growing effort among healthcare providers to encourage patients to become more informed about their diseases and to participate in making choices about intervention options. The concept is called shared decision making or informed decision making.

“If shared decision making is what some have termed the ‘sleeper provision’ of the Affordable Care Act, it certainly is awake now. It’s the newest movement in a quickly converging line-up of ideas streaming toward a value-based delivery system. Shared decision making is a quality measure for accountable care organizations in the Medicare Shared Savings program, and the National Committee for Quality Assurance deems it a criterion for patient-centered medical home recognition. And many think of it as a key cornerstone in patient engagement.”

*Hospitals & Health Networks*

Patients have always participated in decisions related to their care to some extent. Shared decision making goes even further by providing patients with aids to better guide them in the decision making process and by giving them an expanded role. The approach doesn’t take the doctor’s opinion out of the process; rather, it gives weight to the patient’s values when there is a choice.

Shared decision making consists of the following three elements (source: Health Dialog [www.healthdialog.com]):
Shared Decision Making Aid
• Shared decision making often involves written materials, online modules, and video to present information about treatment options that help the patient evaluate potential risks and benefits.

Coaching From A Neutral Health Professional
• A trained coach helps the patient clarify questions and concerns to discuss with their doctor.

An Informed Discussion With The Treating Physician
• After using aids, patients are better prepared to have a more informed discussion with their doctor about their options.

Insurers are embracing the concept as well. Highmark, part of the Blue Cross Blue Shield network, for instance, contacts patients who have had an MRI related to back pain to make certain they understand the treatment options that they may be presented with. In Minnesota, HealthPartners requires patients be offered a shared decision making experience before undergoing procedures such as spinal fusion. Health Net, in California, provides patients with decision making videos and consultation with a nurse or health coach.

Scott & White Health Plan (Texas), one of the nation’s largest multi-specialty group practice systems, has implemented a shared-decision making program that provides tools and health coaching solutions to 160,000 members and plan physicians. Kaiser Permanente Southern California, Massachusetts General Hospital, and the Dartmouth Hitchcock Healthcare System also practice shared decision making.

127.2 Savings Potential

Studies show that shared decision making leads patients to choose conservative options more often. Rates of angioplasty or prostate surgery, for example, have been reduced by 15% to 20% when there has been shared decision making.

Group Health Cooperative (www.ghc.org) reports that after it began using video-based decision aids, patients opting for knee replacements fell by 38%, and those choosing a hip replacement fell by 26%. The cost of caring for those patients dropped by 12% to 21%.

Lewin Group (www.lewingroup.com) estimates that implementing shared decision making for the 11 conditions that account for 40% of Medicare spending could save $4 billion annually.

A study published in Health Affairs reported that patients who received shared-decision making-based support had 5.3% lower overall medical costs than patients who received the usual level of support. Also, the enhanced support group had 12.5% fewer hospital admissions than the usual support group and 9.9% fewer preference-sensitive surgeries, including 20.9% fewer preference-sensitive heart surgeries.
“A retrospective study published in *Health Affairs* found that making patients aware of the risks and benefits of the surgeries led to 26% fewer hip replacements and 38% fewer knee replacements at Group Health. The overall cost reduction from patients opting for less invasive approaches was 12% and 21%, respectively. This paralleled the results of seven randomized trials that measured the effects of empowering patients with shared decisionmaking tools before elective surgeries. The use of decision aids, which are usually pamphlets or computer software accompanied by physician explanation, resulted in a 25% reduction in elective surgeries.”

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### 127.3 Primary Care Demonstration Sites

To demonstrate the integration of shared decision making, the Foundation for Informed Medical Decision Making (www.informedmedicaldecisions.org) is funding demonstration projects at 12 primary care health centers, as follows:

- Dartmouth-Hitchcock Medical Center, General Internal Medicine (Lebanon, NH)
- Massachusetts General Hospital, John D. Stoeckle Center for Primary Care Innovation (Boston, MA)
- MaineHealth (Portland, ME)
- Mercy Clinics Inc. (Des Moines, IA)
- Oregon Rural Practice-based Research Network (Portland, OR)
- Palo Alto Medical Foundation Research Institution (Palo Alto, CA)
- Pittsburgh VA Health Care System (Pittsburgh, PA)
- Stillwater Medical Group (Stillwater, MN)
- University of California, Los Angeles (Los Angeles, CA)
- University of California, San Diego (San Diego, CA)
- University of North Carolina at Chapel Hill, The Sheps Center for Health Services Research (Chapel Hill, NC)
- White River Junction VA Medical Center (White River Junction, VT)
127.4 Breast Cancer Initiative

An initiative launched by the Foundation for Informed Medical Decision Making (www.informedmedicaldecisions.org) provides funding for shared decision making in breast cancer centers across the U.S. The programs, developed in collaboration with a nationally recognized team of breast cancer experts, cover all the major decisions faced by a person with breast cancer in a comprehensive and easy-to-understand manner.

The following sites are participating in the initiative:

• Allegheny General Hospital (Pittsburgh, PA)
• Blum Center for Patient and Family Education, Dana Farber Cancer Institute (Boston, MA)
• Breast Health Center, Beverly Hospital (Beverly, MA)
• Cancer Resource Room, Massachusetts General Hospital Cancer Center (Boston, MA)
• Cancer Resource Center of Mendocino County (Ukiah, CA)
• Christiana Care Breast Center (Newark, DE)
• Community Medical Center (Toms River, CO)
• Dartmouth Hitchcock Medical Center (Hanover, NH)
• Department of General Surgery, Lahey Hitchcock Clinic (Burlington, MA)
• Flower Hospital (Sylvania, OH)
• Fox Chase Cancer Center (Philadelphia, PA)
• Fox Chase Virtual Health Cancer Center (Gibbsboro, NJ)
• Iowa Clinic (West Des Moines, IA)
• Kaiser Permanente (Oakland, CA)
• Mendocino Cancer Resource Center (Mendocino, CA)
• Marcell Community Library, Cleveland Clinic at Fairview (Cleveland, OH)
• Mile High Oncology (Denver, CO)
• Oncology Department, Wing Memorial Hospital (Palmer, MA)
• Outpatient Oncology Clinic, Sturdy Memorial Hospital (Attleboro, MA)
• Rose Medical Center (Denver, CO)
• Sally Jobe Breast Center (Greenwood, CO)
• South Suburban Oncology (Quincy, MA)
• Southcoast Oncology (North Dartmouth, MA)
• University of California, San Francisco (San Francisco, CA)
• Wilshire Oncology Medical Group (Pomona, CA)
• Women’s Imaging Center, Berkshire Hospital (Pittsfield, MA)
128.1 Prevalence

According to the National Commission on Sleep Disorders Research (NCSDR, www.nhlbi.nih.gov/about/ncsdr), approximately 70 million people in the United States are affected by a sleep problem. About 40 million Americans suffer from chronic sleep disorders, and an additional 20 million to 30 million are affected by intermittent sleep-related problems. An overwhelming majority of sleep disorders remain undiagnosed and untreated.

According to *Sleep in America*, an annual report by the National Sleep Foundation (www.sleepfoundation.org), 20% of Americans sleep less than six hours a night; 28% sleep eight hours or more. Only 49% say that they get a good night’s sleep almost every night. The following percentages of adults believe that they have symptoms of sleep disorders:

- Insomnia: 58%
- Snoring: 37%
- Restless leg syndrome: 16%
- Pauses in breathing: 9%

Twenty million Americans suffer from sleep apnea, according to a study by the NCSDR. According to a recent University of Michigan study, 5% to 10% of all men ages 30-to-60 could unknowingly be in need of apnea treatment. Estimates indicate that untreated sleep apnea may cause $3.4 billion in additional medical costs.

Approximately 10% of the population, or 20 million adults, have chronic insomnia, which is inadequate or poor quality sleep nightly for one month or more. Studies indicate untreated insomnia may put people at higher risk for major depression and may cause elderly people to be placed in nursing homes sooner than if the condition had been treated. Fewer than 15% of people who suffer from chronic insomnia receive treatment, according to surveys.

According to a study by researchers at Stanford and Johns Hopkins Universities, as much as 15% of the U.S. population could be affected by restless-legs syndrome (RLS), a sleep and movement disorder characterized by unpleasant (tingling, crawling, creeping, and/or pulling) feelings in the legs, which cause an urge to move in order to relieve the symptoms.

Narcolepsy, another sleep disorder, is a chronic neurological disorder that involves the body’s nervous system. People with narcolepsy are overcome by
uncontrollable urges to sleep, often at inconvenient times, such as when driving. Studies show narcoleptics spend less time in the deeper states of sleep, do not get enough undisturbed sleep, and often nod off from sheer fatigue during the day. Narcolepsy is believed to affect approximately 300,000 people in the U.S., according to the Narcolepsy Network (www.narcolepsynetwork.org).

Approximately 50 million Americans snore. According to the NSF, 55% of all adult Americans report being told they snore, with more men (68%) than women (48%) who snore. Only 43% admit to it. There are more than 3,000 patented devices to keep people from snoring, but doctors agree few are effective.

### 128.2 Economic Impact

Sleep deprivation costs Americans more than $100 billion annually in lost productivity, medical expenses, sick leave, and property and environmental damage, according to the NSF.

The National Highway Traffic Safety Administration estimates that 100,000 police-reported motor vehicle crashes are caused each year by drowsy drivers.

Sleep in America reports that 54% of adults — some 110 million licensed drivers — have driven when drowsy at least once in the past year; 28% say that they have nodded off or fallen asleep while driving a vehicle.

Sleep in America reported that 26% of train operators and 23% of pilots admit that sleepiness has affected their job performance at least once a week; for non-transportation workers, that figure is 17%. One in five pilots (20%) admit that they have made a serious error and one in six train operators (18%) and truck drivers (14%) say that they have had a near miss due to sleepiness.

Short attention spans, fuzzy thinking, and frayed tempers caused by sleep deprivation cost American businesses $15 billion a year in reduced productivity, according to the National Commission on Sleep Disorders Research.

_________________________________________________________________

“**We do not give sleep a lot of credit for the impact it has on our health. As a nation we are all about diet and exercise. But as we look at the data, the personal health impact of sleep deprivation is huge.”**

Prof. Lawrence Epstein, M.D., Director
Sleep Health Centers
Harvard University

_________________________________________________________________
128.3 Sleep And Overall Health

There is convincing evidence that untreated sleep disorders can increase the risk of high blood pressure, coronary-artery disease, heart failure, and stroke. According to Dr. Carl E. Hunt, director of the NCSDR, researchers also think lack of sleep can increase the odds of developing obesity and diabetes.

Sleep in America provides data showing that inadequate sleep is associated with unhealthy lifestyles and negatively impacts health and safety. Those in good health are two times more likely than those in poor health to work efficiently, exercise, and eat healthy, because they are getting enough sleep.

About 40% of Americans agree that sleep is as important as diet and exercise to overall health and well-being; yet only 32% of Americans who report sleep problems discuss them with their doctor.

“Getting enough sleep everyday is as important to your health as eating healthy and being physically active.”

Prof. Woodie Kessel, M.D.
Former Assistant Surgeon General
University of Maryland
School of Public Health

Surveys by the National Sleep Foundation have found a direct correlation between the number of diagnosed medical conditions reported by America’s older adults and the quality of their sleep – the more medical conditions reported, the more sleep problems are likely to occur. Eighty percent (80%) of those with four or more medical conditions report a sleep problem, compared to 53% of those with no reported medical conditions. Sleep problems are reported by the following:

- 82% of those diagnosed with depression
- 81% who have suffered a stroke
- 76% being treated for heart disease
- 75% diagnosed with lung disease
- 72% being treated for diabetes or arthritis
- 71% of those diagnosed with hypertension

Poor sleep is also associated with body pain, excess weight, and ambulatory limitations, according to the NSF.
Researchers at Yale University School of Medicine found those with sleep apnea were twice as likely to have a stroke as those without the condition.

A recent study by researchers at the University of Chicago and the University of Louisville found that children ages 4-to-10 who sleep at least 9½ hours a night – the recommended amount for school age children – are less likely to be obese or have unhealthy bloodwork (e.g., high glucose, insulin, triglycerides, or cholesterol levels) than those getting less sleep.

“We now know that there is a lasting price to pay for sleep loss. We used to think that if you don’t sleep enough, you can get more sleep and you’ll be fine tomorrow. We now know it you push the system enough, that’s simply not true.”

Prof. Sigrid Veasey, M.D.
Center for Sleep and Circadian Neurobiology
University of Pennsylvania

128.4 Sleep-Deprived Demographics
Prevalance Of Healthy Sleep Duration Among Adults, by the Centers for Disease Control and Prevention (CDC, www.cdc.gov), reported the percentage of adults who report getting an average of 7 or more hours of sleep in a 24-hour period as follows:

Age
• 18-to-24: 67.8%
• 25-to-34: 62.1%
• 35-to-44: 61.7%
• 45-to-64: 62.7%
• 65 and older: 73.7%

Race/Ethnicity
• Asian-American: 62.5%
• African-American: 54.2%
• Hispanics: 65.5%
• Caucasian: 66.8%
Education
• Less than college: 62.4%
• College graduate: 71.5%

Marital Status
• Never married: 62.3%
• Married: 67.4%
• Separated, divorced, widowed: 55.7%

Based on the number of adults using medications for sleep disorders, an assessment by Simmons Research (www.simmonsresearch.com) ranked the most sleep-deprived metropolitan areas as follows:
• Charleston, WV
• Mt. Vernon, IL
• Dayton, OH
• Springfield, MO
• Lexington, KY
• Johnson City and Kingsport, TN - Bristol, VA
• Evansville, IN
• Roanoke, VA
• Harrisburg, PA
• Davenport, IA

128.5 Treatment
Marketdata Enterprises (www.marketdataenterprises.com) estimates the annual sleep remedies market at $23.7 billion. Spending includes drugs/sleeping pills, premium mattresses, high tech pillows, white noise machines, aromatherapy, CPAP masks, and self-help guides.

According to IQVIA (www.iqvia.com), over 50 million prescriptions for sleep medications are filled annually, at an approximate cost of $3 billion. Ambien (Sanofi-Aventis) dominates the sector with a marketshare of about 75%. Lunesta (Sepracor) and Rozerem (Takeda Pharmaceutical), introduced in 2005, are designed for longer-term use than drugs previously on the market.

Sleep disorders are diagnosed and treated by many different healthcare professionals, including general practitioners and specialists in neurology, pulmonary medicine, psychiatry, psychology, pediatrics, and other fields.

According to the American Academy of Sleep Medicine (www.aasmnet.org), there are approximately 1,400 sleep clinics or medical centers in the U.S. The Academy accredits facilities that have sleep laboratories that adhere to quality standards as well as appropriate medical expertise.

According to the National Center for Complementary and Alternative Medicine (www.nccam.nih.gov), 4.5% of Americans use some type of alternative medicine to
treat their sleep problems. Most common among these treatments are herbal therapies or relaxation techniques.

128.6 Napping
According to the Sleep and Brain Health Survey, by AARP (www.aarp.org), 41% of adults nap at least once a week. Among people older than 40, 10% nap daily, 42% nap at least once a week, and 22% never take naps.

Those who nap at least once a week are as follows:
- Under age 45: 32%
- 45-to-54: 37%
- 55-to-64: 42%
- 65-to-74: 47%
- 75 and older: 59%

128.7 Market Resources
American Academy of Sleep Medicine, 2510 North Frontage Road, Darien, IL 60561. (630) 737-9700. (www.aasmnet.org)

National Commission on Sleep Disorders Research, Building 31, Room 5A52, 31 Center Drive, MSC 2486, Bethesda, MD 20892. (301) 592-8573. (www.nhlbi.nih.gov/about/hcsdr)

National Sleep Foundation, 1010 N. Glebe Road, Suite 310, Arlington, VA 22201. (703) 243-1697. (www.sleepfoundation.org)
SURGERY

129.1 Overview
Including surgeries performed at hospitals, ambulatory surgery centers, and in physicians offices, over 100 million surgical procedures are performed annually, according to the U.S. Department of Health & Human Services (HHS, www.hhs.gov). Of these surgeries, approximately 22 million are invasive, therapeutic surgery performed in hospital-based ambulatory and inpatient settings. The majority are performed in surgery centers, outpatient clinics, and physicians’ offices.

129.2 Surgeries At Community Hospitals
The Healthcare Cost and Utilization Project (HCUP) of the Agency for Healthcare Research and Quality (www.hcup-us.ahrq.gov) reported invasive, therapeutic surgeries at community hospitals as follows (source: Statistical Brief #223, April 2018):

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Patient Visits</th>
<th>Number of Surgeries</th>
<th>Number of Procedures per Visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Surgeries</td>
<td>17,189,800</td>
<td>21,796,100</td>
<td>1.27</td>
</tr>
<tr>
<td>Ambulatory</td>
<td>9,942,200</td>
<td>11,493,100</td>
<td>1.16</td>
</tr>
<tr>
<td>Inpatient</td>
<td>7,247,600</td>
<td>10,303,000</td>
<td>1.42</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Average Length of Stay: 6.0 days</td>
</tr>
</tbody>
</table>

129.3 Ambulatory and Inpatient Surgery
HCUP reported the 25 most common ambulatory invasive, therapeutic surgeries performed in community hospitals and the ambulatory/inpatient distribution as follows (source: Statistical Brief #223, April 2018):

HEALTHCARE BUSINESS MARKET RESEARCH HANDBOOK 2019-2020
• 518 •
<table>
<thead>
<tr>
<th>Procedure</th>
<th>Ambulatory</th>
<th>Inpatient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lens and cataract procedures:</td>
<td>1,427,800</td>
<td>1,000</td>
</tr>
<tr>
<td>Muscle, tendon, and soft tissue OR procedures:</td>
<td>755,600</td>
<td>295,300</td>
</tr>
<tr>
<td>Incision or fusion of joint, destruction of joint lesion:</td>
<td>607,800</td>
<td>147,800</td>
</tr>
<tr>
<td>Cholecystectomy and common duct exploration:</td>
<td>577,500</td>
<td>372,600</td>
</tr>
<tr>
<td>Excision of semilunar cartilage of knee:</td>
<td>509,900</td>
<td>6,900</td>
</tr>
<tr>
<td>Inguinal and femoral hernia repair:</td>
<td>439,100</td>
<td>38,300</td>
</tr>
<tr>
<td>Repair of diaphragmatic, incisional, and umbilical hernia:</td>
<td>375,200</td>
<td>239,000</td>
</tr>
<tr>
<td>Tonsillectomy and/or adenoidectomy:</td>
<td>366,500</td>
<td>16,800</td>
</tr>
<tr>
<td>Decompression peripheral nerve:</td>
<td>323,500</td>
<td>16,300</td>
</tr>
<tr>
<td>OR procedures of skin and breast, including plastic procedures on breast:</td>
<td>322,000</td>
<td>88,100</td>
</tr>
<tr>
<td>Myringotomy:</td>
<td>308,500</td>
<td>8,300</td>
</tr>
<tr>
<td>Lumpectomy, quadrantectomy of breast:</td>
<td>297,600</td>
<td>8,000</td>
</tr>
<tr>
<td>Insertion, revision, replacement, removal of cardiac pacemaker or cardioverter/defibrillator:</td>
<td>281,100</td>
<td>245,600</td>
</tr>
<tr>
<td>Non-fracture, non-arthroplasty OR procedures on the bone:</td>
<td>277,700</td>
<td>139,800</td>
</tr>
<tr>
<td>Hysterectomy, abdominal and vaginal:</td>
<td>271,200</td>
<td>237,500</td>
</tr>
<tr>
<td>Partial excision bone:</td>
<td>253,000</td>
<td>358,900</td>
</tr>
<tr>
<td>Laminectomy, excision intervertebral disc:</td>
<td>222,000</td>
<td>438,300</td>
</tr>
<tr>
<td>Appendectomy:</td>
<td>208,800</td>
<td>238,800</td>
</tr>
<tr>
<td>Vascular stents and OR procedures, other than head or neck:</td>
<td>205,400</td>
<td>1,000,500</td>
</tr>
<tr>
<td>Testicular, prostate, and penile OR procedures:</td>
<td>189,600</td>
<td>22,100</td>
</tr>
<tr>
<td>Vaginal, vulvar, and female pelvic OR procedures:</td>
<td>187,700</td>
<td>74,500</td>
</tr>
<tr>
<td>Bunionectomy or repair of toe deformities:</td>
<td>187,200</td>
<td>2,900</td>
</tr>
<tr>
<td>OR procedures of mouth, nose, and throat, excluding tonsils and teeth:</td>
<td>178,700</td>
<td>76,400</td>
</tr>
<tr>
<td>Plastic procedures on nose:</td>
<td>169,100</td>
<td>14,600</td>
</tr>
<tr>
<td>Lymph node biopsies and excisions, bone marrow procedures:</td>
<td>151,100</td>
<td>301,100</td>
</tr>
</tbody>
</table>

### 129.4 Quality Standards

The American Hospital Association (www.aha.org), the Centers for Medicare and Medicaid Services (www.cms.gov), the Agency for Healthcare Research and Quality (www.ahrq.gov), the American College of Surgeons (www.facs.org), and the Institute for Healthcare Improvement (www.ihi.org) launched the Surgical Care Improvement Project (SCIP). SCIP is an effort to use evidence-based practices to target four of the most common surgical complications: blood clots, heart attacks, surgical site infections, and ventilator-associated pneumonia. Guidelines for deep vein thrombosis (DVT), for example, which occurs in about 25% of major surgeries without prophylaxis, help
clinicians determine the appropriate prophylactic treatment. And, guidelines for the reduction of cardiac events, which occur in 2% to 5% of patients undergoing non-cardiac surgery, outline the appropriate use of beta blockers and how to identify patients who are at risk.

The Leapfrog Group (www.leapfroggroup.org) established evidence-based quality standards for five surgical procedures – pancreatic surgery, esophageal surgery, open heart surgery, percutaneous coronary interventions (such as angioplasty), and abdominal aortic aneurysm repair – that hospitals must meet to be on the group’s preferred list.

If all hospitals met the quality standards for the five high-risk surgeries set by the Leapfrog Group, 7,818 lives each year would be saved, according to a recent study by researchers at the University of Michigan Health System. Open heart surgery alone would see about 4,089 fewer deaths, and procedures such as angioplasty would see another 3,016 fewer deaths if all patients were treated at hospitals who meet and maintain these standards.

129.5 Market Resources
American College of Surgeons, 633 North Saint Clair Street, Chicago, IL 60611. (312) 202-5000. (www.facs.org)
PART VIII: BEHAVIORAL & MENTAL HEALTH
130

PREVALENCE OF MENTAL ILLNESS

130.1 NAMI Assessment

The National Alliance on Mental Illness (NAMI, www.nami.org) provides the following assessment of the prevalence of mental illness:

- Approximately 1 in 5 adults in the U.S. (18.6%) – 43.7 million – experience mental illness in a given year.
- Approximately 1 in 20 adults in the U.S. (4.1%) – 13.6 million – experience a serious mental illness in a given year that substantially interferes with or limits one or more major life activities.
- Approximately 1 in 5 youth ages 13-to-18 (21.4%) experience a severe mental disorder in a given year. For children ages 8-to-15, the estimate is 13%.
- 1.1% of adults in the U.S. live with schizophrenia.
- 2.6% of adults in the U.S. live with bipolar disorder.
- 6.9% of adults in the U.S. – 16 million – had at least one major depressive episode in the past year.
- 18.1% of adults in the U.S. experienced an anxiety disorder such as post-traumatic stress disorder, obsessive-compulsive disorder, and specific phobias.
- Among the 20.7 million adults in the U.S. with a past year substance use disorder, 40.7% – 8.4 million adults – had co-occurring mental illness.

NAMI provides the following social statistics related to mental illness:

- An estimated 26% of homeless adults staying in shelters live with serious mental illness, and an estimated 46% live with severe mental illness and/or substance use disorders.
- Approximately 20% of state prisoners and 21% of local jail prisoners have a recent history of a mental health condition.
- 70% of youth in juvenile justice systems have at least one mental health condition, and at least 20% live with a serious mental illness.
- Half of all chronic mental illness begins by age 14; three-quarters by age 24. Despite effective treatment, there are long delays – sometimes decades – between the first appearance of symptoms and when people get help.

The following are consequences of lack of treatment (source: NAMI):

- Serious mental illness costs America $193.2 billion in lost earnings per year.
• Mood disorders, including major depression, dysthymic disorder and bipolar disorder, are the third most common cause of hospitalization in the U.S. for both youth and adults ages 18-to-44.
• Individuals living with serious mental illness face an increased risk of having chronic medical conditions.
• Adults in the U.S. living with serious mental illness die on average 25 years earlier than others, largely due to treatable medical conditions.
• Over one-third (37%) of students ages 14-to-21 with a mental health condition who are served by special education drop out – the highest school dropout rate of any disability group.
• Suicide is the 10th leading cause of death in the U.S. (more common than homicide) and the second leading cause of death for people ages 15-to-24.
• More than 90% of children who die by suicide have a mental health condition.
• Each day an estimated 18-to-22 veterans die by suicide.

130.2 NIMH Assessment
The National Institute of Mental Health (NIMH, www.nimh.nih.gov) classifies mental disorders as follows:
• Anxiety Disorders
  - Generalized Anxiety Disorder
  - Obsessive-Compulsive Disorder (OCD)
  - Panic Disorder
  - Post-Traumatic Stress Disorder (PTSD)
  - Social Phobia (Social Anxiety Disorder)
• Attention Deficit Hyperactivity Disorder (ADHD, ADD)
• Bipolar Disorder (Manic-Depressive Illness)
• Borderline Personality Disorder
• Depression
• Eating Disorders
• Schizophrenia

NIMH assesses prevalence as follows:

Anxiety Disorders
• Anxiety disorders affect about 40 million American adults age 18 years and older (about 18%) in a given year, causing them to be filled with fearfulness and uncertainty.
• Women are 60% more likely than men to experience an anxiety disorder over their lifetime. Non-Hispanic blacks are 20% less likely, and Hispanics are 30% less likely, than non-Hispanic whites to experience an anxiety disorder during their lifetime.
• About 8% of teens ages 13-to-18 have an anxiety disorder, with symptoms commonly emerging around age 6. Of these teens, only 18% receive mental healthcare.
• Generalized anxiety disorders (GADs) affect about 6.8 million American adults (about 3.1% of all adults) in a given year, including twice as many women as men. The average age of onset is 31 years old.

• Obsessive-Compulsive Disorder (OCD) affects about 2.2 million American adults. It strikes men and women in roughly equal numbers and usually appears in childhood, adolescence, or early adulthood. One-third of adults with OCD develop symptoms as children, and research indicates that OCD might run in families.

• Panic disorder affects about 6 million American adults and is twice as common in women as men. Panic attacks often begin in late adolescence or early adulthood, but not everyone who experiences panic attacks will develop panic disorder. Many people have just one attack and never have another.

• Social phobia affects about 15 million American adults. Women and men are equally likely to develop the disorder, which usually begins in childhood or early adolescence.

**Attention Deficit Hyperactivity Disorder (ADHD)**

• ADHD is one of the most common childhood disorders and can continue through adolescence and into adulthood. The average age of onset is 7 years old.

• ADHD affects about 4.1% of American adults age 18 years and older in a given year. The disorder affects 9.0% of American children age 13 to 18 years. Boys are four times more at risk than girls.

• Studies show that the number of children being diagnosed with ADHD is increasing, but it is unclear why.

**Bipolar Disorder**

• Bipolar disorder, or manic-depressive illness, often develops in a person’s late teens or early adult years. At least half of all cases start before age 25. NIMH does not provide an estimate of the number of people with bipolar disorder.

**Borderline Personality Disorder (BPD)**

• About 1.6% of adults in the United States have BPD in a given year.

**Depression**

• Each year about 6.7% of U.S. adults experience major depressive disorder. Women are 70% more likely than men to experience depression during their lifetime. Non-Hispanic blacks are 40% less likely than non-Hispanic whites to experience depression during their lifetime. The average age of onset is 32 years old. Additionally, 3.3% of 13-to-18 year olds experience a seriously debilitating depressive disorder.
Eating Disorders
• Eating disorders frequently appear during the teen years or young adulthood but may also develop during childhood or later in life. It is unknown how many adults and children suffer with significant eating disorders.

Schizophrenia
• About 1% of Americans have schizophrenia. Schizophrenia affects men and women equally.

130.3 MHA Assessment
According to Mental Health America (MHA, www.mentalhealthamerica.net), the following is the prevalence of mental illness by state:

<table>
<thead>
<tr>
<th>State</th>
<th>Percentage</th>
<th>Number</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>19.34%</td>
<td>698,000</td>
<td>32</td>
</tr>
<tr>
<td>Alaska</td>
<td>18.94%</td>
<td>97,000</td>
<td>28</td>
</tr>
<tr>
<td>Arizona</td>
<td>18.83%</td>
<td>901,000</td>
<td>26</td>
</tr>
<tr>
<td>Arkansas</td>
<td>19.81%</td>
<td>432,000</td>
<td>40 (tie)</td>
</tr>
<tr>
<td>California</td>
<td>17.68%</td>
<td>4,964,000</td>
<td>13</td>
</tr>
<tr>
<td>Colorado</td>
<td>18.12%</td>
<td>694,000</td>
<td>19</td>
</tr>
<tr>
<td>Connecticut</td>
<td>16.71%</td>
<td>457,000</td>
<td>4</td>
</tr>
<tr>
<td>Delaware</td>
<td>18.26%</td>
<td>126,000</td>
<td>21</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>19.44%</td>
<td>99,000</td>
<td>34</td>
</tr>
<tr>
<td>Florida</td>
<td>16.87%</td>
<td>2,509,000</td>
<td>7</td>
</tr>
<tr>
<td>Georgia</td>
<td>18.99%</td>
<td>1,360,000</td>
<td>29 (tie)</td>
</tr>
<tr>
<td>Hawaii</td>
<td>17.48%</td>
<td>179,000</td>
<td>11</td>
</tr>
<tr>
<td>Idaho</td>
<td>20.58%</td>
<td>235,000</td>
<td>46</td>
</tr>
<tr>
<td>Illinois</td>
<td>15.86%</td>
<td>1,524,000</td>
<td>2</td>
</tr>
<tr>
<td>Indiana</td>
<td>19.87%</td>
<td>961,000</td>
<td>42</td>
</tr>
<tr>
<td>Iowa</td>
<td>18.40%</td>
<td>424,000</td>
<td>22</td>
</tr>
<tr>
<td>Kansas</td>
<td>18.20%</td>
<td>381,000</td>
<td>20</td>
</tr>
<tr>
<td>Kentucky</td>
<td>19.47%</td>
<td>635,000</td>
<td>35</td>
</tr>
<tr>
<td>Louisiana</td>
<td>19.28%</td>
<td>649,000</td>
<td>31</td>
</tr>
<tr>
<td>Maine</td>
<td>20.05%</td>
<td>210,000</td>
<td>43</td>
</tr>
<tr>
<td>Maryland</td>
<td>17.93%</td>
<td>792,000</td>
<td>16</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>17.38%</td>
<td>893,000</td>
<td>10</td>
</tr>
<tr>
<td>Michigan</td>
<td>19.81%</td>
<td>1,484,000</td>
<td>40 (tie)</td>
</tr>
<tr>
<td>Minnesota</td>
<td>17.18%</td>
<td>692,000</td>
<td>8</td>
</tr>
<tr>
<td>Mississippi</td>
<td>20.27%</td>
<td>439,000</td>
<td>45</td>
</tr>
<tr>
<td>Missouri</td>
<td>18.99%</td>
<td>855,000</td>
<td>29 (tie)</td>
</tr>
<tr>
<td>Montana</td>
<td>18.92%</td>
<td>145,000</td>
<td>27</td>
</tr>
<tr>
<td>Nebraska</td>
<td>17.89%</td>
<td>243,000</td>
<td>15</td>
</tr>
</tbody>
</table>
By state, adult dependence or abuse of illicit drugs or alcohol is as follows (source: MHA):

<table>
<thead>
<tr>
<th>State</th>
<th>Percentage</th>
<th>Number</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>6.58%</td>
<td>238,000</td>
<td>1</td>
</tr>
<tr>
<td>Alaska</td>
<td>10.33%</td>
<td>53,000</td>
<td>48</td>
</tr>
<tr>
<td>Arizona</td>
<td>9.09%</td>
<td>435,000</td>
<td>33</td>
</tr>
<tr>
<td>Arkansas</td>
<td>7.64%</td>
<td>167,000</td>
<td>8</td>
</tr>
<tr>
<td>California</td>
<td>8.80%</td>
<td>2,472,000</td>
<td>26</td>
</tr>
<tr>
<td>Colorado</td>
<td>10.13%</td>
<td>388,000</td>
<td>44</td>
</tr>
<tr>
<td>Connecticut</td>
<td>9.29%</td>
<td>254,000</td>
<td>36</td>
</tr>
<tr>
<td>Delaware</td>
<td>9.10%</td>
<td>63,000</td>
<td>34</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>13.78%</td>
<td>70,000</td>
<td>51</td>
</tr>
<tr>
<td>Florida</td>
<td>7.71%</td>
<td>1,146,000</td>
<td>9</td>
</tr>
<tr>
<td>Georgia</td>
<td>7.20%</td>
<td>516,000</td>
<td>3</td>
</tr>
<tr>
<td>Hawaii</td>
<td>7.96%</td>
<td>82,000</td>
<td>14</td>
</tr>
<tr>
<td>Idaho</td>
<td>8.45%</td>
<td>97,000</td>
<td>22</td>
</tr>
<tr>
<td>Illinois</td>
<td>8.80%</td>
<td>845,000</td>
<td>27</td>
</tr>
<tr>
<td>Indiana</td>
<td>8.44%</td>
<td>408,000</td>
<td>21</td>
</tr>
<tr>
<td>Iowa</td>
<td>8.94%</td>
<td>206,000</td>
<td>30</td>
</tr>
</tbody>
</table>
• Kansas: 7.90% 165,000 11
• Kentucky: 7.42% 242,000 6
• Louisiana: 8.48% 285,000 23
• Maine: 8.52% 89,000 24
• Maryland: 7.92% 350,000 12
• Massachusetts: 9.33% 479,000 37
• Michigan: 8.92% 668,000 29
• Minnesota: 9.22% 372,000 35
• Mississippi: 7.24% 157,000 4
• Missouri: 8.14% 367,000 17
• Montana: 10.38% 79,000 49
• Nebraska: 8.97% 122,000 31
• Nevada: 10.31% 210,000 47
• New Mexico: 9.54% 146,000 41
• New Jersey: 8.03% 538,000 15
• New York: 8.36% 1,255,000 19
• New Hampshire: 8.73% 90,000 25
• North Dakota: 10.30% 54,000 46
• North Carolina: 7.37% 532,000 5
• Ohio: 8.86% 771,000 28
• Oklahoma: 9.94% 276,000 43
• Oregon: 9.49% 283,000 39
• Pennsylvania: 8.40% 824,000 20
• Rhode Island: 10.91% 89,000 50
• South Dakota: 10.24% 62,000 45
• South Carolina: 8.20% 289,000 18
• Tennessee: 7.95% 384,000 13
• Texas: 8.07% 1,484,000 16
• Utah: 6.79% 131,000 2
• Vermont: 9.61% 48,000 42
• Virginia: 7.56% 459,000 7
• Washington: 9.50% 491,000 40
• West Virginia: 7.85% 113,000 10
• Wisconsin: 9.08% 393,000 32
• Wyoming: 9.35% 40,000 38

130.4 World Health Organization

According to the World Health Organization (www.who.org), mental illness tops all other diseases as a cause of disability in the United States, Canada, and Western Europe, accounting for 25% of all disability. By 2020, major depressive illness will be the leading cause of disability in the world for women and children.
130.5 Market Resources
Mental Health America, 2000 N. Beauregard Street, 6th Floor, Alexandria, VA 22311. (703) 684-7722. (www.mentalhealthamerican.net)

National Alliance on Mental Illness, 3803 North Fairfax Drive, Suite 100, Arlington, VA 22203. (703) 524-7600. (www.nami.org)

National Institute of Mental Health, 6001 Executive Boulevard, Bethesda, MD 20892. (866) 615-6464. (www.nimh.nih.gov)

131.1 Direct Expenditures

The Substance Abuse and Mental Health Services Administration (SAMHSA, www.samhsa.gov) assesses spending for mental health and substance use disorders as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Mental Health</th>
<th>Substance Abuse</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>$147.4 billion</td>
<td>$24.3 billion</td>
<td>$171.7 billion</td>
</tr>
<tr>
<td>2010</td>
<td>$155.0 billion</td>
<td>$25.6 billion</td>
<td>$180.6 billion</td>
</tr>
<tr>
<td>2011</td>
<td>$163.0 billion</td>
<td>$26.6 billion</td>
<td>$189.6 billion</td>
</tr>
<tr>
<td>2012</td>
<td>$167.6 billion</td>
<td>$27.9 billion</td>
<td>$195.5 billion</td>
</tr>
<tr>
<td>2013</td>
<td>$173.5 billion</td>
<td>$29.3 billion</td>
<td>$202.7 billion</td>
</tr>
<tr>
<td>2014</td>
<td>$179.3 billion</td>
<td>$31.3 billion</td>
<td>$210.5 billion</td>
</tr>
<tr>
<td>2015</td>
<td>$186.3 billion</td>
<td>$32.6 billion</td>
<td>$218.9 billion</td>
</tr>
<tr>
<td>2016</td>
<td>$194.4 billion</td>
<td>$34.5 billion</td>
<td>$228.9 billion</td>
</tr>
<tr>
<td>2017</td>
<td>$203.6 billion</td>
<td>$36.2 billion</td>
<td>$239.8 billion</td>
</tr>
<tr>
<td>2018</td>
<td>$213.3 billion</td>
<td>$38.0 billion</td>
<td>$251.3 billion</td>
</tr>
<tr>
<td>2019</td>
<td>$225.1 billion</td>
<td>$40.0 billion</td>
<td>$265.0 billion</td>
</tr>
<tr>
<td>2020</td>
<td>$238.4 billion</td>
<td>$42.1 billion</td>
<td>$280.5 billion</td>
</tr>
</tbody>
</table>

“The cost to care for people with mental disorders now exceeds the cost of cardiovascular disease. Though mental health isn’t the fastest-growing expense, it contributes the most to making healthcare grow faster than the rest of the economy.”

Modern Healthcare
131.2 Spending By Provider

SAMHSA assesses total spending in 2018 for mental health and substance abuse disorders at $251.3 billion. Distribution of spending is as follows:

- Retail prescription drugs: $57.4 billion
- General hospitals: $40.8 billion
- Specialty mental health centers: $36.2 billion
- Non-physician professionals: $20.0 billion
- Insurance administration: $19.7 billion
- Specialty hospitals: $19.6 billion
- Specialty substance abuse centers: $13.8 billion
- Psychiatrists: $13.5 billion
- Nursing homes: $13.3 billion
- Non-psychiatric physicians: $12.2 billion
- Home health: $4.8 billion

131.3 Spending By Payer

SAMHSA assesses spending for mental health and substance abuse disorders as follows:

Public Payers
- Medicaid: 30%
- Medicare: 15%
- Other state and local payer: 13%
- Other federal payer: 5%

Private Payers
- Private insurance: 25%
- Out-of-pocket: 10%
- Other private payer: 2%

131.4 State Spending

The National Association of State Mental Health Program Directors (www.nasmhpd.org) reports state mental health agency total expenditures, per capita spending, and per capita rank as follows:

<table>
<thead>
<tr>
<th>State</th>
<th>Total Expenditure</th>
<th>Per Capita</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>$373,100,000</td>
<td>$78.19</td>
<td>37</td>
</tr>
<tr>
<td>Alaska</td>
<td>$214,200,700</td>
<td>$310.01</td>
<td>3</td>
</tr>
<tr>
<td>Arizona</td>
<td>$1,414,300,000</td>
<td>$221.27</td>
<td>7</td>
</tr>
<tr>
<td>Arkansas</td>
<td>$122,468,795</td>
<td>$42.02</td>
<td>48</td>
</tr>
<tr>
<td>California</td>
<td>$5,674,396,088</td>
<td>$152.60</td>
<td>15</td>
</tr>
<tr>
<td>Colorado</td>
<td>$443,227,875</td>
<td>$88.41</td>
<td>31</td>
</tr>
<tr>
<td>State</td>
<td>General Revenue</td>
<td>Per Capita Income</td>
<td>Rank</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------</td>
<td>-------------------</td>
<td>------</td>
</tr>
<tr>
<td>Connecticut</td>
<td>$675,500,000</td>
<td>$189.34</td>
<td>9</td>
</tr>
<tr>
<td>Delaware</td>
<td>$95,000,125</td>
<td>$106.04</td>
<td>26</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>$217,069,846</td>
<td>$360.57</td>
<td>1</td>
</tr>
<tr>
<td>Florida</td>
<td>$742,227,938</td>
<td>$39.55</td>
<td>49</td>
</tr>
<tr>
<td>Georgia</td>
<td>$449,147,633</td>
<td>$46.54</td>
<td>47</td>
</tr>
<tr>
<td>Hawaii</td>
<td>$224,800,000</td>
<td>$169.99</td>
<td>11</td>
</tr>
<tr>
<td>Idaho</td>
<td>$57,400,000</td>
<td>$36.64</td>
<td>51</td>
</tr>
<tr>
<td>Illinois</td>
<td>$1,030,100,000</td>
<td>$80.43</td>
<td>36</td>
</tr>
<tr>
<td>Indiana</td>
<td>$530,148,000</td>
<td>$81.73</td>
<td>34</td>
</tr>
<tr>
<td>Iowa</td>
<td>$409,900,000</td>
<td>$134.46</td>
<td>19</td>
</tr>
<tr>
<td>Kansas</td>
<td>$375,700,000</td>
<td>$132.33</td>
<td>20</td>
</tr>
<tr>
<td>Kentucky</td>
<td>$232,300,000</td>
<td>$53.69</td>
<td>45</td>
</tr>
<tr>
<td>Louisiana</td>
<td>$282,060,590</td>
<td>$62.37</td>
<td>43</td>
</tr>
<tr>
<td>Maine</td>
<td>$459,680,997</td>
<td>$346.92</td>
<td>2</td>
</tr>
<tr>
<td>Maryland</td>
<td>$944,700,000</td>
<td>$164.11</td>
<td>13</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>$714,300,000</td>
<td>$109.07</td>
<td>24</td>
</tr>
<tr>
<td>Michigan</td>
<td>$1,177,100,000</td>
<td>$119.23</td>
<td>21</td>
</tr>
<tr>
<td>Minnesota</td>
<td>$797,029,922</td>
<td>$150.18</td>
<td>16</td>
</tr>
<tr>
<td>Mississippi</td>
<td>$339,500,000</td>
<td>$114.95</td>
<td>22</td>
</tr>
<tr>
<td>Missouri</td>
<td>$518,428,093</td>
<td>$86.75</td>
<td>32</td>
</tr>
<tr>
<td>Montana</td>
<td>$171,381,791</td>
<td>$173.59</td>
<td>10</td>
</tr>
<tr>
<td>Nebraska</td>
<td>$147,191,849</td>
<td>$80.73</td>
<td>35</td>
</tr>
<tr>
<td>Nevada</td>
<td>$184,000,000</td>
<td>$68.32</td>
<td>41</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>$192,590,991</td>
<td>$146.40</td>
<td>17</td>
</tr>
<tr>
<td>New Jersey</td>
<td>$1,758,813,000</td>
<td>$200.09</td>
<td>8</td>
</tr>
<tr>
<td>New Mexico</td>
<td>$191,789,054</td>
<td>$93.37</td>
<td>28</td>
</tr>
<tr>
<td>New York</td>
<td>$4,965,000,000</td>
<td>$256.31</td>
<td>5</td>
</tr>
<tr>
<td>North Carolina</td>
<td>$1,565,147,892</td>
<td>$165.64</td>
<td>12</td>
</tr>
<tr>
<td>North Dakota</td>
<td>$64,315,281</td>
<td>$96.37</td>
<td>27</td>
</tr>
<tr>
<td>Ohio</td>
<td>$843,055,168</td>
<td>$73.13</td>
<td>39</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>$198,100,000</td>
<td>$53.05</td>
<td>46</td>
</tr>
<tr>
<td>Oregon</td>
<td>$602,389,187</td>
<td>$157.08</td>
<td>14</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>$3,568,718,516</td>
<td>$280.78</td>
<td>4</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>$94,919,347</td>
<td>$90.51</td>
<td>30</td>
</tr>
<tr>
<td>South Carolina</td>
<td>$275,500,000</td>
<td>$59.95</td>
<td>44</td>
</tr>
<tr>
<td>South Dakota</td>
<td>$69,392,215</td>
<td>$85.35</td>
<td>33</td>
</tr>
<tr>
<td>Tennessee</td>
<td>$490,700,000</td>
<td>$77.40</td>
<td>38</td>
</tr>
<tr>
<td>Texas</td>
<td>$979,600,000</td>
<td>$38.99</td>
<td>50</td>
</tr>
<tr>
<td>Utah</td>
<td>$177,688,669</td>
<td>$64.17</td>
<td>42</td>
</tr>
<tr>
<td>Vermont</td>
<td>$150,000,000</td>
<td>$239.84</td>
<td>6</td>
</tr>
<tr>
<td>Virginia</td>
<td>$717,200,000</td>
<td>$90.72</td>
<td>29</td>
</tr>
<tr>
<td>Washington</td>
<td>$761,100,000</td>
<td>$113.57</td>
<td>23</td>
</tr>
</tbody>
</table>
131.5 Influence On Healthcare Costs

The presence of both mental and chronic health conditions in a patient often increases healthcare costs. According to the American Hospital Association (www.aha.org), patients with untreated depression and a chronic illness have monthly healthcare costs that average $560 higher than those with just a chronic disease.

While 29% of adults with a medical condition also have some type of mental health disorder, close to 70% of behavioral health patients have a medical co-morbidity. Both conditions often act as a driver for one another, heightening the risk that a person with a chronic disease will develop a mental health disorder and vice versa.

Studies have estimated it can cost as much as three times more to treat the physical health of a patient with underlying behavioral health issues than it does to treat the same physical health issues in a patient without a mental health disorder.

“The co-occurrence of chronic illness and depression is really striking. If somebody is diagnosed with a chronic illness, they are twice as likely to have a behavioral health illness. But it's true the other way around; someone with a mental health diagnosis is more likely to have a chronic illness.”

Alexander Blount, EdD
Professor of Clinical Psychology
Antioch University New England
Modern Healthcare, 5/29/17

131.6 Indirect Costs

The National Institute of Mental Health (NIMH, www.nimh.nih.gov) estimates loss of earnings due to serious mental illness at $193.2 billion; disability benefits total $24.3 billion each year.

Other estimates put indirect costs of serious mental illness at $500 billion.
“The biggest blow to the overall economy are the many hidden, indirect costs. People with serious mental illness earn, on average, $16,000 less than their mentally well counterparts, totaling about $193 billion annually in lost earnings. And many mentally ill workers, who are more likely to miss work, also suffer from what social scientists call presenteeism – the opposite of absenteeism – in which they are very likely to be less productive on the job when they show up. Reduced earnings and a lower likelihood of being, or staying, married compound the problem. The mentally ill are at higher risk of poverty than their peers, which subsequently increases their need for other public safety-net services like food stamps and subsidized housing. Their use of those services, according to one recent estimate, probably costs taxpayers another $140 billion to $160 billion a year. All together, our cumulative mental-health issues – depression, schizophrenia and bipolar disorder, among others – are costing the U.S. economy about a half-trillion dollars. That’s more than the government spends on all of Medicare.”

The New York Times

131.7 Market Resources
National Association of State Mental Health Program Directors (NASMHPD), 66 Canal Center Plaza, Suite 302, Alexandria, VA 22314. (703) 739-9333. (www.nasmhpd.org)

National Institute of Mental Health, 6001 Executive Boulevard, Bethesda, MD 20892. (866) 615-6464. (www.nimh.nih.gov)

Substance Abuse and Mental Health Services Administration (SAMHSA), 5600 Fishers Lane, Rockville, MD 20857. (800) 487-4889. (www.samhsa.gov)
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BEHAVIORAL HEALTH PROVIDERS

132.1 Behavioral Health Hospitals

According to the National Association of Psychiatric Health Systems (NAPHS, www.naphs.org), occupancy rates at behavioral health hospitals have been at record highs. The NAPHS Annual Survey reports an average of 2,724 inpatient behavioral hospital admissions per hospital per year. Hospital occupancy averages 70.2%; lengths of stay average 9.7 days. Residential treatment admissions average 166. Residential treatment center occupancy averages 80.6%.

NAPHS represents behavioral healthcare provider organizations that own or manage more than 600 psychiatric hospitals, general hospital psychiatric and addiction treatment units and behavioral healthcare divisions, residential treatment facilities, youth services organizations, and extensive outpatient networks.

Overall, behavioral health facilities have scaled back beds for decades because of low occupancy rates. In Illinois, for example, there were as many as 55,000 behavioral health beds during the 1950s; now there are only 1,400.

132.2 Largest Behavioral Health Providers

The largest behavioral health providers, ranked by behavioral health net patient revenue, are as follows (source: American Hospital Directory and Modern Healthcare):

For-Profit and Not-For-Profit Facilities

<table>
<thead>
<tr>
<th>Facility</th>
<th>Revenue</th>
<th>Total Acute Beds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheppard &amp; Enoch Pratt Hospital (Baltimore, MD):</td>
<td>$121 million</td>
<td>350</td>
</tr>
<tr>
<td>McLean Hospital (Partners HealthCare System; Belmont, MA):</td>
<td>$116 million</td>
<td>328</td>
</tr>
<tr>
<td>Rogers Memorial Hospital (Rogers Behavioral Health System; Oconomowoc, WI):</td>
<td>$114 million</td>
<td>227</td>
</tr>
<tr>
<td>South Oaks Hospital (North Shore-Long Island Jewish Health System; Amityville, NY):</td>
<td>$102 million</td>
<td>197</td>
</tr>
<tr>
<td>UPMC Susquehanna Divine Providence Hospital (Williamsport, PA):</td>
<td>$ 87 million</td>
<td>31</td>
</tr>
<tr>
<td>Aspire Health Partners (Orlando, FL):</td>
<td>$ 86 million</td>
<td>56</td>
</tr>
<tr>
<td>Pine Rest Christian Mental Health Services (Grand Rapids, MI):</td>
<td>$ 81 million</td>
<td>84</td>
</tr>
</tbody>
</table>
• Butler Hospital (Care New England Health System; Providence, RI): $ 74 million 143
• Sharp Mesa Vista Hospital (Sharp HealthCare; San Diego, CA): $ 74 million 158
• Alexian Brothers Behavioral Health Hospital (Hoffman Estates, IL): $ 73 million 141
• Christian Health Care Center (Wyckoff, NJ): $ 71 million 58
• College Hospital Cerritos (Cerritos, CA): $ 70 million 187
• Spring Harbor Hospital (Westbrook, ME): $ 68 million 88
• Jewish Home of San Francisco (San Francisco, CA): $ 66 million 13
• Brattleboro Retreat (Brattleboro, VT): $ 65 million 122

Government-Run Facilities
• Napa State Hospital (Napa, CA): $271 million 151
• Metropolitan State Hospital (Norwalk, CA): $232 million 1,004
• Oregon State Hospital (Salem, OR): $163 million 115
• Western State Hospital (Tacoma, WA): $150 million 771
• North Texas State Hospital (Wichita Falls, TX): $140 million 297
• Greystone Park Psychiatric Hospital (Morris Plains, NJ): $120 million 468
• Ancora Psychiatric Hospital (Hammonton, NJ): $117 million 709
• Central Regional Hospital (Butner, NC): $ 96 million 422
• Trenton Psychiatric Hospital (West Trenton, NJ): $ 92 million 400
• Fulton State Hospital (Fulton, MO): $ 80 million 354

132.3 Community Hospital Services

According to the Agency for Healthcare Research and Quality (www.ahrq.gov), approximately 25% of all hospitalizations involve depression, bipolar, schizophrenia, substance abuse, or other behavioral health disorders as a primary or secondary diagnosis.

Emergency departments have become the safety net for many patients with severe behavioral health disorders. Most general hospitals, however, are designed for short-stay medical-surgical patients. General hospitals that lack adequate psychiatric services generally attempt to move behavioral health patients to other facilities with such capabilities.

Many community hospitals are not adequately prepared to provide services for patients with behavioral health problems. According to the American Hospital Association (www.aha.org), only 1,349 of 4,919 community general hospitals, or 27%, have an organized inpatient psychiatric unit.
132.4 Market Resources
**ACCESS & COVERAGE**

**133.1 Reimbursement Parity**

The Mental Health Parity and Addiction Equity Act of 2008 requires group health plans of 50 or more employees that provide medical-surgical coverage and mental health and substance-abuse benefits to ensure that financial requirements and treatment limitations for mental health coverage are on par with those for medical-surgical services. The federal parity law took effect in 2010.

The Medicare Improvements for Patients and Providers Act of 2008 mandated the reduction of co-insurance for outpatient mental health services from 50% to 20%, which is the same level as non-psychiatric services.

The Patient Protection and Affordable Care Act, signed into law in 2010, requires that insurance plans offer behavioral health coverage, including mental health and addiction and substance abuse help, as an essential health benefit.

“Mental health services became part of the Affordable Care Act's 10 essential health benefits that all health plans are required to cover, while mental health parity rules restrict insurers from placing higher limits on mental health services than ones applied to medical and surgical services.”

*Modern Healthcare, 5/29/17*

**133.2 Access**

Despite reimbursement parity, access to mental healthcare still lags. The Affordable Care Act does not require psychiatrists to accept health insurance, and many psychiatrists have opted out of insurance programs.
An assessment by Prof. Tara Bishop at Weill Cornell Medical College found that 53% of psychiatrists accept insurance, compared with 89% of other physicians. Further limiting access, budget cuts have reduced local resources.

“Problems with access to behavioral healthcare services persist despite the considerable attention given to the issue from lawmakers in recent years. Evidence points to a mental healthcare system that is still offering less access even as the number of people in need of such care is on the rise.”

Modern Healthcare, 5/29/17
ALCOHOL-USE DISORDER

134.1 Overview
The National Institute on Alcohol Abuse and Alcoholism (NIAAA, www.niaaa.nih.gov) estimates that 16 million to 18 million people in the U.S. abuse or are addicted to alcohol. More than 30% of Americans engage in risky drinking at some point in their lives, according to the NIAAA.

Estimates of the number of people with alcohol addiction vary because there is no consensus on exactly what an ‘alcoholic’ is. Even Alcoholics Anonymous relies on alcoholics to self-diagnosis.

“Researchers have long shied away from using the term “alcoholic,” because it’s both negative and dated. The new term to describe problematic drinking is alcohol-use disorder – a clunky but more expansive phrase that denotes a spectrum of risky drinking from mild to moderate to severe. Only about 10% of the estimated 16 million Americans who abuse alcohol fall into the severe category. While those in the severe category might need to abstain from drinking, the vast majority of others don’t.”

The New York Times, 12/29/17

134.2 Prevalence
The Behavioral Risk Factor Surveillance System (BRFSS) of the Centers for Disease Control and Prevention (CDC, www.cdc.gov/brfss) reports the following alcohol
consumption behaviors:

- Adults who have had at least one drink of alcohol within the past 30 days: 54.1%
- Heavy drinkers (adult men having more than two drinks per day; adult women having more than one drink per day): 4.9%
- Binge drinkers (males having five or more drinks on one occasion; females having four or more drinks on one occasion): 15.1%

States with the highest percentage of heavy drinkers are Vermont (7.2%), Massachusetts (6.7%), Hawaii (6.6%), and New Hampshire (6.4%). Wisconsin (21.6%), Alabama (20.6%), Nebraska (19.4%), and Delaware (18.8%) have the highest percentage of binge drinkers.

The CDC estimates that 88,000 deaths per year are associated with excessive alcohol use in adults ages 20-to-64.

“Alcohol overuse remains a persistent public health problem and is responsible for more deaths, as many as 88,000 per year. While light drinking has been shown to be helpful for overall health, since the beginning of this century there has been about a 50% uptick in emergency room visits related to heavy drinking. After declining for three decades, deaths from cirrhosis, often linked to alcohol consumption, have been on the rise since 2006.”

_The New York Times, 12/29/17_

134.3 Medical Treatment

Since 1935, when Alcoholics Anonymous (AA) was founded, the vast majority of treatments for alcoholism in the U.S. have been based on AA’s 12-step program, which encourages behavioral changes and faith in a higher power in treatment. Up to a million alcoholics connect with AA programs annually.

According to the Substance Abuse and Mental Health Services Administration (SAMHSA, www.samhsa.gov), 41% of patients seeking admission to state-licensed or certified substance abuse treatment facilities do so because of alcohol abuse.
Approximately 500,000 alcohol abusers each year seek treatment at centers such as the Betty Ford Center (Rancho Mirage, CA; www.bettyfordcenter.org), Delancey Street Foundation (San Francisco, CA; www.delanceystreetfoundation.org), Hazelden Foundation (Center City, MN; www.hazelden.org), Operation PAR (Largo, FL; www.operationpar.org), Ridgeview Institute (Atlanta, GA; www.ridgeviewinstitute.com), and a host of other inpatient and outpatient treatment centers.


Despite the fact that up to 18 million Americans have alcohol-use disorder, the U.S. market for related drug treatments is less than $60 million annually. Only about 140,000 alcoholics in the U.S. receive medication for their disease, with treatment ranging from such drugs as Antabuse or Naltrexone to anti-depressants to anti-seizure drugs.

A clearer understanding of the biological underpinnings of alcoholism is opening the way to better drugs. Scientists, for example, have identified a number of genes that confer a predisposition to alcohol addiction. They have also found that the brain goes through profound changes when a person starts drinking to excess.

Cognitive therapy is being used to aid addicts in forming new, healthier habits by helping them recognize what situations or patterns of thinking trigger an urge to abuse alcohol. It has been found that treatments combining medication with psychotherapy work better than either strategy does alone.

“The Newer treatments embrace an array of techniques and are effective for those with mild and moderate problems. A great deal of research supports the use of anticraving medications, such as naltrexone, and harm-reduction therapy. Many of the new treatments help people track their drinking and understand why they’re imbibing in the first place. Others offer web-based methods to curtail drinking, and in some initial research, they have shown promise.”

The New York Times, 12/29/17
134.4 Alcohol-Related ED Visits
According to a study by researchers at the NIAAA, published in the January 2018 issue of Alcoholism Clinical & Experimental Research, there are 210,000 hospital emergency department visits related to alcohol use, an increase of 47% since 2006. Rates increased more for females than males and were highest for adults ages 45-to-64.

“During the study period, the number of people in the United States who drank alcohol and the total amount of alcohol consumed each year remained about the same. We suspect the increase in ED visits is related to an increase in the intensity of alcohol use among a subset of drinkers.”

Aaron White, Senior Scientific Adviser
NIAAA, 1/18

134.5 Market Resources
National Institute on Alcohol Abuse and Alcoholism (NIAAA), 5635 Fishers Lane, MSC 9304, Bethesda, MD 20892. (301) 443-3860. (www.niaaa.nih.gov)

Substance Abuse and Mental Health Services Administration, P.O. Box 2345, Rockville, MD 20847. (www.samhsa.gov)
135.1 Prevalence And Cost
The National Institute on Drug Abuse (www.nida.nih.gov) reports that approximately 22 million people in the U.S. are suffering from drug abuse and addiction. Of those who abuse drugs, some 3.2 million Americans are addicted to hard drugs such as heroin, cocaine, and speed (methamphetamine), according to a recent report by the United Nations.

According to the National Center on Addiction and Substance Abuse at Columbia University (CASA, www.casacolumbia.org), federal, state, and local governments spend $467.7 billion a year related to substance abuse. Of that amount, 96% is used to deal with consequences, including 58% for healthcare.

“We are spending 96¢ of every dollar we spend on substance abuse and addiction to shovel up the human wreckage. We’re making this really tiny investment in prevention and treatment when we have enough experience to know that prevention and treatment can reduce the shoveling-up burden. These governments have it backwards. They’re wasting billions of dollars of taxpayers’ money and not making some relatively simple investments that could sharply reduce the consequences of drug and alcohol addiction.”

Joseph Califano, Jr., Chairman
CASA, Columbia University

According to the Substance Abuse and Mental Health Services Administration (SAMHSA, www.samhsa.gov), about 8% of people use illicit drugs in any given month.
Illicit drug use is highest in Alaska, Colorado, Connecticut, Maine, Massachusetts, Montana, New York, Oregon, Rhode Island, Vermont, and Washington, D.C.

135.2 Heroin Use

Heroin use in the U.S. has been on the rise since 2000, in large part because people addicted to prescription opioid pain killers frequently turn to cheaper and more plentiful heroin. According to the National Survey On Drug Use And Health, the number of heroin users increased to 680,000 in 2016, up from 475,000 in 2014. There were 15,400 heroin deaths in 2016, according to the National Center for Health Statistics (www.cdc.gov/nchs), an increase from 3,200 in 2010.

“Despite the dangers associated with heroin use, its use has increased in recent years. The percentage of current heroin users aged 12 or older in 2016 was higher than the percentages in most years between 2002 and 2013, but it was similar to the percentages in 2014 and 2015.”

National Survey On Drug Use And Health, 1/18

135.3 Medical Treatment

Approximately $12 billion is spent annually in the United States to treat drug addiction. According to the Center for Substance Abuse Research at the University of Maryland (www.cesar.umd.edu), patients who seek admission to substance abuse facilities because of drug addictions do so because of the following primary substances:

- Opiates: 30%
- Marijuana: 27%
- Cocaine: 24%
- Stimulants and other: 19%

The American Medical Association (www.ama-assn.org) recognized drug addiction as a disease back in 1956. But only now are treatments that target the underlying biochemistry of the disease being developed.

According to a survey by researchers at Brown University, which appeared in Archives of Internal Medicine, approximately one-third of primary care doctors reported
they do not routinely ask new patients if they use illicit drugs, and 15% do not routinely offer any intervention to drug-abusing patients. Of those doctors who do offer intervention, 61% recommend 12-step programs, which research has suggested may be less successful than formal addiction therapy. Only 55% of providers surveyed reported routinely recommending formal addiction therapy, such as methadone treatment or residential treatment centers.

“Trying to treat drug addiction comprehensively and early on is ‘part and parcel’ of healthcare reform and moving to population health. That means training primary care physicians to recognize the signs of addiction, managing the problem before it ends up in the ED, and linking with community partners such as behavioral health and halfway houses.”

_Hospitals & Health Networks_

**135.4 Prevention**

Approximately $10 billion is spent annually by federal, state, and local governments on substance abuse prevention programs.

The Substance Abuse and Mental Health Services Administration provides funds directly to states through the Substance Abuse Prevention and Treatment (SAPT) Block Grant. Those grants, administered by SAMHSA’s Center for Substance Abuse Treatment (CSAT), support almost 40% of all substance abuse treatment provided through state agencies. Using these federal resources, states are able to provide treatment to over 340,000 people annually. Recognizing the importance of prevention, the block grant program requires that states use a minimum of 20% of their funds to deliver substance abuse prevention services in community and school settings. These services are targeted to populations with the greatest need, including high-risk youth, youth involved with the criminal justice system, pregnant and postpartum women, and people with HIV infection. Research shows that for every $1 spent on drug abuse prevention, communities can save $4 to $5 in costs for drug abuse treatment and counseling.
135.5 Market Resources
Center for Substance Abuse Research, University of Maryland, 4321 Hartwick Road, Suite 501, College Park, MD 20740. (301) 405-9770. (www.cesar.umd.edu)

National Center on Addiction and Substance Abuse at Columbia University, 633 Third Avenue, 19th Floor, New York, NY 10017. (212) 841-5200. (www.casacolumbia.org)

National Institute on Drug Abuse, c/o National Institutes of Health, 6001 Executive Boulevard, Room 5213, Bethesda, MD 20892. (301) 443-1124. (www.nida.nih.gov)

National Survey On Drug Use And Health, Substance Abuse and Mental Health Services Administration. (https://nsduhweb.rti.org/respweb/homepage.cfm)

Substance Abuse and Mental Health Services Administration, P.O. Box 2345, Rockville, MD 20847. (www.samhsa.gov)
136.1 Opioid Use
Since 1999, the amount of prescription opioids sold in the U.S. nearly quadrupled. Opioids are addictive and the rise is medical usage has been accompanied by illicit use of opioids, addiction for millions of people, and skyrocketing death rates.

The Substance Abuse and Mental Health Services Administration (www.samhsa.gov) estimates that 4.3 million people ages 12 and older use prescription painkillers for non-medical purposes.

According to the Centers for Disease Control and Prevention (CDC, www.cdc.gov), 71% of all prescription drug overdose deaths involve prescription opioids.

The White House's Council of Economic Advisers recently estimated the annual cost of the opioid crisis at $504 billion, nearly 3% of gross domestic product.

In October 2017, the opioid crisis was declared a public health emergency.

136.2 Opioid Overdose Deaths
In 2016, there were more than 63,600 drug overdose deaths in the United States, according to the CDC, 49,249 of which involved opioids. The age-adjusted rate of drug overdose deaths in 2016 (19.8 per 100,000) was 21% higher than the rate in 2015 (16.3 per 100,000).

Provisional data for 2017 from the CDC show no signs of the epidemic abating, with an estimate of more than 66,000 overdose deaths for the year.

“Drug overdoses are now the leading cause of death among Americans younger than 50.”

2018 Environmental Scan
American Hospital Association
The rate of drug overdose deaths involving synthetic opioids other than methadone, which include drugs such as fentanyl, fentanyl analogs, and tramadol, increased from 0.3 per 100,000 in 1999 to 1.0 in 2013, 1.8 in 2014, 3.1 in 2015, and 6.2 in 2016. The rate increased on average by 18% per year from 1999 to 2006, did not statistically change from 2006 to 2013, then increased by 88% per year from 2013 to 2016.

136.3 State-by-State

A March 2018 report by the National Institute on Drug Abuse (www.drugabuse.gov) reported state opioid-related overdose death rates and opioid prescribing levels as follows:

<table>
<thead>
<tr>
<th>Opioid-Related Overdose Deaths/100,000</th>
<th>Opioid Prescriptions/100 persons</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Virginia: 43.40</td>
<td>110.00</td>
</tr>
<tr>
<td>New Hampshire: 35.80</td>
<td>66.60</td>
</tr>
<tr>
<td>Ohio: 32.90</td>
<td>85.80</td>
</tr>
<tr>
<td>Maryland: 30.00</td>
<td>65.60</td>
</tr>
<tr>
<td>District of Columbia: 30.00</td>
<td>70.00</td>
</tr>
<tr>
<td>Massachusetts: 29.70</td>
<td>59.90</td>
</tr>
<tr>
<td>Rhode Island: 26.70</td>
<td>69.40</td>
</tr>
<tr>
<td>Maine: 25.20</td>
<td>70.00</td>
</tr>
<tr>
<td>Connecticut: 24.50</td>
<td>64.00</td>
</tr>
<tr>
<td>Kentucky: 23.60</td>
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<tr>
<td>Michigan: 18.50</td>
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<td>81.10</td>
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<td>Vermont: 18.40</td>
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<tr>
<td>New Mexico: 17.50</td>
<td>70.00</td>
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<td>62.80</td>
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<tr>
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</tr>
<tr>
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<td>State</td>
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<td>5.20</td>
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<td>Kansas</td>
<td>5.10</td>
</tr>
<tr>
<td>South Dakota</td>
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</tr>
<tr>
<td>California</td>
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</tr>
<tr>
<td>Texas</td>
<td>4.90</td>
</tr>
<tr>
<td>Montana</td>
<td>4.20</td>
</tr>
<tr>
<td>Nebraska</td>
<td>2.40</td>
</tr>
</tbody>
</table>
137

SUICIDE

137.1 Suicides and Attempts


The American Association of Suicidology (www.suicidology.org) reports 44,965 suicide deaths in 2016, a rate of 13.9 per 100,000 population. There are about 1 million suicide attempts in the U.S. each year.

According to the Agency for Healthcare Research and Quality (AHRQ, www.ahrq.gov), about 500,000 people are treated in emergency departments for self-inflicted injuries each year.

137.2 Demographics Of Suicide Deaths

The American Association of Suicidology reports suicide rates in 2016 as follows:

Gender

• Female: 6.2 per 100,000
• Male: 21.8 per 100,000

Age

• 5-to-14: 1.1 per 100,000
• 15-to-24: 13.2 per 100,000
• 25-to-34: 16.5 per 100,000
• 35-to-44: 17.4 per 100,000
• 45-to-54: 19.7 per 100,000
• 55-to-64: 18.7 per 100,000
• 65-to-74: 15.4 per 100,000
• 75-to-84: 18.2 per 100,000
• 85 and older: 19.0 per 100,000
Ethnicity
• African-American: 6.1 per 100,000
  - Female: 2.4 per 100,000
  - Male: 10.2 per 100,000
• Asian: 6.8 per 100,000
• Caucasian: 15.9 per 100,000
  - Female: 7.2 per 100,000
  - Male: 24.8 per 100,000
• Hispanic: 6.4 per 100,000
• Native American: 13.6 per 100,000

The suicide rate among military veterans is 30 per 100,000.

“Women make almost four times as many suicide attempts as men, but men succeed about four times as often. Whites are nearly three times as likely as African-Americans to kill themselves. Military veterans are especially prone to suicide.”

The Economist

137.3 Suicides By State
By state, the number of suicides and rate in 2016 were as follows (source: American Association of Suicidology):

<table>
<thead>
<tr>
<th>State</th>
<th>Total</th>
<th>Rate</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>788</td>
<td>16.2 per 100,000</td>
<td>24</td>
</tr>
<tr>
<td>Alaska</td>
<td>193</td>
<td>26.0 per 100,000</td>
<td>1</td>
</tr>
<tr>
<td>Arizona</td>
<td>1,271</td>
<td>18.3 per 100,000</td>
<td>17 (tie)</td>
</tr>
<tr>
<td>Arkansas</td>
<td>555</td>
<td>18.6 per 100,000</td>
<td>14 (tie)</td>
</tr>
<tr>
<td>California</td>
<td>4,294</td>
<td>10.9 per 100,000</td>
<td>46</td>
</tr>
<tr>
<td>Colorado</td>
<td>1,168</td>
<td>22.1 per 100,000</td>
<td>5 (tie)</td>
</tr>
<tr>
<td>Connecticut</td>
<td>397</td>
<td>11.1 per 100,000</td>
<td>44 (tie)</td>
</tr>
<tr>
<td>Delaware</td>
<td>119</td>
<td>12.5 per 100,000</td>
<td>40 (tie)</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>40</td>
<td>5.9 per 100,000</td>
<td>51</td>
</tr>
<tr>
<td>Florida</td>
<td>3,143</td>
<td>15.2 per 100,000</td>
<td>28</td>
</tr>
<tr>
<td>State</td>
<td>Population</td>
<td>Rate per 100,000</td>
<td>Rank</td>
</tr>
<tr>
<td>------------------</td>
<td>------------</td>
<td>------------------</td>
<td>------</td>
</tr>
<tr>
<td>Georgia</td>
<td>1,409</td>
<td>13.7</td>
<td>34 (tie)</td>
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<tr>
<td>Hawaii</td>
<td>174</td>
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<td>42</td>
</tr>
<tr>
<td>Idaho</td>
<td>351</td>
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<td>8</td>
</tr>
<tr>
<td>Illinois</td>
<td>1,415</td>
<td>11.1</td>
<td>44 (tie)</td>
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<tr>
<td>Indiana</td>
<td>1,034</td>
<td>15.6</td>
<td>26</td>
</tr>
<tr>
<td>Iowa</td>
<td>451</td>
<td>14.4</td>
<td>32</td>
</tr>
<tr>
<td>Kansas</td>
<td>514</td>
<td>17.7</td>
<td>19</td>
</tr>
<tr>
<td>Kentucky</td>
<td>756</td>
<td>17.0</td>
<td>20 (tie)</td>
</tr>
<tr>
<td>Louisiana</td>
<td>677</td>
<td>14.5</td>
<td>31</td>
</tr>
<tr>
<td>Maine</td>
<td>226</td>
<td>17.0</td>
<td>20 (tie)</td>
</tr>
<tr>
<td>Maryland</td>
<td>586</td>
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<td>47</td>
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<tr>
<td>Massachusetts</td>
<td>631</td>
<td>9.3</td>
<td>48</td>
</tr>
<tr>
<td>Michigan</td>
<td>1,364</td>
<td>13.7</td>
<td>34 (tie)</td>
</tr>
<tr>
<td>Minnesota</td>
<td>745</td>
<td>13.5</td>
<td>36 (tie)</td>
</tr>
<tr>
<td>Mississippi</td>
<td>383</td>
<td>12.8</td>
<td>39</td>
</tr>
<tr>
<td>Missouri</td>
<td>1,133</td>
<td>18.6</td>
<td>14 (tie)</td>
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<tr>
<td>Montana</td>
<td>267</td>
<td>25.6</td>
<td>2</td>
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<tr>
<td>Nebraska</td>
<td>246</td>
<td>12.9</td>
<td>38</td>
</tr>
<tr>
<td>Nevada</td>
<td>650</td>
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<td>5 (tie)</td>
</tr>
<tr>
<td>New Mexico</td>
<td>471</td>
<td>22.6</td>
<td>4</td>
</tr>
<tr>
<td>New Hampshire</td>
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<td>17 (tie)</td>
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<td>New Jersey</td>
<td>687</td>
<td>7.7</td>
<td>50</td>
</tr>
<tr>
<td>New York</td>
<td>1,679</td>
<td>8.5</td>
<td>49</td>
</tr>
<tr>
<td>North Carolina</td>
<td>1,373</td>
<td>13.5</td>
<td>36 (tie)</td>
</tr>
<tr>
<td>North Dakota</td>
<td>140</td>
<td>18.5</td>
<td>16</td>
</tr>
<tr>
<td>Ohio</td>
<td>1,707</td>
<td>14.7</td>
<td>30</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>822</td>
<td>21.0</td>
<td>7</td>
</tr>
<tr>
<td>Oregon</td>
<td>772</td>
<td>18.9</td>
<td>11 (tie)</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>1,970</td>
<td>15.4</td>
<td>27</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>126</td>
<td>11.9</td>
<td>43</td>
</tr>
<tr>
<td>South Carolina</td>
<td>815</td>
<td>16.4</td>
<td>23</td>
</tr>
<tr>
<td>South Dakota</td>
<td>163</td>
<td>18.8</td>
<td>13</td>
</tr>
<tr>
<td>Tennessee</td>
<td>1,111</td>
<td>16.7</td>
<td>22</td>
</tr>
<tr>
<td>Texas</td>
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<td>40 (tie)</td>
</tr>
<tr>
<td>Utah</td>
<td>620</td>
<td>20.3</td>
<td>9</td>
</tr>
<tr>
<td>Vermont</td>
<td>118</td>
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<td>11 (tie)</td>
</tr>
<tr>
<td>Virginia</td>
<td>1,166</td>
<td>13.9</td>
<td>33</td>
</tr>
<tr>
<td>Washington</td>
<td>1,141</td>
<td>15.7</td>
<td>25</td>
</tr>
<tr>
<td>West Virginia</td>
<td>362</td>
<td>19.8</td>
<td>10</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>866</td>
<td>15.0</td>
<td>29</td>
</tr>
<tr>
<td>Wyoming</td>
<td>144</td>
<td>24.6</td>
<td>3</td>
</tr>
</tbody>
</table>
137.4 Risk Factors

According to the American Foundation For Suicide Prevention (www.afsp.org), 30% of adults who die by suicide receive mental health services in the last year of life; 19% receive services during their final month.

The strongest risk factor for suicide is depression. According to one assessment, over 90% of people who die by suicide have a mental illness at the time of their death, the most common of which is depression.

Substance abuse is also a major risk factor for suicide. According to the Violent Death Reporting System (www.cdc.gov/violenceprevention/nvdrs), 73% of suicides test positive for at least one substance (alcohol, cocaine, heroin or marijuana). The CDC reports that 33% of suicide decedents test positive for alcohol, 23% for antidepressants, and 21% for opiates, including heroin and prescription pain killers.

But blaming suicide on depression and substance abuse is considered overly simplistic. The reasons are complex and there is little hard evidence to explain why some people attempt suicide.

137.5 Market Resources

American Association of Suicidology, 5221 Wisconsin Avenue NW, Washington, DC 20015. (202) 237-2280. (www.suicidology.org)

American Foundation For Suicide Prevention, 120 Wall Street, 29th Floor, New York, NY 10005. (212) 363-3500. (www.afsp.org)
STATE OF MENTAL HEALTH

138.1 Ranking 2018

_The State Of Mental Health In America 2018_, published by Mental Health America (www.mentalhealthamerica.net), ranked the state of mental health in each state based on 15 attributes, as follows:

- Adults with any mental illness (AMI)
- Adults with AMI and uninsured
- Adults with AMI reporting unmet need
- Adults with AMI who received treatment
- Adults with dependence or abuse of illicit drugs or alcohol
- Adults with disability who could not see a doctor due to costs
- Adults with serious thoughts of suicide
- Children with emotional behavioral developmental issues (EBD)
- Children with EBD who were consistently insured
- Children who needed but did not get mental health services
- Children with ongoing EBD reporting inadequate insurance
- Mental health workforce availability
- Students identified with seriously emotional disturbance for an individualized education plan
- Youth dependence or abuse of illicit drugs or alcohol
- Youth with at least one major depressive episode

A high overall ranking indicates lower prevalence of mental illness and higher rates of access to care. States that rank 1-10 have lower rates of mental illnesses compared to states that ranked 42-51.

States ranked on overall need and access to mental health services as follows:

1. Massachusetts 10. New Jersey
2. South Dakota 11. Illinois
3. Minnesota 12. Maryland
6. Iowa 15. District of Columbia
8. Maine 17. Michigan
9. Hawaii 18. Nebraska
<table>
<thead>
<tr>
<th></th>
<th>State</th>
<th></th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Kansas</td>
<td>36</td>
<td>Oklahoma</td>
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<tr>
<td>20</td>
<td>Ohio</td>
<td>37</td>
<td>Utah</td>
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<td>21</td>
<td>New Mexico</td>
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<td>Kentucky</td>
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<td>Texas</td>
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<td>23</td>
<td>Rhode Island</td>
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<td>Virginia</td>
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<td>24</td>
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<tr>
<td>29</td>
<td>New Hampshire</td>
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<td>34</td>
<td>Washington</td>
<td>51</td>
<td>Nevada</td>
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### 138.2 Adult And Youth Ranking

States ranked on adult and youth overall need and access to mental health services as follows:

**Adult**

1. Massachusetts  
2. Iowa  
3. Hawaii  
4. North Dakota  
5. South Dakota  
6. Maine  
7. Minnesota  
8. Illinois  
9. New Jersey  
10. Connecticut  
11. Wisconsin  
12. Delaware  
13. New York  
14. Maryland  
15. California  
16. Pennsylvania  
17. Vermont  
18. Texas  
19. Michigan  
20. Rhode Island  
21. Nebraska  
22. Kansas  
23. Virginia  
24. Florida  
25. New Mexico  
26. Arkansas  
27. Alabama  
28. Ohio  
29. Georgia  
30. Wyoming  
31. West Virginia  
32. Kentucky  
33. District of Columbia  
34. Montana  
35. Oklahoma  
36. Missouri  
37. North Carolina  
38. Washington
39. South Carolina 46. New Hampshire
40. Colorado 47. Indiana
41. Louisiana 48. Oregon
42. Arizona 49. Alaska
43. Mississippi 50. Nevada
44. Tennessee 51. Utah
45. Idaho

Youth
1. South Dakota 27. Hawaii
2. Vermont 28. Alabama
4. Massachusetts 30. Missouri
5. Connecticut 31. Louisiana
6. North Dakota 32. Tennessee
7. District of Columbia 33. Rhode Island
8. Iowa 34. West Virginia
11. Ohio 37. Florida
12. Maine 38. Indiana
14. Maryland 40. Idaho
15. Kentucky 41. Oregon
16. Alaska 42. South Carolina
17. Michigan 43. Wisconsin
18. New York 44. Texas
19. Kansas 45. Oklahoma
20. Georgia 46. Arkansas
21. Nebraska 47. Virginia
22. New Hampshire 48. Colorado
23. Delaware 49. Mississippi
24. Utah 50. Arizona
25. New Mexico 51. Nevada
26. Montana

138.3 Prevalence Ranking
States ranked on prevalence of mental health problems as follows:
2. Hawaii 5. Texas
7. South Carolina
8. Alabama
9. Illinois
10. Florida
11. Mississippi
12. Iowa
13. Kansas
14. Louisiana
15. Maryland
16. Tennessee
17. Missouri
18. Connecticut
19. District of Columbia
20. Nebraska
21. Pennsylvania
22. New York
23. Michigan
24. California
25. Oklahoma
26. Minnesota
27. Arkansas
28. Virginia
29. Delaware
30. North Carolina
31. New Mexico
32. Kentucky
33. Massachusetts
34. Montana
35. Wyoming
36. Ohio
37. Utah
38. West Virginia
39. Idaho
40. Maine
41. Washington
42. Wisconsin
43. Nevada
44. Alaska
45. Arizona
46. Vermont
47. Indiana
48. Rhode Island
49. Colorado
50. New Hampshire
51. Oregon

138.4 Access To Care Ranking
States ranked on access to mental health services as follows:
1. Vermont
2. Massachusetts
3. Minnesota
4. Maine
5. Connecticut
6. Rhode Island
7. New Hampshire
8. South Dakota
9. Iowa
10. Delaware
11. New York
12. Oregon
13. Wisconsin
14. Ohio
15. North Dakota
16. Michigan
17. Colorado
18. Pennsylvania
19. Maryland
20. Alaska
21. District of Columbia
22. Illinois
23. New Mexico
24. Hawaii
25. Kentucky
26. New Jersey
27. Nebraska
28. Washington
29. Montana
30. California
31. Wyoming 42. Virginia
32. Kansas 43. Georgia
33. Indiana 44. Florida
34. Utah 45. Louisiana
35. West Virginia 46. Tennessee
36. North Carolina 47. Nevada
37. Idaho 48. Alabama
38. Arkansas 49. Texas
39. Arizona 50. South Carolina
40. Missouri 51. Mississippi
41. Oklahoma

138.5 Market Resources
Mental Health America, 500 Montgomery Street, Suite 820, Alexandria, VA 22314.
(703) 684-7722. (www.mentalhealthamerican.net)
PART IX: MARKETING
139.1 Types of Marketing

Health systems and hospitals spend approximately 0.5% to 2% of their operating budgets on marketing.

According to a survey by the 4,200-member Society for Healthcare Strategy and Market Development (SHSMD, www.shsmd.org), marketing budgets are distributed by expenditure as follows:

- Advertising: 48%
- Publications: 17%
- Collateral materials: 10%
- Community events/giveaways: 9%
- Marketing research: 6%
- Website management: 5%
- Call center: 2%
- Other: 9%

139.2 Market Assessment

According to Kantar Media (www.kantarmedia.com), advertising spending by hospitals, clinics, and medical centers was $2.6 billion in 2017; the average annual growth rate is 8%.

Spending is distributed as follows:

- Television: 36%
- Digital: 21%
- Newspaper: 16%
- Outdoor: 13%
- Radio: 10%
- Magazine: 4%

139.3 Top Spending Hospitals

The largest hospital and healthcare advertisers are as follows (source: Kantar Media):

- St. Jude Children’s Research Hospital: $128.4 million
- Cancer Treatment Centers of America: $104.1 million
- Laser Spine Institute: $26.4 million
- MD Anderson Cancer Center: $25.9 million
• Dignity Health: $18.8 million
• Shriners Hospital for Children: $13.7 million
• Memorial Sloan Kettering Cancer Center: $12.9 million
• Mayo Clinic: $12.8 million
• Ostel Relief Institute: $12.1 million
• NYU Langone Medical Center: $9.6 million

139.4 Advertising and Promotions

Hospitals have engaged in advertising since 1979, after the American Medical Association (AMA, www.ama-assn.org) was forced by a Supreme Court decision to drop its policy that discouraged most forms of healthcare ads. Though some ads are little more than public services messages, most are direct-to-patient marketing efforts aimed at creating demand.

According to a survey of hospital executives by Modern Healthcare, the following methods are used by hospitals to increase marketshare:
• Print ads: 97%
• Alliances or partnerships: 77%
• Direct mail: 74%
• Billboard ads: 40%
• Television ads: 34%

Hospitals are large distributors of promotional items; for example, bee sting kits, first aid kits, and health education materials are often given free. Hospitals also focus on educational programs and health promotions to gain name recognition. Hospital-sponsored wellness and fitness programs within the workplace and in communities nationwide have become popular. Even shopping centers have become a place hospitals use to promote themselves to the public.

Much healthcare advertising is driven by the fact that patients travel more for specialized care than in the past. Hospitals with national prominence advertise to attract visitors from other locales. The Mayo Clinic (Rochester, MN), for instance, reports that 25% of its patients come from 500 miles away or more. The Cleveland Clinic spends $8.5 million annually on advertising to attract patients nationally, according to Advertising Age.

Targeted promotional programs have proven effective for many hospitals. Kaiser Health News estimates that 20% of hospitals use targeting tools in their marketing programs. The following are some examples:
• Provena’s six hospitals in Illinois mailed information about screenings and educational events to 293,000 people. The mailings led to more than 50,000 patient visits, a 17% response rate. After accounting for marketing costs, those visits netted the system $595,000.
• During a recent 14-month period, St. Anthony’s Medical Center spent $25,000 on targeted mailings to 40,000 women for mammogram screenings. The letters led
1,000 women to get screened and generated $530,000 in revenue from screenings, biopsies, and other related services.
• The Henry Ford Health System promoted mammograms in mailings to 30,000 women ages 40 or older. More than 5,700 women responded to the mailings, generating $268,000 in profit, a return of more than four to one on the cost of the campaign.

139.5 Community Outreach Programs
According to the AMA, the following percentages of hospitals offer select community outreach programs:
• Health screenings: 80%
• Health fairs: 78%
• Support groups: 67%
• Patient education center: 60%
• Health information: 49%
• Enrollment assistance services: 45%

139.6 Hospital Websites
While virtually all hospitals have a website, they vary significantly in content and effectiveness. Many sites go beyond providing basic information about a hospital’s expertise to serve as an interactive extension of hospital services.

“An important goal of hospital website design is a simple one: Help people find what they’re looking for quickly. Hospital websites are also starting to reflect innovation with interactive portals that give patients access to their test results, medical bills, and doctors’ schedules. Physicians can now introduce themselves via online videos and profiles.”

Modern Healthcare

Hospital websites are perpetual works in progress. Some hospitals redesign their websites as frequently as once a year.
“Early hospital websites could be classified as ‘brochure-ware’ that didn’t take advantage of the interactive features the Internet offers. A lot of hospitals didn’t see the immediate value of engaging visitors. Hospital websites have to avoid looking institutional and need to offer user-friendly functions.”

Modern Healthcare

139.7 Virtual Tours

Some hospital websites offer virtual tours. The tours serve to reduce anxiety and relieve fears about procedures and admissions among patients, as well as to serve as a promotional tool for consumers searching for a hospital.

A virtual tour on the website of the McLean Hospital, located just outside Boston, provides 360° panoramic views of the tree-lined, serene, and historic grounds of the hospital, as well as interior spaces. According to Nancy Hóines, director of business development and marketing at the Harvard-affiliated psychiatric hospital, the virtual tour is one of the most visited features on the McLean Hospital website.

When Palomar Medical Center West, near San Diego, moved to a new 653-bed facility, the hospital began promoting the new facility with a virtual tour at the time of construction groundbreaking. This engaged the community with the new facility even prior to the opening.

At Seattle Children’s Hospital, mini virtual tours use cartoon characters as guides, such as a little boy and friendly tiger in the MRI room. The tours help put families more at ease, particularly kids, according to Stephen Halsey, web services manager at the hospital.

139.8 Market Resources

Institute for Health Care Marketing, C.T. Bauer College of Business, University of Houston, 334 Melcher Hall, Houston, TX 77204. (713) 743-4600. (www.bauer.uh.edu/centers/ihcm)

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PHARMACEUTICAL MARKETING

140.1 Types of Marketing

The three primary categories of marketing by pharmaceutical companies are as follows:

Professional Promotion

• Pharmaceutical companies send representatives to doctors’ offices to encourage them to prescribe their brands. The practice is referred to as ‘detailing’ and includes providing samples and often other perks to doctors.

Direct-to-Consumer

• Direct-to-consumer (DTC) promotion represents advertising of pharmaceuticals on television, radio, magazines, and newspapers, as well as outdoor advertising.

Journal Advertising

• Journal advertising reflects advertising for prescription products appearing in medical journals.

140.2 Market Assessment

IQVIA (www.iqvia.com) assesses annual spending for detailing at $6.8 billion.

The bulk of pharmaceutical advertising is directed at consumers. Journal advertising spending is $330 million, according to IQVIA, or less than 1% of total ad spending.

According to Kantar Media (www.kantarmedia.com), pharmaceutical advertising spending was $11.7 billion in 2017. Spending is distributed by medium as follows:

• Television: 56%  • Newspaper: 6%
• Magazine: 19%   • Outdoor: 4%
• Digital: 13%    • Radio: 3%

140.3 Top Spending Pharmaceutical Companies

The largest pharmaceutical advertisers are as follows (source: Kantar Media):
Pharmaceutical marketing increased dramatically during the first half of the past decade, peaking in the mid-2000s. The industry employs some 90,000 detailers – a ratio of one representative for every 4.7 office-based physicians. Drug companies spend over $6 billion (not including drug samples) annually marketing to doctors. This works out to about $8,400 per doctor per year. Studies show that such marketing works: interaction with drug company representatives is shown to influence doctors’ prescribing patterns.

Direct-to-consumer advertising of prescription drugs surged after 1997, when the Food and Drug Administration relaxed restrictions on the practice of the advertising of pharmaceuticals to consumers. Critics say DTC ads, which are permitted in few other countries, inflate healthcare costs by prompting patients to request brand-name medicines rather than cheaper generic alternatives. The pharmaceutical industry, citing a statement from the Federal Trade Commission, argues that the ads educate consumers about drug options and have not been shown to lead to higher costs. DTC advertising peaked in 2006, then declined through 2013. Spending is now increasing at approximately 10% annually.

**140.5 Market Resources**
Intellus Worldwide, P.O. Box 1449, Minneola, FL 34755. (www.intellus.org). Intellus was formed in 2018 with the merger of PBIRG (Pharmaceutical Business Intelligence & Research Group) and PMRG (Pharmaceutical Marketing Research Group).

IQVIA, 4820 Emperor Boulevard, Durham, NC 27703. (919) 998-2000. (www.iqvia.com)
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PUBLIC RELATIONS & MARKETING AGENCIES

141.1 Largest Agencies

The largest healthcare public relations & marketing agencies, ranked by U.S. revenue, are as follows (source: Modern Healthcare):

• Omnicom Health Group (Omnicom): $808.5 million
• Publicis Health (Publicis): $770.0 million
• InVentiv Health Communications: $335.0 million
• FBC Health (Interpublic): $258.3 million
• Havas Health & You (Havas): $219.0 million
• PwC Digital Services: $210.0 million
• McCann Health/McCann Human Care (Interpublic): $174.9 million
• Wunderman Health (WPP): $174.2 million
• Klick Health: $145.2 million
• Rapp (Omnicom): $140.4 million
• Ogilvy CommonHealth Worldwide (WPP): $128.6 million
• GHG/Grey Health Group (WPP): $115.0 million
• W20 Group: $113.7 million
• Sudler & Hennessey (WPP): $107.6 million
• Huntsworth Health: $106.8 million
• Intouch Solutions: $101.9 million
• Deloitte Digital: $100.0 million
• Epsilon (Alliance Data Systems): $ 83.8 million
• Merkle (Dentsu): $ 83.1 million
• Abelson Taylor: $ 75.3 million
HEALTHCARE MARKETING IMPACT AWARDS

142.1 Overview
The Healthcare Marketing IMPACT Awards, sponsored by Advertising Age and Modern Healthcare, are designed to recognize healthcare’s best advertising, marketing, promotion, and communication campaigns on and across all media platforms. The awards honor campaigns that advance provider, insurer, supplier, and advocacy group efforts to deliver high quality, affordable, and accessible healthcare; promote the health of individual patients, groups and communities; and help organizations thrive and grow in the rapidly changing healthcare environment. The awards were inaugurated in 2014.

142.2 Award Winners: Provider/Insurer
The 2017 Healthcare Marketing Impact Awards recognized provider and insurer organizations as follows:

Audio Campaign
- Gold Award: Cedars-Sinai: “We Treat Cancer with People”
  Agency: Wongdoody
- Silver Award: CareConnect Insurance Co.: “Healthier Insurance”
  Agency: Blackbird Communications Group
- Bronze Award: The Christ Hospital Health Network: “Musculoskeletal Radio Spots”
  Agency: Creative Department

Digital Campaign
- Gold Award: Allegheny Health Network: “Living Proof”
  Agency: Doner
- Silver Award: St. Luke’s University Health Network: “March Gladness”
  Agency: in-house
- Bronze Award: CareConnect Insurance Co.: “Healthier Insurance”
  Agency: Blackbird Communications Group

Direct Mail
- Gold Award: Horizon Blue Cross and Blue Shield of New Jersey: “Power of Yes”
  Agency: Partners & Simons
• Silver Award: Sheppard Pratt Health System: “The Retreat”
  Agency: Weber Shandwick
• Bronze Award: Montefiore Health System: “Montefiore Gala”
  Agency: Hagopian Ink

Integrated Campaign
• Gold Award: Presence Health: “This is Presence”
  Agency: Downtown Partners & Beat
• Silver Award: St. Bernards Healthcare: “There’s a Gap that Exists in Arkansas”
  Agency: blr/further
• Bronze Award: River Edge Behavioral Health: “Campaign: Unmasking Mental Illness”
  Agency: Jessica Lanier Walden

Print Campaign
• Gold Award: St. Bernards Healthcare: “Mission - This is the Heart of Who We Are”
  Agency: blr/further
• Silver Award: Horizon Blue Cross and Blue Shield of New Jersey: “Power of Yes”
  Agency: Partners & Simons
• Bronze Award: Sinai Health System: “Be Stronger. Care Harder. Love Deeper.”
  Agency: Steve Turner

Social Media
• Gold Award: Cape Cod Healthcare: “We Are Cape Cod Healthcare”
  Agency: Pierce Cote
• Silver Award: Aetna: “Take a Moment”
  Agency: Ogilvy & Mather
• Bronze Award: Atlantic Health System: “#AskHer”
  Agency: in-house

Video
• Gold Award: Riley Children's at Indiana University Health: “Change the Play Kids Club”
  Agency: HY Connect
• Silver Award: The Christ Hospital Health Network: “Healthspirations - Wholesome Kitchen”
  Agency: in-house
• Bronze Award: University of Texas Medical Branch at Galveston: “UTMB Wonders”
  Agency: SPM Marketing & Communications
Website Campaign
• Gold Award: Avera Health: “Avera.org”
  Agency: Geonetric of Cedar Rapids, Iowa
• Silver Award: Cape Cod Healthcare: “Cape Cod Health News Brand Journalism”
  Agency: TopNotch Innovative
• Bronze Award: HCA Midwest Health: “Turn4TheBetter.com”
  Agency: Brown Parker & DeMarinis Advertising

142.3 Award Winners: Supplier/Vendor/Pharma
The 2017 Healthcare Marketing Impact Awards recognized supplier/vendor/pharma organizations as follows:

Digital Campaign
• Gold Award: Cardinal Health/Edgepark Medical: “Project MVP (Most Valuable Patient)”
  Agency: in-house
• Silver Award: Otsuka America Pharmaceutical: “PsychU 'Stigma' Campaign”
  Agency: Open Minds
• Bronze Award: GlaxoSmithKline: “Pronamel Strong & Bright Enamel - Strong Looks Good on You”
  Agency: Wunderman Health and Weber Shandwick

Integrated Campaign
• Gold Award: Johnson & Johnson medical devices: “JJMDC Employee Engagement”
  Agency: Marina Maher Communications
• Silver Award: Medela: “Medela Sonata Launch”
  Agency: StoneArch
• Bronze Award: Equitas Health: “Let's Talk About PrEP”
  Agency: in-house

Print Campaign
• Gold Award: Grunenthal: “Protect the Pill, Protect the People”
  Agency: Palio
• Silver Award: Walgreens: “Let's Grow Old Together”
  Agency: GSD&M
• Bronze Award: The Bloc: “Health Well Next”
  Agency: in-house

Social Media
• Gold Award: Sunovion Pharmaceuticals: “#MyEpilepsyHero”
  Agency: AbelsonTaylor
• Silver Award: AstraZeneca: “Save Your Breath”
  Agency: imre
• Bronze Award: Avant Healthcare Professionals: “We’re Hiring Nurses!”
  Agency: in-house

Video
• Gold Award: Dexcom: “Fingers Video”
  Agency: Marcus Thomas
• Silver Award: Lilly Diabetes: “Whose Diabetes Do You Have?”
  Agency: GSW
• Bronze Award: Neurocrine Biosciences: “Take On TD”
  Agency: JUICE Pharma Worldwide

Website Campaign
• Gold Award: Veran Medical Technologies: “Veran Medical”
  Agency: StoneArch
• Silver Award: Walgreens: “Let’s Grow Old Together”
  Agency: GSD&M
• Bronze Award: AbbVie: “Puberty Too Soon”
  Agency: LiquidHub
PART X: ACADEMICS
143

MEDICAL SCHOOLS

143.1 Overview
The Association of American Medical Colleges (AAMC, www.aamc.org) represents the 145 accredited medical schools in the United States and Puerto Rico. For the 2017-2018 academic year, medical schools had 51,680 applicants; 21,388 were accepted for enrollment. Total enrollment for the 2017-2018 school year was 89,904. The class of 2017 had 19,254 medical school graduates.

The American Association of Colleges of Osteopathic Medicine (AACOM, www.aacom.org) represents the 39 accredited colleges of osteopathic medicine in the United States. Total enrollment for the 2017-2018 academic year was 28,981, of which 8,088 were first-year students. The class of 2017 had 6,015 graduates.

143.2 Largest Medical Schools
The largest medical schools, ranked by 2017-2018 enrollment, were as follows (source: AAMC):

- Indiana University School of Medicine: 1,460
- University of Illinois College of Medicine: 1,393
- Wayne State University School of Medicine: 1,249
- Kimmel Medical School at Thomas Jefferson University: 1,144
- University of Washington School of Medicine: 1,124
- Drexel University College of Medicine: 1,082
- University of Texas Medical School at Houston: 1,010
- University of Minnesota Medical School: 997
- University of Texas Southwestern Medical School: 991
- Medical College of Wisconsin: 986
- Case Western Reserve University School of Medicine: 980
- University of Texas Medical Branch at Galveston: 975
- Medical College of Georgia: 962
- Virginia Commonwealth University School of Medicine: 920
- University of Texas Health Science Center at San Antonio: 886
- Temple University Katz School of Medicine: 882
- New York Medical College: 877
- University of Kansas School of Medicine: 876
Tufts University School of Medicine: 872
University of Miami Miller School of Medicine: 853
Harvard Medical School: 852
Albert Einstein College of Medicine of Yeshiva University: 826
SUNY Downstate Medical Center College of Medicine: 843
University of California at Los Angeles Geffen School of Medicine: 845
Ohio State University College of Medicine: 842
University of North Carolina School of Medicine: 837
Baylor University School of Medicine: 827
Louisiana State University School of Medicine New Orleans: 826
Georgetown University School of Medicine: 815
Michigan State University School of Medicine: 813
University of Alabama School of Medicine: 805
University of Colorado School of Medicine: 801


The largest colleges of osteopathic medicine, ranked by 2017-2018 enrollment, were as follows:

Lake Erie College of Osteopathic Medicine: 1,496
New York Institute of Technology College of Osteopathic Medicine: 1,484
Edward Via College of Osteopathic Medicine (combined enrollment at Carolinas and Virginia campuses): 1,376
Western University of Health Sciences/College of Osteopathic Medicine of the Pacific: 1,349
Kansas City University of Medicine and Biosciences College of Osteopathic Medicine: 1,225
Michigan State University College of Osteopathic Medicine: 1,195
Philadelphia College of Osteopathic Medicine: 1,084
Touro College of Osteopathic Medicine: 1,056
Nova Southeastern University College of Osteopathic Medicine: 1,027
Arizona College of Osteopathic Medicine at Midwestern University: 1,020


143.3 New Medical Schools

Since 2002, 20 U.S. medical schools received full, provisional, or preliminary accreditation. Nine schools have candidate or applicant status. They are as follows:
Fully Accredited
- Florida Atlantic University, Charles E. Schmidt College of Medicine
- Florida International University, Herbert Wertheim College of Medicine
- Hofstra University, Hofstra Northwell School of Medicine
- Oakland University, William Beaumont School of Medicine
- San Juan Bautista School of Medicine
- Texas Tech University Health Sciences Center, Paul L. Foster School of Medicine
- The Commonwealth Medical College
- University of Central Florida, College of Medicine
- University of South Carolina School of Medicine, Greenville
- Virginia Tech Carilion School of Medicine

Schools with Provisional Accreditation*
- Quinnipiac University, Frank H. Netter MD School of Medicine
- Rowan University, Cooper Medical School
- University of Arizona, College of Medicine
- University of California Riverside, School of Medicine
* Once provisional accreditation has been granted, students enrolled in the program may continue into their third and fourth years of medical education, and the program may continue to enroll new students.

Schools with Preliminary Accreditation*
- California Northstate University, College of Medicine
- Central Michigan University, College of Medicine
- CUNY School of Medicine
- University of Texas at Austin, Dell Medical School
- University of Texas Rio Grande, Valley School of Medicine
- Western Michigan University, Homer Stryker MD School of Medicine
* Once preliminary accreditation is granted, the program may begin to recruit applicants and accept applications for enrollment.

Schools with Candidate Status*
- Roseman University of Health Sciences, College of Medicine
- University of Nevada Las Vegas, School of Medicine
- Washington State University, Elson S. Floyd College of Medicine
* Candidate schools may not recruit or advertise for applicants or accept student applications.

Schools with Applicant Status*
- College of Henricopolis, School of Medicine
- California University of Science and Medicine, College of Medicine
- Seton Hall–Hackensack School of Medicine
- TCU and UNTHSC School of Medicine
* Applicant schools may not recruit or advertise for applicants or accept student applications.
143.4 Teaching Hospitals

The U.S. healthcare system relies on teaching hospitals – and their clinics, emergency rooms, free-standing ambulatory care centers, chronic care facilities, hospices, and individual and group practices – for the clinical education of medical students and residents. Some 400 in number, they are the training ground for more than 100,000 new physicians, nurses, and other health professionals each year.

A listing of teaching hospitals is provided at www.aamc.org/teachinghospitals.htm. A list of the largest teaching hospitals is presented in section 36.4 of this handbook.

143.5 Market Resources

American Association of Colleges of Osteopathic Medicine, 5550 Friendship Boulevard, Suite 310, Chevy Chase, MD 20815. (301) 968-4100. (www.aacom.org)

Association of American Medical Colleges, 655 K Street NW, Suite 100, Washington, DC, 20001. (202) 828-0400. (www.aamc.org)
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NURSING SCHOOLS

144.1 Overview

According to the 2018 Annual Report of the American Association of Colleges of Nursing (AACN, www.aacn.nche.edu), there are 833 nursing schools in the U.S. with baccalaureate and graduate programs. A directory of colleges of nursing is available at (www.aacnnursing.org/about-aacn/who-we-are/member-schools).

For the 2017-2018 academic year there were 747 RN to Baccalaureate (BSN, BS or Bachelor of Science in Nursing) programs in the U.S., including more than 600 programs that are offered at least partially online.

Accelerated nursing programs continue to be an important pathway into nursing for individuals with degrees in other fields who are looking to change careers. In the 2016-2017 academic year, 17,725 students were enrolled in the nation’s 272 accelerated baccalaureate programs and 69 accelerated or entry-level master’s programs available at nursing schools. The class of 2017 had 11,823 graduates.

144.2 Centers of Excellence

The National League for Nursing (www.nln.org) designated the following nursing schools as Centers of Excellence for the 2017-2018 academic year:

**Advance the Science of Nursing Education**
- Duke University
- Kent State University
- Villanova University
- Widener University

**Enhance Student Learning and Professional Development**
- Ball State University
- Emory University
- Purdue University
- Rush University
- University of Alabama at Birmingham
- University of Kansas
- Washington State University
144.3 Doctorate in Nursing

According to the AACN, there were 303 DNP programs in the U.S. and an additional 124 new DNP programs are in the planning stages (58 post-baccalaureate and 66 post-master’s programs).

This advanced degree in nursing equips graduates with skills the schools say are equivalent to those of primary-care physicians. The two-year programs, including a one-year residency, create a ‘hybrid practitioner’ with more skills, knowledge, and training than a nurse practitioner with a master’s degree. According to Mary Mundinger, R.N., Ph.D., dean of the Columbia University School of Nursing, DNPs are being trained to have more focus than doctors with coordinating care among many specialists and healthcare settings.

The Council for the Advancement of Comprehensive Care (www.caccnet.org), in conjunction with the National Board of Medical Examiners (www.nbme.org), is in the process of establishing a national standard for DNPs.

Nurses with doctorates are generally compensated the same as those with master’s degrees since insurers pay the same rates to both.

There were 25,289 students enrolled in DNP programs for the 2016-2017 academic year. The class of 2017 had 4,955 DNP graduates.

144.4 Market Resources

American Association of Colleges of Nursing, 655 K Street NW, Suite 750, Washington, DC 20001. (202) 463-6930. (www.aacnnursing.org)

National League For Nursing, 2600 Virginia Avenue NW, Eighth Floor, Washington, DC 20037. (800) 669-1656. (www.nln.org)
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PHARMACY PROGRAMS

145.1 Overview

According to the American Association of Colleges of Pharmacy (www.aacp.org), as of January 2018 there were 138 U.S.-based colleges and schools of pharmacy with accredited (full or candidate status) professional degree programs and four schools with pre-candidate status. Seventy-three (73) colleges and schools of pharmacy are in private institutions and sixty-nine (69) are in publicly supported universities.

One hundred and forty-two (142) colleges and schools offered the Pharm.D. as a first professional degree and seven colleges and schools offered the Pharm.D. as a post-B.S. degree for the 2017-2018 academic year.

Seventy-nine (79) colleges and schools will offer graduate programs in the pharmaceutical sciences at the M.S. and/or Ph.D. level for the 2017-2018 academic year.

There were 6,346 full-time and 279 part-time pharmacy faculty members at 135 colleges and schools of pharmacy.

Pharmacy school enrollment for the 2016-2017 academic year was as follows:

- Total first professional degree enrollment: 63,464
- Full-time graduate student enrollment: 4,591
- Students already holding a B.S. in pharmacy and enrolled in Pharm.D. programs: 840

Degrees awarded were as follows:

- First professional degrees: 14,556
- Ph.D. degrees: 547
- Post-B.S. Pharm.D. degrees: 326

145.2 Best Graduate School Programs

U.S. News & World Report ranked the best Pharmacy Graduate Schools Programs in 2018 as follows:

1. University of North Carolina, Eshelman School of Pharmacy
2. University of Minnesota, College of Pharmacy
3. (tie) University of California-San Francisco, School of Pharmacy
3. (tie) University of Michigan, College of Pharmacy
3. (tie) University of Texas, College of Pharmacy
6. (tie) Ohio State University, College of Pharmacy
3. (tie) University of Illinois-Chicago, College of Pharmacy
3. (tie) University of Kentucky, College of Pharmacy
9. (tie) Purdue University, School of Pharmacy and Pharmaceutical Science
9. (tie) University of Florida, College of Pharmacy
9. (tie) University of Maryland-Baltimore, School of Pharmacy
9. (tie) University of Pittsburgh, School of Pharmacy
9. (tie) University of Southern California, School of Pharmacy
9. (tie) University of Washington, School of Pharmacy
9. (tie) University of Wisconsin, School of Pharmacy
16. University of Arizona, College of Pharmacy
17. (tie) University of Iowa, College of Pharmacy
17. (tie) University of Tennessee Health Science Center, College of Pharmacy
17. (tie) University of Utah, College of Pharmacy
17. (tie) Virginia Commonwealth University, School of Pharmacy

145.3 Market Resources
Accreditation Council for Pharmacy Education, 135 S. LaSalle Street, Suite 4100, Chicago, IL 60603. (312) 664-3575. (www.acpe-accredit.org)

American Association of Colleges of Pharmacy, 1727 King Street, Alexandria, VA 22314. (703) 739-2330. (www.aacp.org)
PUBLIC HEALTH PROGRAMS

146.1 Overview
The Council on Education for Public Health (www.ceph.org) reported public health programs for the 2017-2018 academic year as follows:
- Public health programs: 111
- Schools of public health: 59
- Standalone baccalaureate programs: 10

146.2 Best Graduate School Programs
*U.S. News & World Report* ranked the best Public Health Graduate School Programs in 2018 as follows:
1. Johns Hopkins University, Bloomberg School of Public Health
2. (tie) Harvard University, School of Public Health
2. (tie) University of North Carolina, School of Public Health
4. University of Michigan, School of Public Health
5. Columbia University, Mailman School of Public Health
6. University of Washington, School of Public Health
7. Emory University, Rollins School of Public Health
8. University of Minnesota Twin Cities, School of Public Health
9. University of California-Berkeley, School of Public Health
10. (tie) Boston University, School of Public Health
10. (tie) University of California at Los Angeles, School of Public Health
12. Tulane University, School of Public Health and Tropical Medicine
13. University of Pittsburgh, Graduate School of Public Health
14. (tie) George Washington University, Milken Institute School of Public Health
14. (tie) Yale University, School of Public Health
16. University of South Florida, College of Public Health
17. (tie) University of Illinois-Chicago, School of Public Health
17. (tie) University of Iowa, College of Public Health
19. (tie) Ohio State University, College of Public Health
19. (tie) University of Alabama-Birmingham, School of Public Health
146.3 Market Resources
Council on Education for Public Health, 1010 Wayne Avenue, Suite 220, Silver Spring, MD 20910. (202) 789-1050. (www.ceph.org)
147

UNIVERSITY PROGRAMS IN HEALTH ADMINISTRATION

147.1 Overview

According to the Association of University Programs in Health Administration (www.aupha.org), there are 152 programs in health administration at U.S. universities. The following are the number of programs by area of focus:

- IT: 63
- Long-term care curriculum: 53
- Medical group practice curriculum: 48
- Executive program: 26
- Physician-specific program: 3

Fifty-three (53) schools offer an online education option.

147.2 Largest Master’s Programs

The largest master’s programs in health administration, ranked by number of graduates in the 2017-2018 academic year, are as follows (source: Modern Healthcare):

- Columbia University: 98
- Seton Hall University: 92
- University of Central Florida: 90
- University of Michigan: 76
- University of Southern California: 71
- University of North Carolina at Chapel Hill: 65
- University of Scranton: 62
- University of Alabama at Birmingham: 62
- University of Missouri: 52
- Army-Baylor University: 50
- California State University at Long Beach: 50
- University of Miami: 49
- St. Louis University: 45
- Texas Women’s University: 40
- University of Iowa: 38
- University of Colorado at Denver: 37
• Trinity University: 35
• University of Illinois at Chicago: 34
• Cornell University: 33
• Xavier University: 22

147.3 Business Graduate Schools For Physician-Executives

The largest business graduate schools for physician-executives, ranked by number of graduates in 2017, are as follows (source: Modern Healthcare):

• Temple University, Fox School of Business: 265
• Michigan State University: 133
• Florida International University, Chapman Graduate School of Business: 116
• Columbia University, Mailman School of Public Health: 110
• University of Massachusetts at Amherst, Isenberg School of Management: 94
• Duke University, Fuqua School of Business: 92
• George Washington University School of Business: 66
• Clarkson University, Capital Region Campus: 36
• Johns Hopkins University, Bloomberg School of Public Health: 35
• University of Tennessee: 35
• University of North Carolina at Chapel Hill: 32
• Emory University: 31
• Carnegie Mellon University: 30
• University of Miami, School of Business Administration: 28
• Auburn University: 27
• Trinity University: 26
• University of Missouri: 25
• California State University at Long Beach: 25
• Baylor University: 25
• University of Michigan, School of Public Health: 24

147.4 Market Resources

Association of University Programs in Health Administration, 1730 M Street NW, Suite 407, Washington, DC 20036. (202) 763-7283. (www.aupha.org)

Commission on Accreditation of Healthcare Management Education, 6110 Executive Boulevard, Suite 614, Rockville, MD 20852. (301) 298-1820. (www.cahme.org)
APPENDIX A

ANALYSTS

Becker's Healthcare, 17 N. State Street, Chicago, IL 60602. (800) 417-2035. (www.beckershealthcare.com)

Cleverley + Associates, 438 E. Wilson Bridge Road, Suite 200, Worthington, OH 43085. (888) 779-5663. (www.cleverleyassociates.com)

Dartmouth Atlas Project, 35 Centerra Parkway, Lebanon, NH 03766. (603) 653-0800. (www.dartmouthatlas.org)

Decision Resources Group, 100 District Avenue, Suite 213, Burlington, MA 01803. (781) 993-2500. (www.decisionresourcesgroup.com)

Definitive Healthcare, 550 Cochituate Road, Framingham, MA 01701. (888) 307-4107. (www.definitivehc.com)

ECRI Institute, 5200 Butler Pike, Plymouth Meeting, PA 19462. (610) 825-6000. (www.ecri.org)

Health Industries Research Center, 519 Seabright Avenue, Suite 211, Santa Cruz, CA 95062. (831) 426-5260. (www.hirc.com)

IDC Health Insights, 5 Speen Street, Framingham, MA 01701. (508) 872-8200. (www.idc-hi.com)

IQVIA, 4820 Emperor Boulevard, Durham, NC 27703. (919) 998-2000. (www.iqvia.com)

Jobson Healthcare Information, 440 9th Avenue, 14th Floor, New York, NY 10001. (212) 274-7000. (www.jhihealth.com)

Milliman USA, 1301 Fifth Avenue, Suite 3800, Seattle, WA 98101. (206) 624-7940. (www.milliman.com)

Press Ganey Associates, 404 Columbia Plaza, South Bend, IN 46601. (800) 232-8032. (www.pressganey.com)

Rand Corporation, 1776 Main Street, Santa Monica, CA 90401. (310) 393-0411. (www.rand.org)

Richard K. Miller & Associates, 2413 Main Street, Suite 331, Miramar, FL 33025. (888) 928-7562. (www.rkma.com)

Robert Wood Johnson Foundation, 50 College Road East, Princeton, NJ 08540. (877) 843-7953. (www.rwjf.org)

Sg2, 5250 Old Orchard Road, Skokie, IL 60077. (847) 779-5300. (www.sg2.com)

The Commonwealth Fund, 1 East 75th Street, New York, NY 10021. (212) 606-3800. (www.commonwealthfund.org)

The Freedonia Group, 767 Beta Drive, Cleveland, OH 44143. (440) 684-9600. (www.freedoniagroup.com)


The Henry J. Kaiser Family Foundation, 2400 Sand Hill Road, Menlo Park, CA 94025. (650) 854-9400. (www.kff.org)

The Leapfrog Group, 1660 L Street NW, Suite 308, Washington, DC 20036. (202) 292-6713. (www.leapfroggroup.org)

UnitedHealth Foundation, 9900 Bren Road East, Minnetonka, MN 55343. (www.unitedhealthfoundation.org)

Vizient, 290 E. John Carpenter Freeway, Irving, TX 75039. (972) 830-0000. (www.vizientinc.com)
APPENDIX B

ASSOCIATIONS

Advanced Medical Technology Association, 701 Pennsylvania Avenue NW, Suite 800, Washington, DC 20004. (202) 783-8700. (www.advamed.org)

Alzheimer’s Association, 225 North Michigan Avenue, 17th Floor, Chicago, IL 60601. (800) 272-3900. (www.alz.org)

American Academy of Allergy, Asthma and Immunology, 555 East Wells Street, Suite 1100, Milwaukee, WI 53202. (414) 272-6071. (www.aaaai.org)

American Academy of Family Physicians, P.O. Box 11210, Shawnee Mission, KS 66207. (800) 274-2237. (www.aafp.org)

American Academy of Nurse Practitioners, P.O. Box 12846, Austin, TX 78711. (512) 442-4262. (www.aanp.org)

American Academy of Ophthalmology, P.O. Box 7424, San Francisco, CA 94120. (415) 561-8500. (www.aao.org)

American Academy of Physician Assistants, 2318 Mill Road, Suite 1300, Alexandria, VA 22314. (703) 836-2272. (www.aapa.org)

American Academy of Sleep Medicine, 2510 North Frontage Road, Darien, IL 60561. (630) 737-9700. (www.aasmnet.org)

American Academy of Urgent Care Medicine, 2813 S. Hiawassee Road, Suite 206, Orlando, FL 32835. (407) 521-5789. (www.aaucm.org)

American Association for Long-Term Care Insurance, 3835 East Thousand Oaks Boulevard, Suite 336, Westlake Village, CA 91362. (818) 597-3227. (www.aaltci.org)

American Association for Respiratory Care, 9425 North MacArthur Boulevard, Suite 100, Irving, TX 75063. (972) 243-2272. (www.aarc.org)

American Association of Orthopedic Surgeons, 9400 West Higgins Road, Rosemont, IL 60018. (847) 823-7186. (www.aaos.org)

American Board of Obesity Medicine, 2696 S. Colorado Boulevrd, Suite 340, Denver, CO 80222. (303) 770-9100. (www.abom.org)

American Cancer Society, 250 Williams Street NW, Atlanta, GA 30303. (800) 227-2345. (www.cancer.org)

American Chronic Pain Association, P.O. Box 850, Rocklin, CA 95677. (800) 533-3231. (www.theacpa.org)

American College of Cardiology, 2400 N Street NW, Washington, DC 20037. (202) 375-6000. (www.acc.org)

American College of Emergency Physicians, 1125 Executive Circle, Irving, TX 75038. (800) 798-1822. (www.acep.org)

American College of Healthcare Executives, 300 S. Riverside Plaza, Suite 1900, Chicago, IL 60606. (312) 424-2800. (www.ache.org)

American College of Medical Genetics and Genomics, 7101 Wisconsin Avenue, Bethesda, MD 20814. (301) 718-9603. (www.acmg.net)

American College of Obstetricians and Gynecologists, 409 12th Street SW, Washington, DC 20024. (800) 673-8444. (www.acog.org)

American College of Physicians, 190 North Independence Mall West, Philadelphia, PA 19106. (800) 523-1546. (www.acponline.org)

American College of Surgeons, 633 North Saint Clair Street, Chicago, IL 60611. (312) 202-5000. (www.facs.org)

American Diabetes Association, 2451 Crystal Drive, Suite 900, Arlington, VA 22202. (800) 342-2383. (www.diabetes.org)


American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231. (800) 242-8721. (www.americanheart.org)
American Hospital Association, 155 N. Wacker Drive, Chicago, IL 60606. (312) 422-3000. (www.aha.org)

American Lung Association, 55 W. Wacker Drive, Suite 1150, Chicago, IL 60601. (800) 586-4872. (www.lungusa.org)

American Medical Association, AMA Plaza, 330 N. Wabash Avenue, Chicago, IL 60611. (800) 621-8335. (www.ama-assn.org)

American Migraine Foundation, 19 Mantua Road, Mount Royal, NJ 08061. (856) 423-0043. (www.americanmigrainefoundation.org)

American Nurses Association, 8515 Georgia Avenue, Suite 400, Silver Spring, MD 20910. (301) 628-5000. (www.nursingworld.org)

American Orthopaedic Foot & Ankle Society, 9400 W. Higgins Road, Suite 220, Rosemont, IL 60018. (800) 235-4855. (www.aofas.org)

American Pain Society, 8735 W. Higgins Road, Suite 300, Chicago, IL 60631. (847) 375-4715. (www.americanpainsociety.org)


Association for Accessible Medicines, 601 New Jersey Avenue NW, Suite 850, Washington, DC 20001. (202) 249-7100. (www.accessiblemeds.org)

American Society for Healthcare Risk Management, 155 N. Wacker Drive, Suite 400, Chicago, IL 60606. (312) 422-4580. (www.ashrm.org)

American Society for Metabolic & Bariatric Surgery, 100 SW 75th Street, Suite 201, Gainesville, FL 32607. (352) 331-4900. (www.asmbs.org)

American Society of Gene & Cell Therapy, 555 East Wells Street, Suite 1100, Milwaukee, WI 53202. (414) 278-1341. (www.asgct.org)

American Society of Plastic Surgeons, 444 E. Algonquin Road, Arlington Heights, IL 60005. (847) 288-9900. (www.plasticsurgery.org)

American Society of Transplant Surgeons, 2461 South Clark Street, Suite 640, Arlington, VA 22202. (703) 414-7870. (www.asts.org)
American Telemedicine Association, 901 N Glebe Road, Suite 850, Arlington, VA 22203. (703) 373-9600. (www.americantelemed.org)

Ambulatory Surgery Center Association, 1012 Cameron Street, Alexandria, VA 22314. (703) 836-8808. (www.ascassociation.org)

Association For Professionals In Infection Control and Epidemiology, 1400 Crystal Drive, Suite 900, Arlington, VA 22202. (202) 789-1890. (www.apic.org)

Association of American Medical Colleges, 655 K Street NW, Suite 100, Washington, DC, 20001. (202) 828-0400. (www.aamc.org)

Association of University Programs In Health Administration, 1730 M Street NW, Suite 407, Washington, DC 20036. (202) 763-7283. (www.aupha.org)

Children’s Hospital Association, 600 13th Street NW, Suite 500, Washington, DC 20005. (202) 753-5500. (www.childrenshospitals.net)

Convenient Care Association, 1413 Florence Drive, Gwynned Valley, PA 19437. (610) 656-1213. (www.ccaclinics.org)

Healthcare Financial Management Association, 3 Westbrook Corporate Center, Suite 600, Westchester, IL 60154. (800) 252-4362. (www.hfma.org)

Healthcare Information and Management Systems Society, 33 West Monroe Street, Suite 1700, Chicago, IL 60603. (312) 664-4467. (www.himss.org)


Infectious Diseases Society of America 1300 Wilson Boulevard, Suite 300 Arlington, VA 22209. (703) 299-0200. (www.idsociety.org)

Medical Device Manufacturers Association, 1333 H Street, Suite 400, Washington, DC 20005. (202) 354-7171. (www.medicaldevices.org)

Medical Group Management Association, 104 Inverness Terrace East, Englewood, CO 80112. (303) 799-1111. (www.mgma.com)

National Alliance on Mental Illness, 3803 North Fairfax Drive, Suite 100, Arlington, VA 22203. (703) 524-7600. (www.nami.org)

National Association for Home Care & Hospice, 228 Seventh Street SE, Washington, DC 20003. (202) 547-7424. (www.nahc.org)


National Association of Rural Health Clinics, 2 East Main Street, Fremont, MI 49412. (866) 306-1961. (www.narhc.org)


National Hospice and Palliative Care Organization, 1731 King Street, Suite 100, Alexandria, VA 22314. (703) 837-1500. (www.nhpco.org)

National Osteoporosis Foundation, 251 18th Street S, Suite 630, Arlington, VA, 22202. (800) 231-4222. (www.nof.org)

National Rural Health Association, 4501 College Boulevard, Suite 225, Leawood, KS 66211. (816) 756-3140. (www.ruralhealthweb.org)

National Sleep Foundation, 1010 N. Glebe Road, Suite 310, Arlington, VA 22201. (703) 243-1697. (www.sleepfoundation.org)


Urgent Care Association of America, 28600 Bella Vista Pkwy, Suite 2010, Warrenville, IL 60555. (877) 698-2262. (www.ucaoa.org)
APPENDIX C

FEDERAL AGENCIES

Agency for Healthcare Research and Quality, 540 Gaither Road, Rockville, MD 20850. (301) 427-1364. (www.ahrq.gov)

Centers for Disease Control and Prevention, 1600 Clifton Road NE, Atlanta, GA 30333. (404) 639-3311. (www.cdc.gov)


Food and Drug Administration, 10903 New Hampshire Avenue, Silver Spring, MD 20993. (888) 463-6332. (www.fda.gov)


National Center for Health Statistics, 3311 Toledo Road, Room 5419, Hyattsville, MD 20782. (800) 232-4636. (www.cdc.gov/nchs)

National Institutes of Health (NIH), 9000 Rockville Pike, Bethesda, MD 20892. (301) 496-4000. (www.nih.gov)

Office of the Surgeon General, 1101 Wootton Parkway, Room 100, Rockville MD 20852. (240) 276-8853. (www.surgeongeneral.gov)
APPENDIX D

PERIODICALS

Chain Drug Review, 126 Fifth Avenue, New York, NY 10001. (212) 213-6000. (www.chaindrugreview.com)

Health Affairs, 7500 Old Georgetown Road, Suite 600, Bethesda, MD 20814. (301) 656-7401. (www.healthaffairs.org)

Health Facilities Management, 155 N. Wacker Drive, Suite 400, Chicago, IL 60606. (312) 893-6800. (www.hfmmagazine.com)


Journal of Infectious Diseases, 2001 Evans Road, Cary, NC 27513. (919) 677-0977. (http://jid.oxfordjournals.org)


Modern Healthcare, 150 North Michigan Avenue, Chicago, IL 60601. (312) 649-5200. (www.modernhealthcare.com)

New England Journal of Medicine, 860 Winter Street, Waltham, MA 02451. (800) 843-6356. (www.nejm.org)

Pharmaceutical Executive, 545 Boylston Street, Boston, MA 02116. (617) 267-6500. (www.pharmaexec.com)
REFERENCES

Chapter 5: State Health System Performance

Chapter 8: Causes Of Death

Chapter 13: Accountable Care Organizations

Castellucci, Maria, and Virgil Dickson, “Medicare ACOs Saved CMS Millions, But Many Could Drop Out As The Program Gets Retooled,” Modern Healthcare, September 3, 2018.


“Largest Accountable Care Organizations,” Modern Healthcare, February 5, 2018, p. 34.

Chapter 17: Community Health Centers

Chapter 20: Design & Construction

Chapter 21: Digital Healthcare

Chapter 22: Economic Contribution Of Hospitals
Hospitals Are Economic Anchors In Their Communities, American Hospital Association, January 2017.

Chapter 23: Electronic Health Records

**Chapter 24: Emergency Departments**

“Stand-alone EDs Flock To Affluent ZIP Codes,” Modern Healthcare, August 13, 2018, p. 31.

**Chapter 25: Fundraising**

**Chapter 27: Healthcare Management Consultants**


**Chapter 29: Hospice & Palliative Care**

Hospice Care in America, National Hospice and Palliative Care Organization, October 2017.

**Chapter 30: Hospital Mergers & Acquisitions**

Noether, Monica and Sean May, Hospital Merger Benefits: Views from Hospital Leaders and Econometric Analysis, Charles River Associates, January 2017.

**Chapter 32: Hospital Profile**

Chapter 33: Information Technology


Chapter 34: Laboratory Services

Chapter 35: Largest Hospital Systems

Chapter 37: Medical Liability
“Largest Professional Liability Carriers,” Modern Healthcare, July 9, 2018, p.34.

Chapter 39: Micro-Hospitals


Chapter 43: Patients From Overseas

Chapter 44: Population Health Management

**Chapter 45: Post-Acute & Long-Term Care**


**Chapter 47: Price Transparency**


**Chapter 50: Professional Services**


**Chapter 53: Quality & Patient Safety**

**Chapter 55: Readmissions**

Chapter 56: Retail Clinics
Birth, Allyssa, “One In Five Adults Turn To Retail Health Clinics For Treatment, Prevention, And More,” The Harris Poll, January 5, 2017.

Chapter 57: Rural Healthcare

Chapter 58: Telemedicine


Chapter 59: Top 100 Hospitals

Chapter 60: Top Cardiovascular Hospitals

Chapter 62: Top Issues Confronting Hospitals

Chapter 63: Top Issues Confronting The Healthcare Industry

Chapter 65: Urgent-Care Clinics

Chapter 66: Value-Based Purchasing
2018 Environmental Scan, American Hospital Association, 2018.

Chapter 70: Individual Market Health Plans


Chapter 71: Provider-Owned Health Plans


Chapter 75: Medicaid & CHIP

Chapter 78: U.S. Pharmaceutical Market
Medicine Use and Spending in the U.S.: A Review of 2017 and Outlook to 2022, IQVIA Institute, April 2018.

Chapter 79: Top Medicines
Medicine Use and Spending in the U.S.: A Review of 2017 and Outlook to 2022, IQVIA Institute, April 2018.

Chapter 82: Medical Marijuana

Chapter 86: Personalized Medicine

Chapter 87: Genetic Testing
Chapter 88: Gene Therapy

Chapter 90: Acid Reflex

Chapter 92: Alzheimer’s Disease & Dementia

Chapter 101: Chronic Conditions

Chapter 105: Diabetes

Chapter 107: Geriatric Medicine

Chapter 111: Infections


Chapter 113: Influenza

Chapter 115: Joint Replacement


**Chapter 118: Obstetrics**

**Chapter 120: Organ Transplants**

**Chapter 124: Rare Diseases**
“Trying To Make Rare Diseases Even More Rare,” *Modern Healthcare*, February 26, 2018, p. 29.

**Chapter 131: Cost of Mental Illness**

*Projections of National Expenditures for Treatment of Mental and Substance Use Disorders, 2010-2020*, Substance Abuse and Mental Health Services Administration.

**Chapter 132: Behavioral Health Providers**

**Chapter 134: Alcohol-Use Disorder**


**Chapter 136: Opioid Addiction**


**Chapter 141: Public Relations & Marketing Agencies**

**Chapter 142: Healthcare Marketing Impact Awards**

**Chapter 147: University Programs In Health Administration**
“Largest Master’s Programs In Health Administration,” Modern Healthcare, March 26, 2018, p. 48.