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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:

<table>
<thead>
<tr>
<th>State</th>
<th>Excellent</th>
<th>Very Good</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>16.7%</td>
<td>27.8%</td>
<td>32.7%</td>
<td>15.5%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Alaska</td>
<td>20.0%</td>
<td>33.7%</td>
<td>31.3%</td>
<td>10.5%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Arizona</td>
<td>19.8%</td>
<td>33.0%</td>
<td>30.5%</td>
<td>12.3%</td>
<td>4.4%</td>
</tr>
<tr>
<td>Arkansas</td>
<td>14.8%</td>
<td>27.8%</td>
<td>33.2%</td>
<td>15.9%</td>
<td>8.2%</td>
</tr>
<tr>
<td>California</td>
<td>20.2%</td>
<td>30.5%</td>
<td>30.4%</td>
<td>14.4%</td>
<td>4.6%</td>
</tr>
<tr>
<td>Colorado</td>
<td>21.1%</td>
<td>37.2%</td>
<td>28.6%</td>
<td>10.0%</td>
<td>3.1%</td>
</tr>
<tr>
<td>Connecticut</td>
<td>21.7%</td>
<td>36.8%</td>
<td>28.3%</td>
<td>10.1%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Delaware</td>
<td>18.2%</td>
<td>32.9%</td>
<td>31.7%</td>
<td>12.9%</td>
<td>4.4%</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>26.8%</td>
<td>33.6%</td>
<td>26.9%</td>
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<td>3.0%</td>
</tr>
<tr>
<td>Florida</td>
<td>19.9%</td>
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<tr>
<td>Georgia</td>
<td>17.9%</td>
<td>31.6%</td>
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<tr>
<td>Hawaii</td>
<td>20.1%</td>
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<tr>
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<td>3.4%</td>
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<tr>
<td>Illinois</td>
<td>17.5%</td>
<td>32.4%</td>
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<td>4.0%</td>
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<tr>
<td>Indiana</td>
<td>15.6%</td>
<td>33.8%</td>
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<td>12.6%</td>
<td>5.5%</td>
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<tr>
<td>Iowa</td>
<td>18.6%</td>
<td>35.3%</td>
<td>31.8%</td>
<td>11.0%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Kansas</td>
<td>18.0%</td>
<td>34.8%</td>
<td>31.8%</td>
<td>11.6%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Kentucky</td>
<td>13.4%</td>
<td>31.9%</td>
<td>31.4%</td>
<td>15.4%</td>
<td>8.0%</td>
</tr>
<tr>
<td>Louisiana</td>
<td>16.3%</td>
<td>28.1%</td>
<td>32.8%</td>
<td>16.3%</td>
<td>6.5%</td>
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<tr>
<td>Maine</td>
<td>18.3%</td>
<td>37.3%</td>
<td>29.5%</td>
<td>10.9%</td>
<td>4.0%</td>
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<tr>
<td>Maryland</td>
<td>21.0%</td>
<td>33.5%</td>
<td>30.5%</td>
<td>11.8%</td>
<td>3.2%</td>
</tr>
<tr>
<td>State</td>
<td>Excellent</td>
<td>Good</td>
<td>Fair</td>
<td>Poor</td>
<td>Unknown</td>
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<td>---------------------</td>
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</tr>
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<td>Massachusetts:</td>
<td>23.9%</td>
<td>34.6%</td>
<td>27.8%</td>
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<td>3.4%</td>
</tr>
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<td>15.9%</td>
<td>34.9%</td>
<td>31.5%</td>
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<td>4.8%</td>
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<td>Minnesota:</td>
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<td>35.8%</td>
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<td>Mississippi:</td>
<td>16.1%</td>
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<tr>
<td>Missouri:</td>
<td>16.5%</td>
<td>34.8%</td>
<td>30.3%</td>
<td>13.0%</td>
<td>5.4%</td>
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<tr>
<td>Montana:</td>
<td>20.8%</td>
<td>34.4%</td>
<td>29.4%</td>
<td>10.7%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Nebraska:</td>
<td>19.4%</td>
<td>35.9%</td>
<td>30.8%</td>
<td>10.4%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Nevada:</td>
<td>18.0%</td>
<td>32.9%</td>
<td>31.9%</td>
<td>12.9%</td>
<td>4.4%</td>
</tr>
<tr>
<td>New Hampshire:</td>
<td>21.8%</td>
<td>38.9%</td>
<td>26.8%</td>
<td>9.2%</td>
<td>3.4%</td>
</tr>
<tr>
<td>New Jersey:</td>
<td>19.9%</td>
<td>32.7%</td>
<td>30.8%</td>
<td>12.6%</td>
<td>4.0%</td>
</tr>
<tr>
<td>New Mexico:</td>
<td>17.8%</td>
<td>28.8%</td>
<td>32.7%</td>
<td>15.3%</td>
<td>5.4%</td>
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<tr>
<td>New York:</td>
<td>19.7%</td>
<td>31.9%</td>
<td>30.4%</td>
<td>13.3%</td>
<td>4.8%</td>
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<tr>
<td>North Carolina:</td>
<td>18.3%</td>
<td>31.6%</td>
<td>31.0%</td>
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<td>5.4%</td>
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<tr>
<td>North Dakota:</td>
<td>16.5%</td>
<td>37.5%</td>
<td>31.3%</td>
<td>10.7%</td>
<td>4.0%</td>
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<tr>
<td>Ohio:</td>
<td>18.6%</td>
<td>31.7%</td>
<td>31.7%</td>
<td>13.8%</td>
<td>4.3%</td>
</tr>
<tr>
<td>Oklahoma:</td>
<td>15.9%</td>
<td>29.5%</td>
<td>34.0%</td>
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<td>6.3%</td>
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<tr>
<td>Oregon:</td>
<td>18.5%</td>
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<td>28.5%</td>
<td>12.2%</td>
<td>5.2%</td>
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<tr>
<td>Pennsylvania:</td>
<td>17.9%</td>
<td>34.7%</td>
<td>30.5%</td>
<td>12.2%</td>
<td>4.7%</td>
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<tr>
<td>Rhode Island:</td>
<td>19.1%</td>
<td>34.9%</td>
<td>29.9%</td>
<td>12.5%</td>
<td>3.8%</td>
</tr>
<tr>
<td>South Carolina:</td>
<td>18.9%</td>
<td>31.4%</td>
<td>29.9%</td>
<td>13.9%</td>
<td>5.9%</td>
</tr>
<tr>
<td>South Dakota:</td>
<td>20.2%</td>
<td>37.5%</td>
<td>29.7%</td>
<td>9.7%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Tennessee:</td>
<td>15.5%</td>
<td>31.3%</td>
<td>30.0%</td>
<td>14.6%</td>
<td>8.5%</td>
</tr>
<tr>
<td>Texas:</td>
<td>18.1%</td>
<td>27.1%</td>
<td>35.7%</td>
<td>14.2%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Utah:</td>
<td>23.3%</td>
<td>35.6%</td>
<td>28.5%</td>
<td>9.4%</td>
<td>3.1%</td>
</tr>
<tr>
<td>Vermont:</td>
<td>21.9%</td>
<td>39.9%</td>
<td>26.2%</td>
<td>8.7%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Virginia:</td>
<td>20.1%</td>
<td>33.4%</td>
<td>30.6%</td>
<td>11.9%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Washington:</td>
<td>18.5%</td>
<td>34.4%</td>
<td>31.4%</td>
<td>11.5%</td>
<td>4.2%</td>
</tr>
<tr>
<td>West Virginia:</td>
<td>12.9%</td>
<td>28.7%</td>
<td>32.7%</td>
<td>16.9%</td>
<td>8.8%</td>
</tr>
<tr>
<td>Wisconsin:</td>
<td>17.1%</td>
<td>36.6%</td>
<td>30.9%</td>
<td>11.3%</td>
<td>4.1%</td>
</tr>
<tr>
<td>Wyoming:</td>
<td>19.9%</td>
<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>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>
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<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>
<td>14.3%</td>
<td>3.3%</td>
</tr>
<tr>
<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>
<td>18.0%</td>
<td>38.9%</td>
<td>32.6%</td>
<td>8.2%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Baton Rouge, LA MSA:</td>
<td>19.0%</td>
<td>31.6%</td>
<td>29.4%</td>
<td>13.4%</td>
<td>6.6%</td>
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<tr>
<td>Bellingham, WA MSA:</td>
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<td>8.7%</td>
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</tr>
<tr>
<td>Berlin, NH-VT μSA:</td>
<td>13.7%</td>
<td>34.1%</td>
<td>31.3%</td>
<td>13.4%</td>
<td>7.5%</td>
</tr>
<tr>
<td>Billings, MT MSA:</td>
<td>19.6%</td>
<td>35.3%</td>
<td>29.7%</td>
<td>11.6%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Birmingham-Hoover, AL MSA:</td>
<td>17.7%</td>
<td>27.4%</td>
<td>33.1%</td>
<td>15.8%</td>
<td>5.9%</td>
</tr>
<tr>
<td>Bismarck, ND MSA:</td>
<td>15.3%</td>
<td>33.8%</td>
<td>37.0%</td>
<td>11.1%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Boise City-Nampa, ID MSA:</td>
<td>19.2%</td>
<td>32.6%</td>
<td>34.1%</td>
<td>9.8%</td>
<td>4.4%</td>
</tr>
<tr>
<td>Boston, MA MD:</td>
<td>24.9%</td>
<td>34.8%</td>
<td>27.4%</td>
<td>10.5%</td>
<td>2.5%</td>
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<tr>
<td>Bremerton-Silverdale, WA MSA:</td>
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<td>29.3%</td>
<td>15.0%</td>
<td>3.5%</td>
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<tr>
<td>Bridgeport-Stamford-Norwalk, CT MSA:</td>
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<td>27.9%</td>
<td>11.4%</td>
<td>2.6%</td>
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<tr>
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<tr>
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<td>2.7%</td>
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<td>32.5%</td>
<td>16.5%</td>
<td>9.1%</td>
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<tr>
<td>Charleston-North Charleston, SC MSA:</td>
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<td>34.4%</td>
<td>27.3%</td>
<td>10.7%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Charlotte-Gastonia-Concord, NC-SC MSA:</td>
<td>20.1%</td>
<td>31.4%</td>
<td>31.1%</td>
<td>13.2%</td>
<td>4.2%</td>
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<tr>
<td>City/Metro Area</td>
<td>2016</td>
<td>2017</td>
<td>2018</td>
<td>2019</td>
<td>2020</td>
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<tr>
<td>Chattanooga, TN-GA MSA</td>
<td>16.0%</td>
<td>29.9%</td>
<td>29.8%</td>
<td>17.0%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Cheyenne, WY MSA</td>
<td>19.5%</td>
<td>35.2%</td>
<td>27.5%</td>
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<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>
</tr>
<tr>
<td>Cincinnati-Middletown, OH-KY-IN MSA</td>
<td>21.0%</td>
<td>32.6%</td>
<td>28.7%</td>
<td>12.0%</td>
<td>5.8%</td>
</tr>
<tr>
<td>Claremont, NH µSA</td>
<td>22.0%</td>
<td>40.4%</td>
<td>25.4%</td>
<td>9.7%</td>
<td>2.6%</td>
</tr>
<tr>
<td>Cleveland-Elyria-Mentor, OH MSA</td>
<td>19.9%</td>
<td>32.3%</td>
<td>30.3%</td>
<td>13.5%</td>
<td>3.9%</td>
</tr>
<tr>
<td>Colorado Springs, CO MSA</td>
<td>20.7%</td>
<td>37.2%</td>
<td>29.3%</td>
<td>8.6%</td>
<td>4.1%</td>
</tr>
<tr>
<td>Columbia, SC MSA</td>
<td>18.6%</td>
<td>33.2%</td>
<td>31.2%</td>
<td>10.8%</td>
<td>6.1%</td>
</tr>
<tr>
<td>Columbus, OH MSA</td>
<td>20.3%</td>
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<td>4.0%</td>
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<tr>
<td>Concord, NH µSA</td>
<td>22.5%</td>
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<td>3.4%</td>
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<tr>
<td>Dallas-Plano-Irving, TX MD</td>
<td>18.0%</td>
<td>31.3%</td>
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<td>4.9%</td>
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<tr>
<td>Dayton, OH MSA</td>
<td>18.5%</td>
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<td>4.6%</td>
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<tr>
<td>Denver-Aurora, CO MSA</td>
<td>21.4%</td>
<td>36.1%</td>
<td>27.5%</td>
<td>11.4%</td>
<td>3.6%</td>
</tr>
<tr>
<td>Des Moines-West Des Moines, IA MSA</td>
<td>18.1%</td>
<td>40.1%</td>
<td>28.8%</td>
<td>9.4%</td>
<td>3.6%</td>
</tr>
<tr>
<td>Detroit-Livonia-Dearborn, MI MD</td>
<td>14.7%</td>
<td>29.1%</td>
<td>34.3%</td>
<td>15.7%</td>
<td>6.2%</td>
</tr>
<tr>
<td>Dover, DE MSA</td>
<td>19.8%</td>
<td>31.9%</td>
<td>30.3%</td>
<td>14.2%</td>
<td>3.8%</td>
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<tr>
<td>Duluth, MN-WI MSA</td>
<td>18.3%</td>
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<td>30.9%</td>
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<td>4.5%</td>
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<tr>
<td>Durham, NC MSA</td>
<td>24.9%</td>
<td>34.3%</td>
<td>25.4%</td>
<td>12.4%</td>
<td>3.0%</td>
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<tr>
<td>El Paso, TX MSA</td>
<td>14.2%</td>
<td>22.4%</td>
<td>40.0%</td>
<td>13.7%</td>
<td>9.7%</td>
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<tr>
<td>Eugene-Springfield, OR MSA</td>
<td>13.5%</td>
<td>36.8%</td>
<td>34.2%</td>
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<td>5.3%</td>
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<tr>
<td>Fairbanks, AK MSA</td>
<td>17.5%</td>
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<td>2.9%</td>
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<tr>
<td>Fargo, ND-MN MSA</td>
<td>20.8%</td>
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<td>2.5%</td>
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<tr>
<td>Farmington, NM MSA</td>
<td>19.1%</td>
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<td>7.4%</td>
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<tr>
<td>Fayetteville, NC MSA</td>
<td>21.3%</td>
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<td>31.4%</td>
<td>12.2%</td>
<td>4.1%</td>
</tr>
<tr>
<td>Fayetteville-Springdale-Rogers, AR-MO MSA</td>
<td>15.0%</td>
<td>36.9%</td>
<td>27.8%</td>
<td>13.5%</td>
<td>6.9%</td>
</tr>
<tr>
<td>Fort Collins-Loveland, CO MSA</td>
<td>23.9%</td>
<td>37.9%</td>
<td>26.9%</td>
<td>9.1%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Fort Wayne, IN MSA</td>
<td>15.2%</td>
<td>36.4%</td>
<td>30.6%</td>
<td>13.0%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Fort Worth-Arlington, TX MD</td>
<td>16.6%</td>
<td>30.4%</td>
<td>37.4%</td>
<td>11.6%</td>
<td>4.1%</td>
</tr>
<tr>
<td>Grand Island, NE µSA</td>
<td>14.6%</td>
<td>34.6%</td>
<td>36.1%</td>
<td>11.5%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Grand Rapids-Wyoming, MI MSA</td>
<td>19.2%</td>
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<td>9.1%</td>
<td>2.9%</td>
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<tr>
<td>Great Falls, MT MSA</td>
<td>18.5%</td>
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<td>4.8%</td>
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<tr>
<td>Greeley, CO MSA</td>
<td>18.0%</td>
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<td>12.0%</td>
<td>3.5%</td>
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<tr>
<td>Greensboro-High Point, NC MSA</td>
<td>17.1%</td>
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<td>6.9%</td>
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<tr>
<td>Greenville, SC MSA</td>
<td>17.0%</td>
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<td>32.3%</td>
<td>12.6%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Gulfport-Biloxi, MS MSA</td>
<td>14.2%</td>
<td>34.1%</td>
<td>28.1%</td>
<td>15.8%</td>
<td>7.8%</td>
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<tr>
<td>Hagerstown-Martinsburg, MD-WV MSA</td>
<td>20.3%</td>
<td>33.8%</td>
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<td>12.1%</td>
<td>3.8%</td>
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<tr>
<td>Harrisburg-Carlisle, PA MSA</td>
<td>18.1%</td>
<td>36.2%</td>
<td>31.7%</td>
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<td>4.2%</td>
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<tr>
<td>Hartford-W. Hartford-E. Hartford, CT MSA</td>
<td>19.1%</td>
<td>38.0%</td>
<td>29.2%</td>
<td>9.7%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Heber, UT µSA</td>
<td>24.7%</td>
<td>42.5%</td>
<td>21.2%</td>
<td>10.1%</td>
<td>1.6%</td>
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<tr>
<td>Hilo, HI µSA</td>
<td>19.6%</td>
<td>27.6%</td>
<td>37.4%</td>
<td>11.5%</td>
<td>3.9%</td>
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<tr>
<td>Hilton Head-Beaufort, SC µSA</td>
<td>23.8%</td>
<td>39.5%</td>
<td>27.2%</td>
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<td>2.5%</td>
</tr>
<tr>
<td>Honolulu, HI (urban) MSA</td>
<td>17.6%</td>
<td>28.9%</td>
<td>38.7%</td>
<td>10.4%</td>
<td>4.3%</td>
</tr>
<tr>
<td>Houston-Sugar Land-Baytown, TX MSA</td>
<td>18.4%</td>
<td>29.4%</td>
<td>33.1%</td>
<td>13.6%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Huntington-Ashland, WV-KY-OH MSA</td>
<td>11.9%</td>
<td>29.9%</td>
<td>31.5%</td>
<td>16.8%</td>
<td>9.9%</td>
</tr>
<tr>
<td>Location</td>
<td>2017%</td>
<td>2018%</td>
<td>2019%</td>
<td>2020%</td>
<td>2021%</td>
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<tr>
<td>Huntsville, AL MSA:</td>
<td>17.8%</td>
<td>31.9%</td>
<td>29.0%</td>
<td>16.7%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Idaho Falls, ID MSA:</td>
<td>21.0%</td>
<td>34.1%</td>
<td>30.0%</td>
<td>8.3%</td>
<td>6.6%</td>
</tr>
<tr>
<td>Indianapolis-Carmel, IN MSA:</td>
<td>17.9%</td>
<td>33.0%</td>
<td>30.1%</td>
<td>13.4%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Jackson, MS MSA:</td>
<td>19.4%</td>
<td>29.6%</td>
<td>31.0%</td>
<td>13.6%</td>
<td>6.4%</td>
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<tr>
<td>Jacksonville, FL MSA:</td>
<td>23.0%</td>
<td>32.0%</td>
<td>26.5%</td>
<td>12.2%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Kahului-Wailuku, HI μSA:</td>
<td>24.3%</td>
<td>29.7%</td>
<td>32.3%</td>
<td>10.0%</td>
<td>3.7%</td>
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<tr>
<td>Kalispell, MT μSA:</td>
<td>22.9%</td>
<td>33.1%</td>
<td>26.6%</td>
<td>13.3%</td>
<td>4.1%</td>
</tr>
<tr>
<td>Kansas City, MO-KS MSA:</td>
<td>18.7%</td>
<td>36.1%</td>
<td>29.1%</td>
<td>12.0%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Kapaa, HI μSA:</td>
<td>17.9%</td>
<td>26.6%</td>
<td>39.0%</td>
<td>12.9%</td>
<td>3.6%</td>
</tr>
<tr>
<td>Keene, NH μSA:</td>
<td>24.4%</td>
<td>35.1%</td>
<td>25.3%</td>
<td>11.0%</td>
<td>4.2%</td>
</tr>
<tr>
<td>Kennewick-Richland-Pasco, WA MSA:</td>
<td>12.3%</td>
<td>35.9%</td>
<td>32.6%</td>
<td>13.1%</td>
<td>6.1%</td>
</tr>
<tr>
<td>Kingsport-Bristol, TN-VA MSA:</td>
<td>13.4%</td>
<td>25.1%</td>
<td>34.5%</td>
<td>16.1%</td>
<td>10.9%</td>
</tr>
<tr>
<td>Knoxville, TN MSA:</td>
<td>15.3%</td>
<td>35.0%</td>
<td>29.1%</td>
<td>11.5%</td>
<td>9.1%</td>
</tr>
<tr>
<td>Laconia, NH μSA:</td>
<td>21.8%</td>
<td>34.3%</td>
<td>25.1%</td>
<td>12.1%</td>
<td>6.8%</td>
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<tr>
<td>Lafayette, LA MSA:</td>
<td>22.4%</td>
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<td>33.1%</td>
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<td>6.4%</td>
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<tr>
<td>Las Cruces, NM MSA:</td>
<td>17.8%</td>
<td>21.1%</td>
<td>32.3%</td>
<td>23.0%</td>
<td>5.8%</td>
</tr>
<tr>
<td>Las Vegas-Paradise, NV MSA:</td>
<td>16.7%</td>
<td>30.5%</td>
<td>33.2%</td>
<td>13.3%</td>
<td>6.3%</td>
</tr>
<tr>
<td>Lewiston-Auburn, ME MSA:</td>
<td>15.2%</td>
<td>34.6%</td>
<td>31.9%</td>
<td>13.7%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Lexington-Fayette, KY MSA:</td>
<td>15.9%</td>
<td>36.7%</td>
<td>30.9%</td>
<td>13.0%</td>
<td>3.5%</td>
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<tr>
<td>Lincoln, NE MSA:</td>
<td>19.1%</td>
<td>40.2%</td>
<td>28.6%</td>
<td>9.2%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Little Rock-North Little Rock, AR MSA:</td>
<td>19.1%</td>
<td>31.3%</td>
<td>30.2%</td>
<td>13.6%</td>
<td>5.8%</td>
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<tr>
<td>Logan, UT-ID MSA:</td>
<td>31.9%</td>
<td>32.3%</td>
<td>25.9%</td>
<td>7.7%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Los Angeles-Long Beach-Glendale, CA MD:</td>
<td>20.6%</td>
<td>28.0%</td>
<td>29.8%</td>
<td>16.8%</td>
<td>4.8%</td>
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<tr>
<td>Louisville, KY-IN MSA:</td>
<td>14.2%</td>
<td>31.9%</td>
<td>32.2%</td>
<td>15.7%</td>
<td>6.2%</td>
</tr>
<tr>
<td>Lumberton, NC μSA:</td>
<td>11.5%</td>
<td>24.5%</td>
<td>36.8%</td>
<td>15.6%</td>
<td>11.7%</td>
</tr>
<tr>
<td>Manchester-Nashua, NH MSA:</td>
<td>21.3%</td>
<td>37.4%</td>
<td>28.4%</td>
<td>9.6%</td>
<td>3.2%</td>
</tr>
<tr>
<td>McAllen-Edinburg-Mission, TX MSA:</td>
<td>12.8%</td>
<td>16.4%</td>
<td>42.7%</td>
<td>18.2%</td>
<td>9.9%</td>
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<tr>
<td>Memphis, TN-MS-AR MSA:</td>
<td>16.7%</td>
<td>27.2%</td>
<td>35.9%</td>
<td>13.4%</td>
<td>6.8%</td>
</tr>
<tr>
<td>Miami-Ft, Lauderdale-Miami Beach, FL MSA:</td>
<td>22.2%</td>
<td>27.3%</td>
<td>31.5%</td>
<td>13.1%</td>
<td>5.9%</td>
</tr>
<tr>
<td>Milwaukee-Waukesha-West Allis, WI MSA:</td>
<td>16.7%</td>
<td>38.1%</td>
<td>30.5%</td>
<td>10.8%</td>
<td>3.9%</td>
</tr>
<tr>
<td>Minneapolis-St. Paul-Bloom., MN-WI MSA:</td>
<td>21.8%</td>
<td>38.5%</td>
<td>28.9%</td>
<td>8.2%</td>
<td>2.5%</td>
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<tr>
<td>Missoula, MT MSA:</td>
<td>23.2%</td>
<td>35.5%</td>
<td>28.6%</td>
<td>9.1%</td>
<td>3.7%</td>
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<tr>
<td>Mobile, AL MSA:</td>
<td>12.3%</td>
<td>26.5%</td>
<td>35.4%</td>
<td>14.8%</td>
<td>11.0%</td>
</tr>
<tr>
<td>Montgomery-Bucks-Chester County, PA MD:</td>
<td>22.7%</td>
<td>38.2%</td>
<td>26.6%</td>
<td>9.0%</td>
<td>3.5%</td>
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<tr>
<td>Montgomery, AL MSA:</td>
<td>19.3%</td>
<td>26.7%</td>
<td>32.6%</td>
<td>13.8%</td>
<td>7.8%</td>
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<tr>
<td>Myrtle Beach-Conway, SC MSA:</td>
<td>16.3%</td>
<td>36.0%</td>
<td>30.9%</td>
<td>12.5%</td>
<td>4.2%</td>
</tr>
<tr>
<td>Nashville-Davidson-Murfreesboro, TN MSA:</td>
<td>18.4%</td>
<td>33.9%</td>
<td>32.3%</td>
<td>10.1%</td>
<td>5.3%</td>
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<tr>
<td>Nassau-Suffolk, NY MD:</td>
<td>22.2%</td>
<td>34.8%</td>
<td>31.8%</td>
<td>8.9%</td>
<td>2.2%</td>
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<tr>
<td>New Haven-Milford, CT MSA:</td>
<td>21.0%</td>
<td>33.6%</td>
<td>29.6%</td>
<td>12.1%</td>
<td>3.6%</td>
</tr>
<tr>
<td>New Orleans-Metairie-Kenner, LA MSA:</td>
<td>18.7%</td>
<td>31.7%</td>
<td>30.3%</td>
<td>13.9%</td>
<td>5.4%</td>
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<tr>
<td>New York-Jersey City-W. Plains, NY-NJ MD:</td>
<td>21.0%</td>
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<td>31.2%</td>
<td>14.5%</td>
<td>4.2%</td>
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<td>Newark-Union, NJ-PA MD:</td>
<td>23.3%</td>
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<td>3.0%</td>
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<tr>
<td>Norfolk, NE μSA:</td>
<td>14.6%</td>
<td>35.6%</td>
<td>35.4%</td>
<td>11.3%</td>
<td>3.1%</td>
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<tr>
<td>North Platte, NE μSA:</td>
<td>17.7%</td>
<td>35.4%</td>
<td>32.5%</td>
<td>11.9%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Location</td>
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<tr>
<td>Norwich-New London, CT MSA</td>
<td>20.3% 39.1% 27.7% 8.3% 4.6%</td>
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<tr>
<td>Oakland-Fremont-Hayward, CA MD</td>
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<td>Scottsbluff, NE µSA</td>
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<td>Seattle-Bellevue-Everett, WA MD</td>
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<tr>
<td>St. Louis, MO-IL MSA</td>
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<td>Tacoma, WA MD</td>
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<tr>
<td>Tampa-St. Petersburg-Clearwater, FL MSA</td>
<td>16.5% 34.7% 29.8% 14.3% 4.7%</td>
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</table>
• 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 2015

A November 2015 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: 50%
   - Only fair: 16%
   - Poor: 5%

2. How would you describe your own mental health or emotional well-being at this time?
   - Excellent: 43%
   - Good: 45%
   - Only fair: 8%
   - Poor: 4%

3. Overall, how would you rate the quality of healthcare you receive?
   - Excellent: 31%
   - Good: 44%
   - Only fair: 16%
   - Poor: 7%

4. Overall, how would you rate your healthcare coverage?
   - Excellent: 25%
   - Good: 42%
   - Only fair: 22%
   - Poor: 10%
   - Not applicable/no opinion: 2%

5. Are you generally satisfied or dissatisfied with the total cost you pay for your healthcare?
   - Yes: 57%
   - No: 42%
   - No opinion: 1%
6. Who pays the cost of premiums on your health insurance (based on adults with private health insurance)?
   • Self/household: 28%
   • Employer pays all: 10%
   • Costs are shared: 58%
   • None/other: 3%

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: 36%
   • Gone up a little: 38%
   • Not changed: 20%
   • Gone down a little: 3%
   • Gone down a lot: 1%
   • No opinion: 1%

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: 19%
   • Yes, non-serious condition: 12%
   • No: 68%
3.1 Summary By Disease

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

Alzheimer’s Disease

- 2016 Alzheimer’s Disease Facts and Figures, by the Alzheimer’s Association (www.alz.org), estimates 5.4 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 $236 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 40 million to 50 million people and costing the U.S. economy $140 billion per year in medical care and 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 and Allergies

- According to the Asthma and Allergy Foundation of America (www.aafa.org), more than 60 million people in America have asthma or allergies, with a cost to the U.S. economy over $325 billion each year in hospitalizations, medical services, and lost productivity at work or school.

Cancer

- Cancer is the second-leading cause of death in the United States, exceeded only by heart disease. There are about 14.5 million Americans with a history of cancer. The 5-year survival rate for all cancers combined is 66%.
- Cancer Facts and Figures 2016, by the American Cancer Society (www.cancer.org), projects that 1.69 million people in the U.S. will be diagnosed with cancer in 2016; about 595,690 are expected to die of cancer.

Cardiovascular Disease

- According to 2016 Heart Disease and Stroke Statistics, by the American Heart Association (www.americanheart.org), 85.6 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 are 800,000 annual deaths in the U.S. attributed to CVD.

**Diabetes**
- According to the Centers for Disease Control and Prevention (CDC, [www.cdc.gov](http://www.cdc.gov)), 29 million Americans have diabetes, and an estimated 86 million U.S. adults have prediabetes. An estimated 7 million Americans with diabetes do not know they have the disease.
- According to the American Diabetes Association (ADA, [www.diabetes.org](http://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](http://www.headaches.org)), as many as 50 million Americans suffer from chronic headaches.

**HIV and AIDS**
- The CDC estimates 1.2 million people in the U.S. are infected with human immunodeficiency virus (HIV); 490,696 have acquired immune deficiency syndrome (AIDS). A quarter of those 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](http://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 26 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
• Chronic pain – commonly defined as pain persisting longer than six months – affects an estimated 76.5 million Americans and is a tragically overlooked public health problem, according to the National Center for Health Statistics (www.cdc.gov/nchs). Arthritis and back pain account for up to 60% of cases.

Vision
• According to the National Eye Institute (www.nei.nih.gov), blindness or low vision affects 4.2 million Americans. Of the 4.2 million vision-impaired Americans, 1.3 million are blind (0.8% of the population) and 2.4 million have low vision. In addition, 34.1 million people have myopia (nearsightedness) and 14.2 million have hyperopia (farsightedness). The American Academy of Ophthalmology (AAO, www.aao.org) estimates that eye disease costs the U.S. about $51.4 billion each year. According to the Vision Council of America (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 Causes of Death
Deaths: Leading Causes for 2013, published in February 2016 by the National Center for Health Statistics (www.cdc.gov/nchs), reported the leading causes of death in the United States are as follows:
• Heart disease: 611,105
• Cancer: 584,881
• Chronic lower respiratory disease: 149,205
• Accidents (unintentional injuries): 130,577
• Stroke: 128,978
• Alzheimer’s disease: 84,767
• Diabetes: 75,578
• Influenza and pneumonia: 56,979
• Nephritis, nephrotic syndrome, and nephritis: 47,112
• Intentional self-harm (suicide): 41,149

3.3 State-by-State
Prevalence data for each state is available at 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 2015

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

The 2015 study by United Health Foundation marked the 26th 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:

POSITIVE TRENDS

Air Pollution
- In the past 10 years, air pollution decreased 24% from 12.5 to 9.5 micrograms of fine particles per cubic meter.

Cancer Deaths
- Since 1990, cancer deaths decreased 4% from 197.5 to 189.6 per 100,000 population.

Immunization
- Vaccine coverage is increasing. Since 2013, immunization coverage among children aged 19 to 35 months increased 5% from 68.4% to 71.6%. In 1996, the percentage was less than 60%.

Infant Mortality
- Since 1990, infant mortality has decreased 41% from 10.2 to 6.0 deaths per 1,000 live births. In 2015, infant mortality has not changed. In the past 10 years cardiovascular deaths decreased 23% from 326.6 to 250.8 deaths per 100,000 population.

Preventable Hospitalizations
- In 2015, preventable hospitalizations decreased 8% from 62.9 to 57.6 discharges per 1,000 Medicare beneficiaries. Since 2013, preventable hospitalizations decreased 11%, and since 2001 the decrease has been 30%.

Smoking
- In 2015, the prevalence of smoking decreased 5% from 19.0% to 18.1% of adults. Smoking has decreased since 1990 from 29.5% to 18.1% of the adult population. However, 1 in 6 adults still smoke.

Violent Crime
- In the past 20 years, violent crime decreased 51% from 746 to 368 offenses per 100,000 population.

NEGATIVE TRENDS

Children in Poverty
- In 2015, the percentage of children living in poverty increased 6% from 19.9% to 21.1% of children under age 18 years. Since 2002, children in poverty has increased 34% from 15.8% to 21.1%.
Diabetes
• Self-reported diabetes continues to increase – now at 10.0% of the adult population. Twenty years ago it was 4.4% of the adult population.

Drug Deaths
• In 2015, the rate of drug deaths increased 4% from 13.0 to 13.5 deaths per 100,000 population. In 2013, drug deaths were only 12.2 deaths per 100,000 population.

Obesity
• Since 2013, obesity increased 7% from 27.6% to 29.6% of adults who are obese by self-report. In 1990, obesity was less than 12% of the adult population.

Premature Death
• For the third year in a row, the nation has not made progress in the premature death rate, a measure of early death in the population. Many of these deaths are preventable through lifestyle modifications.

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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<tr>
<td>2</td>
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<tr>
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49. Louisiana: -0.83  
50. Mississippi: -0.90  

4.5 Market Resources

(www.americashealthrankings.org/reports/annual)
5

STATE HEALTH SYSTEM PERFORMANCE

5.1 Overview

Scorecard on State Health System Performance 2015, 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 2015 ranked states as follows:

1. (tie) Minnesota
1. (tie) Vermont
3. Hawaii
4. Massachusetts
5. (tie) Connecticut
5. (tie) New Hampshire
5. (tie) Rhode Island
8. Colorado
9. Iowa
10. Washington
11. (tie) Maine
11. (tie) Wisconsin
13. (tie) Nebraska
13. (tie) New York
15. (tie) Delaware
15. (tie) Oregon
15. (tie) South Dakota
18. (tie) Maryland
18. (tie) Utah
20. (tie) District of Columbia
20. (tie) New Jersey
20. (tie) Pennsylvania
23. (tie) California
23. (tie) Virginia
25. Idaho
26. (tie) Illinois
26. (tie) North Dakota
28. (tie) Kansas
28. (tie) Montana
28. (tie) Wyoming
31. Michigan
32. Alaska
33. (tie) Arizona
33. (tie) New Mexico
33. (tie) Ohio
36. Missouri
37. (tie) Florida
37. (tie) North Carolina

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• 46 •
39. West Virginia  46. Georgia
40. (tie) Kentucky  47. Alabama
40. (tie) South Carolina  48. Louisiana
40. (tie) Texas  49. Arkansas
43. (tie) Indiana  50. Oklahoma
43. (tie) Nevada  51. Mississippi
43. (tie) Tennessee

5.3 Market Resources
Scorecard on State Health System Performance 2015, The Commonwealth Fund.

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

2016 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, Route 1 and College Road East, P.O. Box 2316, Princeton, NJ 08543. (877) 843-7953. (www.rwjf.org)

University of Wisconsin Population Health Institute, 610 Walnut Street, 575 WARP, Madison, WI 53726. (608) 263-6294. (http://uwphi.pophealth.wisc.edu)
7

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 121 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](http://www.cdc.gov/healthyyouth))
PART II: HEALTHCARE SPENDING
NATIONAL HEALTH EXPENDITURES

8.1 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.

8.2 Spending

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<td>$3.80 trillion (6.1%)</td>
<td>17.9%</td>
<td>$11,504</td>
</tr>
<tr>
<td>2019:</td>
<td>$4.04 trillion (6.5%)</td>
<td>18.1%</td>
<td>$12,131</td>
</tr>
<tr>
<td>2020:</td>
<td>$4.31 trillion (6.6%)</td>
<td>18.4%</td>
<td>$12,808</td>
</tr>
<tr>
<td>2021:</td>
<td>$4.58 trillion (6.3%)</td>
<td>18.7%</td>
<td>$13,490</td>
</tr>
<tr>
<td>2022:</td>
<td>$4.86 trillion (6.2%)</td>
<td>19.0%</td>
<td>$14,202</td>
</tr>
<tr>
<td>2023:</td>
<td>$5.16 trillion (6.1%)</td>
<td>19.3%</td>
<td>$14,944</td>
</tr>
</tbody>
</table>
“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

8.3 Source Of Funds
By source of funds, health expenditures in 2015 were as follows (change from 2014 in parenthesis):

- Private health insurance: $1.082 trillion (6.9%)
- Medicare: $632.7 billion (2.7%)
- Medicaid: $541.1 billion (6.7%)
- Other 3rd party payers:* $489.2 billion (3.5%)
- Out-of-pocket payments: $345.7 billion (2.3%)
- Other health insurance: $116.2 billion (4.9%)

* 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.

8.4 Distribution of Expenditures
By type of expenditure, expenditures in 2015 were as follows (change from 2014 in parenthesis):

- Hospital care: $1.008 trillion (5.1%)
- Physician and clinical services: $641.8 billion (3.8%)
- Prescription drugs (retail outlet sales): $309.3 billion (6.4%)
- Net cost of private health insurance: $212.5 billion (8.1%)
- Nursing home care and continuing care retirement communities: $170.2 billion (4.9%)
- Other personal healthcare: $161.5 billion (5.5%)
- Dental services: $122.7 billion (5.3%)
- Other professional services: $92.3 billion (5.3%)
- Home healthcare: $91.7 billion (6.4%)

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- Government public health activities: $84.5 billion (4.2%)
- Equipment: $67.2 billion (3.4%)
- Non-durable medical products (retail outlet sales): $62.2 billion (2.7%)
- Structures: $53.0 billion (3.4%)
- Research: $46.4 billion (-1.7%)
- Durable medical equipment (retail outlet sales): $45.8 billion (4.1%)
- Government administration of health insurance: $37.8 billion (4.3%)

### 8.5 Market Resources

(www.cms.hhs.gov/NationalHealthExpendData)
HEALTH EXPENDITURES BY STATE

9.1 Overview


Based on CMS’s health expenditure growth projections (see section 8.4), this chapter provides estimates of health spending in 2015.

9.2 Per Capita Expenditures

By state of residence, per capita health expenditures in 2015 were as follows:

- Alabama: $ 7,659
- Alaska: $11,147
- Arizona: $ 6,366
- Arkansas: $ 7,531
- California: $ 7,618
- Colorado: $ 7,319
- Connecticut: $10,568
- Delaware: $10,355
- District of Columbia: $12,637
- Florida: $ 8,739
- Georgia: $ 6,676
- Hawaii: $ 8,372
- Idaho: $ 6,909
- Illinois: $ 8,250
- Indiana: $ 8,140
- Iowa: $ 8,452
- Kansas: $ 8,282
- Kentucky: $ 8,055
- Louisiana: $ 8,298
- Maine: $10,405
- Maryland: $ 9,149
- Massachusetts: $11,330
- Michigan: $ 8,082
- Minnesota: $ 9,048
• Mississippi: $ 8,024
• Missouri: $ 8,508
• Montana: $ 8,109
• Nebraska: $ 8,607
• Nevada: $ 7,003
• New Hampshire: $ 9,573
• New Jersey: $ 9,260
• New Mexico: $ 8,122
• New York: $10,186
• North Carolina: $ 7,869
• North Dakota: $ 9,463
• Ohio: $ 8,641
• Oklahoma: $ 7,977
• Oregon: $ 8,035
• Pennsylvania: $ 9,440
• Rhode Island: $10,147
• South Carolina: $ 7,721
• South Dakota: $ 8,617
• Tennessee: $ 7,829
• Texas: $ 7,234
• Utah: $ 6,144
• Vermont: $ 9,324
• Virginia: $ 7,676
• Washington: $ 8,282
• West Virginia: $ 9,363
• Wisconsin: $ 8,833
• Wyoming: $ 8,597

9.3 Market Resources

Health Expenditures By State, Centers for Medicare & Medicaid Services.
STATE SPENDING FOR HOSPITAL CARE

10.1 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%
• New Jersey: 33.8%
• New Mexico: 39.0%
• New York: 36.1%
• North Carolina: 36.8%
• North Dakota: 41.5%
• Ohio: 37.8%
• Oklahoma: 38.4%
• Oregon: 34.2%
• Pennsylvania: 36.4%
• Rhode Island: 36.5%
• South Carolina: 38.8%
• South Dakota: 42.7%
• Tennessee: 33.4%
• Texas: 37.6%
• Utah: 36.1%
• Vermont: 38.4%
• Virginia: 37.1%
• Washington: 33.9%
• West Virginia: 41.1%
• Wisconsin: 37.3%
• Wyoming: 41.1%

10.2 Market Resources
Health Expenditures By State, Centers for Medicare & Medicaid Services.
REGIONAL VARIATIONS IN HEALTHCARE SPENDING

11.1 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

11.2 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.
11.3 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

11.4 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

11.5 State Cost Index

Based on data from the Health Care Cost Institute (www.healthcostinstitute.org), Modern Healthcare (May 2016) 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, 5/2/16*

### 11.6 Market Resources

*Dartmouth Atlas of Health Care*, The Dartmouth Institute for Health Policy and Clinical Practice. ([www.dartmouthatlas.org](http://www.dartmouthatlas.org))

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

12.1 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.

Participation in an ACO is purely voluntary.

“A pilot program in the 2010 healthcare law saved Medicare nearly $400 million over two years and is the first alternative-payment model shown to cut costs while improving quality of care.”

*The Wall Street Journal, 5/5/15*

12.2 ACO Census

According to Leavitt Partners (www.leavittpartners.com), there were 738 ACOs in the U.S. covering 26.8 million people as of July 2015. The ACO count by state is as follows:

- Alabama: 7
- Alaska: 3
- Arizona: 18
- Arkansas: 14
- California: 78
- Colorado: 19
- Connecticut: 15
- Delaware: 3
- District of Columbia: 3
- Florida: 72
- Georgia: 23
- Hawaii: 5
- Idaho: 5
- Illinois: 48
- Indiana: 28
- Iowa: 26
• Kansas: 14  • North Dakota: 4
• Kentucky: 12  • Ohio: 28
• Louisiana: 7  • Oklahoma: 5
• Maine: 14  • Oregon: 29
• Maryland: 23  • Pennsylvania: 28
• Massachusetts: 28  • Rhode Island: 6
• Michigan: 28  • South Carolina: 10
• Minnesota: 22  • South Dakota: 4
• Mississippi: 7  • Tennessee: 21
• Missouri: 18  • Texas: 48
• Montana: 4  • Utah: 10
• Nebraska: 11  • Vermont: 4
• Nevada: 7  • Virginia: 24
• New Hampshire: 11  • Washington: 22
• New Jersey: 37  • West Virginia: 3
• New Mexico: 3  • Wisconsin: 17
• New York: 41  • Wyoming: 3

12.3 Largest ACOs

The 2015 Accountable Care Organizations Survey, by Modern Healthcare, ranked the largest ACOs as follows:

<table>
<thead>
<tr>
<th># Covered</th>
<th># Participating Physicians</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trinity Health (Livonia, MI):</td>
<td>1,578,938</td>
</tr>
<tr>
<td>Advocate Health Partners (Downers Grove, IL):</td>
<td>729,000</td>
</tr>
<tr>
<td>UnityPoint Health Partners (West Des Moines, IA):</td>
<td>330,000</td>
</tr>
<tr>
<td>Banner Health Network (Phoenix, AZ):</td>
<td>320,000</td>
</tr>
<tr>
<td>OSF HealthCare (Peoria, IL):</td>
<td>175,000</td>
</tr>
<tr>
<td>Integrated Health Network (Brookfield, WI):</td>
<td>150,000</td>
</tr>
<tr>
<td>ACO of PA (Wayne, PA):</td>
<td>121,000</td>
</tr>
<tr>
<td>Beacon Health (Brewer, ME):</td>
<td>100,000</td>
</tr>
<tr>
<td>Summa ACO (Akron, OH):</td>
<td>88,000</td>
</tr>
</tbody>
</table>

12.4 Shared Savings

There were 137 organizations in the first group of ACOs recognized by the Centers for Medicare & Medicaid Services (CMS, www.cms.gov) in 2012. These providers saved $380 million during their first year of participation, according to the CMS, a portion of which was returned to the providers.

CMS reported 250 ACOs reduced Medicare spending by $833 million during the second year of the program. These hospitals and physicians retained $422 million for their efforts. The 53 top performing organizations garnered more than $300 million of this total.
12.5 Quality Measures

For the first year of the program, ACOs were required to submit quality results to Medicare to be eligible for bonus awards. Quality was not factored into the bonuses. The percentages of shared-savings for ACOs meeting the recommended standard of care were as follows:

- Appropriate use of heart disease prescriptions: 81%
- Diabetic with heart disease using aspirin: 77%
- Diabetic with adequate hemoglobin A1c control: 75%
- Diabetic with blood pressure of less than 140/90: 73%
- Diabetic non-smoker: 68%

Beginning in 2014, the CMS began factoring compliance with quality measures along with savings to determine bonus payments.

12.6 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

### 12.7 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%
13.1 Overview
Ambulatory Surgery Centers (ASCs) compete with hospital outpatient departments for procedures that don't require overnight stays, like colonoscopies and some joint surgeries. Four in five ASCs are at least partly owned by physicians, many in partnership with hospitals seeking to minimize losses.

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.

13.2 ASC Census
The following states have the most ambulatory surgery centers (source: Ambulatory Surgery Center Association [www.ascassociation.org]):

- California: 761
- Florida: 406
- Texas: 361
- Maryland: 354
- Georgia: 287
- Pennsylvania: 236
- New Jersey: 233
- Washington: 220
- Ohio: 201
- Arizona: 152

According to the American Hospital Association (www.aha.org), there are 5,316 Medicare-certified freestanding ambulatory care surgery centers in the U.S.

13.3 Market Assessment
The Centers for Medicare & Medicaid Services (CMS, www.cms.gov) pays approximately $3 billion annually to ASCs, or an average of $580,000 per facility. The following are the most frequent ASC surgery procedures:
<table>
<thead>
<tr>
<th>Volume</th>
<th>Pct. of Total Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastrointestinal: 1.82 million</td>
<td>32.7%</td>
</tr>
<tr>
<td>Eye:</td>
<td>1.79 million</td>
</tr>
<tr>
<td>Nervous system: 1.06 million</td>
<td>19.0%</td>
</tr>
<tr>
<td>Musculoskeletal: 370,000</td>
<td>6.6%</td>
</tr>
<tr>
<td>Skin:</td>
<td>238,000</td>
</tr>
<tr>
<td>Genitourinary: 208,000</td>
<td>3.7%</td>
</tr>
</tbody>
</table>

### 13.4 Market Leaders

The following companies are the largest ASC operators:

- AmSurg ([www.amsurg.com](http://www.amsurg.com))
- NovaMed ([www.novamed.com](http://www.novamed.com))
- Surgical Care Affiliates ([www.scasurgery.com](http://www.scasurgery.com))
- United Surgical Partners International ([www.unitedsurgical.com](http://www.unitedsurgical.com))

Ranked by total number of annual procedures, the following are the largest ambulatory surgery centers (source: *Modern Healthcare*):

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

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

Procedures by state are as follows:

<table>
<thead>
<tr>
<th>State</th>
<th># Procedures</th>
<th>Procedures per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mississippi</td>
<td>57,970</td>
<td>1,941</td>
</tr>
<tr>
<td>Delaware</td>
<td>15,651</td>
<td>1,703</td>
</tr>
<tr>
<td>Maryland</td>
<td>95,401</td>
<td>1,621</td>
</tr>
<tr>
<td>Florida</td>
<td>306,076</td>
<td>1,584</td>
</tr>
<tr>
<td>South Carolina</td>
<td>70,312</td>
<td>1,489</td>
</tr>
<tr>
<td>Tennessee</td>
<td>91,618</td>
<td>1,415</td>
</tr>
<tr>
<td>Arkansas</td>
<td>38,326</td>
<td>1,299</td>
</tr>
<tr>
<td>Kansas</td>
<td>35,112</td>
<td>1,217</td>
</tr>
<tr>
<td>Nebraska</td>
<td>21,918</td>
<td>1,181</td>
</tr>
<tr>
<td>New Jersey</td>
<td>104,747</td>
<td>1,181</td>
</tr>
<tr>
<td>Louisiana</td>
<td>50,590</td>
<td>1,099</td>
</tr>
<tr>
<td>Arizona</td>
<td>70,583</td>
<td>1,077</td>
</tr>
<tr>
<td>Indiana</td>
<td>70,300</td>
<td>1,075</td>
</tr>
<tr>
<td>Alabama</td>
<td>51,653</td>
<td>1,072</td>
</tr>
<tr>
<td>Idaho</td>
<td>16,779</td>
<td>1,052</td>
</tr>
<tr>
<td>Georgia</td>
<td>100,619</td>
<td>1,015</td>
</tr>
<tr>
<td>Nevada</td>
<td>27,498</td>
<td>998</td>
</tr>
<tr>
<td>Montana</td>
<td>9,937</td>
<td>998</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>12,860</td>
<td>973</td>
</tr>
<tr>
<td>South Dakota</td>
<td>7,929</td>
<td>951</td>
</tr>
<tr>
<td>North Dakota</td>
<td>6,647</td>
<td>948</td>
</tr>
<tr>
<td>Missouri</td>
<td>57,050</td>
<td>947</td>
</tr>
<tr>
<td>Wyoming</td>
<td>5,419</td>
<td>940</td>
</tr>
<tr>
<td>Kentucky</td>
<td>39,251</td>
<td>896</td>
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<tr>
<td>Washington</td>
<td>61,712</td>
<td>895</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>112,756</td>
<td>883</td>
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<tr>
<td>Colorado</td>
<td>42,569</td>
<td>820</td>
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<tr>
<td>Oklahoma</td>
<td>31,124</td>
<td>816</td>
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<tr>
<td>Massachusetts</td>
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<td>783</td>
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<tr>
<td>Ohio</td>
<td>89,530</td>
<td>775</td>
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<tr>
<td>Texas</td>
<td>196,932</td>
<td>756</td>
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<tr>
<td>North Carolina</td>
<td>73,402</td>
<td>753</td>
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<tr>
<td>Oregon</td>
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<td>706</td>
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<td>Michigan</td>
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<td>699</td>
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<tr>
<td>Maine</td>
<td>9,046</td>
<td>681</td>
</tr>
<tr>
<td>State</td>
<td>Number</td>
<td>Code</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------</td>
<td>------</td>
</tr>
<tr>
<td>Virginia</td>
<td>51,893</td>
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</tr>
<tr>
<td>Illinois</td>
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<td>634</td>
</tr>
<tr>
<td>Connecticut</td>
<td>22,291</td>
<td>621</td>
</tr>
<tr>
<td>California</td>
<td>231,318</td>
<td>609</td>
</tr>
<tr>
<td>New Mexico</td>
<td>12,678</td>
<td>609</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>32,016</td>
<td>559</td>
</tr>
<tr>
<td>Iowa</td>
<td>15,959</td>
<td>519</td>
</tr>
<tr>
<td>West Virginia</td>
<td>9,211</td>
<td>496</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>5,069</td>
<td>483</td>
</tr>
<tr>
<td>Utah</td>
<td>13,553</td>
<td>475</td>
</tr>
<tr>
<td>Alaska</td>
<td>3,255</td>
<td>446</td>
</tr>
<tr>
<td>Hawaii</td>
<td>5,375</td>
<td>387</td>
</tr>
<tr>
<td>New York</td>
<td>67,206</td>
<td>343</td>
</tr>
<tr>
<td>Minnesota</td>
<td>18,369</td>
<td>342</td>
</tr>
<tr>
<td>Vermont</td>
<td>1,165</td>
<td>186</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>728</td>
<td>115</td>
</tr>
</tbody>
</table>

### 13.6 Market Resources

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

14

BEST PLACES TO WORK

14.1 Overview

*Modern Healthcare* names the 100 Best Places To Work in Healthcare annually. The recognition program is sponsored by Studer Group (www.studergroup.com).

14.2 Top 100

The following are companies receiving the Best Places To Work In Healthcare designation in 2016:
- Advantage Home Health Services (Canton, OH)
- ArborMetrix (Ann Arbor, MI)
- Asheville Specialty Hospital (Asheville, NC)
- athenahealth (Watertown, MA)
- Bailey Medical Center (Owasso, OK)
- Baylor Jack and Jane Hamilton Heart and Vascular Hospital (Dallas, TX)
- Beach Cities Health District (Redondo Beach, CA)
- Black River Memorial Hospital (Black River Falls, WI)
- Bon Secours Virginia Health System (Richmond, VA)
- Burwood Group (Chicago, IL)
- CareSource (Dayton, OH)
- CHI St. Luke's Health-Lakeside Hospital (The Woodlands, TX)
- CipherHealth (New York, NY)
- CompHealth (Salt Lake City, UT)
- CoverMyMeds (Columbus, OH)
- CQuence Health Group (Omaha, NE)
- Crothall Healthcare (Wayne, PA)
- CTG Health Solutions (Buffalo, NY)
- Cumberland Consulting Group (Franklin, TN)
- Diagnostic Laboratory of Oklahoma (Oklahoma City, OK)
- Divurgent (Virginia Beach, VA)
- Doctors Hospital of Sarasota (Sarasota, FL)
- Encompass Home Health and Hospice (Dallas, TX)
- Entrada (Brentwood, TN)
- Galen Healthcare Solutions (Chicago, IL)
- Grand Rounds (San Francisco, CA)
- Hayes Management Consulting (Newton, MA)
• Health By Design (San Antonio, TX)
• Health Catalyst (Salt Lake City, UT)
• HealthSouth Corp (Birmingham, AL)
• Heart ’n Home Hospice & Palliative Care (Fruitland, ID)
• HopeWest (Grand Junction, CO)
• Hospice Care of South Carolina (Spartanburg, SC)
• Impact Advisors (Spartanburg, SC)
• Imprivata (Lexington, MA)
• Indiana Health Information Exchange (Indianapolis, IN)
• Intelligent InSites (Fargo, ND)
• King's Daughters Medical Center (Brookhaven, MA)
• Lafayette Surgical Specialty Hospital (Lafayette, LA)
• Lake Area Medical Center (Lake Charles, LA)
• Laser Spine Institute (Tampa, FL)
• Licking Memorial Health Systems (Newark, OH)
• LiquidAgents Healthcare (Plano, TX)
• Louisiana Organ Procurement Agency (Metairie, LA)
• Lovelace Westside Hospital (Albuquerque, NM)
• Lovelace Women's Hospital (Albuquerque, NM)
• Massachusetts General Hospital (Boston, MA)
• MedeAnalytics (Emeryville, CA)
• Medical Solutions (Omaha, NE)
• MediRevv (Coralville, IA)
• MedSys Group (Plano, TX)
• Memorial Healthcare System (Hollywood, FL)
• MMY Consulting (Indianapolis, IN)
• Modernizing Medicine (Boca Raton, FL)
• MyRounding (Denver, CO)
• Nathan Adelson Hospice (Las Vegas, NV)
• National Medical Billing Services (Chesterfield, MO)
• Navin, Haffty & Associates (Westborough, MA)
• Neosho Memorial Regional Medical Center (Chanute, KS)
• Nordic (Madison, WI)
• Orthopaedic Hospital of Wisconsin (Glendale, WI)
• Park Place International (Marlborough, MA)
• Physicians Surgical Hospitals (Amarillo, TX)
• PracticeLinkcom (Hinton, WV)
• Prominence Advisors (Lincolnshire, IL)
• Quantum Health (Columbus, OH)
• RNetwork (Boca Raton, FL)
• Robert Wood Johnson University Hospital (New Brunswick, NJ)
• Santa Rosa Consulting (Franklin, TN)
• Signature HealthCARE (Louisville, KY)
• South Baldwin Regional Medical Center (Foley, AL)
• South Broward Endoscopy (Cooper City, FL)
• South Carolina Hospital Association (Columbia, SC)
• Southern Ohio Medical Center (Portsmouth, OH)
• Southwest Medical Center (Charleroi, PA)
• SpineNevada (Reno, NV)
• St. Martin Hospital (Breaux Bridge, LA)
• Stillwater Medical Center (Stillwater, OK)
• Sutter Center for Psychiatry (Sacramento, CA)
• Sutter Davis Hospital (Davis, CA)
• Talent Plus (Lincoln, NE)
• Texas Health Flower Mound (Flower Mound, TX)
• Texas Health Harris Methodist Hospital Southlake (Southlake, TX)
• Texas Health Heart & Vascular Hospital (Arlington, TX)
• Texas Health Presbyterian Hospital Rockwall (Rockwall, TX)
• Texas Orthopedic Hospital (Houston)
• The Advisory Board Co. (Washington, DC)
• The Chartis Group (Chicago)
• The Medicus Firm (Dallas)
• The Women's Hospital (Newburgh, IN)
• TigerText (Santa Monica, CA)
• Triage Consulting Group (San Francisco, CA)
• Tri-Cities Cancer Center (Kennewick, WA)
• TSI Healthcare (Chapel Hill, NC)
• Weatherby Healthcare (Fort Lauderdale, FL)
• West Valley Medical Center (Caldwell, ID)
• Woman's Hospital (Baton Rouge, LA)
• Yankee Alliance (Andover, MA)
• York General Health Care Services (York, NE)
15.1 Top 10 Best Practices
An April 2016 survey by Modern Healthcare asked hospital and healthcare executives to select up to three best practices from a list of 25 topics. Responses were as follows:
1. Using collaboration to cut readmission rates
2. Adopting telehealth to boost patient outcomes
3. Thwarting the spread of deadly bacteria
4. Hiring medical scribes to allow physicians to focus on patients
5. Using software to avoid misdiagnoses
6. Payers publishing what services will cost
7. Making the discharge process smoother
8. Targeting the right patients for support
9. Leadership development of future administrators
10. Residency programs for nurses

“Most important best practice? Partnerships targeting readmission. Under the ACA’s Hospital Readmissions Reduction Program, hospitals have to keep readmission rates below the national average to avoid Medicare penalties of up to 3%. Although telemedicine was a distant second, its showing confirms that the use of remote technology continues to gain traction as a legitimate means of augmenting face-to-face visits with clinicians.”

Modern Healthcare, 5/9/16
16.1 Overview

According to the Children's Hospital Association (www.childrenshospitals.net), there are approximately 200 children's hospitals in the United States. 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.

16.2 Market Assessment

According to the Agency for Healthcare Research and Quality (AHRQ, www.ahrq.gov), there were 5.8 million discharges from general and children’s hospitals in 2014.

Annual per capita spending for children is $2,574, according to the Health Care Cost Institute (www.healthcostinstitute.org).

16.3 Largest Children’s Hospitals

The largest children’s hospitals, ranked by number of staffed beds, are as follows (source: Modern Healthcare, February 2016):

- Texas Children’s Hospital (Houston, TX): 606 beds
- Children’s Hospital Los Angeles (Los Angeles, CA): 568 beds
- Cincinnati Children’s Hospital Medical Center (Cincinnati, OH): 523 beds
- Rady Children’s Hospital (San Diego): 518 beds
- Children’s Hospital of Philadelphia (Philadelphia, PA): 514 beds
- Children’s Healthcare of Atlanta (Atlanta, GA): 483 beds
- Children’s Hospital Colorado (Aurora, CO): 414 beds
- Children’s Medical Center Dallas (Dallas, TX): 406 beds
• Boston Children’s Hospital (Boston, MA): 395
• Phoenix Children’s Hospital (Phoenix, AZ): 385
• Nationwide Children’s Hospital (Columbus, OH): 378
• Valley Children’s Hospital (Madera, CA): 348
• Children’s Hospital of Alabama (Birmingham, AL): 331
• Children’s Hospital of Pittsburgh of UPMC (Pittsburgh, PA): 312
• Children’s National Medical Center (Washington, DC): 303
• Children’s Mercy Hospital (Kansas City, MO): 297
• Children’s Hospital of Wisconsin (Milwaukee, WI): 296
• Nicklaus Children’s Hospital (Miami, FL): 289
• Lucile Packard Children’s Hospital at Stanford (Palo Alto, CA): 287
• Cook Children’s Medical Center (Ft. Worth, TX): 272
• Arkansas Children’s Hospital (Little Rock, AZ): 280
• Children’s Hospitals and Clinics of Minnesota (Minneapolis, MN): 279
• Ann & Robert H. Lurie Children’s Hospital of Chicago (Chicago, IL): 262
• Nemours/Alfred I. duPont Hospital for Children (Wilmington, DE): 260
• All Children’s Hospital (St. Petersburg, FL): 259
• Akron Children’s Hospital (Akron, OH): 253
• Seattle Children’s Hospital (Seattle, WA): 250
• Children’s Hospital (New Orleans, LA): 247
• St. Louis Children’s Hospital (St. Louis, MO): 235
• Primary Children’s Hospital (Salt Lake City, UT): 232

16.4 Market Resources
Children’s Hospital Association, 600 13th Street NW, Suite 500, Washington, DC 20005. (202) 753-5500. (www.childrenshospitals.net)
17

COMMUNITY HEALTH CENTERS

17.1 Overview

Community health centers (CHC) are 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 health care 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 8,800 community health center clinics and delivery sites in the U.S. operated by 1,278 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. In 2006, CHCs nationwide implemented a program for offering free rapid HIV testing to all patients ages 13-to-64 during routine primary medical and dental care visits.

Community health centers served over 23 million patients and 90 million visits in 2015. Annually, they serve approximately one million patients covered by plans purchased through federal exchanges, most of whom are below 200% of the poverty level.

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

17.2 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>

17.3 Cost Of Care

Costs of care at community health centers are as follows (source: NACHC):

Average Cost per Patient

- Medical costs per medical patient: $516
- Dental costs per dental patient: $439
- Total cost per patient: $763

Average Cost per Patient Visit

- Medical cost per medical patient visit: $165
- Dental costs per dental patient visit: $176
- Mental health and substance abuse costs per mental health and substance abuse health patient visit: $145

17.4 Market Resources

National Association of Community Health Centers, 7501 Wisconsin Avenue, Bethesda, MD 20814. (301) 347-0400. (www.nachc.com)
18

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 America
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 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.
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%

18.7 Market Resources

National Center for Complementary and Integrative Health, 9000 Rockville Pike, Bethesda, MD 20892. (888) 644-6226. (www.nccih.nih.gov)
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 offer wellness promotion initiatives. Larger employers are more likely to have more complex wellness programs.

Kaiser Family Foundation (www.kff.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, 5/1/16

19.2 Market Assessment
According to a 2016 report by IBISWorld (www.ibisworld.com), corporate wellness services are a $8 billion market; annual market growth is 4.8%.

IBISWorld estimates 550 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 cessation: 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*, 5/1/16

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.dol.gov/ebsa/pdf/workplacewellnessstudyfinal.pdf)
20

DESIGN & CONSTRUCTION

20.1 Overview

Modern Healthcare assesses the healthcare construction market annually. This chapter presents a summary of the 37th annual Construction & Design Survey, published in March 2016.

20.2 Healthcare Construction Projects

The cost of healthcare construction projects completed in 2015 totaled $26.0 billion. This represented 2,871 projects of all type (new facilities, expansions, and renovations) and 20,476 beds. The distribution by type of facility is as follows:

**Acute-care Hospitals**
- Entire facilities: $4.83 billion (97 projects)
- Expansions: $4.44 billion (229 projects)
- Renovations: $3.55 billion (1,191 projects)

**Rehabilitation Hospitals**
- Entire facilities: $1.26 billion (45 projects)

**Psychiatric Centers/Hospitals**
- All projects: $453 million (48 projects)

**Stand-Alone Emergency Departments**
- All projects: $193 million (20 projects)

**Specialty Hospitals**
- Entire facilities: $1.10 billion (30 projects)
- Expansions: $239 million (27 projects)
- Renovations: $249 million (66 projects)

**Outpatient Facilities**
- Entire facilities: $2.66 billion (143 projects)
- Expansions: $826 million (123 projects)
- Renovations: $968 million (291 projects)
Medical Office Buildings

- Entire facilities: $884 million (93 projects)
- Expansions: $75 million (25 projects)
- Renovations: $263 million (235 projects)
- Research facilities: $2.62 billion (70 projects)
- Other: $1.54 billion (138 projects)

For 2015, 1,950 projects broke ground, with 19,600 beds at a projected construction cost of $32.0 billion. Representing 2,943 projects and 44,969 beds, in total, $54.5 billion in hospital projects were designed during 2015.
21

ECONOMIC CONTRIBUTION OF HOSPITALS

21.1 Overview
The American Hospital Association (www.aha.org) published The Economic Contribution of Hospitals. This chapter sources data from this report.

21.2 Hospital Care and The U.S. Economy
Hospital care is the largest component of the healthcare sector. This sector represents 17.8% of GDP, or approximately $3.0 trillion. Hospital revenue accounts for $885 billion of that total.
Hospitals employ nearly 5.6 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 $757 billion annually on goods and services.

21.3 State-by-State Hospital Expenditures
By state, direct spending is as follows (source: The Economic Contribution of Hospitals):

- Alabama: $9.01 billion
- Alaska: $1.76 billion
- Arizona: $12.11 billion
- Arkansas: $5.76 billion
- California: $83.34 billion
- Colorado: $10.94 billion
- Connecticut: $9.80 billion
- Delaware: $2.66 billion
- District of Columbia: $3.94 billion
- Florida: $40.82 billion
- Georgia: $17.66 billion
- Hawaii: $2.86 billion
- Idaho: $3.13 billion
- Illinois: $31.92 billion
- Indiana: $17.93 billion
- Iowa: $7.71 billion
- Kansas: $6.51 billion
- Kentucky: $10.40 billion
• Louisiana: $10.15 billion  
• Maine: $  4.42 billion  
• Maryland: $13.81 billion  
• Massachusetts: $24.08 billion  
• Michigan: $27.29 billion  
• Minnesota: $15.07 billion  
• Mississippi: $  6.98 billion  
• Missouri: $17.02 billion  
• Montana: $  2.66 billion  
• Nebraska: $  4.97 billion  
• Nevada: $  4.20 billion  
• New Hampshire: $  4.02 billion  
• New Jersey: $19.79 billion  
• New Mexico: $  4.00 billion  
• New York: $62.12 billion  
• North Carolina: $22.66 billion  
• North Dakota: $  2.68 billion  
• Ohio: $35.77 billion  
• Oklahoma: $  7.46 billion  
• Oregon: $  9.10 billion  
• Pennsylvania: $37.28 billion  
• Rhode Island: $  3.07 billion  
• South Carolina: $  9.73 billion  
• South Dakota: $  2.49 billion  
• Tennessee: $14.71 billion  
• Texas: $51.15 billion  
• Utah: $  5.12 billion  
• Vermont: $  1.93 billion  
• Virginia: $16.51 billion  
• Washington: $  16.70 billion  
• West Virginia: $  5.15 billion  
• Wisconsin: $15.80 billion  
• Wyoming: $  1.18 billion

21.4 Market Resources
American Hospital Association, 155 N. Wacker Drive, Chicago, IL 60606.  
(312) 422-3000.  (www.aha.org)
ELECTRONIC HEALTH RECORDS

22.1 Hospital and Physician Use of EHRs

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

Meaningful use of EHRs is classified as follows:
- Stage 1: Data capture and sharing
- Stage 2: Advance clinical processes (i.e., meaningful use)

*Modern Healthcare* reported 59% of U.S. hospitals had an operational Stage 1 EHR; 5.8% met all Stage 2 meaningful-use criteria. Fifty-percent (50%) of office-based physicians had a basic EHR; 30% had a fully functional EHR.

22.2 EHR Vendors

According to the HHS Office of the National Coordinator for Health Information Technology (http://healthit.gov), the top vendors of acute-care EHR systems, ranked by 2015 marketshare, are as follows:

- Epic Systems Meditech (www.epicsysinc.com): 22.0%
- Allscripts Healthcare Solutions (www.allscripts.com): 9.8%
- eClinicalWorks (www.eclinicalworks.com): 8.4%
- NextGen Healthcare (www.nextgen.com): 7.6%
- GE Healthcare (www.gehealthcare.com): 5.6%
- Greenway Health (www.greenwayhealth.com): 4.3%
- Cerner Corp. (www.cerner.com): 4.1%
- Practice Fusion (www.practicefusion.com): 3.2%
- Athenahealth (www.athenahealth.com): 2.9%
- McKesson Provider Technologies (www.mckesson.com): 2.1%
- e-MDs (www.e-mds.com): 1.2%

Approximately 260 EHR systems have been developed by hospitals.

22.3 Hospital-Physician Collaboration

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%

22.4 Benefits Of EHRs

The move to electronic health records is contributing to billions of dollars in higher costs for Medicare, private insurers, and patients by making it easier for hospitals and physicians to bill more efficiently for their services. The New York Times estimates that billing efficiencies brought about by EHRs have contributed significantly to the $1 billion in extra reimbursements that hospitals receive compared with the pre-EHR era.

According to a survey published in the New England Journal of Medicine, physicians who have used basic or fully functional (FF) EHRs reported the following benefits:

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Basic</th>
<th>FF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alerted them to an important laboratory test:</td>
<td>75%</td>
<td>90%</td>
</tr>
<tr>
<td>Prompted them to avoid a drug-allergy problem:</td>
<td>66%</td>
<td>80%</td>
</tr>
<tr>
<td>Helped them prevent a potentially dangerous medication reaction:</td>
<td>54%</td>
<td>71%</td>
</tr>
<tr>
<td>Helped them provide preventive care:</td>
<td>41%</td>
<td>69%</td>
</tr>
<tr>
<td>Led them to order a critical test:</td>
<td>36%</td>
<td>68%</td>
</tr>
<tr>
<td>Led them to order a genetic test:</td>
<td>8%</td>
<td>17%</td>
</tr>
</tbody>
</table>

A survey of 4,279 physicians, conducted by the American College of Physicians (www.acponline.org), found that in spite of the benefits, 34% of respondents said they are very dissatisfied with the ability of their EHRs to decrease their workload.

22.5 Interoperability

Coordinating care for patients with complex health conditions who see multiple physicians can be supported by better EHR interoperability. The primary care team may be in the best position to coordinate a patient’s care, but it will often need information from other providers. Most current EHRs don’t adequately support data exchange across providers and settings, so practices communicate with outsiders primarily on paper. To support information exchange, EHRs must present data in standard formats, and separate organizations providing services for the same patient need to share information securely.
“Data interoperability across electronic health record systems remains a substantial barrier to the development of a robust health IT infrastructure to support new care models and to health information exchange among providers and with patients to support patient care.”

American Hospital Association

In 2015, the HHS’ Office of the National Coordinator for Health Information Technology (www.healthit.gov) published Connecting Health and Care for the Nation, A Shared Nationwide Interoperability Roadmap which called on healthcare providers to be able to use their systems to send, receive, and use a common set of electronic clinical information by the end of 2017.

22.6 Scribe Services

According to a survey by Health IT Strategist, 35% of healthcare organizations using EHRs use scribes to aid physician documentation.

Many hospitals use subcontractors to provide scribe services. Michael Murphy, CEO of ScribeAmerica (www.scribeamerica.com), estimates that the three largest companies in the field provide services for more than 150 hospitals, staffing them with about 2,000 scribes. About half of ScribeAmerica scribes are students in pre-med, pre-nursing, physician-assistant, or nurse-practitioner programs who go on to those professions after gaining invaluable, on-the-job educational experience working as scribes.

22.7 Market Resources

HHS Office of the National Coordinator for Health Information Technology (www.healthit.gov)

23

EMERGENCY DEPARTMENTS

23.1 Profile Of Emergency Medicine

According to Hospital Statistics 2016™, by the American Hospital Association (AHA, www.aha.org), total 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>
</tbody>
</table>

Of the 4,440 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

23.2 Profile Of ED Care

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%

The immediacy of care needed for ED visits is as follows:
• Urgent: 35%
• Emergent: 15%
• Semi-urgent: 20%
• Non-urgent: 13%
• No triage/unknown: 17%

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.

23.3 Emergency Medicine In American Hospitals

HealthGrades (www.healthgrades.com) assesses annually Medicare patient records to evaluate emergency care provided at U.S. hospitals. The assessment focuses on 12 of the most common and life-threatening medical emergencies among that patient population, including heart attack, stroke, pneumonia, and chronic obstructive pulmonary disease (COPD).

Emergency Medicine in American Hospitals, published by HealthGrades, identified the following Top 10 Cities for Emergency Medicine, based on overall lowest mortality rate for patients admitted through the emergency department:
23.4 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

23.5 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></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%

### 23.6 Wait Times

According to the NHAMCS, waits for emergency care have increased to an average of 56 minutes from 38 minutes a decade ago. The median wait is 31 minutes.

A study by Harvard Medical School and researchers at Cambridge Health Alliance, published in Health Affairs, reports a similar finding. The study, which analyzed the time between patients’ ED arrivals and when they are first seen by a doctor, reports a 36% increase in wait time over the past seven years. For those whom a triage nurse classified as needing immediate attention, waits increased from 10 to 14 minutes, up 40%. Waits increased 150% for emergency patients suffering heart attacks, to 20 minutes.

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.

### 23.7 Admissions Via Emergency Room

According to the National Hospital Ambulatory Medical Care Survey, 50% of all hospital admissions come through the ED, an increase from 36% a decade ago. Of all ED visits, 13.3% result in hospital admission.

Hospitals in the following cities had the highest percentage of admission through the emergency department for the 12 of the most common and life-threatening medical emergencies among Medicare patients (source: HealthGrades):

- Providence, RI: 93.0%
- Las Vegas, NV: 91.6%
- Miami-Ft. Lauderdale, FL: 91.1%
- New York, NY: 90.8%
Hospitals in the following cities had the lowest percentage:

- Lincoln, NE: 48.1%
- Sioux Falls, SD: 53.7%
- Wichita, KS: 54.8%
- Omaha, NE: 62.3%

According to HealthGrades, 61% of hospital admissions among seniors begin in the emergency department, more than any other age group.

“I call the emergency department the front porch of the medical neighborhood. We 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. People come in through the emergency department, and we can help coordinate their care either to a primary care home, or specialty care, or even to a skilled nursing facility.”

David Seaberg, M.D., Dean
College of Medicine
University of Tennessee
Hospitals & Health Networks

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23.8 ED Patient Satisfaction

The Emergency Department Pulse Report, by Press Ganey Associates (www.pressganey.com), reports that patient satisfaction with care in the ED has increased since 2003. Still, patients admitted through the ED report lower satisfaction scores than those otherwise admitted directly to hospitals. The following are further findings of the report:

- ED patients ranked the following as the most important contributors to their overall satisfaction:
  - How well they were kept informed about delays
  - How well their pain was controlled
  - Degree to which staff cared about them as a person
  - Overall rating of care received during their visit
  - Nurses’ concern for keeping them informed about their treatment
• The average ED patient experience lasts four hours and seven minutes.
• Patient satisfaction drops based on amount of time spent in the ED, as follows (satisfaction scores on scale of 1-to-100):
  - < 1 hour: 88.9
  - 1-to-2 hours: 89.0
  - 2-to-3 hours: 86.3
  - 3-to-4 hours: 83.4
  - 4-to-5 hours: 81.0
  - 5-to-6 hours: 79.0
  - 6 hours or more: 76.9

• Patient satisfaction was lowest during the evening shift, 3:00 p.m.-11:00 p.m., and highest during the daytime, 7:00 a.m.-3:00 p.m.
• The average time spent in the ED increases by 30 minutes for every additional 10,000 patients seen annually.
• Patients who reported receiving “good” or “very good” information about delays reported nearly the same overall satisfaction whether they had spent over four hours or less than one hour in the ED.

“Frequent, proactive communication – particularly about wait times and delays – is the most important determinant of patient satisfaction in hospital emergency departments.”

Hospitals & Health Networks

According to Hospitals & Health Networks, based on data from Press Ganey, EDs at hospitals in the following cities rank highest in patient satisfaction scores:

**Metro Areas With Population Over One Million**
- Miami-Ft. Lauderdale, FL: 87.0
- Hartford, CT: 86.8
- Indianapolis, IN: 86.5
- Columbus, OH: 86.4
- Milwaukee, WI: 86.2

**Metro Areas With Population Under One Million**
- Wichita, KS: 88.2
- Madison, WI: 87.4
- Grand Rapids, MI: 86.8
23.9 Non-Urgent Care Visits

According to Prof. David Seaberg, M.D., Dean of the University of Tennessee College of Medicine and a practicing emergency physician, only about 50% of ED visits are for urgent care. The other half 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. Data released by the state in 2014 reported that ED visits by Medicaid patients fell 10% during the prior 12 month period; the rate of ED visits that resulted in a non-acute diagnosis decreased 14%.

23.10 Market Resources

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

HealthGrades, 999 18th Street, Suite 600, Denver, CO 80202. (303) 716-0041. (www.healthgrades.com)

Press Ganey Associates, 404 Columbia Plaza, South Bend, IN 46601. (800) 232-8032. (www.pressganey.com)
HEALTH INFORMATION EXCHANGES

24.1 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.

24.2 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
• Excela 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)
25.1 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.

25.2 Market Assessment
According to The Market Survey of Long-Term Care Costs, by the MetLife Mature Market Institute (www.maturemarketinstitute.com), the average hourly rate for home health aides provided by a home care agency is $21 per hour; daily rates for adult day services are $70, figures that remained unchanged from the previous year.

According to the Centers for Medicare and Medicaid Services (www.cms.gov), national expenditures for home healthcare are $75.7 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%

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.

25.3 Largest Home Healthcare Companies

The following are the largest home healthcare companies (source: Modern Healthcare, August 2015):

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).

25.4 Hospitals In The Home Care Market

According to Hospital Statistics 2016™, by the American Hospital Association (www.aha.org), 60% 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></th>
<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>
<td>41</td>
</tr>
<tr>
<td>Cox Health</td>
<td>1.14 million</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Catholic Health Initiatives</td>
<td>701,400</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Trinity Health</td>
<td>699,100</td>
<td>37</td>
<td>43</td>
</tr>
<tr>
<td>Hartford Healthcare System</td>
<td>554,100</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Ascension Health</td>
<td>546,785</td>
<td>14</td>
<td>21</td>
</tr>
<tr>
<td>Adventist Health System</td>
<td>534,200</td>
<td>20</td>
<td>22</td>
</tr>
<tr>
<td>North Shore-Long Island Jewish Health System</td>
<td>508,600</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Bon Secours Health System</td>
<td>499,200</td>
<td>5</td>
<td>n/a</td>
</tr>
<tr>
<td>University of Pittsburgh Medical Center</td>
<td>450,000</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

### 25.5 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*
25.6 Market Resources
National Association for Home Care & Hospice, 228 Seventh Street SE, Washington, DC 20003. (202) 547-7424. (www.nahc.org)
26

HOSPICE & PALLIATIVE CARE

26.1 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

26.2 Market Assessment
Annual hospice and palliative care expenditures in the U.S. are estimated at $16 billion. Of this amount, Medicare pays about $13 billion. Spending is distributed by payer as follows (source: Modern Healthcare):

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“Medicare’s hospice program is supposed to be only for patients who doctors certify are likely to die within six months. Today, care is routinely being extended not only to those with terminal cancer – the program’s original focus – but to patients with an array of ailments, including dementia, whose declines can take years. Between 2005 and 2013, about 107,000 patients received hospice care for an average of nearly 1,000 spread out over four or more calendar years. They cost Medicare 14% of its overall hospice spending, even though they accounted for just 1.3% of its hospice patients.”

The Wall Street Journal, 2/18/16

Researchers at Duke University found that hospice 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.

Health Affairs reported the following per patient savings for Medicare patients enrolled in hospice compared with hospitalization:

- 1-to-7 days: $2,650
- 8-to-14 days: $5,040
- 15-to-30 days: $6,430

26.3 Hospice Care

Hospice Care in America, published by The National Hospice and Palliative Care Organization (www.nhpco.org), provides the following data on hospice care in the
United States:

**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)

### 26.4 Market Leaders

The following are the largest providers of hospice care:
- Gentiva Health Services (www.gentiva.com)
- Golden Living (www.goldenliving.com)
- Heartland-Manor Care (www.heartland-manorcare.com)
- Vitas Healthcare (www.vitas.com)

### 26.5 Hospital Palliative Care

According to *Hospital Statistics 2016™*, by the American Hospital Association (AHA, www.aha.org), 64% 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), The Robert Wood Johnson Foundation (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_

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**26.6 Hospice Quality Reporting**

The hospice quality-reporting program, launched in FY2013 by the Centers for Medicare & Medicaid Services (CMS, [www.cms.gov](http://www.cms.gov)), requires hospices to report data on two measures:

**NQF 0209-Comfortable Dying Measure**

- Developed by the National Hospice and Palliative Care Organization and endorsed by the National Quality Forum (NQF, [www.qualityforum.org](http://www.qualityforum.org)), this indicator measures whether patients who reported being uncomfortable because of pain at their initial assessment after admission to hospice had their pain brought to a comfortable level within 48 hours.

**Structural/QAPI Measure**

- This measure reflects whether hospices have an internal quality assessment and performance-improvement program, or QAPI, in place. That QAPI program must include at least three patient care-related indicators.

**26.7 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)

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

National Hospice and Palliative Care Organization, 1731 King Street, Suite 100, Alexandria, VA 22314. (703) 837-1500. (www.nhpco.org)
27

HOSPITAL MERGERS & ACQUISITIONS

27.1 Overview
Since 1993, Irving Levin Associates has published The Health Care Services Acquisition Report. This chapter provides a summary of the data from the 21st edition.

27.2 Number of Deals
Irving Levin Associates reports the number of hospital merger and acquisition deals and number of hospitals involved as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Deals</th>
<th>Number of Hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>83</td>
<td>118</td>
</tr>
<tr>
<td>2002</td>
<td>58</td>
<td>101</td>
</tr>
<tr>
<td>2003</td>
<td>38</td>
<td>56</td>
</tr>
<tr>
<td>2004</td>
<td>59</td>
<td>236</td>
</tr>
<tr>
<td>2005</td>
<td>51</td>
<td>88</td>
</tr>
<tr>
<td>2006</td>
<td>57</td>
<td>249</td>
</tr>
<tr>
<td>2007</td>
<td>58</td>
<td>149</td>
</tr>
<tr>
<td>2008</td>
<td>60</td>
<td>78</td>
</tr>
<tr>
<td>2009</td>
<td>52</td>
<td>80</td>
</tr>
<tr>
<td>2010</td>
<td>72</td>
<td>125</td>
</tr>
<tr>
<td>2011</td>
<td>90</td>
<td>156</td>
</tr>
<tr>
<td>2012</td>
<td>107</td>
<td>244</td>
</tr>
<tr>
<td>2013</td>
<td>88</td>
<td>296</td>
</tr>
<tr>
<td>2014</td>
<td>99</td>
<td>178</td>
</tr>
<tr>
<td>2015</td>
<td>102</td>
<td>n/a</td>
</tr>
</tbody>
</table>

27.3 Market Resources
Irving Levin Associates, 268½ Main Avenue, Norwalk, CT 06851. (203) 846-6800. (www.levinassociates.com)
28

HOSPITAL PATIENT DIAGNOSES & PROCEDURES

28.1 Overview
Data for the most frequent diagnoses and procedures, published by AHRQ in 2015 and 2016, are presented in this chapter.

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

- Liveborn: 3.91 million
- Pneumonia: 1.10 million
- Osteoarthritis: 974,000
- Congestive heart failure; nonhypertensive: 967,000
- Septicemia (except in labor): 934,000
- Mood disorders: 887,000
- Cardiac dysrhythmias: 764,000
- Chronic obstructive pulmonary disease and bronchiectasis: 703,000
- Complication of device, implant or graft: 684,000
- Obstetrics-related trauma to perineum and vulva: 674,000

28.3 Most Frequent Procedures
The most frequent hospital procedures are as follows:

- Blood transfusion: 2.93 million
- Prophylactic vaccinations and inoculations: 1.86 million
- Respiratory intubation and mechanical ventilation: 1.63 million
- Repair of current obstetric laceration: 1.31 million
- Cesarean section: 1.27 million
- Diagnostic cardiac catheterization, coronary arteriography: 1.26 million
- Upper gastrointestinal endoscopy, biopsy: 1.22 million
- Circumcision: 1.10 million
- Artificial rupture of membranes to assist delivery: 948,000
- Hemodialysis: 909,000
- Diagnostic ultrasound of heart (echocardiogram): 869,000
28.4 Most Frequent Operating Room Procedures

The most frequent operating room procedures are as follows:

- Arthroplasty knee: 700,100
- Percutaneous coronary angioplasty (PTCA): 534,600
- Laminectomy, excision intervertebral disc: 468,200
- Hip replacement, total and partial: 468,000
- Spinal fusion: 450,900
- Cholecystectomy and common duct exploration: 406,300
- Partial excision bone: 338,000
- Hysterectomy, abdominal and vaginal: 312,100
- Colorectal resection: 305,900
- Excision, lysis peritoneal adhesions: 305,800
- Appendectomy: 293,000
- Treatment, fracture or dislocation of hip and femur: 276,400
- Oophorectomy, unilateral and bilateral: 223,800
- Coronary artery bypass graft (CABG): 202,900
- Treatment, fracture or dislocation of lower extremity (other than hip or femur): 188,900

28.5 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
<table>
<thead>
<tr>
<th>Medical Procedure</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other OR procedures on vessels other than head and neck</td>
<td>202,000</td>
</tr>
<tr>
<td>Other excision of cervix and uterus</td>
<td>201,000</td>
</tr>
<tr>
<td>Partial excision bone</td>
<td>190,000</td>
</tr>
<tr>
<td>Other OR therapeutic procedures on bone</td>
<td>180,000</td>
</tr>
<tr>
<td>Transurethral excision; drainage; or removal urinary obstruction</td>
<td>173,000</td>
</tr>
<tr>
<td>Excision of skin lesion</td>
<td>160,000</td>
</tr>
<tr>
<td>Other OR therapeutic procedures; female organs</td>
<td>160,000</td>
</tr>
<tr>
<td>Insertion; revision; replacement; removal of cardiac pacemaker or cardioverter/defibrillator</td>
<td>160,000</td>
</tr>
<tr>
<td>Skin graft</td>
<td>160,000</td>
</tr>
<tr>
<td>Hysterectomy; abdominal and vaginal</td>
<td>156,000</td>
</tr>
<tr>
<td>Other intraocular therapeutic procedures</td>
<td>155,000</td>
</tr>
<tr>
<td>Debridement of wound; infection or burn</td>
<td>154,000</td>
</tr>
<tr>
<td>Bunionectomy or repair of toe deformities</td>
<td>134,000</td>
</tr>
<tr>
<td>Laminectomy; excision intervertebral disc</td>
<td>122,000</td>
</tr>
</tbody>
</table>
Hospital Statistics 2016™, 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:** 5,627
  - U.S. community hospitals*: 4,926
  - Non-government not-for-profit community hospitals: 2,870
  - Investor-owned (for-profit) community hospitals: 1,053
  - State and local government community hospitals: 1,003
  - Non-federal psychiatric hospitals: 403
  - Federal government hospitals: 213
  - Non-federal long-term care hospitals: 75
  - Hospital units of institutions (prison hospitals, college infirmaries, etc.): 10

- **Total staffed beds in all U.S. registered hospitals:** 902,202
  - Staffed beds in community hospitals: 786,874

- **Total admissions in all U.S. registered hospitals:** 34,878,887
  - Admissions in community hospitals: 33,066,720

- **Number of urban community hospitals:** 3,071
- **Number of rural community hospitals:** 1,855
- **Number of community hospitals in a system**: 3,183
- **Number of community hospitals in a network**: 1,619

* 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.

29.2 Utilization

Inpatient, emergency department, and outpatient utilization in community hospitals is as follows (source: Hospital Statistics 2016™):

- Total inpatient admissions: 33,609,083
- Inpatient admissions per 1,000: 106.3
- Total inpatient days: 182,370,189
- Inpatient days per 1,000: 576.9
- Inpatient surgeries: 9,147,267
- Average length of stay: 5.4
- Emergency department (ED) visits: 133,600,000
- ED visits per 1,000: 423
- Outpatient visits: 677,951,120
- Outpatient visits per 1,000: 2,144.5
- Outpatient surgeries: 17,418,773

Hospital utilization is further assessed in Chapter 31.

29.3 Financial Performance

Hospital revenue and profit margins have been as follows (source: American Hospital Association):

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Revenue</th>
<th>Profit Margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>$435.8 billion</td>
<td>4.4%</td>
</tr>
<tr>
<td>2003</td>
<td>$472.7 billion</td>
<td>4.8%</td>
</tr>
<tr>
<td>2004</td>
<td>$507.5 billion</td>
<td>5.2%</td>
</tr>
<tr>
<td>2005</td>
<td>$544.7 billion</td>
<td>5.3%</td>
</tr>
<tr>
<td>2006</td>
<td>$587.1 billion</td>
<td>6.0%</td>
</tr>
<tr>
<td>2007</td>
<td>$626.3 billion</td>
<td>6.9%</td>
</tr>
<tr>
<td>2008</td>
<td>$643.6 billion</td>
<td>2.6%</td>
</tr>
<tr>
<td>2009</td>
<td>$690.5 billion</td>
<td>5.0%</td>
</tr>
<tr>
<td>2010</td>
<td>$730.9 billion</td>
<td>7.2%</td>
</tr>
<tr>
<td>2011</td>
<td>$755.3 billion</td>
<td>7.0%</td>
</tr>
<tr>
<td>2012</td>
<td>$821.3 billion</td>
<td>7.8%</td>
</tr>
</tbody>
</table>

29.4 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 following percentages of U.S. community hospitals provide services beyond traditional inpatient and outpatient care (source: Hospital Statistics 2016™):
• Hospice: 64%
• Home health service: 60%
• Skilled nursing facility: 37%
• Meals on wheels: 21%
• Assisted living: 14%
• Other long-term care: 12%

29.5 State-by-State

According to Hospital Statistics 2016™, 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>3.13</td>
<td>5.3</td>
</tr>
<tr>
<td>Alaska</td>
<td>2.12</td>
<td>6.5</td>
</tr>
<tr>
<td>Arizona</td>
<td>2.01</td>
<td>4.5</td>
</tr>
<tr>
<td>Arkansas</td>
<td>3.19</td>
<td>5.2</td>
</tr>
<tr>
<td>California</td>
<td>1.83</td>
<td>5.1</td>
</tr>
<tr>
<td>Colorado</td>
<td>1.96</td>
<td>5.3</td>
</tr>
<tr>
<td>Connecticut</td>
<td>2.17</td>
<td>5.5</td>
</tr>
<tr>
<td>Delaware</td>
<td>2.20</td>
<td>5.1</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>5.58</td>
<td>7.1</td>
</tr>
<tr>
<td>Florida</td>
<td>2.72</td>
<td>5.0</td>
</tr>
<tr>
<td>Georgia</td>
<td>2.47</td>
<td>6.4</td>
</tr>
<tr>
<td>Hawaii</td>
<td>2.01</td>
<td>6.9</td>
</tr>
<tr>
<td>Idaho</td>
<td>2.08</td>
<td>4.8</td>
</tr>
<tr>
<td>Illinois</td>
<td>2.46</td>
<td>4.8</td>
</tr>
<tr>
<td>Indiana</td>
<td>2.63</td>
<td>5.2</td>
</tr>
<tr>
<td>Iowa</td>
<td>3.18</td>
<td>6.1</td>
</tr>
<tr>
<td>Kansas</td>
<td>3.45</td>
<td>6.6</td>
</tr>
<tr>
<td>Kentucky</td>
<td>3.19</td>
<td>5.2</td>
</tr>
</tbody>
</table>
- Louisiana: 3.36 5.4
- Maine: 2.62 5.6
- Maryland: 2.09 5.0
- Massachusetts: 2.46 5.3
- Michigan: 2.53 5.1
- Minnesota: 2.73 6.0
- Mississippi: 4.29 6.6
- Missouri: 3.13 5.2
- Montana: 3.67 8.6
- Nebraska: 3.63 6.7
- Nevada: 2.03 5.5
- New Hampshire: 2.12 5.3
- New Jersey: 2.40 5.1
- New Mexico: 1.83 4.6
- New York: 2.86 6.8
- North Carolina: 2.30 5.7
- North Dakota: 4.04 7.0
- Ohio: 2.95 4.9
- Oklahoma: 2.95 5.4
- Oregon: 1.72 4.3
- Pennsylvania: 3.05 5.6
- Rhode Island: 2.14 5.1
- South Carolina: 2.67 5.7
- South Dakota: 4.92 9.2
- Tennessee: 3.12 5.5
- Texas: 2.33 5.2
- Utah: 1.80 4.3
- Vermont: 1.92 6.3
- Virginia: 2.18 5.7
- Washington: 1.75 4.6
- West Virginia: 3.80 5.8
- Wisconsin: 2.22 5.0
- Wyoming: 3.30 8.4
30

HOSPITAL USE OF SOCIAL MEDIA

30.1 Provider Social Networking

The Mayo Clinic Center for Social Media (http://network.socialmedia.mayoclinic.org) reports on social networking activities of 1,573 community hospitals. In 2015, hospitals use of various social sites was as follows:

- YouTube: 717
- Facebook: 1,301
- Twitter: 1,007
- LinkedIn: 653
- 4Square: 1,080
- Blog: 212

Social media use for each of the 1,573 community hospitals is posted online at (http://network.socialmedia.mayoclinic.org/hcsmi-grid).

“Social media is emerging as the communications tool hospitals use to engage patients. Social media outlets have become a valuable tool in reaching the public about upcoming hospital events, local healthcare coverage changes, and personal healthcare education.”

Hospitals & Health Networks

30.2 Social Media Use By Hospitals

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%
HOSPITAL UTILIZATION

31.1 Overview
Hospital inpatient volumes have declined in recent years while outpatient services have increased. The following factors have contributed to the shift (source: *Modern Healthcare*):

- A growing number of procedures can be performed outside the hospital in less-costly outpatient settings.
- More Americans are covered by health plans with high deductibles, copayments and coinsurance, dampening demand for elective procedures requiring hospitalization.
- New Medicare policies have boosted the financial incentives for hospitals to strengthen management of chronic diseases and avoid over-hospitalization. Those policies have been mirrored to some extent by private payers, which increasingly offer bonuses to hospitals and doctors for curbing costs.
- The slow economic recovery is also a factor, though the full scope of its influence is uncertain as the recovery continues.

_________________________________________________________________

“U.S. hospital operators are blaming weak performance on flagging hospital volumes. That highlights a persistent shift in where patients are receiving care because of major changes in payment and delivery and continued weakness in the overall economy, analysts say. Hospital systems are setting their strategic plans with the assumption that inpatient care will continue to decline.”

*Modern Healthcare*

_________________________________________________________________
### 31.2 Inpatient Utilization

*Hospital Statistics 2016™*, by the American Hospital Association (www.aha.org), provides the following inpatient utilization data for U.S. community hospitals:

<table>
<thead>
<tr>
<th>Year</th>
<th>Admissions</th>
<th>Per 1,000</th>
<th>Inpatient Days</th>
<th>Per 1,000</th>
<th>Inpatient Surgeries</th>
<th>Avg. Stay</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000:</td>
<td>33,089,467</td>
<td>117.6</td>
<td>192,420,368</td>
<td>683.7</td>
<td>9,729,336</td>
<td>5.8</td>
</tr>
<tr>
<td>2001:</td>
<td>33,813,589</td>
<td>118.7</td>
<td>194,106,316</td>
<td>681.6</td>
<td>9,779,583</td>
<td>5.7</td>
</tr>
<tr>
<td>2002:</td>
<td>34,478,280</td>
<td>119.7</td>
<td>196,690,099</td>
<td>682.7</td>
<td>10,105,010</td>
<td>5.7</td>
</tr>
<tr>
<td>2003:</td>
<td>34,782,742</td>
<td>119.6</td>
<td>196,649,769</td>
<td>676.2</td>
<td>9,940,922</td>
<td>5.7</td>
</tr>
<tr>
<td>2004:</td>
<td>35,086,061</td>
<td>119.5</td>
<td>197,564,172</td>
<td>672.8</td>
<td>10,050,346</td>
<td>5.6</td>
</tr>
<tr>
<td>2005:</td>
<td>35,238,673</td>
<td>119.2</td>
<td>197,073,770</td>
<td>666.4</td>
<td>10,097,271</td>
<td>5.6</td>
</tr>
<tr>
<td>2006:</td>
<td>35,377,659</td>
<td>118.2</td>
<td>196,366,512</td>
<td>655.9</td>
<td>10,095,683</td>
<td>5.6</td>
</tr>
<tr>
<td>2007:</td>
<td>35,345,986</td>
<td>117.3</td>
<td>194,549,348</td>
<td>645.7</td>
<td>10,189,630</td>
<td>5.5</td>
</tr>
<tr>
<td>2008:</td>
<td>35,760,750</td>
<td>117.6</td>
<td>196,078,468</td>
<td>644.9</td>
<td>10,105,156</td>
<td>5.5</td>
</tr>
<tr>
<td>2009:</td>
<td>35,527,377</td>
<td>115.7</td>
<td>192,656,804</td>
<td>627.5</td>
<td>10,100,980</td>
<td>5.4</td>
</tr>
<tr>
<td>2010:</td>
<td>35,149,427</td>
<td>113.7</td>
<td>189,593,349</td>
<td>613.5</td>
<td>9,954,821</td>
<td>5.4</td>
</tr>
<tr>
<td>2011:</td>
<td>34,843,085</td>
<td>111.8</td>
<td>187,072,013</td>
<td>600.4</td>
<td>9,638,467</td>
<td>5.4</td>
</tr>
<tr>
<td>2012:</td>
<td>34,422,071</td>
<td>109.7</td>
<td>185,423,035</td>
<td>590.7</td>
<td>9,513,598</td>
<td>5.4</td>
</tr>
<tr>
<td>2013:</td>
<td>33,609,083</td>
<td>106.3</td>
<td>182,870,189</td>
<td>576.9</td>
<td>9,147,264</td>
<td>5.4</td>
</tr>
</tbody>
</table>

### 31.3 Outpatient Utilization

*Hospital Statistics 2016™* provides the following outpatient utilization data for U.S. community hospitals:

<table>
<thead>
<tr>
<th>Year</th>
<th>Outpatient Visits</th>
<th>Per 1,000</th>
<th>Outpatient Surgeries</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000:</td>
<td>521,404,976</td>
<td>1,852.8</td>
<td>16,383,374</td>
</tr>
<tr>
<td>2001:</td>
<td>538,480,378</td>
<td>1,890.8</td>
<td>16,684,726</td>
</tr>
<tr>
<td>2002:</td>
<td>556,404,212</td>
<td>1,931.1</td>
<td>17,361,176</td>
</tr>
<tr>
<td>2003:</td>
<td>563,186,046</td>
<td>1,936.7</td>
<td>17,165,616</td>
</tr>
<tr>
<td>2004:</td>
<td>571,569,334</td>
<td>1,946.4</td>
<td>17,351,490</td>
</tr>
<tr>
<td>2005:</td>
<td>584,428,736</td>
<td>1,976.1</td>
<td>17,445,587</td>
</tr>
<tr>
<td>2006:</td>
<td>599,553,025</td>
<td>2,002.5</td>
<td>17,235,141</td>
</tr>
<tr>
<td>2007:</td>
<td>603,300,374</td>
<td>2,002.4</td>
<td>17,146,334</td>
</tr>
<tr>
<td>2008:</td>
<td>624,098,296</td>
<td>2,052.6</td>
<td>17,354,282</td>
</tr>
<tr>
<td>2009:</td>
<td>641,953,442</td>
<td>2,091.0</td>
<td>17,357,534</td>
</tr>
<tr>
<td>2010:</td>
<td>651,423,717</td>
<td>2,107.8</td>
<td>17,357,177</td>
</tr>
<tr>
<td>2011:</td>
<td>656,078,942</td>
<td>2,105.6</td>
<td>17,269,245</td>
</tr>
<tr>
<td>2012:</td>
<td>674,971,331</td>
<td>2,150.2</td>
<td>17,297,633</td>
</tr>
<tr>
<td>2013:</td>
<td>677,951,120</td>
<td>2,144.5</td>
<td>17,418,773</td>
</tr>
</tbody>
</table>

### 31.4 Inpatient And Outpatient Revenue

*Hospital Statistics 2016™* reports the distribution of revenue by inpatient and outpatient services as follows:
### 31.5 Hospital Utilization By State

By state, acute-care discharges and rate per 1,000 people are as follows (source: Modern Healthcare, September 2015):

<table>
<thead>
<tr>
<th>State</th>
<th>Total Discharges</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>499,012</td>
<td>102.9</td>
</tr>
<tr>
<td>Alaska</td>
<td>22,887</td>
<td>31.1</td>
</tr>
<tr>
<td>Arizona</td>
<td>580,468</td>
<td>86.2</td>
</tr>
<tr>
<td>Arkansas</td>
<td>315,536</td>
<td>106.4</td>
</tr>
<tr>
<td>California</td>
<td>2,377,256</td>
<td>61.3</td>
</tr>
<tr>
<td>Colorado</td>
<td>379,321</td>
<td>70.8</td>
</tr>
<tr>
<td>Connecticut</td>
<td>353,930</td>
<td>98.4</td>
</tr>
<tr>
<td>Delaware</td>
<td>95,113</td>
<td>101.7</td>
</tr>
<tr>
<td>Florida</td>
<td>2,368,946</td>
<td>115.7</td>
</tr>
<tr>
<td>Georgia</td>
<td>791,558</td>
<td>85.8</td>
</tr>
<tr>
<td>Hawaii</td>
<td>84,155</td>
<td>59.3</td>
</tr>
<tr>
<td>Idaho</td>
<td>119,488</td>
<td>73.1</td>
</tr>
<tr>
<td>Illinois</td>
<td>1,265,608</td>
<td>98.3</td>
</tr>
<tr>
<td>Indiana</td>
<td>655,606</td>
<td>99.4</td>
</tr>
<tr>
<td>Iowa</td>
<td>294,738</td>
<td>94.9</td>
</tr>
<tr>
<td>Kansas</td>
<td>275,655</td>
<td>94.9</td>
</tr>
<tr>
<td>Kentucky</td>
<td>504,871</td>
<td>119.1</td>
</tr>
<tr>
<td>Louisiana</td>
<td>486,407</td>
<td>104.6</td>
</tr>
<tr>
<td>Maine</td>
<td>125,717</td>
<td>94.5</td>
</tr>
<tr>
<td>Maryland</td>
<td>627,149</td>
<td>104.9</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>695,889</td>
<td>103.2</td>
</tr>
<tr>
<td>Michigan</td>
<td>1,060,496</td>
<td>107.0</td>
</tr>
<tr>
<td>Minnesota</td>
<td>454,375</td>
<td>83.3</td>
</tr>
</tbody>
</table>
• Mississippi: 339,953 113.5
• Missouri: 690,095 113.8
• Montana: 69,238 67.6
• Nebraska: 183,661 97.6
• Nevada: 186,772 65.8
• New Hampshire: 106,851 80.5
• New Jersey: 569,937 63.8
• New Mexico: 172,759 82.8
• New York: 2,003,088 101.4
• North Carolina: 972,165 97.8
• North Dakota: 80,739 109.2
• Ohio: 1,007,108 86.9
• Oklahoma: 392,187 101.1
• Oregon: 265,128 66.8
• Pennsylvania: 1,466,625 114.7
• Rhode Island: 107,701 102.1
• South Carolina: 464,820 96.2
• South Dakota: 98,713 115.7
• Tennessee: 597,329 91.2
• Texas: 2,313,064 85.8
• Utah: 193,129 65.6
• Vermont: 44,922 71.7
• Virginia: 670,572 80.5
• Washington: 392,827 55.6
• West Virginia: 220,590 119.2
• Wisconsin: 485,739 84.4
• Wyoming: 37,601 64.6

31.6 Impact Of The Affordable Care Act

The one-time effect of up to 30 million people gaining insurance coverage for the first time under the Affordable Care Act could drive healthcare utilization upward. In a study on hospital utilization, McKinsey & Co. (www.mckinsey.com) found insurance status could drive an increase of about 30% in inpatient utilization. Increased coverage may cause emergency department utilization rates to rise by 15%. And coverage could increase utilization of outpatient elective services by about 40% to 70%.
32.1 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 $11.9 billion in 2010 (most recent data available). Still, the number of advanced-imaging tests continued to increase between 2006 and 2010.

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.

32.2 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.

32.3 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.

32.4 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 were performed in 2013, 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.
33

INFORMATION TECHNOLOGY

33.1 Market Assessment

IDC Health Insights (www.idc-hi.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%

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 27th Annual HIMSS Leadership Survey, conducted in 2016:

- The vast majority of respondents (95%) view health IT as a strategically critical tool to help healthcare organizations be successful, especially surrounding their patient care focused efforts.
  - Clinical integration: 73.8%
  - Primary care provider efficiency: 72.3%
  - Mandated quality metrics improvement: 68.4%
  - Care coordination: 67.4%

- The criticality of health IT to patient focused initiatives suggests there is a need to better understand the role and impact of clinical IT executives.
  - Seventy-one percent (71%) of all respondents indicated their organization employs a clinical IT leader, such as a Chief Medical Information Officer or Chief Nursing Informatics Officer

- The presence of a clinical IT executive in the organization appears to have a notable impact on the organization’s orientation towards health IT.
- Respondents working for an organization with a clinical IT executive tended to place a substantially higher importance of health IT than their counterparts in a variety of areas, but most notable care coordination, post-acute care management and use of evidence based medicine.

- Many healthcare organizations employing clinical IT executives include them in the overall executive team, but this is not universally the case.
- Seventy-one percent (71%) of respondents working for an organization with a CNIO on staff indicated that this individual was part of the executive team.
- Fifty-nine percent (59%) of respondents working for an organization with a CMIO on staff indicated that the individual was part of the executive team.

### 33.3 Patient Data-Sharing
The percentages of hospitals and health networks that have capabilities to share patient data with outside organizations are as follows (source: *Hospitals & Health Networks*):

**Exchange Clinical Records Electronically**
- Affiliated hospitals: 54%
- Non-affiliated ambulatory providers: 46%
- Health information exchange: 46%
- Non-affiliated hospitals: 36%

**Exchange Admission, Discharge, and Transfer Alerts**
- Affiliated hospitals: 42%
- Non-affiliated ambulatory providers: 26%
- Health information exchange: 26%
- Non-affiliated hospitals: 15%

“Seamless, real-time data-sharing across the continuum is essential for value-based care. Poor communications among clinicians and providers can lead to errors and unnecessary tests, procedures, and emergency department visits. Today's reality falls short; communications regarding patient data-sharing is piecemeal at best.”

*Hospitals & Health Networks*
33.4 Coordinated Care

The percentage of hospitals and health networks that electronically coordinate care across the medical neighborhood are as follows (source: Hospitals & Health Networks):

- Manage care transitions: 50%
- Coordinate and monitor exchanges of information with specialists and other facilities: 45%
- Consult/referral management and follow-up communications: 43%
- Secure messaging with patients and health professionals: 42%
- Build linkages to community based resources: 41%
- Electronic medication and diagnostic ordering/management: 41%

33.5 Patient Portals

The percentage of hospitals that provide select services to patients through a patient portal are as follows (source: Hospitals & Health Networks):

**Clinical Management**

- Access test results: 70%
- Access a visit summary: 64%
- Patient-generated data: 48%
- Self-management tools for chronic conditions: 42%
- Access full medical record: 25%

**Administrative**

- Pay bill: 63%
- Renew/fill a prescription: 54%
- Self-schedule appointments: 43%
- Check status of a bill: 40%
- Update insurance information: 40%

_____________________________________________________

“Several patient engagement requirements of Stage 2 meaningful use require effective implementation of a patient portal for clinical summaries, reminders for preventive and follow-up care, timely access to health information, patient-specific educational resources and secure electronic messaging.”

Hospitals & Health Networks
33.6 Market Resources
Healthcare Information and Management Systems Society, 230 East Ohio Street, Suite 500, Chicago, IL 60611. (312) 664-4467. (www.himss.org)
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 May 2016 by IBISWorld (www.ibisworld.com), estimates annual laboratory revenue at $53 billion, with a 0.8% average annual growth rate.

_________________________________________________________________

“Over the past five years, Medicare and Medicaid, which includes coverage for most clinical diagnostic laboratory services, have bolstered industry growth. In the coming years, the industry will benefit from scientific advances that yield new and improved service capabilities, coupled with the aging U.S. population requiring more laboratory testing and diagnostic imaging services.”

IBISWorld, 5/16

_________________________________________________________________

According to the Medicare Payment Advisory Commission (www.medpac.gov), Medicare spending for clinical laboratory services in 2013 was as follows:

- Independent labs and physician offices: $5.4 billion
- Hospital-based labs: $4.9 billion
Average Medicare spending grew 5.6% between 2003 and 2012. This growth was primarily driven by increased volume, as there were only three increases in lab payment rates during the period.

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.

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 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.”

Rick Conlin, Managing Director
The Advisory Board Co.
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 more likely to send lab work to the hospital’s lab than to outsource.
34.4 Market Resources
G2 Intelligence, P.O. Box 509, New London, CT 06320. (888) 729-2315.
(www.g2intelligence.com)

IBISWorld, 40 Wall Street, New York, NY 10005. (800) 330-3772.
(www.ibisworld.com)
LARGEST HEALTHCARE SYSTEMS

35.1 Largest Hospital Systems

The 2016 *Hospital Systems Survey*, an annual ranking by *Modern Healthcare*, ranks the largest healthcare systems as follows:

Largest Healthcare Systems (All Types) Ranked By Revenue

- HCA: $39.7 billion
- Community Health Systems: $19.4 billion
- Ascension Health: $18.8 billion
- Tenet Healthcare Corp.: $18.6 billion
- Catholic Health Initiatives: $13.3 billion
- Trinity Health: $12.5 billion
- Providence Health & Services: $11.8 billion
- Dignity Health: $11.4 billion
- University of California Health System: $10.0 billion
- Sutter Health: $9.6 billion

Largest Healthcare Systems (All Types) Ranked By Hospital Count

- Community Health Systems: 193
- HCA: 164
- Ascension Health: 112
- Catholic Health Initiatives: 103
- Tenet Healthcare Corporation: 80
- LifePoint Hospitals: 63
- Trinity Health: 63
- Sanford Health: 41
- Baylor Scott & White Health: 37
- Adventist Health System: 35
- Providence Health & Services: 34

Largest For-Profit Healthcare Systems Ranked By Staffed Acute-Care Beds

<table>
<thead>
<tr>
<th>Beds</th>
<th>Hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCA:</td>
<td>42,860</td>
</tr>
<tr>
<td>Community Health Systems:</td>
<td>30,173</td>
</tr>
<tr>
<td>Tenet Healthcare Corporation:</td>
<td>20,814</td>
</tr>
<tr>
<td>LifePoint Hospitals:</td>
<td>8,254</td>
</tr>
<tr>
<td>Universal Health Services:</td>
<td>5,629</td>
</tr>
<tr>
<td>Iasis Healthcare Corp.:</td>
<td>3,679</td>
</tr>
</tbody>
</table>
- Ardent Health Services: 2,252 13
- Prime Healthcare Services: 1,959 18
- Capella Healthcare: 1,574 12

### Largest Public Healthcare Systems Ranked By Staffed Acute-Care Beds

<table>
<thead>
<tr>
<th>Beds</th>
<th>Hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York City Health and Hospitals Corp:</td>
<td>4,726</td>
</tr>
<tr>
<td>Carolinas HealthCare System:</td>
<td>2,768</td>
</tr>
<tr>
<td>Texas Dept. of State Health Services:</td>
<td>2,309</td>
</tr>
<tr>
<td>Huntsville Hospital:</td>
<td>1,539</td>
</tr>
<tr>
<td>Broward Health:</td>
<td>1,343</td>
</tr>
<tr>
<td>Lee Memorial Health System:</td>
<td>1,303</td>
</tr>
<tr>
<td>Parkland Health &amp; Hospital System:</td>
<td>752</td>
</tr>
<tr>
<td>Erlanger Health System:</td>
<td>750</td>
</tr>
<tr>
<td>West Tennessee Healthcare:</td>
<td>709</td>
</tr>
<tr>
<td>University of Mississippi Medical Center:</td>
<td>698</td>
</tr>
</tbody>
</table>

### Largest Catholic Healthcare Systems Ranked By Staffed Acute-Care Beds

<table>
<thead>
<tr>
<th>Beds</th>
<th>Hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ascension Health:</td>
<td>22,416</td>
</tr>
<tr>
<td>Trinity Health:</td>
<td>14,117</td>
</tr>
<tr>
<td>Catholic Health Initiatives:</td>
<td>10,550</td>
</tr>
<tr>
<td>Providence Health &amp; Services:</td>
<td>9,377</td>
</tr>
<tr>
<td>Mercy Health (Cincinnati, OH):</td>
<td>4,755</td>
</tr>
<tr>
<td>SSM Health Care:</td>
<td>3,628</td>
</tr>
<tr>
<td>Mercy (Chesterfield, MO):</td>
<td>3,558</td>
</tr>
<tr>
<td>Christus Health:</td>
<td>3,360</td>
</tr>
<tr>
<td>Catholic Healthcare Partners:</td>
<td>3,161</td>
</tr>
<tr>
<td>St. Joseph Health System:</td>
<td>3,185</td>
</tr>
<tr>
<td>Bon Secours Health System:</td>
<td>2,002</td>
</tr>
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</table>

### Largest Secular Not-for-Profit Healthcare Systems Ranked By Staffed Acute-Care Beds

<table>
<thead>
<tr>
<th>Beds</th>
<th>Hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dignity Health:</td>
<td>7,344</td>
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<tr>
<td>North Shore-Long Island Jewish Health System:</td>
<td>5,863</td>
</tr>
<tr>
<td>Sutter Health:</td>
<td>4,226</td>
</tr>
<tr>
<td>Banner Health System:</td>
<td>4,987</td>
</tr>
<tr>
<td>Baylor Scott &amp; White:</td>
<td>4,036</td>
</tr>
<tr>
<td>University of Pittsburgh Medical Center (UMPC):</td>
<td>3,759</td>
</tr>
<tr>
<td>Memorial Hermann Healthcare System:</td>
<td>3,723</td>
</tr>
<tr>
<td>Texas Health Resources:</td>
<td>3,141</td>
</tr>
<tr>
<td>MedStar Health:</td>
<td>2,913</td>
</tr>
<tr>
<td>Mayo Clinic:</td>
<td>2,613</td>
</tr>
<tr>
<td>Johns Hopkins Health System:</td>
<td>2,569</td>
</tr>
<tr>
<td>Acute-Care Beds</td>
<td>Beds</td>
</tr>
<tr>
<td>---------------------------------</td>
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</tr>
<tr>
<td>Adventist Health System:</td>
<td>7,846</td>
</tr>
<tr>
<td>Texas Health Resources:</td>
<td>3,800</td>
</tr>
<tr>
<td>Advocate Health Care:</td>
<td>3,242</td>
</tr>
<tr>
<td>Indiana University Health:</td>
<td>2,732</td>
</tr>
<tr>
<td>Baylor Health Care System:</td>
<td>3,055</td>
</tr>
<tr>
<td>UnityPoint Health:</td>
<td>2,270</td>
</tr>
<tr>
<td>OhioHealth:</td>
<td>2,027</td>
</tr>
<tr>
<td>Baptist Health:</td>
<td>1,637</td>
</tr>
<tr>
<td>Methodist Le Bonheur Healthcare:</td>
<td>1,448</td>
</tr>
<tr>
<td>Baptist Memorial Healthcare:</td>
<td>2,384</td>
</tr>
</tbody>
</table>
LARGEST HOSPITALS

36.1 Largest Community Hospitals

According to the *American Hospital Association Guide*, the following are the largest U.S. hospitals:

- New York Presbyterian Hospital* (New York, NY): 2,261 staffed beds
- Jackson Health System* (Miami, FL): 2,186 staffed beds
- Florida Hospital* (Orlando, FL): 2,083 staffed beds
- Central Texas Veterans Healthcare* (Temple, TX): 1,852 staffed beds
- Indiana University Health* (Indianapolis, IN): 1,597 staffed beds
- UPMC Presbyterian* (Pittsburgh, PA): 1,544 staffed beds
- Patton State Hospital (Patton, CA): 1,517 staffed beds
- Montefiore Medical Hospital* (New York, NY): 1,491 staffed beds
- Orlando Regional Medical Center* (Orlando, FL): 1,464 staffed beds
- Methodist Hospital* (San Antonio, TX): 1,409 staffed beds
- Veterans Affairs Greater Los Angeles Healthcare System (CA): 1,327 staffed beds
- Baptist Health System* (San Antonio, TX): 1,313 staffed beds
- Methodist Healthcare* (Memphis, TN): 1,305 staffed beds
- Atascadero State Hospital (Atascadero, CA): 1,275 staffed beds
- Lee Memorial Hospital* (Fort Myers, FL): 1,273 staffed beds
- Cleveland Clinic Foundation* (Cleveland, OH): 1,239 staffed beds
- Napa State Hospital (Napa, CA): 1,229 staffed beds
- Kaleida Health* (Buffalo, NY): 1,161 staffed beds
- Memorial Hermann Norhtwest Hospital (Houston, TX): 1,158 staffed beds
- Barnes Jewish Hospital (St. Louis, MO): 1,150 staffed beds

* includes multiple campuses

36.2 Largest U.S. Military Hospitals

The following are the largest U.S. military hospitals (source: *American Hospital Association Guide*):

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

36.3 Largest Academic Medical Centers
The largest academic medical centers, ranked by number of residents and interns, are as follows (source: American Hospital Directory):
• 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 fo 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 (Connecticut) Hospital (New Haven, CT): 553
• University of Chicago Medical Center (Chicago, IL): 549
• UAB Hospital (Birmingham, AL): 537

36.4 Market Resources
American Hospital Directory, 166 Thierman Lane, Louisville, KY 40207. (502) 899-7738. (www.ahd.com)
37

MARKETING

37.1 Market Assessment

According to Kantar Media (www.kantarmedia.com), advertising spending by hospitals, clinics, and medical centers has been as follows:

- 2011: $1.5 billion
- 2012: $1.7 billion
- 2013: $1.9 billion
- 2014: $2.0 billion
- 2015: $2.2 billion

Health systems and hospitals spend approximately 0.5% to 2% of their operating budgets on marketing.

Betsy Gelb, Ph.D., professor of marketing and director of the Institute for Health Care Marketing at the University of Houston (www.bauer.uh.edu/centers/ihcm), estimates that about half of hospital marketing budgets go to advertising. The other half is spent on community relations/educational/PR activities, patient satisfaction, market research, and more.

According to a survey by the 3,600-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%

37.2 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.

37.3 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%
37.4 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 doctor’s schedules. Physicians can now introduce themselves via online videos and profiles.”

Modern Healthcare

According to William Rice, president of the Web Marketing Association (www.webmarketingassociation.org), 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 such as posting items in English as well as other languages, especially in highly diverse communities.”

William Rice, President
Web Marketing Association
Modern Healthcare
37.5 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 Hoines, 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 engagement with the community made patients feel at home 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.

37.6 Healthcare Marketing Impact Awards

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.

The 2015 Healthcare Marketing Impact Awards to provider organizations were as follows:

Print Campaign
- Gold Award: St. Thomas Health (Nashville, TN): “Nothing Shall Be Impossible”
  Agency: Bohan Advertising
- Silver Award: be.group (Glendale, CA): “be.magazine”
  Agency: Imagination
- Silver Award: Brigham and Women’s Hospital (Boston, MA):
  Agency: SPM Marketing & Communications

Digital Campaign
- Gold Award: IWK Health Centre (Halifax, Nova Scotia): “Don’t Stumble. Tumble”
  Agency: Current Studios
- Silver Award: be.com (Glendale, CA): website awareness
  Agency: Imagination
Video
• Gold Award: Memorial Sload Kettering Cancer Center (New York, NY): “More Science. Less Fear.”
  Agency: Pereira and O'Dell
• Silver Award: John Muir Health (Walnut Creek, CA): “Every Step”
  Agency: Duncan/Channon
• Bronze Award: Phoenix Children’s Hospital (Phoenix, AZ): “Patient Stories”
  Agency: Anderson Advertising and Public Relations

Social Media
• Gold Award: Baylor Scott & White (Dallas, TX): “#HeartTXLive”
  Agency: in-house

Community Outreach
• Gold Award: Texas Health Presbyterian (Dallas, TX): “Texas Health Resources - Ebola”
  Agency: Commerce House
• Silver Award: St. Joseph Health (Irvine, CA): “Health Calling Blog”
  Agency: in-house
• Bronze Award: Thomas Jefferson University Hospital (Philadelphia): naming rights campaign
  Agency: Harmelin Media

Patient Education
• Gold Award: be.group (Glendale, CA): “be.you.” (community living events/consumer guides
  Agency: Imagination

Integrated
• Gold Award: Dr. Daniel Stazman/University of Minnesota (Minneapolis, MN): “Project Stealth: Launching A Sneak Attack on Cancer”
  Agency: Stone/Arch
• Silver Award: Grady Health (Atlanta, GA): “I Wouldn’t Be Here Without Grady”
  Agency: in-house
• Bronze Award: Cedars-Sinai Medical Center (Los Angeles, CA): Neuro campaign
  Agency: Wongdoody

37.7 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)

38

MEDICAL LIABILITY

38.1 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 premium rates dropped 1.5% in 2014. Following dramatic increases in 2003 through 2005, rates have been relatively flat since 2006. Changes in overall medical premium rates have been as follows:

- 2003: 20.4%
- 2004: 20.5%
- 2005: 9.1%
- 2006: 0.7%
- 2007: 0.4%
- 2008: -4.3%
- 2009: -2.9%
- 2010: -0.5%
- 2011: -0.2%
- 2012: -1.7%
- 2013: -1.9%
- 2014: -1.5%

“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.

### 38.2 Projected Liability Assessment

*The Hospital Professional Liability and Physician Liability Benchmark Analysis,* by Aon (www.aon.com), provides the following assessment:

- Projected loss rate for hospital professional liability is $2,870 per occupied bed equivalent (OBE) for events occurring in 2015. The frequency of claims is projected to be 1.69% per OBE. The severity of claims is expected to be $170,000 per claim.
- Projected loss rate for physician professional liability is $6,230 per class 1 (internal medicine) physician for events occurring in 2015. The frequency of claims is projected to be 3.37% per class 1 physician. Severity of claims is expected to be $185,000 per claim.
- Projected loss rate for hospital general liability is $125 per OBE; the average general liability claim is expected to be $38,000 for claims occurring in 2015.
- Projected loss rate for obstetrics claims occurring in 2015 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.

### 38.3 Professional Liability Insurance Carriers

According to *Modern Healthcare* (September 2015), the largest insurance carriers, ranked by direct premiums written for medical professional liability, are as follows:

- Berkshire Hathaway Insurance Group (www.bhhc.com): $862 million
- Doctors Company Insurance Services (www.thedoctors.com): $694 million
- Medical Liability Mutual Insurance Co. (www.mlmic.com): $499 million
- CNA Insurance Cos. (www.cna.com): $460 million
- ProAssurance (www.proassurance.com): $459 million
- Coverys (www.coverys.com): $424 million
- Physicians’ Reciprocal Insurers (www.pri.com): $377 million
- NORCAL Mutual Insurance Co. (www.norcalmutual.com): $293 million
- MAG Mutual Group (www.magmutual.com): $229 million
**38.4 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. Nationwide, 31 states have caps on non-economic or total damages.

**38.5 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.rmfstrategies.com) found that about 20% of 23,527 medical malpractice cases filed between 2008 and 2012 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*, 1/18/16
### 38.6 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.

### 38.7 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

38.8 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 specialities 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.

38.9 Market Resources


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)
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MEDICAL TOURISM

39.1 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 2008 study healthcare practice at McKinsey & Co. (www.mckinsey.com) estimated 10,000 patients from the U.S. traveled abroad annually for treatment at foreign hospitals at that time. Great potential for growth in this market was foresee at that time. The great potential of medical tourism foreseen a few years ago, 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.
39.2 Certified Foreign Hospitals

The Joint Commission International (www.jointcommissioninternational.org), a not-for-profit subsidiary of the Joint Commission, which accredits U.S. hospitals, certified hospitals and healthcare providers outside the U.S. There are 740 certified organizations.

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

- United Arab Emirates: 102
- Saudi Arabia: 81
- Brazil*: 52
- Turkey: 51
- Thailand: 43
- China: 40
- South Korea: 29
- Ireland: 27
- Italy: 24
- Spain**: 24
- India: 22
- Singapore: 21
- Taiwan: 16

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

39.3 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, 10130 Northlake Boulevard, Suite 315, West Palm Beach, FL 33412. (561) 791-2000. (www.medicaltourismassociation.com)

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

40.2 Most Wired Hospitals

The following is the 2016 list of the most wired hospitals and healthcare systems:
- Abington Health (Abington, PA)
- Abraham Lincoln Memorial Hospital (Lincoln, IL)
- Adventist Health (Roseville, CA)
- Adventist Health System (Altamonte Springs, FL)
- Advocate Health Care (Downers Grove, IL)
- Akron Children’s Hospital (Akron, OH)
- Albany Medical Center (Albany, NY)
- Aleda E. Lutz VA Medical Center (Saginaw, MI)
- Alice Hyde Medical Center (Malone, NY)
• Altru Health System (Grand Forks, ND)
• AnMed Health (Anderson, SC)
• Ann & Robert H. Lurie Children’s Hospital (Chicago, IL)
• Anne Arundel Medical Center (Annapolis, MD)
• Atlantic Health System (Morristown, NJ)
• Aurora Health Care (Milwaukee, WI)
• Avera Health (Sioux Falls, SD)
• Baptist Health South Florida (Coral Gables, FL)
• Baptist Health System (Birmingham, AL)
• Battle Creek VA Medical Center (Battle Creek, MI)
• Baystate Health (Springfield, MA)
• Beaufort Memorial Hospital (Beaufort, SC)
• Beaumont Health System (Royal Oak, MI)
• Berkshire Health Systems (Pittsfield, MA)
• Beth Israel Deaconess Medical Center (Boston, MA)
• Bon Secours Baltimore Health System (Baltimore, MD)
• Bon Secours Charity Health System (Suffern, NY)
• Bon Secours Health System (Mariottsville, MD)
• Bon Secours St. Francis Health System (Greenville, SC)
• Bon Secours Virginia Health System (Richmond, VA)
• Bothwell Regional Health Center (Sedalia, MO)
• Bristol Hospital (Bristol, CT)
• Broadlawns Medical Center (Des Moines, IA)
• Bronson Battle Creek (Battle Creek, MI)
• Bronson Lakeview Hospital (Paw Paw, MI)
• Bronson Methodist Hospital (Kalamazoo, MI)
• Brookdale University Hospital and Medical Center (Brooklyn, NY)
• Brooke Army Medical Center (Fort Sam Houston, TX)
• Brooklyn Hospital Center (Brooklyn, NY)
• Cadence Health (Winfield, IL)
• Calvert Memorial Hospital (Prince Frederick, MD)
• Cancer Treatment Centers of America (Boca Raton, FL)
• Carilion Clinic (Roanoke, VA)
• Carle (Urbana, IL)
• Carle Hoopeston Regional Health Center (Hoopeston, IL)
• Carolinas HealthCare System (Charlotte, NC)
• Catholic Health Services of Long Island (Rockville Centre, NY)
• Cedars-Sinai Health System (Los Angeles, CA)
• Centa Health (Lynchburg, VA)
• Central Maine Medical Center (Lewiston, ME)
• CentraState Healthcare System (Freehold, NJ)
• Centura Health (Englewood, CO)
• Cheyenne Regional Medical Center (Cheyenne, WY)
• Children’s Health (Dallas, TX)
• Children’s Hospital Colorado (Aurora, CO)
• Children’s Hospital of Philadelphia (Philadelphia, PA)
• Children’s Mercy Hospital (Kansas City, MO)
• CHOC Children’s Hospital (Orange, CA)
• Christ Hospital (Cincinnati, OH)
• CHRISTUS Health (Irving, TX)
• Cibola General Hospital (Grants, NM)
• Cincinnati Children’s Hospital Medical Center (Cincinnati, OH)
• Citizens Memorial Hospital (Bolivar, MO)
• Community Health Network (Indianapolis, IN)
• Community Memorial Hospital (Burke, SD)
• Concord Hospital Inc (Concord, NH)
• Cook Children’s Health Care System (Fort Worth, TX)
• Cooper University Health Care (Camden, NJ)
• Covenant Health (Knoxville, TN)
• CoxHealth (Springfield, MO)
• Crawford Memorial Hospital (Robinson, IL)
• Crozer-Keystone Health System (Springfield, PA)
• Danbury Hospital (Danbury, CT)
• Deaconess Health System (Evansville, IN)
• Denver Health (Denver, CO)
• Detroit Medical Center (Detroit, MI)
• Dignity Health (San Francisco, CA)
• Doylestown Hospital (Doylestown, PA)
• Duncan Regional Hospital (Duncan, OK)
• Eastern Maine Healthcare Systems (Brewer, ME)
• Eastern Maine Medical Center (Bangor, ME)
• Edward-Elmhurst Healthcare (Naperville, IL)
• Eisenhower Medical Center (Rancho Mirage, CA)
• Elliot Health System (Manchester, NH)
• Emory Healthcare (Atlanta, GA)
• Englewood Hospital and Medical Center (Englewood, NJ)
• ETMC Regional Healthcare System (Tyler, TX)
• Exeter Health Resources (Exeter, NH)
• Fisher-Titus Medical Center (Norwalk, OH)
• Flagler Hospital (St. Augustine, FL)
• Florida Hospital (Orlando, FL)
• Fort HealthCare (Fort Atkinson, WI)
• Frederick Memorial Hospital (Frederick, MD)
• Geisinger Health System (Danville, PA)
• Genesis Health System (Davenport, IA)
• Genesis HealthCare System (Zanesville, OH)
• Grady Health System (Atlanta, GA)
• Grand View Health (Sellersville, PA)
• Gritman Medical Center (Moscow, ID)
• Grundy County Memorial Hospital (Grundy Center, IA)
• Gundersen Health (La Crosse, WI)
• Guthrie Clinic (Sayre, PA)
• Hackensack University Medical Center (Hackensack, 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)
• Henry Ford Health System (Detroit, MI)
• Henry Mayo Newhall Hospital (Valencia, CA)
• Heritage Valley Health System (Beaver, PA)
• Holy Family Memorial (Manitowoc, WI)
• Holy Spirit Health System (Camp Hill, PA)
• Hospital of Central Connecticut (New Britain, CT)
• Hugh Chatham Memorial Hospital (Elkin, NC)
• IASIS Healthcare (Franklin, TN)
• Ingalls Memorial Hospital (Harvey, IL)
• Inova Health System (Falls Church, VA)
• Intermountain Healthcare (Salt Lake City, UT)
• JFK Medical Center (Edison, NJ)
• John D. Dingell VA Medical Center (Detroit, MI)
• Jupiter Medical Center (Jupiter, FL)
• Kaiser Permanente (Oakland, CA)
• Kaleida Health (Buffalo, NY)
• Kalkaska Memorial Health Center (Kalkaska, MI)
• Katherine Shaw Bethea Hospital (Dixon, IL)
• King’s Daughters Medical Center (Ashland, KY)
• KishHealth System (DeKalb, IL)
• Kittson Memorial Healthcare Center (Hallock, MN)
• Kootenai Health (Coeur d’Alene, ID)
• Lafayette General Health (Lafayette, LA)
• Lafayette General Surgical Hospital (Lafayette, LA)
• Lake Regional Health System (Osage Beach, MO)
• Lakeland Regional Medical Center (Lakeland, FL)
• Lakeland Healthcare (St. Joseph, MI)
• Lancaster General Health (Lancaster, PA)
• Lawrence Memorial Hospital (Lawrence, KS)
• Lee Memorial Health System (Fort Myers, FL)
• Lehigh Valley Health Network (Allentown, PA)
• Lexington Medical Center (West Columbia, SC)
• Licking Memorial Hospital (Newark, OH)
• Lincoln Hospital & North Basin Medical Clinics (Davenport, WA)
• Loma Linda University Medical Center (Murrieta, CA)
• Lowell General Hospital (Lowell, MA)
• Loyola University Medical Center (Maywood, IL)
• Lucile Packard Children’s Hospital/Stanford Children’s Health (Palo Alto, CA)
• Madigan Army Medical Center (Tacoma, WA)
• Mahnomen Health Center (Mahnomen, MN)
• Maimonides Medical Center (Brooklyn, NY)
• Main Line Health (Philadelphia, PA)
• Maine Medical Center (Portland, ME)
• Maria Parham Medical Center (Henderson, NC)
• Marion General Hospital (Marion, IN)
• Marshall County Hospital (Benton, KY)
• Martha Jefferson Hospital (Charlottesville, VA)
• Martin Health System (Stuart, FL)
• Mary Greeley Medical Center (Ames, IA)
• Mason General Hospital (Shelton, WA)
• Mayo Clinic Arizona (Phoenix, AZ)
• Mayo Clinic Florida (Jacksonville, FL)
• Mayo Clinic Hospital – Rochester (Rochester, MI)
• McAlester Regional Health Center (McAlester, OK)
• MedStar Health (Columbia, MD)
• Memorial Healthcare ( Owosso, MI)
• Memorial Healthcare System ( Hollywood, FL )
• Memorial Hermann ( Houston, TX )
• Memorial Hospital of Union County ( Marysville, OH )
• Memorial Sloan Kettering Cancer Center ( New York, NY )
• Mercy ( Chesterfield, MO )
• Mercy Health ( Cincinnati, OH )
• Mercy Health Saint Mary’s ( Grand Rapids, MI )
• Mercy Health System of Maine ( Portland, ME )
• Mercy Medical Center ( Cedar Rapids, IA )
• Meridian Health ( Neptune City, NJ )
• Methodist Health System ( Dallas, TX )
• Metro Health ( Wyoming, MI )
• MetroHealth System ( Cleveland, OH )
• Middlesex Hospital ( Middletown, CT )
• Mid-Valley Hospital ( Omak, WA )
• Ministry Mercy Medical Center ( Oshkosh, WI )
• Ministry Saint Clare’s Hospital ( Weston, WI )
• Ministry St. Elizabeth Hospital ( Appleton, WI )
• Mission Health System ( Asheville, NC )
• Mosaic Life Care ( St. Joseph, MO )
• Mount Sinai Health System ( New York, NY )
• Mountain States Health Alliance (Johnson City, TN)
• MultiCare Health System (Tacoma, WA)
• Munson Healthcare Cadillac Hospital (Cadillac, MI)
• Munson Healthcare Grayling Hospital (Grayling, MI)
• Munson Medical Center (Traverse City, MI)
• MUSC Medical Center of Medical University of South Carolina (Charleston, SC)
• Nanticoke Memorial Hospital (Seaford, DE)
• NCH Healthcare System (Naples, FL)
• Nemaha County Hospital (Auburn, NE)
• Nemours Children’s Health System (Jacksonville, FL)
• Newark Beth Israel Medical Center (Newark, NJ)
• Nicklaus Children’s Hospital (Miami, FL)
• North Cypress Medical Center (Cypress, TX)
• North Kansas City Hospital (Kansas City, MO)
• North Mississippi Health Services (Tupelo, MS)
• Northeast Georgia Health System (Gainesville, GA)
• NorthShore University HealthSystem (Evanston, IL)
• Northwestern Memorial HealthCare (Chicago, IL)
• Norwalk Hospital (Norwalk, CT)
• Oakwood Healthcare (Dearborn, MI)
• 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 MedCentral – Mansfield Hospital (Mansfield, OH)
• Oklahoma Heart Hospital South (Oklahoma City, OK)
• Orlando Health (Orlando, FL)
• OSF Healthcare System (Peoria, IL)
• Othello Community Hospital (Othello, WA)
• Our Lady of Bellefonte Hospital (Ashland, KY)
• Overlake Hospital Medical Center (Bellevue, WA)
• Palmetto Health (Columbia, SC)
• Parkland Health & Hospital System (Dallas, TX)
• Parkview Health (Fort Wayne, IN)
• Paul Oliver Memorial Hospital (Frankfort, MI)
• Pelham Medical Center (Greer, SC)
• Peninsular Regional Medical Center (Salisbury, MD)
• Perham Health (Perham, MN)
• Piedmont Atlanta Hospital (Atlanta, GA)
• Piedmont Fayette Hospital (Fayette, GA)
• Piedmont Henry Hospital (Stockbridge, GA)
• Piedmont Mountainside Hospital (Jasper, GA)
• Piedmont Newnan Hospital (Newnan, GA)
- Presbyterian Healthcare Services (Albuquerque, NM)
- Providence Health & Services (Renton, WA)
- Pullman Regional Hospital (Pullman, WA)
- Rady Children’s Hospital (San Diego, CA)
- Reid Hospital & Health Care Services (Richmond, IN)
- Richard L. Roudebush VA Medical Center (Indianapolis, IN)
- Riverside Health System (Newport News, VA)
- Robert Wood Johnson University Hospital (Hamilton, NJ)
- Robert Wood Johnson University Hospital (New Brunswick, NJ)
- Rockford Health System (Rockford, IL)
- Rush Memorial Hospital (Rushville, IN)
- Rush Oak Park Hospital (Oak Park, IL)
- Rush University Medical Center (Chicago, IL)
- Saint Barnabas Medical Center (Livingston, NJ)
- Saint Francis Care (Hartford, CT)
- Saint Joseph Regional Medical Center (Mishawaka, IN)
- Saint Luke’s Health System (Kansas City, MO)
- Saint Peter’s University Hospital (New Brunswick, NJ)
- Saint Vincent Hospital (Erie, PA)
- Samaritan Healthcare (Moses Lake, WA)
- Sanford Health (Sioux Falls, SD)
- Sarah Bush Lincoln Health Center (Mattoon, IL)
- SCL Health System (Denver, CO)
- Sentara Healthcare (Norfolk, VA)
- Sharp HealthCare (San Diego, CA)
- Somerset Medical Center (Somerville, NJ)
- South Shore Hospital (South Weymouth, MA)
- Spartanburg Regional Healthcare System (Spartanburg, SC)
- SSM Health Care (St. Louis, MO)
- St. Clair Hospital (Pittsburgh, PA)
- St. Dominic Hospital (Jackson, MS)
- St. Elizabeth Healthcare (Edgewood, KY)
- St. Elizabeth Hospital (Enumclaw, WA)
- St. Joseph Mercy Oakland (Pontiac, MI)
- St. Joseph’s Hospital Health Center (Syracuse, NY)
- St. Luke’s Cornwall Hospital (Newburgh, NY)
- St. Luke’s Rehabilitation Institute (Spokane, WA)
- St. Martin Hospital (Breaux Bridge, LA)
- St. Vincent’s Birmingham (Birmingham, AL)
- St. Vincent’s Blount (Oneonta, AL)
- St. Vincent’s East (Birmingham, AL)
- St. Vincent’s St. Clair (Pell City, AL)
- Stanford Health Care (Stanford, CA)
- Stony Brook University Medical Center (Stony Brook, NY)
Summa Health System (Akron, OH)
Watertown Regional Medical Center (Watertown, WI)
WellSpan Health (York, PA)
WellStar Health System (Marietta, GA)
Wentworth-Douglass Hospital (Dover, NH)
West Shore Medical Center (Manistee, MI)
West Virginia University Hospitals (Morgantown, WV)
Western Maryland Health System (Cumberland, MD)
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)
Wood County Hospital (Bowling Green, OH)
Yale New Haven Health System (New Haven, CT)
Yuma Regional Medical Center (Yuma, AZ)

Previous winners are listed online at www.hhnomostwired.com.
41

ONLINE HEALTH INFORMATION

41.1 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%

41.2 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% believe 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 Makovksy Health (www.makovksyhealth.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%

41.3 Use Of Social Media For Healthcare

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%
41.4 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): in partnership with the Avon Foundation for Women (www.avonfoundation.org) has helped 360,000 women sign up for breast-cancer-prevention research
- **Association of Cancer Online Resources** (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): 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): over 35,000 registered users who share advice on managing their condition
- **LMSarcoma Direct Research Foundation** (www.lmsrd.org): a resource for patients with leiomyosarcoma, a rare soft-tissue cancer
- **Myeloproliferative Disorders** (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): 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): 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) found that 40% of adults use social media sites such as these to guide decision making related to their health.

41.5 Shopping Online For Healthcare Providers

According to the Center for Health System Change (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.

41.6 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.
42.1 Overview

*Modern Healthcare* estimates that at least three-quarters of hospitals outsource at least one hospital function.

“As hospitals face a squeeze on payment rates and margins, there are few types of clinical services, purchased services, and medical-supply categories that aren't facing a ruthless bottom-line evaluation. Hospitals increasingly are outsourcing non-clinical services such as laundry and food to save money. Now, some are turning the cost spotlight on clinical services such as labs and diagnostic imaging.”

*Modern Healthcare*

42.2 Outsourced Services

According to *Modern Healthcare*’s 34th Annual Outsourcing Survey, the top hospital department management contracts, ranked by number of healthcare facilities outsourcing various functions, are as follows:

- Laundry: 7,990
- Housekeeping: 4,278
- Clinical/diagnostic equipment maintenance: 2,526
- Emergency departments: 1,324
- Food Services: 758
- Pharmacy: 464
- Security: 380
- Anesthesia: 380
• Parking: 344
• Medical records: 256
• Information systems: 210
• Facility operations/equipment maintenance: 152
• Hospital call centers: 149
• Marketing: 145
• Surgery (urgent): 116
• Psychiatric: 110
• Accounts receivable: 98
• Nursing staff: 92
• Radiology: 73
• Other (including hospitalists, materials management, laboratories, and more): 1,113

42.3 Largest Outsourcing Firms

By category, the following are the largest providers of outsourced services:

Clinical/Diagnostic Equipment Maintenance
• ABM Industries (www.abm.com)
• Crest Services (www.crestservices.org)
• TriMedx (www.trimedx.com)

Emergency Department
• ApolloMD (www.apollomd.com)
• CEP America (www.cepamerica.com)
• ECI Healthcare Partners (www.ecihealthcarepartners.com)
• EmCare (www.emcare.com)
• Emergency Medical Associates (www.emergencymedicalassociates.com)
• Emergency Medicine Physicians (www.emergencymedicinephysicians.com)
• Emergency Service Partners (www.emp.com)
• Premier Physician Services (www.premierphysiciansservices.com)
• Schumacher Group (www.schumachergroup.com)
• TeamHealth (www.teamhealth.com)

Foodservice
• Healthcare Services Group (www.healthcareservicesgroup.com)
• Morrison Management (www.lammorrison.com)

Housekeeping
• Healthcare Services Group (www.healthcareservicesgroup.com)
• ABM Industries (www.abm.com)
• ISS Facility Services (www.issworld.com)
Information Systems
• Anthelio Healthcare Solutions (www.antheliohealth.com)
• CareTech Solutions (www.caretech.com)
• Computer Sciences Corp. (www.csc.com)
• McKesson Technology Solutions (www.mckesson.com)

Laundry
• ABM Healthcare Support Services (www.abm.com)
• Angelica Corp. (www.angelica.com)
• Healthcare Services Group (www.hcsgroup.com)
• Unitex (www.unitex.com)

Pharmacy
• Comprehensive Pharmacy Services (www.cpspharm.com)
• Pharmacy Systems (www.pharmacysystems.com)
• TeamHealth (www.teamhealth.com)
43

PATIENT COMMUNICATIONS

43.1 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.

43.2 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 11\textsuperscript{th} 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.

43.3 Communications for Immigrant 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 recent 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.

43.4 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

43.5 Market Resources

44

PATIENT SATISFACTION

44.1 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).

44.2 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 3,553 rated hospitals in 2015, star ratings were as follows:

- ★★★★★: 251
- ★★★★: 1,205
- ★★★: 1,414
- ★★: 582
- ★: 101

The following are five-star rated hospitals:

- Abbeville Area Medical Center (Abbeville, SC)
- Abraham Lincoln Memorial Hospital (Lincoln, IL)
- Advanced Surgical Hospital (Washington, PA)
- Animas Surgical Hospital (Durango, CO)
• Arizona Orthopedic and Surgical Speciality Hospital (Chandler, AZ)
• Arizona Spine and Joint Hospital (Mesa, AZ)
• Arkansas Heart Hospital (Little Rock, AR)
• Arkansas Surgical Hospital (No Little Rock, AR)
• Aspen Valley Hospital (Aspen, CO)
• Aspirus Medford Hospital & Clinics (Medford, WI)
• Aurora Medical Center (Grafton, WI)
• Avera Heart Hospital of South Dakota (Sioux Falls, SD)
• Avera Holy Family Hospital (Estherville, IA)
• Avera St. Anthony's Hospital (O' Neill, NE)
• Bacon County Hospital (Alma, GA)
• Bailey Medical Center (Owasso, OK)
• Banner Goldfield Medical Center (Apache Junction, AX)
• Barrett Memorial Hospital (Dillon, MT)
• Baylor Heart and Vascular Hospital (Dallas, TX)
• Baylor Medical Center at Trophy Club (Trophy Club, TX)
• Baylor Medical Center at Uptown (Dallas, TX)
• Baylor Orthopedic and Spine Hospital at Arlington (Arlington, TX)
• Bell Hospital (Ishpeming, MI)
• Bellin Memorial Hospital (Green Bay, WI)
• Bigfork Valley Hospital (Bigfork, MN)
• Black Hills Surgical Hospital (Rapid City, SD)
• Black River Memorial Hospital (Black River Falls, WI)
• Blue Hill Memorial Hospital (Blue Hill, ME)
• Bluffton Hospital (Bluffton, OH)
• Boone County Health Center (Albion, NE)
• Brodstone Memorial Hospital (Superior, NE)
• Calais Regional Hospital (Calais, ME)
• Calumet Medical Center (Chilton, WI)
• Cancer Treatment Centers of America (Philadelphia, PA)
• Carilion Tazewell Community Hospital (Tazewell, VA)
• Central Louisiana Surgical Hospital (Alexandria, LA)
• Chatham Hospital (Siler City, NC)
• Childress Regional Medical Center (Childress, TX)
• Citizens Medical Center (Columbia, LA)
• Clinton County Hospital (Albany, KY)
• Clinton Hospital Association (Clinton, MA)
• Columbia Center (Mequon, WI)
• Colombus Community Hospital (Columbus, WI)
• Community Medical Center (Falls City, NE)
• Community Memorial Hospital (Hicksville, OH)
• Confluence Health - Wenatchee Valley Hospital & Clinics (Wenatchee, WA)
• Coordinated Health Orthopedic Hospital (Bethlehem, PA)
• Crossing Rivers Health Medical Center (Prairie du Chien, WI)
• Cypress Pointe Surgical Hospital (Hammond, LA)
• Dakota Plains Surgical Center (Aberdeen, SD)
• Defiance Regional Medical Center (Defiance, OH)
• Dewitt Hospital & Nursing Home (De Witt, AR)
• Doctors Hospital at Deer Creek (Leesville, LA)
• East Texas Medical Center Pittsburg (Pittsburg, TX)
• East Texas Medical Center Quitman (Quitman, TX)
• Eastland Memorial Hospital (Eastland, TX)
• Emanuel Medical Center (Swainsboro, GA)
• Fairview Hospital (Great Barrington, MA)
• Fairview Northland Regional Hospital (Princeton, MN)
• Fairway Medical Center (Covington, LA)
• Fayette Medical Center (Fayette, AL)
• Firsthealth Moore Regional Hospital (Pinehurst, NC)
• Flambeau Hospital (Park Falls, WI)
• Floyd County Memorial Hospital (Charles City, IA)
• Floyd Valley Hospital (Le Mars, IA)
• Fort Madison Community Hospital (Fort Madison, IA)
• Fostoria Community Hospital (Fostoria, OH)
• Foundation Surgical Hospital of San Antonio (San Antonio, TX)
• Frank R. Howard Memorial Hospital (Willits, CA)
• Fresno Surgical Hospital (Fresno, CA)
• Gibson Community Hospital (Gibson City, IL)
• Good Samaritan Hospital (Vincennes, IN)
• Grant Regional Health Center (Lancaster, WI)
• Great Falls Clinic Medical Center (Great Falls, MT)
• Green Clinic Surgical Hospital (Ruston, LA)
• Greenville Health System - Greer Memorial Hospital (Greer, SC)
• Greenville Health System - Patewood Memorial Hospital (Greenville, SC)
• Gunnison Valley Hospital (Gunnison, UT)
• H. B. Magruder Memorial Hospital (Port Clinton, OH)
• Hamilton General Hospital (Hamilton, TX)
• Hardin Memorial Hospital (Kenton, OH)
• Healtheast Woodwinds Hospital (Woodbury, MN)
• Heart Hospital of Lafayette (Lafayette, LA)
• Hendricks Regional Health (Danville, IN)
• Henry County Memorial Hospital (New Castle, IN)
• Heritage Park Surgical Hospital (Sherman, TX)
• Hill Country Memorial Hospital (Fredericksburg, TX)
• Hoag Orthopedic Institute (Irvine, CA)
• Hocking Valley Community Hospital (Logan, OH)
• Houston Orthopedic and Spine Hospital (Bellaire, TX)
• Illinois Valley Community Hospital (Peru, IL)
• Indiana Orthopaedic Hospital (Indianapolis, IN)
• Institute for Orthopaedic Surgery (Lima, OH)
• Iowa Specialty Hospital-Clarion (Clarion, IA)
• Jellico Community Hospital (Jellico, TN)
• Kansas City Orthopaedic Institute (Leawood, KS)
• Kansas Surgery & Recovery Center (Wichita, KS)
• Kauai Veterans Memorial Hospital (Waimea, HI)
• KentuckyOne Health - Saint Joseph Martin (Martin, KY)
• King's Daughters Medical Center-Brookhaven (Brookhaven, MS)
• Ladd Memorial Hospital (Osceola, WI)
• Lady of the Sea General Hospital (Cut off, LA)
• Lafayette General Medical Center (Lafayette, LA)
• Lafayette Regional Health Center (Lexington, MO)
• Lafayette Surgical Specialty Hospital (Lafayette, LA)
• Lakeland Community Hospital-Watervliet (Watervliet, MI)
• Lakeview Memorial Hospital (Stillwater, MN)
• Lakewood Health System (Staples, MN)
• Lincoln Surgical Hospital (Lincoln, NE)
• Manhattan Surgical Hospital (Manhattan, KS)
• Margaret Mary Community Hospital (Batesville, IN)
• Mariners Hospital (Tavernier, FL)
• Mayo Clinic Health System - New Prague (New Prague, MN)
• Mayo Clinic Hospital (Phoenix, AZ)
• Mcbride Clinic Orthopedic Hospital (Oklahoma City, OK)
• Memorial Hospital of Lafayette County (Darlington, WI)
• Mendota Community Hospital (Mendota, IL)
• Menlo Park Surgical Hospital (Menlo Park, CA)
• Mercy Hospital (Portland, ME)
• Mercy Hospital of Defiance (Defiance, OH)
• Methodist Ambulatory Surgery Hospital NW (San Antonio, TX)
• Miami County Medical Center (Paola, KS)
• Midwest Orthopedic Specialty Hospital (Franklin, WI)
• Midwest Surgical Hospital (Omaha, NE)
• Midwestern Region Med Center (Zion, IL)
• Millinocket Regional Hospital (Millinocket, ME)
• Ministry Eagle River Memorial Hospital (Eagle River, WI)
• Mitchell County Hospital District (Colorado City, TX)
• Monroe County Hospital (Monroeville, AL)
• Morrow County Hospital (Mount Gilead, OH)
• Mount Carmel New Albany Surgical Hospital (New Albany, OH)
• Mount Desert Island Hospital (Bar Harbor, ME)
• Mount Pleasant Hospital (Mount Pleasant, SC)
• Municipal Hospital and Granite Manor (Granite Falls, MN)
• Myrtue Medical Center (Harlan, IA)
• Nebraska Orthopaedic Hospital (Omaha, NE)
• Neosho Memorial Regional Medical Center (Chanute, KS)
• New Ulm Medical Center (New Ulm, MN)
• North Carolina Specialty Hospital (Durham, NC)
• North Central Surgical Center (Dallas, TX)
• Northern Westchester Hospital (Mount Kisco, NY)
• Northside Medical Center (Columbus, GA)
• Northwest Hills Surgical Hospital (Austin, TX)
• Northwest Specialty Hospital (Post Falls, ID)
• Oaklawn Hospital (Marshall, MI)
• Oakleaf Surgical Hospital (Altoona, WI)
• Ohio Valley Medical Center (Springfield, OH)
• Oklahoma Center for Orthopaedic & Multi-Specialty Surgery (Oklahoma City, OK)
• Oklahoma Heart Hospital (Oklahoma City, OK)
• Oklahoma Heart Hospital South (Oklahoma City, OK)
• Oklahoma Spine Hospital (Oklahoma City, OK)
• Oklahoma Surgical Hospital (Tulsa, OK)
• Orange City Area Health System (Orange City, IA)
• Orthocolorado Hospital at St. Anthony Medical Campus (Lakewood, CO)
• Orthopaedic Hospital at Parkview North (Fort Wayne, IN)
• Orthopaedic Hospital of Wisconsin (Glendale, WI)
• OSF St. Lukes Medical Center (Kewanee, IL)
• OSS Orthopaedic Hospital (York, PA)
• P & S Surgical Hospital (Monroe, LA)
• Park City Medical Center (Park City, UT)
• Patients' Hospital of Redding (Redding, CA)
• Pender Community Hospital (Pender, NE)
• Physician's Care Surgical Hospital (Royersford, PA)
• Physicians Centre (Bryan, TX)
• Physicians Medical Center (Houma, LA)
• Physicians' Specialty Hospital (Fayetteville, AR)
• Pikeville Medical Center (Pikeville, KY)
• Pullman Regional Hospital (Pullman, WA)
• Quail Creek Surgical Hospital (Amarillo, TX)
• Redwood Area Hospital (Redwood Falls, MN)
• Regional Medical Center (Manchester, IA)
• River Falls Area Hospital (River Falls, WI)
• Riverwood Healthcare Center (Aitkin, MN)
• Rochelle Community Hospital (Rochelle, IL)
• Rockcastle County Hospital (Mount Vernon, KY)
• Rollins Brook Community Hospital (Lampasas, TX)
• Russell County Hospital (Russell Springs, KY)
• Sacred Heart Hospital on the Gulf (Port Saint Joe, FL)
• Saint Thomas Hospital for Spinal Surgery (Nashville, TN)
• Salem Township Hospital (Salem, IL)
• Sanford Aberdeen Medical Center (Aberdeen, SD)
• Sanford Luverne Medical Center (Luverne, MN)
• Sanpete Valley Hospital (Mount Pleasant, UT)
• Sauk Prairie Hospital (Prairie du Sac, WI)
• Schoolcraft Memorial Hospital (Manistique, MI)
• Sharp Coronado Hospital and Healthcare Center (Coronado, CA)
• Sioux Falls Specialty Hospital (Sioux Falls, SD)
• Siouxland Surgery Center Limited Partnership (Dakota Dunes, SD)
• Sleepy Eye Municipal Hospital (Sleepy Eye, MN)
• South County Hospital (Wakefield, RI)
• South Texas Spine and Surgical Hospital (San Antonio, TX)
• Southeastern Regional Medical Center (Newnan, GA)
• Southern Surgical Hospital (Slidell, LA)
• Southwestern Regional Medical Center (Tulsa, OK)
• Specialists Hospital Shreveport (Shreveport, LA)
• Spectrum Health Zeeland Community Hospital (Zeeland, MI)
• Spooner Health System (Spooners, WI)
• St. Andrews Hospital (Lincoln County Healthcare) (Boothbay Harbor, ME)
• St. Anthony Regional Hospital & Nursing Home (Carroll, IA)
• St. Clare Hospital (Baraboo, WI)
• St. James Parish Hospital (Lutcher, LA)
• St. Joseph Mercy Chelsea (Chelsea, MI)
• St. Joseph's Hospital (Highland, IL)
• St. Josephs Hospital (Breese, IL)
• St. Luke's McCall (McCall, ID)
• St. Luke's Wood River Medical Center (Ketchum, ID)
• Stanislaus Surgical Hospital (Modesto, CA)
• Stewart Memorial Community Hospital (Lake City, IA)
• Stoughton Hospital (Stoughton, WI)
• Sugar Land Surgical Hospital (Sugar Land, TX)
• Surgical Hospital at Southwoods (Youngstown, OH)
• Surgical Institute of Reading (Wyomissing, PA)
• Surgical Specialty Center at Coordinated Health (Allentown, PA)
• Surgical Specialty Center of Baton Rouge (Baton Rouge, LA)
• Tahoe Forest Hospital (Truckee, CA)
• Taylorville Memorial Hospital (Taylorville, IL)
• Texas Health Center for Diagnostics & Surgery Plan (Plano, TX)
• Texas Health Harris Methodist Hospital Southlake (Southlake, TX)
• Texas Health Harris Methodist Hospital Stephenville (Stephenville, TX)
• Texas Health Heart & Vascular Hospital Arlington (Arlington, TX)
• Texas Institute for Surgery at Presbyterian Hospital (Dallas, TX)
• Texas Spine and Joint Hospital (Tyler, TX)
• The Heart Hospital at Deaconess Gateway (Newburgh, IN)
• The Heart Hospital Baylor Plano (Plano, TX)
• The Monroe Clinic (Monroe, WI)
• The Neuromedical Center Hospital (Baton Rouge, LA)
• Tomah Memorial Hospital (Tomah, WI)
• Trihealth Evendale Hospital (Cincinnati, OH)
• Tulsa Spine & Specialty Hospital (Tulsa, OK)
• Tyler County Hospital (Woodville, TX)
• United Regional Medical Center (Manchester, TN)
• Unity Medical and Surgical Hospital (Mishawaka, IN)
• University Hospitals Conneaut Medical Center (Conneaut, OH)
• Upland Hills Health (Dodgeville, WI)
• USMD Hospital at Fort Worth (Fort Worth, TX)
• Vernon Memorial Hospital (Viroqua, WI)
• Viera Hospital (Melbourne, FL)
• Wabash County Hospital (Wabash, IN)
• Wabash General Hospital (Mount Carmel, IL)
• Waverly Health Center (Waverly, IA)
• Webster General Hospital (Eupora, MS)
• Wessan Surgery and Rehabilitation Hospital (York, PA)
• Westlake Regional Hospital (Columbia, KY)
• Woodlawn Hospital (Rochester, IN)
• Wright Memorial Hospital (Trenton, MO)
• Yampa Valley Medical Center (Steamboat Springs, CO)
• York Hospital (York, ME)

44.3 Satisfaction With Doctor Visits

A January 2016 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>
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<tr>
<td>18-to-35:</td>
<td>47%</td>
<td>37%</td>
<td>9%</td>
<td>8%</td>
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<tr>
<td>36-to-50:</td>
<td>46%</td>
<td>42%</td>
<td>7%</td>
<td>4%</td>
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<tr>
<td>51-to-69:</td>
<td>56%</td>
<td>34%</td>
<td>6%</td>
<td>5%</td>
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<tr>
<td>70 and older:</td>
<td>69%</td>
<td>21%</td>
<td>2%</td>
<td>7%</td>
</tr>
</tbody>
</table>
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PATIENT-CENTERED MEDICAL HOMES

45.1 Overview

The patient-centered medical home (PCMH) concept is a model in which a physician coordinates patient care that enhances patient access to physicians and engages patients in their own care management.

Patients suffering from one or more chronic disease often depend on several doctors who rarely communicate with one another. This means it’s nearly impossible to arrange complementary treatments, cross-check prescriptions, and avoid ordering repetitive diagnostic tests. The medical home model could reduce these redundancies and save an estimated $25 billion to $50 billion a year.

In the Healthcare Leaders Opinion Survey, conducted by The Commonwealth Fund (www.commonwealthfund.org) and Modern Healthcare, 84% of respondents supported providing supplemental payments to primary-care physicians – on top of fee-for-service payments – for delivering comprehensive, coordinated, and accessible care.

The concept is supported by the American Academy of Family Physicians (www.aafp.org), American Academy of Pediatrics (www.aap.org), American College of Physicians (www.acponline.org), and American Osteopathic Association (www.osteopathic.org). The AARP and employers including IBM, Dow Chemical, and General Motors advocate medical homes.

TransformMED (www.transformmed.com), part of the American Academy of Family Physicians, provides guidance and support to physicians implementing patient-centered medical homes.

“...The medical home has redefined primary care in this country. Experts say it is only a matter of time before the medical home approach becomes the rule across the spectrum of care.”

Modern Healthcare
45.2 The PCMH Model

The Agency for Healthcare Research and Quality (www.ahrq.gov) provides the following characteristics that define the patient-centered medical home model:

Comprehensive Care
• Serves or facilitates most of a patient’s physical and mental healthcare needs through a team-based approach

Patient-Centered Care
• Whole-person orientation, involving partnering with patients to help them improve their own health

Coordinated Care
• Coordinates patient care across the whole spectrum, including specialty care, hospitals, home healthcare, and community services, with an emphasis on seamless transitions

Accessible Services
• Makes primary care accessible through shorter wait times, extended office hours, and after-hours access to providers through alternative methods such as telephone and email

Quality And Safety
• Enhances quality of care through clinical decision-support tools, evidence-based care, shared decision making, performance measurement, and population health management

45.3 NCQA Recognition Program

The National Committee For Quality Assurance (NCQA, www.ncqa.org) established guidelines in 2008 to recognize physicians and medical practices that meet patient-centered medical home standards of care.

In 2015, NCQA recognized over 8,400 practice sites with over 35,000 clinicians. The Recognized Clinician Directory, which lists recognized PCMH practices, is available online at http://recognition.ncqa.org.

45.4 Largest Medical Home Practices

According to Modern Healthcare, the following are the largest medical home practices, ranked by number of annual patient visits:
• Allina Hospitals & Clinics (Minneapolis, MN): 1.66 million
• Fairview Health Services (Minneapolis, MN): 1.23 million
• Open Door Family Medical Center (Ossining, NY): 196,303
• Care Network of the Children’s Hospital of Philadelphia
  (Philadelphia, PA): 83,660
• Sentara Healthcare (Norfolk, VA): 65,312
• Clarkstown Pediatrics (Nanuet, NY): 60,000
• Westchester Health Associates (Katonah, NY): 60,000
• Cambridge Health Alliance (Cambridge, MA): 43,456
• Southeast Texas Medical Associates (Beaumont, TX): 38,325
• Summit Medical Group (Berkeley Heights, NJ): 33,955
• Providence St. Peter Family Medicine Residency Program
  (Olympia, WA): 28,000
• Barry Pointe Family Care (Kansas City, MO): 17,975
• Belmar Family Medicine (Lakewood, CO): 10,000

45.5 Specialist-Based Medical Home Practices

In 2014, NCQA expanded PCMH recognition to include specialist practices.
The New Mexico Cancer Center in Albuquerque, one of the first to gain
recognition, reduced the hospitalization rate for the 7,200 cancer patients in its
oncology medical home demonstration project from 25 to 18 days per 1,000 patients.

“The medical home concept is moving beyond
primary care. Oncologists and other specialists
are launching patient-centered medical homes.”

Modern Healthcare

45.6 Market Resources

Agency for Healthcare Research and Quality, 540 Gaither Road, Rockville, MD 20850.
(301) 427-1364. (www.ahrq.gov)

National Committee For Quality Assurance, 1100 13th Street NW, Suite 1000,
Washington, DC 20005. (202) 955-3500. (www.ncqa.org)

TransforMED, 11400 Tomahawk Creek Parkway, Suite 340, Leawood, KS 66211.
(913) 906-6330. (www.transformmed.com)
PATIENTS FROM OVERSEAS

46.1 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.

46.2 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.

46.3 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 operates a 360-bed hospital in Abu Dhabi. It 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.
• The University of Miami Hospital Miller School of Medicine has clinics in Colombia and in the Caribbean.

### 46.4 Market Resources

**Partners Harvard Medical International**, 100 Cambridge Street, Suite 2002, Boston, MA 02114. (617) 535-6400. ([www.partners.org](http://www.partners.org))

Philadelphia International Medicine, 1835 Market Street, 10th Floor, Philadelphia, PA 19103. (215) 563-4733. ([www.philadelphiamedicine.com](http://www.philadelphiamedicine.com))
47

PHYSICIAN SERVICES ONLINE

47.1 Types Of Services

Manhattan Research (www.manhattanresearch.com) reports that approximately 40% 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 e-mail 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.

_________________________________________________________________

“Get ready for e-visits. Texting and emailing have been shown to be effective and efficient tools to connect patients and physicians. Additionally, the use of email communications and telephone visits cut office visits by 26%, improving the efficiency of ambulatory care.”

American Hospital Association

_________________________________________________________________

47.2 Virtual Visits

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 e-mail 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.
Certain diagnoses, such as whether a sore throat is a virus or a strep infection, of course, are difficult to make using a webcam. Still, the virtual visit can save valuable time in the case of a serious condition because an online doctor can recommend that a patient visit an emergency room or specialist immediately, which eliminates the patient’s wait to see a general practitioner before the referral.

Ailments most frequently treated via a virtual visit include sinus problems, cold and flu symptoms, urinary infections, and coughs. Other common conditions are back pain and sleep issues. Online service can be especially useful for patients who need medication refills or follow-up consultations after surgery, and for those who are elderly and homebound.

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.

Most state medical boards permit doctors to diagnose and treat online only those patients whom they’ve seen at least once in person.

The Medical Board of California prohibits doctors from prescribing prescription medications without a prior exam. If technology such as videoconferencing can provide the same information as a face-to-face visit, however, Internet prescribing is allowed.

Companies such as MDLiveCare.com and RingADoc.com are offering such video-conferencing services in California.

47.3 E-mail Communications With Doctors

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 e-mail for communication. Reasons for use are 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.

According to Terhilda Garrido, a vice president at Kaiser Permanente, e-mail is regularly used within the system because its physicians “don’t get paid by generating more visits so they find the most efficient way. It’s in their best interest to use e-mail.”

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.

47.4 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.
### 48.1 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.

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

> “Hospitals, payers and insurers are taking steps to better manage the care of populations with the goal of preventing or limiting medical issues by treating them earlier and more efficiently. But creating a population health management strategy is more art than science, and acting as fast as is reasonably possible is the best move. Many organizations have already adopted population health techniques, relying on such things as computers that crunch data and human beings who listen to patients.”

*Hospitals & Health Networks, 10/15*

Population health management will become a required core competency for provider organizations in a post fee-for-service payment environment, according to the Institute for Health Technology Transformation (www.ihealthtran.com).

### 48.2 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.

**48.3 Alliances**

*The Future of the Public’s Health in the 21st Century,* a report from the Institute of Medicine (IOC, [www.iom.edu](http://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. 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*

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*
48.4 Community Health Records

A survey by Hospitals & Health Networks ascertained the status of hospitals in creating and using community health records. Survey results, presenting the percentages of hospitals and health networks with various technology capabilities, are as follows:

Ability To Provide A Summary Of Care For The Majority Of Patients Transitioned Or Referred To Another Setting Or Provider

- Using a certified electronic health record: 77%
- Through a health information exchange: 25%

Sharing A Patient’s Clinic Care Record With Other Providers

- Affiliated hospitals: 54%
- Ambulatory providers: 46%
- Health Information Exchange (HIE): 46%
- Non-affiliated hospitals: 36%

Ability To Coordinate Care Across The Medical Neighborhood Electronically

- Manage care transitions: 57%
- Coordinate and monitor exchanges of information with specialists and other facilities: 53%
- Secure messaging with patients and health professionals: 52%
- Electronic medication and diagnostic ordering/management: 49%
- Build linkages to community-based resources: 42%
- Proactive health management of each patient: 35%

Have The Tools To Aggregate Data From Patient Encounters To Create A Community Health Record

- Percentage that aggregate data: 27%

48.5 Population-Based Disease Registries

Patient disease registries are databases of clinical information used to evaluate care processes and outcomes. A survey by Hospitals & Health Networks found that 65% of community hospitals use a disease registry to manage gaps in care across a population. When asked how the majority of data in their disease registry was populated, responses were as follows:

- From a combination of electronic clinical and billing data: 56%
- From HIE or other multi-organizational effort: 15%
- Manually: 15%
- From practice-management data: 14%
“The true value of a registry is that diseases can be prevented, not just managed. Managing diseases via a registry will soon become expected best practice and population-based registries will create an even greater opportunity to manage wellness.”

*Hospitals & Health Networks*

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**48.6 Market Resources**

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


*The Role Of Small And Rural Hospitals And Care Systems In Effective Population Health Partnerships*, American Hospital Association. (www.hpoe.org/resources/hpoe/1385)

*Trends In Hospital-Based Population Health Infrastructure*, American Hospital Association. (www.hpoe.org/resources/hpoe/1467)
49.1 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 48 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, a person can need long-term care services at any age. Forty percent (40%) of people currently receiving long-term care are adults ages 18-to-64.

Long-term care for seniors has changed 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, 3/21/16

49.2 Hospital Discharge To Long-Term Care

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).
### 49.3 Market Leaders

According to *Modern Healthcare* (October 2015), the largest post-acute-care companies, ranked by annual net revenue, are as follows:

<table>
<thead>
<tr>
<th>Type</th>
<th>Facilities</th>
<th>States</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindred Healthcare:</td>
<td>LTAC 188</td>
<td>47</td>
<td>$5.03 billion</td>
</tr>
<tr>
<td>Genesis HealthCare Corp.:</td>
<td>SNF 414</td>
<td>28</td>
<td>$4.77 billion</td>
</tr>
<tr>
<td>Brookdale Senior Living:</td>
<td>ALF 1,143</td>
<td>46</td>
<td>$3.83 billion</td>
</tr>
<tr>
<td>Select Medical Holdings Corp.:</td>
<td>LTAC 1,152</td>
<td>41</td>
<td>$3.06 billion</td>
</tr>
<tr>
<td>HealthSouth Corp.:</td>
<td>RH 267</td>
<td>33</td>
<td>$2.77 billion</td>
</tr>
<tr>
<td>Five Star Quality Care:</td>
<td>ALF 258</td>
<td>31</td>
<td>$1.33 billion</td>
</tr>
<tr>
<td>Amedisys:</td>
<td>HHH 396</td>
<td>34</td>
<td>$1.20 billion</td>
</tr>
<tr>
<td>Ensign Group:</td>
<td>SNF 136</td>
<td>12</td>
<td>$1.03 billion</td>
</tr>
<tr>
<td>National HealthCare Corp:</td>
<td>SNF 74</td>
<td>10</td>
<td>$872 million</td>
</tr>
<tr>
<td>Covenant Care:</td>
<td>SNF 57</td>
<td>7</td>
<td>$543 million</td>
</tr>
<tr>
<td>Athena Health Care Systems:</td>
<td>SNF 48</td>
<td>9</td>
<td>$344 million</td>
</tr>
<tr>
<td>Capital Senior Living:</td>
<td>SNF 117</td>
<td>26</td>
<td>$384 million</td>
</tr>
<tr>
<td>Alden Management Services:</td>
<td>SNF 34</td>
<td>2</td>
<td>$355 million</td>
</tr>
<tr>
<td>Diversicare Healthcare Services:</td>
<td>SNF 52</td>
<td>9</td>
<td>$384 million</td>
</tr>
<tr>
<td>Jewish Home Lifecare:</td>
<td>SNF 46</td>
<td>6</td>
<td>$273 million</td>
</tr>
<tr>
<td>Sutter Care at Home:</td>
<td>HHH 26</td>
<td>3</td>
<td>$252 million</td>
</tr>
<tr>
<td>Nexion Health:</td>
<td>SNF 37</td>
<td>3</td>
<td>$250 million</td>
</tr>
<tr>
<td>Good Shepard Rehabilitation Network:</td>
<td>RH 53</td>
<td>2</td>
<td>$216 million</td>
</tr>
<tr>
<td>Cornerstone Affiliates:</td>
<td>CCRC 11</td>
<td>4</td>
<td>$208 million</td>
</tr>
<tr>
<td>AdCare Health Systems:</td>
<td>SNF 29</td>
<td>6</td>
<td>$193 million</td>
</tr>
<tr>
<td>Front Porch:</td>
<td>CCRC 12</td>
<td>3</td>
<td>$177 million</td>
</tr>
<tr>
<td>Christus Continuing Care:</td>
<td>LTAC 22</td>
<td>5</td>
<td>$151 million</td>
</tr>
<tr>
<td>Ecumen:</td>
<td>ALF 50</td>
<td>5</td>
<td>$146 million</td>
</tr>
</tbody>
</table>

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

### 49.4 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.

According to the National Investment Center for the Seniors Housing & Care Industry (www.nic.org), more than 900,000 Americans live in approximately 39,500 assisted-living residences. The average age of an assisted-living resident is 86.9 years old. The average length of stay in an assisted-living facility is approximately 28.3 months.
The senior assisted care business is an $18 billion to $20 billion annual industry, according to the Assisted Living Federation of America (ALFA, www.alfa.org).

According to the Market Survey of Long-Term Care Costs, by the MetLife Mature Market Institute (www.metlife.com/mmi), the average monthly base price for assisted-living communities is $3,447, or $41,724 annually. The highest cost was reported in Washington, DC, at $5,757 per month. The lowest was in non-metropolitan areas of Arkansas, at $2,156. According to MetLife, 59% of assisted-living facilities offer dementia care; the additional costs for these services average $1,110 per month.

Facilities can range in size from a small house to a large apartment-style complex; most have between 25 and 125 units.

49.5 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 Centers for Medicare & Medicaid Services (CMS, www.cms.gov) 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 LTAC hospital is about $1 million to $3 million, compared with the $10 million to $20 million price tag to build a freestanding LTAC hospital.

49.6 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 2015]):

<table>
<thead>
<tr>
<th>Rehab Hospitals</th>
<th>Beds</th>
</tr>
</thead>
<tbody>
<tr>
<td>HealthSouth Corp.:</td>
<td>107</td>
</tr>
<tr>
<td>Sepect Medical:</td>
<td>16</td>
</tr>
<tr>
<td>Vibra Healthcare:</td>
<td>16</td>
</tr>
<tr>
<td>Terence Cardinal Cooke Health Care Center:</td>
<td>1</td>
</tr>
<tr>
<td>Centerre Healthcare:</td>
<td>8</td>
</tr>
<tr>
<td>Rehabilitation Institute of Chicago:</td>
<td>1</td>
</tr>
<tr>
<td>Kindred Healthcare:</td>
<td>4</td>
</tr>
<tr>
<td>UPMC Community Provider Services:</td>
<td>7</td>
</tr>
<tr>
<td>Brooks Rehabilitation:</td>
<td>1</td>
</tr>
<tr>
<td>Good Shepherd Rehabilitation Network:</td>
<td>2</td>
</tr>
</tbody>
</table>

### 49.7 Skilled Nursing Facilities

According to the *Nursing Facility Operational Characteristics Report*, published by the American Health Care Association (www.ahcancal.org), there are 15,681 skilled nursing facilities in the United States with a combined total of 1.67 million beds.

According to the Centers for Medicare and Medicaid Services, national expenditures for nursing home care are $145 billion. Medicare SNF spending, alone, totals about $25 billion.

Approximately 75% of nursing homes are owned by for-profit chains. By comparison, only 15% of hospitals are owned by for-profit chains.

The largest chains are as follows (source: *Modern Healthcare* [November 2015]):

<table>
<thead>
<tr>
<th>Revenue</th>
<th>Facilities</th>
<th>Beds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindred Healthcare:</td>
<td>$5.03 billion</td>
<td>86</td>
</tr>
<tr>
<td>Genesis HealthCare:</td>
<td>$4.77 billion</td>
<td>380</td>
</tr>
<tr>
<td>Five Star Quality Care:</td>
<td>$1.33 billion</td>
<td>31</td>
</tr>
<tr>
<td>Ensign Group:</td>
<td>$1.02 billion</td>
<td>121</td>
</tr>
<tr>
<td>Good Samaritan Society:</td>
<td>$980 million</td>
<td>57</td>
</tr>
<tr>
<td>National HealthCare Corp.:</td>
<td>$872 million</td>
<td>74</td>
</tr>
<tr>
<td>Covenant Care:</td>
<td>$543 million</td>
<td>53</td>
</tr>
<tr>
<td>Athena Health Care Systems:</td>
<td>$542 million</td>
<td>43</td>
</tr>
<tr>
<td>UPMC Community Provider Services:</td>
<td>$419 million</td>
<td>6</td>
</tr>
<tr>
<td>Alden Management Services:</td>
<td>$355 million</td>
<td>30</td>
</tr>
<tr>
<td>Diversicare Healthcare Services:</td>
<td>$344 million</td>
<td>52</td>
</tr>
</tbody>
</table>

According to the *Market Survey of Long-Term Care Costs*, the average daily rate for a private room in a nursing home is $229, or $83,585 annually. Costs range from $655 per day in Alaska (statewide) to $141 per day in Baton Rouge and Shreveport, Louisiana. For semi-private rooms, the average daily cost is $205.
49.8 Market Resources


Leading Age, 2519 Connecticut Avenue NW, Washington, DC 20008. (202) 783-2242. (www.leadingage.org)

MetLife Mature Market Institute, 57 Greens Farms Road, Westport, CT 06880. (203) 221-6580. (www.metlife.com/mmi)

National Center for Assisted Living, 1201 L Street NW, Washington, DC 20005. (202) 842-4444. (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)

Robert Wood Johnson Foundation, Route 1 and College Road East, P.O. Box 2316, Princeton, NJ 08543. (877) 843-7953. (www.rwjf.org)
50.

PREPAREDNESS

50.1 Overview

Major disasters and pandemic threats of the early 2000s 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.

“One of the sobering lessons of the Ebola crisis was how ill-prepared the world was for a deadly pandemic.”

_The Economist, 3/19/16_

50.2 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 power and pressure 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%

50.3 Funding
In FY2016, the U.S. Department of Health and Human Services (www.hhs.gov) budget for preparedness and response was $1.55 billion, an increase from $1.11 billion the prior year. Hospital preparedness funding was $255 million.

50.4 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
• University of Oklahoma - Southwest Center for Public Health Preparedness
• University of Pittsburgh Center for Public Health Practice
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.

### 50.5 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]):

- 2010: 81
- 2011: 99
- 2012: 47
- 2013: 62
- 2014: 45

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.
51

PREVENTABLE MEDICAL ERRORS

51.1 Never 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 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

### 51.2 Non-Reimbursement

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. Such state policies include 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.
52

PRICE TRANSPARENCY

52.1 Overview

Patients generally have little idea of the cost of procedures that are being performed on them. According to a survey by Capgemini (www.us.capgemini.com), 93% of patients want more transparency of healthcare costs. Similarly, 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. Eighty percent (80%) of consumers say that they are frustrated by the lack of information available on physician costs, according to Towers Perrin (www.towersperrin.com).

“For many, there is no way to know what the hospital will cost. You only think you are covered.”

*Time*, 3/14/16

Many medical device manufacturers require hospital purchasing departments to keep prices confidential, and even physicians do not generally have knowledge of the cost of the devices they are implanting. According to a January 2014 study published in *Health Affairs*, physicians at seven major academic hospitals were wrong 81% of the time when asked the cost of common devices such as replacement knees or spinal screws. The survey of 503 orthopedists at institutions including Harvard, Stanford, and the Mayo Clinic considered doctors’ answers correct if they came within 20% of what their hospital paid suppliers.
“Imagine taking your car to a mechanic who has no clue how much a battery or muffler costs – and has no way of finding out. Substitute “artificial hip” for “battery” and “doctor” for “mechanic” and you get a pretty good picture of the convoluted market for medical implants.”

_Bloomberg Businessweek_

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.

“Healthcare is losing consumer trust through lack of price transparency.”

_Modern Healthcare, 5/22/16_
52.2 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.

_________________________________________________________________

“Some states have robust price transparency laws and regulations, requiring them to create a publically available website with price information based on real paid claims information. But in reality, the public can’t readily access that information because the website is poorly designed, or poorly functioning.”

Catalyst For Payment Reform

_________________________________________________________________

52.4 Report Card On Price Transparency

The Catalyst for Payment Reform (www.catalyzepaymentreform.org) and the Health Care Incentives Improvement Institute (www.hci3.org) published a report card on state price transparency. The report card handed out 45 F’s, three C’s, and two B’s. Maine and Massachusetts received B’s. Colorado, Vermont and Virginia received C’s. All other states got F’s.
53 PRIMARY CARE

53.1 Primary Care Physicians

Approximately 40% of U.S. physicians deliver primary care.

According to Merritt Hawkins & Associates (www.merritthawkins.com), a physician search firm, primary care physicians are in greater demand today than any other type of doctor.

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

53.2 Primary Care State-by-State

According to Modern Healthcare (February 2016), 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>
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<tr>
<td>Arizona</td>
<td>5,306</td>
<td>78.8</td>
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<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>Health Index</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>
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<tr>
<td>Idaho</td>
<td>1,179</td>
<td>72.1</td>
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<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>
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<tr>
<td>Iowa</td>
<td>2,635</td>
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<tr>
<td>Kansas</td>
<td>2,452</td>
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<td>Kentucky</td>
<td>3,475</td>
<td>78.7</td>
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<tr>
<td>Louisiana</td>
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<tr>
<td>Maine</td>
<td>1,673</td>
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<tr>
<td>Maryland</td>
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<td>Massachusetts</td>
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<td>Michigan</td>
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<td>Minnesota</td>
<td>5,749</td>
<td>105.3</td>
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<tr>
<td>Mississippi</td>
<td>1,930</td>
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<tr>
<td>Missouri</td>
<td>5,294</td>
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<td>Montana</td>
<td>901</td>
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<tr>
<td>Nebraska</td>
<td>1,605</td>
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<tr>
<td>Nevada</td>
<td>1,982</td>
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<tr>
<td>New Hampshire</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>
</tr>
<tr>
<td>New York</td>
<td>21,612</td>
<td>109.4</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>
<td>90.1</td>
</tr>
<tr>
<td>Ohio</td>
<td>10,784</td>
<td>93.0</td>
</tr>
<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>
<td>79.8</td>
</tr>
<tr>
<td>South Dakota</td>
<td>771</td>
<td>90.4</td>
</tr>
<tr>
<td>Tennessee</td>
<td>5,618</td>
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<tr>
<td>Texas</td>
<td>19,234</td>
<td>71.4</td>
</tr>
<tr>
<td>Utah</td>
<td>1,914</td>
<td>65.0</td>
</tr>
<tr>
<td>Vermont</td>
<td>803</td>
<td>128.2</td>
</tr>
<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>
53.3 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 IMS Health (www.imshealth.com), the following are the leading diagnoses by total number of patient visits for primary care:

- 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

Merritt Hawkins & Associates found the average wait times to get an appointment for family practice physicians in 15 metropolitan areas is 19.5 days. Wait times in select metros is as follows:

- Atlanta, GA: 24 days
- Boston, MA: 66 days
- Dallas, TX: 5 days
- Denver, CO: 16 days
- Detroit, MI: 16 days
- Houston, TX: 19 days
- Los Angeles, CA: 20 days
- Miami, FL: 12 days
- Minneapolis, MN: 10 days
- New York, NY: 26 days
- Philadelphia, PA: 21 days
- Portland, OR: 13 days
- San Diego, CA: 7 days
- Seattle, WA: 23 days
- Washington, DC: 14 days
53.4 Efficient Use Of Primary Care

Primary care generally provides the most efficient and cost-effective treatment for most conditions. Yet for a variety of reasons, patients often 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.

53.5 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

53.6 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 (wwwqliance.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 (wwwchoice.md).

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

American Academy of Private Physicians, P.O. Box 5129, Glen Allen, VA 23058. (877) 746-7301. (www.aapp.org)

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

54.1 Market Assessment
The inmate population in state and federal prisons is 1.49 million, according to the U.S. Department of Justice (www.justice.gov).

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

54.2 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.

**54.3 Market Resources**

(www.pewtrusts.org/~/media/Assets/2014/07/StatePrisonHealthCareSpendingReport.pdf)
55.1 Market Leaders
This chapter presents market leaders in various healthcare professional service sectors, published by Modern Healthcare. 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).

55.2 Banking and Finance
Healthcare Financing Companies
- JPMorgan Chase & Co. (www.chase.com/commercial-bank/healthcare)
- CitiGroup (www.citibank.com/transactionservices/home/corporations/corp_sectors/c_h.jsp)
- Morgan Stanley (www.morganstanley.com/what-we-do/investment-banking)
- Mitsubishi UFJ Financial Group (www.mufg.jp/english/)
- Barclays (www.barclayscorporate.com/sector-expertise/healthcare.html)
- Deutsche Bank (www.cbs.db.com/new/content/corporate_finance.html)
- Wells Fargo Securities (www.wellsfargo.com/com/industry/healthcare)
- RBC Capital Markets (www.rbccm.com/healthcare/cid-204650.html)
- BNP Paribas (http://cib.bnpparibas.com)
55.3 Construction

Architectural Firms
- HDR Architecture (www.hdrinc.com)
- Stantec Architecture (www.stantec.com)
- HKS (www.hksinc.com)
- Hellmuth, Obata + Kassabaum (www.hok.com)
- Cannon Design (www.cannondesign.com)
- Leo A. Daly (www.leoadaly.com)
- Perkins & Will (www.perkinswill.com)
- AECOM Technology Corp. (www.aecom.com)
- Cathryn Bang & Partners Architects (www.cbparch.com)
- Hammel, Green & Abrahamson (https://hga.com)

Construction Management Firms
- Turner Construction Co. (www.turnerconstruction.com)
- Gilbane Building Co. (www.gilbane.com)
- Whiting-Turner Contracting Co. (www.whiting-turner.com)
- Skanska USA (www.skanskausa.com)
- Lend Lease (www.lendlease.com)
- J.E. Dunn Construction (www.jedunn.com)
- Suffolk Construction Co. (www.suffolkconstruction.com)
- Danis Building Construction Co. (www.danis.com)
- Pepper Construction Group (www.pepperconstruction.com)
- Walsh Brothers Construction (www.walshbrothers.com)

Design/Build Companies
- HBE Corp. (www.hbecorp.com)
- BBL Medical Facilities (www.bblmedicalfacilities.com)
- Beck Group (www.beckgroup.com)
- Haskell (www.haskell.com)
- Monitor Builders (http://monitorbuilders.com)
- GMK Associates (www.gmka.com)

Development Companies
- CBRE/Trammell Crow Co. (www.trammelcrow.com)
- Hammes Co. (www.hammesco.com)
- Navigant Consulting (www.navigantconsulting.com)
- Balfour Concord (www.balfourconcord.com)
- Jones Lang LaSalle (www.jll.com)
- Duke Realty (www.dukerealty.com)
- NexCore Group (www.nexcoregroup.com)
- Landmark Healthcare Facilities (www.landmarkfacilities.com)
- Healthcare Development Partners (www.hdpartners.com)
General Contractors
• McCarthy Building Cos. (www.mccarthy.com)
• Brasfield & Gorrie (www.brasfieldgorrie.com)
• Clark Construction Group (www.clarkconstruction.com)
• DPR Construction (www.dpr.com)
• Robins & Morton Group (www.robinsmorton.com)
• Walsh Group (www.walshgroup.com)
• KBR Building Group (www.kbrbuildinggroup.com)
• Balfour Beatty Construction (www.balfourbeattyus.com)
• Hoar Construction (www.hoar.com)
• Swinterton Builders (www.swinterton.com)

55.4 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)
• Cejka Search (www.cejkaexecutivesearch.com)
• Solomon Page Group Healthcare (www.spghealthcare.com)
• Merraine Group (www.merraine.com)
• Grant Cooper HealthCare (www.grantcooperhealthcare.com)
• Furst Group (www.furstgroup.com)
• Diversified Search Odgers Berndtson (www.diversifiedsearch.com)
• The Healthcare Initiative (www.thehealthcareinitiative.com)
• Phillips DiPisa & Associates (www.phillipsdipisa.com)
• Spencer Stuart (www.spencerstuart.com)
• DHR International (www.dhrinternational.com)

55.5 Hospitalist Services
• Team Health Holdings (www.teamhealth.com)
• EmCare Hospital Medicine (www.emcare.com)
• IPC the Hospitalist Co. (www.hospitalist.com)
• Mednax (www.mednax.com)
• Cogent HMG (www.cogentmg.com)

55.6 Group Purchasing Organizations
• Novation (www.novation.com)
• Premier Purchasing Partners (www.premierinc.com)
• MedAssets (www.medassets.com)
• HealthTrust Purchasing Group (www.healthtrustpg.com)
• Amerinet (www.amerinet-gpo.com)
• Consorta (www.consorta.com)
• GeriMed (www.gerimedgso.com)
• Resource Optimization & Innovation (www.roiscs.com)
• FirstChoice Cooperative (www.fccoop.org)
• Hospital Purchasing Service (www.hpsnet.com)

55.7 Law Firms

• Polsinelli (www.polsinelli.com)
• King & Spalding (www.kslaw.com)
• Morgan, Lewis & Bockius (www.morganlewis.com)
• Hall, Render, Killian, Heath & Lyman (www.hallrender.com)
• Baker, Donelson, Bearman, Caldwell & Berkowitz (www.bakerdonelson.com)
• Epstein Becker & Green (www.ebglaw.com)
• Husch Blackwell (www.huschblackwell.com)
• Waller (www.wallerlaw.com)
• McDermott Will & Emery (www.mwe.com)
• Jones Day (www.jonesday.com)
• McGuireWoods (www.mcguirewoods.com)
• Mintz, Levin, Cohn, Ferris, Glovsky & Popeo (www.mintz.com)

55.8 Management Consulting

Healthcare Management
Accenture (www.accenture.com)
• Deloitte Consulting (www.deloitte.com)
• Advisory Board Co. (www.advisory.com)
• Huron Healthcare (www.huronconsultinggroup.com)
• Navigant (www.navigant.com)
• FTI Consulting (www.fticonsulting.com)
• KPMG (www.kpmg.com)
• MedAssets (www.medassets.com)
• Alvarex & Marshal Healthcare Industry Group (www.alvarezandmarsal.com/healthcare)
• Crowe Horwath (www.crowehorwath.com)
• Quorum Health Resources (www.qhr.com)

Revenue-Cycle Management
• Experian Health/Passport (www.experian.com/healthcare/revenue-cycle-management.html)
• The SSI Group (www.thesigroup.com)
• MedAssets (www.medassets.com)
• Parallon (www.parallon.com)
• Conifer Health Solutions (www.coniferhealth.com)
• ClearBalance (www.clearbalance.org)

55.9 Staffing Firms

Locum Tenens
• GHC 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
• Maxim Healthcare Services (www.maximhealthcare.com)
• Cross Country Healthcare (www.crosscountryhealthcare.com)
• Parallon Workforce Management Solutions (www.parallon.com/workforce-management)
• AMN Healthcare (www.amnhealthcare.com)
• Accountable Healthcare Staffing (www.ahcstaff.com)

Physician Staffing
• AMN Healthcare/Merritt Hawkins (www.merritthawkins.com)
• Team Health (www.teamhealth.com)
• Delta Companies (www.deltacos.com)
• Maxim Physician Resources (www.maximphysicians.com)
• The Medicus Firm (www.themedicusfirm.com)
• Cejka Search/Cross Country Healthcare (www.cejkasearch.com)

Travel Nursing Staffing Firms
• AMN Healthcare (www.amnhealthcare.com)
• Cross Country Healthcare (www.crosscountryhealthcare.com)
• Healthcare Staffing Services (www.healthcarestaffingservicesllc.com)
• Medical Solutions (www.medicalsolutions.com)
• Aya Healthcare (www.ayahealthcare.com)

55.10 Patient Satisfaction Measurement

• Press Ganey Associates (www.pressganey.com)
• National Research Corp. (www.nationalresearch.com)
• Pinnacle Quality Insight (www.pinnacleqi.com)
• Sullivan/Luallin (www.sullivanluallingroup.com)
- Patient Approved (www.patientapproved.com)
- DSS Research (www.dssresearch.com)
- Avatar Solutions (www.avatarsolutions.com)
- Arbor Associates (www.arbor-associates.com)
- Professional Research Consultants (www.prconline.com)
- J.L. Morgan & Associates (www.jlmorganassociates.com)
56.1 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.

56.2 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 with the exception of the 30-Day Risk Adjusted Death measures that only include Medicare beneficiaries hospitalized for heart attack, heart failure, and pneumonia. In 2009, readmission rates were added to Hospital Compare as one of the measurements of hospital performance.

Data from the Hospital CAHPS (HCAHPS) survey, also known as the CAHPS Hospital 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.
56.3 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.

56.4 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.

56.5 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.mhqp.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.

### 56.6 Consumer Reviews

Over 30 million consumers have posted reviews or shared their opinions online, according to eMarketer (www.emarketer.com).

Online peer reviews have become popular among consumers shopping for all kinds of services and products. A 2014 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.

“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*

There are 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.

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 dentists, dermatologists, hospitals, pediatricians, plastic surgeons, primary care physicians, and psychiatrists. 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.
57

PUBLICALLY TRADED HEALTHCARE PROVIDERS

57.1 Largest Publically Traded Companies

The following are the largest U.S.-based healthcare provider companies (SIC codes 8000 through 8093) based on most recent Form 10-K filed with the Securities and Exchange Commission (www.sec.gov) as of June 2016:

- HCA Holdings (www.hcahealthcare.com)
  - Type of company: Health system
  - Stock symbol: HCA
  - Revenue: $43.6 billion
  - Market capitalization: $30.2 billion

- Community Health Systems (www.chs.net)
  - Type of company: Health system
  - Stock symbol: CYH
  - Revenue: $22.6 billion
  - Market capitalization: $1.8 billion

- Tenet Healthcare Corporation (www.tenethealth.com)
  - Type of company: Health system
  - Stock symbol: THC
  - Revenue: $20.1 billion
  - Market capitalization: $2.8 billion

- DaVita Healthcare Partners (www.davita.com)
  - Type of company: Dialysis and physician groups
  - Stock symbol: DVA
  - Revenue: $14.2 billion
  - Market capitalization: $15.9 billion

- Envision Healthcare Holdings (www.evhc.net)
  - Type of company: Physician services
  - Stock symbol: EVHC
  - Revenue: $9.9 billion
  - Market capitalization: $4.5 billion
<table>
<thead>
<tr>
<th>Company Name</th>
<th>Type of company</th>
<th>Stock symbol</th>
<th>Revenue</th>
<th>Market capitalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universal Health Services (<a href="http://www.uhsinc.com">www.uhsinc.com</a>)</td>
<td>Health system</td>
<td>UHS</td>
<td>$9.8 billion</td>
<td>$12.1 billion</td>
</tr>
<tr>
<td>Quest Diagnostics (<a href="http://www.questdiagnostics.com">www.questdiagnostics.com</a>)</td>
<td>Diagnostics</td>
<td>DGX</td>
<td>$7.5 billion</td>
<td>$10.9 billion</td>
</tr>
<tr>
<td>Laboratory Corporation of America (<a href="http://www.labcorp.com)">www.labcorp.com)</a></td>
<td>Diagnostics</td>
<td>LH</td>
<td>$8.7 billion</td>
<td>$13.0 billion</td>
</tr>
<tr>
<td>Kindred Healthcare, Inc. (<a href="http://www.kindredhealthcare.com">www.kindredhealthcare.com</a>)</td>
<td>Health system</td>
<td>KND</td>
<td>$7.0 billion</td>
<td>$1.0 billion</td>
</tr>
<tr>
<td>LifePoint Hospitals (<a href="http://www.lifepointhospitals.com">www.lifepointhospitals.com</a>)</td>
<td>Health system</td>
<td>LPNT</td>
<td>$6.0 billion</td>
<td>$2.9 billion</td>
</tr>
<tr>
<td>Brookdale Senior Living (<a href="http://www.brookdale.com">www.brookdale.com</a>)</td>
<td>Assisted living</td>
<td>BKD</td>
<td>$5.0 billion</td>
<td>$3.4 billion</td>
</tr>
<tr>
<td>Magellan Health Services (<a href="http://www.magellanhealth.com">www.magellanhealth.com</a>)</td>
<td>Behavioral health/diagnostics</td>
<td>MGLN</td>
<td>$4.6 billion</td>
<td>$1.6 billion</td>
</tr>
<tr>
<td>Select Medical Holdings Corporation (<a href="http://www.selectmedical.com">www.selectmedical.com</a>)</td>
<td>Health system</td>
<td>SEM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
- Revenue: $3.7 billion
- Market capitalization: $1.6 billion

• HealthSouth Corporation (www.healthsouth.com)
  - Type of company: Health system
  - Stock symbol: HLS
  - Revenue: $3.2 billion
  - Market capitalization: $3.6 billion

• Amsurg Corp. (www.amsurg.com)
  - Type of company: Ambulatory surgery centers
  - Stock symbol: AMSG
  - Revenue: $2.8 billion
  - Market capitalization: $4.1 billion

• Mednax Inc. (www.mednax.com)
  - Type of company: Neonatal, maternal-fetal, pediatric physician services
  - Stock symbol: MD
  - Revenue: $2.8 billion
  - Market capitalization: $6.3 billion

• Acadia Healthcare Company (www.acadiahealthcare.com)
  - Type of company: Behavioral healthcare
  - Stock symbol: ACHC
  - Revenue: $1.8 billion
  - Market capitalization: $5.0 billion

• Amedisys (www.amedisys.com)
  - Type of company: Home health and hospice
  - Stock symbol: AMED
  - Revenue: $1.3 billion
  - Market capitalization: $1.7 billion

• Ensign Group (www.ensigngroup.net)
  - Type of company: Rehabilitation
  - Stock symbol: ENSG
  - Revenue: $1.3 billion
  - Market capitalization: $1.0 billion

• Five Star Quality Care (www.fivestarseniorliving.com)
  - Type of company: Assisted living
  - Stock symbol: FVE
  - Revenue: $1.3 billion
  - Market capitalization: $100 million
58

QUALITY & PATIENT SAFETY

58.1 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), which estimated that between 44,000 to 98,000 people die each year from medical errors – at a total national cost of up to $29 billion.

58.2 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.

58.3 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

58.4 Hospitals In Pursuit Of Excellence

The AHA Quality Center of the American Hospital Association (AHA, www.aha.org) has published a guide to support the ongoing efforts to improve the patient experience and outcomes in hospitals.

Entitled Hospitals in Pursuit of Excellence (www.hpoe.org), the guide shows how hospitals can reduce waste and inefficiency, optimize the use of resources, and enhance their ability to deliver safe, high-quality, affordable patient care.

The guide focuses on four areas identified as common opportunities for improvement: healthcare-associated infections, patient flow, medication management, and patient safety (such as falls and pressure ulcers).

Hospitals in Pursuit of Excellence recommends the following six core principles:

Focus on the patient’s experience of care
• Care must be respectful of, and responsive to, individual preferences, needs, and values.

Create a culture of reliability
• Culture defines the values and behaviors of organizations. Highly reliable cultures are known to be the safest organizations in the world.

Manage organizational viability
• Achieve consistency in structure and function of staff and units, where possible.

Remove waste
• Removing waste, including unnecessary steps, has a direct, positive impact on the bottom line.

Eliminate defects
• Finding and resolving problem points will result in greater efficiency and better health outcomes.
Reduce process variation
• Using quality tools and frameworks can increase consistency in processes of care and administration, thus reducing the risk of errors.

58.5 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.

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:

<table>
<thead>
<tr>
<th>Infection</th>
<th>Cases</th>
<th>Cost Per Case</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical site infection</td>
<td>182,056</td>
<td>$20,785</td>
<td>$3.3 billion</td>
</tr>
<tr>
<td>Ventilator-associated pneumonia</td>
<td>31,130</td>
<td>$40,144</td>
<td>$3.1 billion</td>
</tr>
<tr>
<td>Central line-associated blood stream infection</td>
<td>47,049</td>
<td>$45,814</td>
<td>$1.8 billion</td>
</tr>
<tr>
<td>Clostridium difficile</td>
<td>133,657</td>
<td>$11,285</td>
<td>$1.5 billion</td>
</tr>
<tr>
<td>Catheter-associated urinary tract infection</td>
<td>77,079</td>
<td>$ 896</td>
<td>$ 30 million</td>
</tr>
</tbody>
</table>

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.

“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 the Agency for Healthcare Research and Quality (AHRQ, www.ahrq.gov) reported the reduction in hospital acquired infections between 2010 and 2013 as follows:

- Central line-associated blood stream infection: 49%
- Catheter-associated urinary tract infection: 28%
- Surgical site infection: 19%

58.6 Penalty For Low Quality Rating

In 2015, the Centers for Medicare & Medicaid Services (CMS, www.cms.gov) began imposing a 1% penalty on hospitals that fall within the worst-performing quartile on measures of quality. Quality measures include incidences of pressure ulcers, pulmonary embolisms, and infections.

58.7 Progress In Patient Safety

The Agency for Healthcare Research and Quality (AHRQ, www.ahrq.gov) reported that approximately 1.3 million fewer patients were harmed in U.S. hospitals between 2010 and 2013. That represents a cumulative 17% reduction and 50,000 prevented deaths. The estimated 34,530 deaths avoided in 2013 were nearly 10 times more than in 2011, suggesting rapid progress. The estimated three-year cost saving from harm reductions was nearly $12 billion.

The AHRQ report was based on medical records collected by the CMS as part of Medicare’s quality-improvement process, as well as surgical-site infection data from the Centers for Disease Control and Prevention’s National Healthcare Safety Network (www.cdc.gov/nhsn) and adverse obstetric events from AHRQ’s Patient Safety Indicators.


In 2011, the American Hospital Association and the Health Research & Educational Trust (www.hret.org) launched the Hospital Engagement Network (HEN) with the goal of reducing patient harm by 40% and readmissions by 20% over three years. Over 1,500 hospitals participated in the program. In January 2014, at the conclusion of the program, HEN reported improvements as follows:

- Early-elective deliveries were reduced by 57%
- Ventilator-associated pneumonia was reduced by 34%
- Pressure ulcers were reduced by 26%
- Central line-associated infections in intensive care were reduced by 23%
- Readmissions among patients with heart failure were reduced by 13%
58.8 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 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)
59

READMISSIONS

59.1 CMS Initiatives

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 were imposed a penalty for excessive readmissions of as much as 1% of their total Medicare billings in FY2013 and 2% in FY2014. Based on readmissions in FY2014 (October 1, 2013 to September 30, 2014), the fine increased 3% for FY2015.

CMS reported the number of hospitals penalized for excessive readmissions within 30 days of discharge as follows:

- FY2012: 2,217
- FY2013: 2,225
- FY2014: 2,610
- FY2015: 2,601

Only 799 out of more than 3,400 hospitals subject to the Hospital Readmissions Reduction Program performed well enough on the CMS' 30-day readmission program to face no penalty. Thirty-eight hospitals will be subject to the maximum 3% reduction.

“In total, hospitals around the country lost $420 million last year under Hospital Readmissions Reduction Program.”

Modern Healthcare, 5/23/16

59.2 Best Hospitals

Based on CMS' Hospital Compare data, Modern Healthcare (December 2015) reported the hospitals with the best readmission rates (within 30 days) as follows:
Large Hospitals (>4,000 admissions)
- Hospital for Special Surgery (New York, NY): 11.0%
- Mission Hospital (Asheville, NC): 12.7%
- St. Francis Downtown (Greenville, SC): 12.7%
- Roper St. Francis (Charleston, SC): 13.1%
- St. Luke’s Regional Medical Center (Boise, ID): 13.1%

Medium Hospitals (1,300 to 3,999 admissions)
- McBride Orthopedic Hospital (Oklahoma City, OK): 11.3%
- Hoag Orthopedic Institute (Irvine, CA): 11.4%
- New England Baptist Hospital (Boston, MA): 11.6%
- Indiana University Health Bloomington Hospital (Bloomington, IN): 12.5%
- Mercy Health Muskegon (Muskegon, MI): 12.7%

Small Hospitals (500 to 1,299 admissions)
- Arkansas Surgical Hospital (North Little Rock, AR): 11.8%
- Chino Valley Medical Center (Chino, CA): 11.9%
- Mount Carmel New Albany Surgical Hospital (New Albany, OH): 11.9%
- Nebraska Orthopaedic Hospital (Omaha, NE): 12.0%
- OrthoIndy (Indianapolis, IN): 12.4%

59.3 Tools For Reducing Admissions
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.pccpieces.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
RETAIL CLINICS

60.1 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 2,100 retail-based clinics in the U.S. as of June 2016, according to the Convenient Care Association (www.ccaclinics.org). Combined, they have served more than 20 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 830 MinuteClinics operating in its stores in 25 states, CVS is the marketshare leader.

60.2 Patient Services

An assessment by Rand Corporation (www.rand.org) and the University of Pittsburgh School of Medicine analyzing data from more than 1.3 million visits to retail clinics found the following:

- Patients ages 18-to-44 account for 43% of the people visiting retail clinics, compared to 23% for primary care physician offices. Just 39% of the patients at retail clinics say they have a primary care physician; 80% of people surveyed nationally say they have a personal doctor.
- When the concept of retail clinics first launched, most patients paid out-of-pocket. Now most use insurance for reimbursement, with only 16% of retail office visits paid for out-of-pocket.
- About 90% of the visits to retail clinics are for preventive care and 10 simple acute conditions: upper respiratory infections, sinusitis, bronchitis, sore throat, immunizations, inner ear infections, swimmers’ ear, conjunctivitis, urinary tract infections, and either a screening test or a blood test. The same conditions account for 18% of visits to primary care physician offices and 12% of emergency department visits.

A recent survey by The Harris Poll (www.theharrispoll.com) found that 7% of households had a family member who visited a retail-based clinic during the prior 12
months. Among those patients, 16% were uninsured. Visits were for the following reasons:
- Vaccination: 40%
- Treatment for a common medical condition like an ear infection, cold, strep throat, skin rash, or sinus infection: 39%
- Preventive screening tests for conditions like high blood pressure, high cholesterol, diabetes, or allergies: 24%
- Physical exam for sports, school, camp, etc.: 10%
- Received a referral from family physician or hospital emergency department: 8%
- Other: 16%

60.3 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 from the more than five million patient visits the clinics have generated.

60.4 Market Resources
Convenient Care Association, 1500 Market Street, Philadelphia, PA 19102.
(215) 731-7140. (www.ccaclinics.org)
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RURAL HEALTHCARE

61.1 Overview

According to Hospital Statistics 2016™, by the American Hospital Association (www.aha.org), there are 1,855 rural hospitals in the U.S., representing 49% of all community hospital locations. This number has declined by 10% over the past decade.

61.2 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):
• 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.
“Many rural medical centers are staffing their clinics with mid-level providers such as nurse practitioners and physician assistants, but while they can relieve some of the burden, state rules vary when it comes to how much physician oversight is still required. With the need so dire, new physicians are being recruited as early as their second year of residency, often receiving dozens of glossy brochures advertising a town’s nature trails, festivals and short flights to major metropolitan areas. Starting salaries can seem tantalizingly high compared with specialty averages.”

Modern Healthcare

61.3 Rural Hospital Closures
There were 51 rural hospital closures from 2010 to 2016.

“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, 5/18/16
### 61.4 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 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.

In 2015, 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:

<table>
<thead>
<tr>
<th>State</th>
<th># CAHs</th>
<th>Beds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td>Alaska</td>
<td>13</td>
<td>200</td>
</tr>
<tr>
<td>Arizona</td>
<td>14</td>
<td>290</td>
</tr>
<tr>
<td>Arkansas</td>
<td>29</td>
<td>712</td>
</tr>
<tr>
<td>California</td>
<td>34</td>
<td>714</td>
</tr>
<tr>
<td>Colorado</td>
<td>29</td>
<td>598</td>
</tr>
<tr>
<td>Florida</td>
<td>13</td>
<td>310</td>
</tr>
<tr>
<td>Georgia</td>
<td>30</td>
<td>737</td>
</tr>
<tr>
<td>Hawaii</td>
<td>9</td>
<td>78</td>
</tr>
<tr>
<td>Idaho</td>
<td>27</td>
<td>536</td>
</tr>
<tr>
<td>Illinois</td>
<td>51</td>
<td>1,271</td>
</tr>
<tr>
<td>Indiana</td>
<td>35</td>
<td>845</td>
</tr>
<tr>
<td>Iowa</td>
<td>82</td>
<td>2,027</td>
</tr>
<tr>
<td>Kansas</td>
<td>84</td>
<td>1,907</td>
</tr>
<tr>
<td>Kentucky</td>
<td>28</td>
<td>694</td>
</tr>
<tr>
<td>Louisiana</td>
<td>27</td>
<td>634</td>
</tr>
<tr>
<td>Maine</td>
<td>16</td>
<td>392</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>3</td>
<td>69</td>
</tr>
<tr>
<td>Michigan</td>
<td>36</td>
<td>839</td>
</tr>
<tr>
<td>Minnesota</td>
<td>79</td>
<td>1,777</td>
</tr>
<tr>
<td>Mississippi</td>
<td>32</td>
<td>753</td>
</tr>
<tr>
<td>Missouri</td>
<td>36</td>
<td>825</td>
</tr>
<tr>
<td>Montana</td>
<td>48</td>
<td>875</td>
</tr>
<tr>
<td>Nebraska</td>
<td>64</td>
<td>1,397</td>
</tr>
<tr>
<td>Nevada</td>
<td>11</td>
<td>186</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>13</td>
<td>305</td>
</tr>
<tr>
<td>New Mexico</td>
<td>9</td>
<td>225</td>
</tr>
<tr>
<td>New York</td>
<td>18</td>
<td>366</td>
</tr>
<tr>
<td>North Carolina</td>
<td>21</td>
<td>500</td>
</tr>
<tr>
<td>North Dakota</td>
<td>36</td>
<td>799</td>
</tr>
</tbody>
</table>
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

### 61.5 Market Resources

National Rural Health Association, 4501 College Boulevard, Suite 225, Leawood, KS 66211. (816) 756-3140. ([www.ruralhealthweb.org](http://www.ruralhealthweb.org))

62.1 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.

More than half of all U.S. hospitals use some form of telehealth. According to *Hospitals & Health Networks* (April 2016), 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%

Telemedicine is a valuable tool for real-time physical exams, consults, and education. And 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

62.2 Market Assessment
Datamonitor (www.datamonitor.com) estimates the annual telemedicine market at $4.0 billion. The category includes a wide range of modalities such as interactive patient consultation, interhospital and intrahospital medical communications, monitoring...

“While more commercial insurers cover telehealth services, adoption remains low as Medicare drags its heels in offering the service to patients outside rural areas.”

Modern Healthcare, 2/22/16

62.3 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.

62.4 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 within its prison system.

62.5 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.

62.6 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).

62.7 At-Home Telemonitoring

InMedica (www.inmedica.com) reports the number of patients monitored at home after hospital care as follows:

- Congestive heart failure: 210,000
- Diabetes: 130,000
- Chronic obstructive pulmonary disease: 80,000
- Hypertension: 50,000
- Mental health: 20,000

“Monitoring the health of not-so-healthy people gets tricky once they leave the hospital or physician clinic and head home. The previous extent of home-based management included visits from nurses, phone calls and other labor-intensive activities. But those moves alone won’t scale to the level of accountability now required to catch medical decline before it leads to emergency department trips, hospital admissions and readmissions. Remote monitoring of patients using computerized devices extends the continuum of care to cover recently discharged patients at risk for readmission as well as people with such chronic conditions as heart failure who could go downhill in a hurry without a way to detect the first slip.”

Hospitals & Health Networks

62.8 Market Resources

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TOP 100 HOSPITALS

63.1 Overview
Since 1992, Truven Health Analytics (www.truvenhealth.com) has developed an annual list of the 100 Top Hospitals (www.100tophospitals.com) 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.

63.2 Top Hospitals
The following is the 2016 list of 100 Top Hospitals:

Major Teaching Hospitals
- Advocate Lutheran General Hospital (Park Ridge, IL)
- Cedars-Sinai Medical Center (Los Angeles, CA)
- Christiana Care Health System (Newark, DE)
- Froedtert & the Medical College of Wisconsin (Milwaukee, WI)
- Houston Methodist Hospital (Houston, TX)
- NorthShore University HealthSystem (Evanston, IL)
- NYU Langone Medical Center (New York, NY)
- OhioHealth Doctors Hospital (Columbus, OH)
- Providence-Providence Park Hospital (Southfield, MI)
- Rush University Medical Center (Chicago, IL)
- St. Joseph Mercy Hospital (Ann Arbor, MI)
- St. Joseph's Hospital and Medical Center (Phoenix, AZ)
- St. Luke's University Hospital - Bethlehem (Bethlehem, PA)
- University of Colorado Hospital (Aurora, CO)
- University of Iowa Hospitals & Clinics (Iowa City, IA)

Teaching Hospitals
- Aspirus Wausau Hospital (Wausau, WI)
- Bethesda North Hospital (Cincinnati, OH)
- BSA Health System (Amarillo, TX)
- Carolinas Medical Center-Mercy (Charlotte, NC)
- Good Samaritan Hospital (Cincinnati, OH)
- Kendall Regional Medical Center (Miami, FL)
- Kettering Medical Center (Kettering, OH)
• LDS Hospital (Salt Lake City, UT)
• McKay-Dee Hospital (Ogden, UT)
• Mercy Health Saint Mary's (Grand Rapids, MI)
• Mercy Hospital St. Louis (St. Louis, MO)
• Mercy Medical Center (Cedar Rapids, IA)
• MidMichigan Medical Center-Midland (Midland, MI)
• Park Nicolett Methodist Hospital (St. Louis Park, MN)
• Parkview Regional Medical Center (Fort Wayne, IN)
• Poudre Valley Hospital (Fort Collins, CO)
• Riverside Medical Center (Kankakee, IL)
• Rose Medical Center (Denver, CO)
• Spectrum Health Medical Center (Grand Rapids, MI)
• St. Cloud Hospital (St. Cloud, MN)
• St. Luke's Boise Medical Center (Boise, ID)
• St. Mary's Hospital (Madison, WI)
• St. Vincent Healthcare (Billings, MT)
• The Christ Hospital Health Network (Cincinnati, OH)
• UnityPoint - Meriter Hospital (Madison, WI)

Large Community Hospitals
• Advocate Good Samaritan Hospital (Downers Grove, IL)
• Asante Rogue Regional Medical Center (Medford, OR)
• Billings Clinic Hospital (Billings, MT)
• Centinela Hospital Medical Center (Inglewood, CA)
• Edward Hospital (Naperville, IL)
• El Camino Hospital (Mountain View, CA)
• EvergreenHealth Kirkland (Kirkland, WA)
• FirstHealth Moore Regional Hospital (Pinehurst, NC)
• Florida Hospital Memorial Medical Center (Daytona Beach, FL)
• Franciscan St. Francis Health - Indianapolis (Indianapolis, IN)
• Memorial Hermann Memorial City Medical Center (Houston, TX)
• Mercy Hospital (Coon Rapids, MN)
• Mosaic Life Care (St. Joseph, MO)
• Mother Frances Hospital Tyler (Tyler, TX)
• Roper Hospital (Charleston, SC)
• Sarasota Memorial Hospital (Sarasota, FL)
• Scripps Memorial Hospital La Jolla (La Jolla, CA)
• St. David's Medical Center (Austin, TX)
• West Florida Hospital (Pensacola, FL)
• West Georgia Medical Center (LaGrange, GA)

Medium Community Hospitals
• Alhambra Hospital Medical Center (Alhambra, CA)
• Aurora BayCare Medical Center (Green Bay, WI)
• Blanchard Valley Hospital (Findlay, OH)
• Bon Secours St. Francis Hospital (Charleston, SC)
• Chino Valley Medical Center (Chino, CA)
• Clermont Hospital (Batavia, OH)
• Dupont Hospital (Fort Wayne, IN)
• French Hospital Medical Center (San Luis Obispo, CA)
• Holland Hospital (Holland, MI)
• Houston Methodist Sugar Land Hospital (Sugar Land, TX)
• Lawrence Memorial Hospital (Lawrence, KS)
• Logan Regional Hospital (Logan, UT)
• Mercy Iowa City (Iowa City, IA)
• Ochsner Medical Center - Baton Rouge (Baton Rouge, LA)
• Sentara Williamsburg Regional Medical Center (Williamsburg, VA)
• Sherman Oaks Hospital (Sherman Oaks, CA)
• Sycamore Medical Center (Miamisburg, OH)
• Texas Health Harris Methodist Hospital - Southwest Fort Worth (Fort Worth, TX)
• Timpanogos Regional Hospital (Orem, UT)
• West Valley Medical Center (Caldwell, ID)

Small Community Hospitals
• Aurora Medical Center (Two Rivers, WI)
• Brigham City Community Hospital (Brigham City, UT)
• Fairview Northland Medical Center (Princeton, MN)
• Franklin Woods Community Hospital (Johnson City, TN)
• Hawkins County Memorial Hospital (Rogersville, TN)
• Hill Country Memorial Hospital (Fredericksburg, TX)
• HSHS St. Joseph’s Hospital Breese (Breese, IL)
• Kansas Medical Center (Andover, KS)
• Lakeview Hospital (Bountiful, UT)
• Lakeview Medical Center (Rice Lake, WI)
• Mercy Defiance Hospital (Defiance, OH)
• Morris Hospital & Healthcare Centers (Morris, IL)
• OhioHealth Dublin Methodist Hospital (Dublin, OH)
• Parkview Huntington Hospital (Huntington, IN)
• Pomerene Hospital (Millersburg, OH)
• Renown South Meadows Medical Center (Reno, NV)
• Roper St. Francis Mount Pleasant Hospital (Mount Pleasant, SC)
• St. Luke’s Hospital - Quakertown (Quakertown, PA)
• Waynesboro Hospital (Waynesboro, PA)
• Zeeland Community Hospital (Zeeland, MI)
64.1 Overview
Since 1998, Truven Health Analytics (www.truvenhealth.com) has conducted 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 971 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.

Compared with peer hospitals, performance of the 50 Top Cardiovascular Hospitals is as follows:
• Spend an average $1,300 less per case
• Have significantly better 30-day survival
• Maintain lower 30-day readmission rates for heart attack and heart patients
• Return patients to daily life half a day earlier, on average

The following are projected outcomes if all cardiovascular providers performed at the level of the Top 50:
• More than 7,500 additional lives could be saved
• Nearly 12,000 additional patients could be complication-free
• Approximately $910 million could be saved

The top performing hospitals perform over 50% more cardiac surgeries than peer hospitals.

64.2 Top Cardiovascular Hospitals
The following is the 2016 List of Top Cardiovascular Hospitals:
Teaching Hospitals With Cardiovascular Residency Programs
• Baystate Medical Center (Springfield, MA)
• Beth Israel Deaconess Medical Center (Boston, MA)
• Guthrie Robert Packer Hospital (Sayre, PA)
• Kettering Medical Center (Kettering, OH)
• Lankenau Medical Center (Wynnewood, PA)
• Mayo Clinic - Saint Marys Hospital (Rochester, MN)
• Mayo Clinic Hospital (Phoenix, AZ)
• Riverside Medical Center (Kankakee, IL)
• Sanford USD Medical Center (Sioux Falls, SD)
• Scripps Green Hospital (La Jolla, CA)
• Steward St. Elizabeth's Medical Center (Boston, MA)
• The Christ Hospital Health Network (Cincinnati, OH)
• Tufts Medical Center (Boston, MA)
• University of Wisconsin Hospital and Clinics (Madison, WI)
• Vanderbilt University Medical Center (Nashville, TN)

Teaching Hospitals Without Cardiovascular Residency Programs
• Abrazo Central Campus (Phoenix, AZ)
• Aspirus Wausau Hospital (Wausau, WI)
• Aultman Hospital (Canton, OH)
• Decatur Memorial Hospital (Decatur, IL)
• Eisenhower Medical Center (Rancho Mirage, CA)
• Henry Ford Macomb Hospitals Clinton (Township, MI)
• Huntsville Hospital (Huntsville, AL)
• MacNeal Hospital (Berwyn, IL)
• Memorial Hermann Hospital System (Houston, TX)
• Memorial Regional Hospital (Hollywood, FL)
• Mercy Hospital St. Louis (St. Louis, MO)
• Mission Hospital (Asheville, NC)
• Morton Plant Hospital (Clearwater, FL)
• Sacred Heart Hospital (Pensacola, FL)
• Saint Thomas West Hospital (Nashville, TN)
• St. Joseph Mercy Hospital (Ann Arbor, MI)
• St. Joseph's Hospital (Saint Paul, MN)
• St. Luke's Boise Medical Center (Boise, ID)
• St. Luke's Hospital (Cedar Rapids, IA)
• Sutter Medical Center, Sacramento (Sacramento, CA)

Community Hospitals
• Banner Heart Hospital (Mesa, AZ)
• Bellin Hospital (Green Bay, WI)
• Edward Hospital (Naperville, IL)
• FirstHealth Moore Regional Hospital (Pinehurst, NC)
• Hoag Memorial Hospital Presbyterian (Newport Beach, CA)
• HonorHealth John C. Lincoln Medical Center (Phoenix, AZ)
• Lovelace Medical Center (Albuquerque, NM)
• Nebraska Heart Institute & Heart Hospital (Lincoln, NE)
• Oklahoma Heart Hospital (Oklahoma City, OK)
• OSF St. Joseph Medical Center (Bloomington, IL)
• Saddleback Memorial Medical Center (Laguna Hills, CA)
• Salem Hospital (Salem, OR)
• Southcoast Hospitals Group (Fall River, MA)
• St. David's Medical Center (Austin, TX)
• St. Patrick Hospital (Missoula, MT)
TOP HEALTH INDUSTRY ISSUES

65.1 Top Issues Of 2016

The Health Research Institute of PricewaterhouseCoopers (www.pwc.com/us/healthindustries) identified the top health industry issues of 2016 as follows:

Behavioral Healthcare
• Employers and healthcare organizations eye behavioral healthcare as key to keeping costs down, productivity up and consumers healthy.

Biosimilars
• Biosimilars, lower-cost substitutes for branded biologic drugs, are expected to begin to offer some counterweight to rising drug prices in 2016, much as generic drugs did 30 years ago.

Care Moves To The Community
• As payment shifts to value-based models, health systems will pursue lower-cost settings more aggressively than before while employing creative approaches to distributing care.

Cybersecurity
• As security breaches become more common and costly, attention shifts to buttressing the security of medical devices.

Databases Improve Patient Care And Consumer Health
• New databases and database tools will allow industry players to analyze data from many sources in novel ways, finally unlocking insights embedded in the reams of information being collected about health consumers.

Drug Prices
• The search is on for a drug pricing formula that is “just right.”

Medical Cost Mystery
• In the journey to value-based care, health systems dig in to calculate the true cost of services, an exercise that also can uncover opportunities to become more efficient and improve care.
Mergers
- High-profile mergers and acquisitions likely will continue in 2016, with regulators taking center stage in the debate over how consolidation impacts consumers.

Mobile Healthcare
- Thanks to technology and shifts in financial incentives, care will begin to move into the palms of consumers’ hands, providing care anywhere, anytime.

Money Managers
- Shouldering higher deductibles, consumers seek help managing their health spending with fresh tools and services developed by players new and old.
66.1 Overview
Truven Health Analytics (www.truvenhealth.com) 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

66.2 Best-Performing Healthcare Systems
The 2016 list of top-rated healthcare systems is as follows:

Large Health Systems
• Mayo Foundation (Rochester, MN)
• Mercy (Chesterfield, MO)
• Spectrum Health (Grand Rapids, MI)
• Sutter Health (Sacramento, CA)
• Sutter Health Valley Area (Sacramento, CA)

Medium Health Systems
• Kettering Health Network (Dayton, OH)
• Scripps Health (San Diego, CA)
• St. Luke’s Health System (Boise, ID)
• St. Vincent Health (Indianapolis, IN)
• TriHealth (Cincinnati, OH)

Small Health Systems
• Asante (Medford, OR)
• Lovelace Health System (Albuquerque, NM)
• MidMichigan Health (Midland, MI)
• Roper St. Francis Healthcare (Charleston, SC)
• Tanner Health System (Carrolton, GA)
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TOP ISSUES CONFRONTING HOSPITALS

67.1 ACHE Survey
A survey conducted by the American College of Healthcare Executives (ACHE, www.ache.org) found the following top issues confronting hospitals in 2016:
1. Financial challenges
2. Patient safety and quality
3. Government mandates
4. Personnel shortages
5. Patient satisfaction
6. Physician-hospital relations
7. Access to care
8. Population health management
9. Technology
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.

67.2 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):
- Transition from volume to value: 65%
- Medicaid reimbursement (including adequacy and timeliness of payment, etc.): 62%
- Bad debt (including uncollectable Emergency Department and other charges): 57%
- Increasing costs for staff, supplies, etc.: 57%
- Reducing operating costs: 56%
- Government funding cuts (other than reduced reimbursement for Medicaid or Medicare): 48%
- Competition from other providers (of any type – e.g., inpatient, outpatient, ambulatory care, diagnostic, retail): 47%
- Moving away from fee for service: 45%
• Medicare reimbursement (including adequacy and
timeliness of payment): 44%
• Managed care and other commercial insurance payments: 42%
• Revenue cycle management (converting charges to cash): 39%
• Inadequate funding for capital improvements: 38%
• Emergency Department overuse: 37%
• Pricing and price transparency: 37%

67.3 Patient Safety And Quality
Specific concerns related to patient safety and quality are as follows:
• Engaging physicians in improving the culture of quality/safety: 66%
• Engaging physicians in reducing clinically unnecessary tests
and procedures: 60%
• Redesigning care processes: 59%
• Pay for performance: 46%
• Public reporting of outcomes data (including being
transparent, fairness of measures, reporting burden): 41%
• Redesigning work environment to reduce errors: 39%
• Leapfrog demands (i.e., computerized physician order entry,
ICU staffing by trained intensivists, etc.): 37%
• Compliance with accrediting organizations
(e.g., Joint Commission, NCQA): 26%
• Medication errors: 25%

67.4 Government Mandates
Specific concerns related to government mandates are as follows:
• Implementation of ICD-10: 71%
• CMS audits (RAC, MAC, CERT): 63%
• CMS regulations: 61%
• Cost of demonstrating compliance: 50%
• State and local regulations/mandates: 43%
• Regulatory/legislative uncertainty affecting strategic planning: 42%
• Increased government scrutiny of accounting practices
(e.g., IRS, Sarbanes-Oxley Act): 19%

67.5 Market Resources
American College of Healthcare Executives, One North Franklin, Chicago, IL 60606.
(312) 424-2800. (www.ache.org)
TOP-RANKED HOSPITALS IN SPECIALITY FIELDS

68.1 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, and 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.

68.2 Ranking Of Hospitals
The following are the 2016 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)
• UCLA Medical Center (Los Angeles, CA)
• Massachusetts General Hospital (Boston, MA)
• UCSF Medical Center (San Francisco, CA)
• Stanford Hospital and Clinics (Stanford, 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)
• Brigham and Women’s Hospital (Boston, MA)
• Massachusetts General Hospital (Boston, MA)
• Duke University Medical Center (Durham, NC)
• Mount Sinai Medical Center (New York, NY)
• Hospitals of the University of Pennsylvania and Pennsylvania Presbyterian (Philadelphia, PA)
• Northwestern Memorial Hospital (Chicago, IL)
• Cedars-Sinai Medical Center (Los Angeles, CA)

Diabetes and Endocrinology
• Mayo Clinic (Rochester, MN)
• Massachusetts General Hospital (Boston, MA)
• Cleveland Clinic (Cleveland, OH)
• UCSF Medical Center (San Francisco, CA)
• Johns Hopkins Hospital (Baltimore, MD)
• New York-Presbyterian University Hospital of Columbia and Cornell (New York, NY)
• Northwestern Memorial Hospital (Chicago, IL)
• Yale-New Haven Hospital (New Haven, CT)
• Brigham and Women’s Hospital (Boston, MA)
• Hospitals of the University of Pennsylvania and Pennsylvania Presbyterian (Philadelphia, PA)

Ear, Nose & Throat
• Massachusetts Eye and Ear Infirmary, Massachusetts General Hospital (Boston, MA)
• Mayo Clinic (Rochester, MN)
• Johns Hopkins Hospital (Baltimore, MD)
• Hospitals of the University of Pennsylvania and Pennsylvania Presbyterian (Philadelphia, PA)
• University of Texas M.D. Anderson Cancer Center (Houston, TX)
• UPMC-University of Pittsburgh Medical Center (Pittsburgh, PA)
• Cleveland Clinic (Cleveland, OH)
• University of Iowa Hospitals and Clinics (Iowa City, IA)
• Stanford Hospital (Stanford, CA)
• UCLA Medical Center (Los Angeles, CA)
Gastroenterology & GI Surgery
• Mayo Clinic (Rochester, MN)
• Cleveland Clinic (Cleveland, OH)
• Massachusetts General Hospital (Boston, MA)
• UCLA Medical Center (Los Angeles, CA)
• Johns Hopkins Hospital (Baltimore, MD)
• Cedars-Sinai Medical Center (Los Angeles, CA)
• UPMC-University of Pittsburgh Medical Center (Pittsburgh, PA)
• Mount Sinai Medical Center (New York, NY)
• Mayo Clinic (Phoenix, AZ)
• Houston Methodist Hospital (Houston, TX)

Geriatrics
• Mayo Clinic (Rochester, MN)
• UCLA Medical Center (Los Angeles, CA)
• Mount Sinai Medical Center (New York, NY)
• Massachusetts General Hospital (Boston, MA)
• Johns Hopkins Hospital (Baltimore, MD)
• NYU Langone Medical Center (New York, NY)
• Hospital for Special Surgery (New York, NY)
• New York-Presbyterian University Hospital of Columbia and Cornell (New York, NY)
• Brigham and Women’s Hospital (Boston, MA)
• Cleveland Clinic (Cleveland, OH)

Gynecology
• Mayo Clinic (Rochester, MN)
• Brigham and Women’s Hospital (Boston, MA)
• Cleveland Clinic (Cleveland, OH)
• Massachusetts General Hospital (Boston, MA)
• Memorial Sloan-Kettering Cancer Center (New York, NY)
• UCSF Medical Center (San Francisco, CA)
• University of Texas M.D. Anderson Cancer Center (Houston, TX)
• UCLA Medical Center (Los Angeles, CA)
• Magee-Womens Hospital of UPMC (Pittsburgh, PA)
• Abbott Northwestern Hospital (Minneapolis, MN)

Nephrology (Kidney Disorders)
• Mayo Clinic (Rochester, MN)
• Cleveland Clinic (Cleveland, OH)
• New York-Presbyterian University Hospital of Columbia and Cornell (New York, NY)
• UCSF Medical Center (San Francisco, CA)
• Brigham and Women’s Hospital (Boston, MA)
• Massachusetts General Hospital (Boston, MA)
• UCLA Medical Center (Los Angeles, CA)
• Vanderbilt University Medical Center (Nashville, TN)
• Johns Hopkins Hospital (Baltimore, MD)
• Barnes-Jewish Hospital/Washington University (St. Louis, MO)

Neurology and Neurosurgery
• Mayo Clinic (Rochester, MN)
• Massachusetts General Hospital (Boston, MA)
• Johns Hopkins Hospital (Baltimore, MD)
• UCSF Medical Center (San Francisco, CA)
• New York-Presbyterian University Hospital of Columbia and Cornell (New York, NY)
• Brigham and Women’s Hospital (Boston, MA)
• UCLA Medical Center (Los Angeles, CA)
• Cleveland Clinic (Cleveland, OH)
• NYU Langone Medical Center (New York, NY)
• Northwestern Memorial Hospital (Chicago, IL)

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)
• Cleveland Clinic (Cleveland, OH)
• University of Iowa Hospitals and Clinics (Iowa City, IA)
• Duke University Medical Center (Durham, NC)
• New York Eye and Ear Infirmary, N.Y. (New York, NY)
• W.K. Kellogg Eye Center, University of Michigan, (Ann Arbor, MI)

Orthopedics
• Hospital for Special Surgery (New York, NY)
• Mayo Clinic (Rochester, MN)
• Cleveland Clinic (Cleveland, OH)
• Massachusetts General Hospital (Boston, MA)
• Hospital for Joint Diseases, NYU Langhonne Medical Center (New York, NY)
• Rush University Medical Center (Chicago, IL)
• Brigham and Women’s Hospital (Boston, MA)
• UCLA Medical Center (Los Angeles, CA)
• Northwestern Memorial Hospital (Chicago, IL)
• New England Baptist Hospital (Boston, MA)
Psychiatry
- New York-Presbyterian University Hospital of Columbia and Cornell (New York, NY)
- Massachusetts General Hospital (Boston, MA)
- Johns Hopkins Hospital (Baltimore, MD)
- McLean Hospital (Belmont, MA)
- Menninger Clinic (Houston, TX)
- Sheppard and Enoch Pratt Hospital (Baltimore, MD)
- Resnick Neuropsychiatric Hospital at UCLA (Los Angeles, CA)
- Mayo Clinic (Rochester, MN)
- UPMC-University of Pittsburgh Medical Center (Pittsburgh, PA)
- Hospitals of the University of Pennsylvania and Pennsylvania Presbyterian (Philadelphia, PA)

Pulmonology
- Mayo Clinic (Rochester, MN)
- National Jewish Health, University of Colorado Hospital (Aurora, CO)
- Cleveland Clinic (Cleveland, OH)
- Massachusetts General Hospital (Boston, MA)
- Brigham and Women’s Hospital (Boston, MA)
- UC San Diego Medical Center (San Diego, CA)
- Duke University Medical Center (Durham, NC)
- Barnes-Jewish Hospital/Washington University (St. Louis, MO)
- UCLA Medical Center (Los Angeles, CA)
- Hospitals of the University of Pennsylvania and Pennsylvania Presbyterian (Philadelphia, PA)

Rehabilitation
- Rehabilitation Institute of Chicago (Chicago, IL)
- TIRR Memorial Hermann (Houston, TX)
- Kessler Institute for Rehabilitation (West Orange, NJ)
- University of Washington Medical Center (Seattle, WA)
- Mayo Clinic (Rochester, MN)
- Spaulding Rehabilitation Hospital (Boston, MA)
- Craig Hospital (Englewood, CO)
- Moss Rehab-Albert Einstein Medical Center (Elkins Park, PA)
- Shepherd Center (Atlanta, GA)
- Rusk Institute, NYU Langone Medical Center (New York, NY)

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)
• Massachusetts General Hospital (Boston, MA)
• UCLA Medical Center (Los Angeles, CA)
• UPMC-University of Pittsburgh Medical Center (Pittsburgh, PA)
• Hospital for Joint Diseases, NYU Langone Medical Center (New York, NY)
• UCSF Medical Center (San Francisco, CA)

**Urology**
• Mayo Clinic (Rochester, MN)
• Cleveland Clinic (Cleveland, OH)
• UCLA Medical Center (Los Angeles, CA)
• Johns Hopkins Hospital (Baltimore, MD)
• UCSF Medical Center (San Francisco, CA)
• New York-Presbyterian University Hospital of Columbia and Cornell (New York, NY)
• Vanderbilt University Medical Center (Nashville, TN)
• Northwestern Memorial Hospital (Chicago, IL)
• Duke University Medical Center (Durham, NC)
• University of Michigan Hospitals (Ann Arbor, MI)


UNCOMPENSATED HOSPITAL CARE

69.1 Overview
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.

69.2 Cost to Hospitals
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>
</tbody>
</table>

An assessment by the U.S. Department of Health and Human Services (HHS, www.hhs.gov) put the figure even higher, at $49 billion a year. HHS found that, on average, uninsured families pay only about 12% of their hospital bills in full. Families
with incomes above 400% of the poverty level, or about $88,000 a year for a family of four, pay about 37% of their hospital bills in full.

69.3 Bad Debt
Bad debt typically amounts to 3% to 4% of hospitals' gross revenue, one of the highest rates among all industry sectors. According to Kurt Salmon Associates (www.kurtsalmon.com), bad debt among California hospitals alone amounts to $8.0 billion.

Denial of claims by health insurance companies for treatments that fall outside of coverage is a contributor to unpaid patient debt.

_________________________________________________________________

“Insurance may provide patients little protection from catastrophic medical bills. Health insurers are very creative in how they can erode the actual value of a policy. Medical bills can escalate rapidly when patients need more than routine care and run into clauses that limit benefits or exclude certain spending from applying to deductibles.”

Prof. Karen Pollitz, Ph.D.
Health Policy Institute
Georgetown University

_________________________________________________________________

69.4 Reassessing Charity Care
Hospitals are reassessing charity care for uninsured patients who come in for treatment without coverage for which they are eligible through federal subsidies. There is a question as to whether non-Medicaid-eligible patients should receive full charity care – either free care or deep discounts on their bills – when they had a source of affordable coverage under the Patient Protection and Affordable Care Act and did not take advantage of it.
“Hospitals and health systems across the country are divided over whether to deny financial aid to uninsured patients who are eligible for subsidized health insurance under Obamacare but did not buy a plan. While a growing number of hospitals are adopting such policies, others have chosen not to as uninsured Americans grapple with the cost and complexity of obtaining coverage.”

Modern Healthcare
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URGENT CARE CLINICS

70.1 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 2,600 clinics, estimates there are more than 9,000 clinics in the United States. 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. The New York Times estimated the urgent care clinic market at $14.5 billion.

### 70.2 Cost of Care

Recent studies found that the average cost of an urgent care visit is slightly below the average primary care visit: $155 vs. $165.

A survey by Medica Health Plans (www.medicaplan.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>Condition</th>
<th>Urgent Care Cost</th>
<th>ER Cost</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allergies</td>
<td>$ 97</td>
<td>$345</td>
<td>72%</td>
</tr>
<tr>
<td>Acute bronchitis</td>
<td>$127</td>
<td>$595</td>
<td>79%</td>
</tr>
<tr>
<td>Chronic bronchitis</td>
<td>$114</td>
<td>$665</td>
<td>83%</td>
</tr>
<tr>
<td>Ear ache</td>
<td>$110</td>
<td>$400</td>
<td>73%</td>
</tr>
<tr>
<td>Pharyngitis</td>
<td>$ 94</td>
<td>$525</td>
<td>82%</td>
</tr>
<tr>
<td>Pink eye</td>
<td>$102</td>
<td>$370</td>
<td>72%</td>
</tr>
<tr>
<td>Sinusitis</td>
<td>$112</td>
<td>$617</td>
<td>82%</td>
</tr>
<tr>
<td>Strep throat</td>
<td>$123</td>
<td>$531</td>
<td>77%</td>
</tr>
<tr>
<td>Upper respiratory infection</td>
<td>$111</td>
<td>$486</td>
<td>77%</td>
</tr>
<tr>
<td>Urinary tract infection</td>
<td>$110</td>
<td>$665</td>
<td>83%</td>
</tr>
</tbody>
</table>

### 70.3 Market Leaders

Ranked by number of clinics, the following are the largest urgent care chains (source: Forbes):

- Concentra Urgent Care (www.concentra.com): 330
  Owner: Humana
  Owner: Dignity Health
- MedExpress (www.medexpress.com): 132
  Owner: Sequia Capital and General Atlantic
- American Family Care (www.americanfamilycare.com): 128
  Independently owned
- NextCare (www.nextcare.com): 106
  Owner: Enhanced Equity Funds
70.4 Market Resources
American Academy of Urgent Care Medicine, 2813 S. Hiawassee Road, Suite 206, Orlando, FL 32835. (407) 521-5789. (www.aaucm.org)

Urgent Care Association of America, 387 Shuman Boulevard, Suite 235W, Naperville, IL 60563. (877) 698-2262. (www.ucaoa.org)
71.1 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.

“The evolution away from payment for volume of service and toward payment for value can be seen as threatening to both physicians and hospitals that historically have been rewarded for delivering more services. Yet, value-based payment both creates incentives for integration and enhances the quality and cost efficiencies that can be achieved through integration for patients, communities and providers themselves. Payers should move forward in developing these models and seeking relationships with institutions with the interest and capability to jointly manage care.”

American Hospital Association

Member hospitals of the American Hospital Association (www.aha.org) support value-based purchasing.
71.2 Development Of The VBP Program

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.

71.3 Participation

The National Scorecard On Payment Reform, published by CMS, reported participation in value-based payments as follows:

- All hospital payments: 38%
- Outpatient primary care physician payments: 25%
- All outpatient specialist payments: 10%

71.4 Implementation

The hospital value-based purchasing program pays hospitals a bonus or imposes a penalty of up to 1% based on their performance on quality measures. 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)

71.5 Rewarding Quality
A total of 3,042 community hospitals participated in the CMS value-based purchasing program in FY2016. A complete listing of rewards and penalties is available at www.modernhealthcare.com/cms.

The hospitals with the highest VBP rewards in FY2016 were as follows:
• Bucks County Specialty Hospital (Bensalem, PA): 2.87%
• Orthopaedic Hospital of Wisconsin (Glendale, WI): 2.69%
• Midwest Surgical Hospital (Omaha, NE): 2.69%
• GHS Patewood Memorial Hospital (Greenville, SC): 2.64%
• Pineville Community Hospital (Pineville, KY): 2.50%
• Black Hills Surgical Hospital (Rapid City, SD): 2.47%
• Caldwell Memorial Hospital (Columbia, LA): 2.47%
• Northwest Specialty Hospital (Post Falls, ID): 2.44%
• Kansas Surgery & Recovery Center (Wichita, KS): 2.33%
• St. Thomas Hospital for Spinal Surgery (Nashville, TN): 2.30%

71.6 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.
VETERANS HEALTH ADMINISTRATION

72.1 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 275,000 employees, over 1,700 sites of care, and serving 8.76 million Veterans.

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 VA has 150 hospitals nationwide and about 820 clinics.

The VHA had 6.6 million patients (5.9 million veterans) in FY2014; there were 83.6 million outpatient visits.

FY2016 federal funding for the VHA was $58.7 billion, distributed as follows:

- Medical services: $47.6 billion
- Medical support and compliance: $ 6.1 billion
- Medical facilities: $ 4.9 billion

72.2 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
**72.3 VHA Services**

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 copayment is required for VA services for veterans with military-related medical conditions.

**72.4 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
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AFFORDABLE CARE ACT

73.1 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.

The Congressional Budget Office (CBO, www.cbo.gov) estimated in 2010 that the legislation will reduce the number of uninsured people by 32 million by 2019 at a net cost of $938 billion over 10 years. Of that cost, $710 billion would occur during FY2015 through FY2019. In February 2015, CBO revised the cost estimated to $571 billion.

73.2 Enrollment
During the open enrollment periods people can enroll, switch plans, and get subsidies. The first general enrollment period was January to March 2014. The second enrollment period was November 15, 2014 through February 15, 2015.

At the end of the second enrollment period, preliminary estimates were that 10 million adults signed up on federal and state exchanges. At the end of the first enrollment period, that figure was 7.5 million.

According to an April 2014 study by the Rand Corporation (www.rand.org), an additional 7.8 million people enrolled for health insurance outside the exchanges between November 2013 and March 2014.

Gallup Poll (www.gallup.com) reported the rate of uninsured fell to 13.4% in 2014, down from 17.1% a year earlier.

The U.S. Department of Health & Human Services (HHS, www.hhs.gov) reported that 85% of adults who signed up for Obamacare received premium subsidies.

At the end of the January 31, 2016 enrollment period, 12.7 million people selected or re-enrolled in the ACA’s state and federal marketplaces.

73.3 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 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).

73.4 Mandate For Individuals
All individuals were required to have health insurance, with some exceptions, as of 2014. Those who do not have coverage are required to pay penalty of the greater of $695 per person (up to a maximum of $2,085 per family) or 2.5% of household income. Exceptions are given for those with financial hardship and religious objections; American Indians; people who have been uninsured for less than three months; those for whom the lowest cost health plan exceeds 8% of income; and individuals with income below the tax filing threshold ($10,000 for an individual, $12,850 for a head of household, and $20,000 for a married couple in 2015).

73.5 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.

73.6 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.

73.7 Expansion of Medicaid

The ACA allows for the expansion of Medicaid by states. This allows Medicaid benefits to all 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 June 2016, 28 states and the District of Columbia had expanded Medicaid programs, as follows:

• Arizona
• Arkansas
• California
• Colorado
• Connecticut
• Delaware
• District of Columbia
• Hawaii
• Illinois
• Indiana
• Iowa
• Kentucky
• Maryland
• Massachusetts
• Michigan
• Minnesota
• Nevada
• New Hampshire
• New Jersey
• New Mexico
• New York
• North Dakota
• Ohio
• Oregon
• Pennsylvania
• Rhode Island
• Vermont
• Washington
• West Virginia
Twenty-two (22) states have not expanded their Medicare programs, as follows:

- Alabama
- Alaska
- Florida
- Georgia
- Idaho
- Kansas
- Louisiana
- Maine
- Mississippi
- Missouri
- Montana
- Nebraska
- North Carolina
- Oklahoma
- South Carolina
- South Dakota
- Tennessee
- Texas
- Utah
- Virginia
- Wisconsin
- Wyoming

Among these states, expansion is being considered in Alaska, Montana, Tennessee, Utah, and Wyoming.

### 73.8 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 June 2016 was as follows:

- Federally facilitated marketplaces: 28
- State-based marketplaces: 14
- State-partnership marketplaces: 7
- 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-partnership marketplace
- 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: State-based 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
• 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: Federally supported marketplace
• 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
• Wisconsin: Federally facilitated marketplace
• Wyoming: Federally facilitated marketplace
EMPLOYER-SPONSORED HEALTH INSURANCE

74.1 Overview

This chapter provides a summary of the 17th Kaiser/HRET survey, published in September 2015.

74.2 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>
</tbody>
</table>

In 2015, the average family premium rose 4% over the 2014 average premium. Single coverage premiums rose 4% in 2015.

The average family premium has increased 61% since 2005 and 27% since 2010. The average family premium for workers in small firms (3-to-199 workers)
($16,625) is significantly lower than average family premiums for workers in larger firms (200 or more workers) ($17,938).

Average single and family premiums for covered workers are higher in the Northeast ($6,631 and $19,074) and lower in the South ($6,052 and $16,985) than the average premiums for covered workers in all other regions.

Premium contributions by covered workers average 18% for single coverage and 29% for family coverage. Employers pay 82% and 71% of premiums, respectively, for single and family coverage.

### 74.3 Types Of Plans

By type of plan, employee enrollment in 2015 was distributed as follows:

- Preferred provider organizations (PPOs): 52%
- High-deductible health plan/savings option (HDHP/SOs): 24%
- Health maintenance organizations (HMOs): 14%
- Point-of-service (POS) plans: 10%
- Conventional plans: <1%

Average annual total premium by type of policy in 2015 was as follows:

<table>
<thead>
<tr>
<th>Type</th>
<th>Single</th>
<th>Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMO</td>
<td>$6,212</td>
<td>$17,248</td>
</tr>
<tr>
<td>PPO</td>
<td>$6,575</td>
<td>$18,469</td>
</tr>
<tr>
<td>POS</td>
<td>$6,259</td>
<td>$16,913</td>
</tr>
<tr>
<td>HDHP/SO</td>
<td>$5,567</td>
<td>$15,970</td>
</tr>
<tr>
<td>All plans</td>
<td>$6,251</td>
<td>$17,545</td>
</tr>
</tbody>
</table>

Average deductible by type of policy in 2015 was as follows:

- HMO: $1,032
- PPO: $843
- POS: $1,215
- HDHP/SO: $2,215
- All plans: $1,217

### 74.4 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)
PROVIDER-OWNED HEALTH PLANS

75.1 Overview
According to the American Hospital Association (www.aha.org), over 700 hospitals have an equity in an HMO; the number is increasing at about 11% per year. The figure includes many hospitals within the same health system; the total number of provider-sponsored plans about 90.

“Provider-owned health plans continue to spring up or get larger as more hospitals and physician groups are moving to take on financial risk for their patients under value-based and capitated payment contracts. Providers see the financial and quality advantages of controlling premium dollars from beginning to end and steering patients toward their services. It frees them from having to share with insurance companies any savings they generate from improved quality and efficiency.”

Modern Healthcare, 6/6/16

Provider-owned plans cover less than 10% of the entire privately insured market, but their membership is growing. Total enrollment jumped to 19.1 million people in 2013, a 4% increase from 2012 and a higher growth rate than for other types of plans. 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.
75.2 Largest Provider-Owned Health Plans

Ranked by annual premiums collected, the following are the largest provider-owned health plans (sources: A.M. Best Co. and Modern Healthcare):

- Kaiser Foundation Health Plan: $59.3 billion
- UPMC Health Plan: $4.5 billion
- Health Alliance Plan of Michigan: $2.4 billion
- Priority Health: $2.3 billion
- Geisinger Health Plan: $2.0 billion
- SelectHealth: $1.5 billion
- Optima Health Plan: $1.4 billion
- Boston Medical Center Health Plan: $1.4 billion
- Presbyterian Health Plan: $1.3 billion
- Health Alliance Medical Plans: $1.1 billion
76

INDIVIDUAL HEALTH INSURANCE

76.1 Overview
According to Modern Healthcare, 27.2 million Americans are covered by direct-purchase or individual health insurance.

Among adults with individual insurance coverage, employment status is as follows (source: The Commonwealth Fund (www.commonwealthfund.org):
- Unemployed: 36%
- Working for firms with >20 employees: 28%
- Self-employed: 22%
- Working for firms with <20 employees: 13%

76.2 Coverage Challenges
According to The Commonwealth Fund, 73% of adults who shopped for insurance in the last three years did not purchase a policy, primarily because premiums were too high. More than half (57%) said it was very difficult or impossible to find coverage they could afford; 47% said it was very difficult or impossible to find a plan with the coverage they needed.

For those with individual health insurance, most have limited coverage, including no prescription drug coverage (20%); limits on the total dollar amount their insurance pays for healthcare (49%); doctors charging more than insurance pay and being forced to pay the difference (39%); and bills that their insurance does not cover (36%). In addition, 41% of individually insured adults report forgoing needed healthcare because of costs, an increase from 24% who did so in 2001. Over one-third of those with individual coverage (36%) also reported medical bill or debt problems.

76.3 Out-Of-Pocket Spending
A recent study by the California HealthCare Foundation (www.chcf.org) found that a consumer with individual coverage pays almost three times more in out-of-pocket expenses than a consumer with small-group coverage. Among patients with chronic conditions, the following is a cost comparison of average out-of-pocket expenses for small group vs. individual coverage:
<table>
<thead>
<tr>
<th>Condition</th>
<th>Group</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma:</td>
<td>$886</td>
<td>$2,607</td>
</tr>
<tr>
<td>Cancer:</td>
<td>$1,010</td>
<td>$2,951</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease:</td>
<td>$859</td>
<td>$2,528</td>
</tr>
<tr>
<td>Diabetes:</td>
<td>$1,100</td>
<td>$3,275</td>
</tr>
<tr>
<td>Hypertension:</td>
<td>$933</td>
<td>$2,759</td>
</tr>
</tbody>
</table>
### 77.1 Largest Insurers

The largest insurance groups based on annual healthcare-related revenue are as follows (sources: Securities and Exchange Commission filings, *Modern Healthcare*, and Weiss Ratings):

<table>
<thead>
<tr>
<th>Insurance Group</th>
<th>Annual Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Health Group (<a href="http://www.unitedhealthgroup.com">www.unitedhealthgroup.com</a>)</td>
<td>$119.8 billion</td>
</tr>
<tr>
<td>Anthem [formerly WellPoint] (<a href="http://www.anthem.com">www.anthem.com</a>)</td>
<td>$73.9 billion</td>
</tr>
<tr>
<td>Kaiser Foundation (<a href="http://www.kaiserpermanente.org">www.kaiserpermanente.org</a>)</td>
<td>$60.7 billion</td>
</tr>
<tr>
<td>Aetna (<a href="http://www.aetna.com">www.aetna.com</a>)</td>
<td>$58.0 billion</td>
</tr>
<tr>
<td>Humana (<a href="http://www.humana.com">www.humana.com</a>)</td>
<td>$48.5 billion</td>
</tr>
<tr>
<td>Cigna Corp. (<a href="http://www.cigna.com">www.cigna.com</a>)</td>
<td>$34.9 billion</td>
</tr>
<tr>
<td>Health Care Service Corp. (<a href="http://www.hcsc.com">www.hcsc.com</a>)</td>
<td>$23.4 billion</td>
</tr>
<tr>
<td>Aflac (<a href="http://www.aflac.com">www.aflac.com</a>)</td>
<td>$22.7 billion</td>
</tr>
<tr>
<td>Centene Corp. (<a href="http://www.centene.com">www.centene.com</a>)</td>
<td>$16.6 billion</td>
</tr>
<tr>
<td>Health Net (<a href="http://www.healthnet.com">www.healthnet.com</a>)</td>
<td>$14.0 billion</td>
</tr>
<tr>
<td>Highmark (<a href="http://www.highmark.com">www.highmark.com</a>)</td>
<td>$13.2 billion</td>
</tr>
<tr>
<td>WellCare Health Plans (<a href="http://www.wellcare.com">www.wellcare.com</a>)</td>
<td>$12.9 billion</td>
</tr>
<tr>
<td>Blue Shield of California (<a href="http://www.blueshieldca.com">www.blueshieldca.com</a>)</td>
<td>$10.7 billion</td>
</tr>
<tr>
<td>Independence BlueCross (<a href="http://www.ibx.com">www.ibx.com</a>)</td>
<td>$10.1 billion</td>
</tr>
<tr>
<td>EmblemHealth (<a href="http://www.emblemhealth.com">www.emblemhealth.com</a>)</td>
<td>$10.0 billion</td>
</tr>
<tr>
<td>Molina Healthcare (<a href="http://www.molinahealthcare.com">www.molinahealthcare.com</a>)</td>
<td>$9.7 billion</td>
</tr>
<tr>
<td>Horizon Blue Cross and Blue Shield of New Jersey (<a href="http://www.horizonblue.com">www.horizonblue.com</a>)</td>
<td>$9.5 billion</td>
</tr>
<tr>
<td>Blue Cross and Blue Shield of Michigan (<a href="http://www.bcbsm.com">www.bcbsm.com</a>)</td>
<td>$9.5 billion</td>
</tr>
<tr>
<td>Blue Cross and Blue Shield of Florida (<a href="http://www.bcbsfl.com">www.bcbsfl.com</a>)</td>
<td>$7.8 billion</td>
</tr>
<tr>
<td>CareFirst (<a href="http://www.carefirst.com">www.carefirst.com</a>)</td>
<td>$7.4 billion</td>
</tr>
<tr>
<td>Lifetime HealthCare Co. (<a href="http://www.lifethc.com">www.lifethc.com</a>)</td>
<td>$6.4 billion</td>
</tr>
<tr>
<td>Universal American (<a href="http://www.universalamerican.com">www.universalamerican.com</a>)</td>
<td>$2.0 billion</td>
</tr>
</tbody>
</table>
78

LONG-TERM CARE INSURANCE

78.1 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.

78.2 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.

78.3 Market Challenges

The LTCI market is in crisis; the rising cost of care has outpaced premium increases. For instance, Genworth Financial, the largest seller of LTC policies, announced a $345 million writeoff in 2014 as a result of underpricing of plans. The company is considering halting the sale of new policies 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

78.4 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

79.1 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.

79.2 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%)

79.3 Components of Spending
The $25,826 in medical costs paid by and on behalf of the typical American family in 2016 was distributed as follows (percent of total in parenthesis):
• Inpatient: $7,965 (31%)
• Professional services: $7,728 (30%)
• Outpatient: $4,922 (19%)
• Pharmacy: $4,270 (17%)
• Other: $ 941 (4%)
**79.4 Share Of Spending**

The distribution of employer and employee spending for healthcare in 2016 was as follows (percent of total in parenthesis):

- Employer contribution: $14,793 (57%)
- Employee contribution: $6,717 (26%)
- Employee out-of-pocket: $4,316 (17%)

**79.5 Market Resources**

*2016 Milliman Medican Index.*

(www.milliman.com/uploadedFiles/insight/Periodicals/mmi/2016-milliman-medical-index.pdf)

Milliman, 1301 Fifth Avenue, Suite 3800, Seattle, WA 98101. (206) 624-7940. (www.milliman.com)
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MEDICAID & CHIP

80.1 Medicaid Overview
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.


80.2 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.

80.3 Medicaid And CHIP Enrollment
Total Medicaid and CHIP enrollment was 72,457,339 in March 2016.

Enrollment by state was as follows:

- Alabama: 886,099
- Alaska: 146,153
- Arizona: 1,675,407
- Arkansas: 842,433
- California: 11,869,623
- Colorado: 1,343,590
- Connecticut: 764,590
- Delaware: 251,851
- District of Columbia: 265,963
- Florida: 3,595,860
- Georgia: 1,764,901
- Hawaii: 341,501
- Idaho: 284,390
- Illinois: 3,145,232
- Indiana: 1,464,935
- Iowa: 619,917
- Kansas: 405,108
- Kentucky: 1,187,773
• Louisiana: 1,069,499  • Ohio: 2,967,077
• Maine: 276,624  • Oklahoma: 780,157
• Maryland: 1,183,846  • Oregon: 1,076,961
• Massachusetts: 1,647,644  • Pennsylvania: 2,806,701
• Michigan: 2,307,018  • Rhode Island: 282,386
• Minnesota: 1,017,357  • South Carolina: 958,933
• Mississippi: 696,165  • South Dakota: 119,140
• Missouri: 952,532  • Tennessee: 1,599,225
• Montana: 227,648  • Texas: 4,707,919
• Nebraska: 235,119  • Utah: 310,162
• Nevada: 608,719  • Vermont: 191,745
• New Hampshire: 188,446  • Virginia: 967,004
• New Jersey: 1,737,744  • Washington: 1,772,370
• New Mexico: 766,013  • West Virginia: 556,843
• New York: 6,412,485  • Wisconsin: 1,054,411
• North Carolina: 1,976,159  • Wyoming: 63,648
• North Dakota: 84,313

80.4 State-by-State Medicaid Spending

Total estimated Medicaid spending in FY2014 was $475.91 billion. Spending by state was as follows (source: Kaiser Family Foundation [www.kff.org]):

• Alabama: $5.24 billion  • Michigan: $13.58 billion
• Alaska: $1.42 billion  • Minnesota: $10.05 billion
• Arizona: $9.23 billion  • Mississippi: $4.88 billion
• Arkansas: $4.89 billion  • Missouri: $8.92 billion
• California: $63.94 billion  • Montana: $1.08 billion
• Colorado: $5.95 billion  • Nebraska: $1.81 billion
• Connecticut: $7.23 billion  • Nevada: $2.30 billion
• Delaware: $1.72 billion  • New Hampshire: $1.34 billion
• District of Columbia: $2.38 billion  • New Jersey: $12.57 billion
• Florida: $20.42 billion  • New Mexico: $4.18 billion
• Georgia: $9.48 billion  • New York: $54.20 billion
• Hawaii: $1.99 billion  • North Carolina: $12.09 billion
• Idaho: $1.60 billion  • North Dakota: $0.65 billion
• Illinois: $16.72 billion  • Ohio: $19.58 billion
• Indiana: $9.12 billion  • Oklahoma: $4.96 billion
• Iowa: $4.03 billion  • Oregon: $6.83 billion
• Kansas: $2.76 billion  • Pennsylvania: $23.62 billion
• Kentucky: $7.90 billion  • Rhode Island: $2.44 billion
• Louisiana: $7.35 billion  • South Carolina: $5.55 billion
• Maine: $2.45 billion  • South Dakota: $0.78 billion
• Maryland: $9.37 billion  • Tennessee: $9.26 billion
• Massachusetts: $14.60 billion  • Texas: $32.20 billion
<table>
<thead>
<tr>
<th>State</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utah</td>
<td>$2.09 billion</td>
</tr>
<tr>
<td>Vermont</td>
<td>$1.53 billion</td>
</tr>
<tr>
<td>Virginia</td>
<td>$7.61 billion</td>
</tr>
<tr>
<td>Washington</td>
<td>$10.40 billion</td>
</tr>
<tr>
<td>West Virginia</td>
<td>$3.34 billion</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>$7.49 billion</td>
</tr>
<tr>
<td>Wyoming</td>
<td>$0.54 billion</td>
</tr>
</tbody>
</table>

### 80.5 Market Resources
81.1 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.


81.2 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.

81.3 Medicare Enrollment
Medicare enrollment at year-end 2015 was 55,504,005. Enrollment by state was
as follows:
• Alabama: 968,010 • Montana: 201,359
• Alaska: 83,863 • Nebraska: 313,703
• Arizona: 1,134,774 • Nevada: 453,032
• Arkansas: 594,596 • New Hampshire: 266,210
• California: 5,644,384 • New Jersey: 1,492,066
• Colorado: 785,398 • New Mexico: 372,685
• Connecticut: 630,333 • New York: 3,343,349
• Delaware: 180,529 • North Carolina: 1,769,074
• District of Columbia: 88,421 • North Dakota: 118,883
• Florida: 4,024,223 • Ohio: 2,154,337
• Georgia: 1,519,461 • Oklahoma: 678,763
• Hawaii: 244,364 • Oregon: 754,402
• Idaho: 282,024 • Pennsylvania: 2,533,515
• Illinois: 2,066,376 • Rhode Island: 203,289
• Indiana: 1,150,553 • South Carolina: 941,169
• Iowa: 571,956 • South Dakota: 156,127
• Kansas: 487,086 • Tennessee: 1,235,157
• Kentucky: 862,887 • Texas: 3,633,785
• Louisiana: 793,159 • Utah: 345,340
• Maine: 306,420 • Vermont: 131,381
• Maryland: 930,088 • Virginia: 1,349,115
• Massachusetts: 1,218,036 • Washington: 1,190,127
• Michigan: 1,895,558 • West Virginia: 416,820
• Minnesota: 912,285 • Wisconsin: 1,050,020
• Mississippi: 560,344 • Wyoming: 95,055
• Missouri: 1,136,382

The number of Medicare beneficiaries is projected to increase to 80.2 million by
2030.

81.4 Medicare Spending
Net Medicare benefit payments (i.e., Medicare spending minus income from
premiums and other offsetting receipts) have been, and are projected, as follows
(source: Congressional Budget Office:

HEALTHCARE BUSINESS MARKET RESEARCH HANDBOOK 2017-2018
• 305 •
• 2010: $446 billion
• 2011: $480 billion
• 2012: $466 billion
• 2013: $492 billion
• 2014: $505 billion
• 2015: $527 billion
• 2016: $560 billion
• 2017: $562 billion
• 2018: $574 billion
• 2019: $642 billion
• 2020: $688 billion
• 2021: $738 billion
• 2022: $833 billion
• 2023: $852 billion
• 2024: $866 billion

Total Medicare benefit payments in 2014 were $597 billion, 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 per beneficiary has been as follows (change from previous year in parenthesis):
• 2007: $10,707 (3.6%)
• 2008: $11,236 (4.9%)
• 2009: $11,723 (4.3%)
• 2010: $11,925 (1.6%)
• 2011: $12,175 (2.2%)
• 2012: $12,209 (0.3%)
• 2013: $12,210 (no change)
• 2014: $12,243 (0.3%)

Spending in 2014 was distributed as follows (change from previous year in parenthesis):
• Part A: $4,999 (-2.8%)
• Part B: $5,340 (3.4%)
• Part D: $1,904 (0.2%)
81.5 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

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 2015, the largest Medicare Advantage insurers are as follows (source: *Modern Healthcare*):

- UnitedHealth: 3.45 million
- Humana: 3.18 million
- Kaiser Foundation Health Plan: 1.30 million
- Aetna: 1.25 million
- Anthem: 581,000
- Cigna 495,000
- Blue Cross and Blue Shield of Michigan 394,000
- WellCare Health Plans 341,000
- Highmark Health 300,000
- Health Net 294,000
- InnovaCare 215,000
- EmblemHealth 184,000
- Medica 178,000
- Blue Cross and Blue Shield of Minnesota 168,000
- Scan Health Plan 168,000
- Florida Blue 150,000
- UPMC Health System 143,000
- Healthfirst 127,000
- Blue Cross and Blue Shield of North Carolina 126,000
- Cambia Health Solutions 120,000

81.6 Market Resources


*State Health Facts*, The Henry J. Kaiser Family Foundation. (http://kff.org/statedata)
82.1 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>2013</td>
<td>48.0 million</td>
<td>15.4%</td>
</tr>
<tr>
<td>2014</td>
<td>41.8 million</td>
<td>13.3%</td>
</tr>
<tr>
<td>2015</td>
<td>37.9 million</td>
<td>11.9%</td>
</tr>
</tbody>
</table>

“The uninsured rate has declined 6.1 percentage points since the 4th quarter of 2013, which was right before the individual mandate provision of the Affordable Care Act took effect in early 2014 that required Americans to carry health insurance.”

Gallup, 4/7/16

The following is a summary of Health Insurance Coverage in the United States: 2014, published in September 2015 by the Census Bureau:

• The uninsured rate decreased between 2013 and 2014 by 2.9 percentage points.
• In 2014, the percentage of people without health insurance coverage for the entire calendar year was 10.4%, or 33.0 million, lower than the rate and number of uninsured in 2013 (13.3% or 41.8 million).
• Between 2008 and 2013, the uninsured rate was relatively stable. In 2014, the uninsured rate sharply decreased.
• The percentage of people with health insurance coverage for all or part of 2014 was 89.6%, higher than the 86.7% rate in 2013.
82.2 Uninsured State-by-State
By state, the rates of those uninsured in 2014 were as follows (source: U.S. Census Bureau):

- Alabama: 12.1%
- Alaska: 17.2%
- Arizona: 13.6%
- Arkansas: 11.8%
- California: 12.4%
- Colorado: 10.3%
- Connecticut: 6.9%
- Delaware: 7.8%
- District of Columbia: 5.3%
- Florida: 16.6%
- Georgia: 15.8%
- Hawaii: 5.3%
- Idaho: 13.6%
- Illinois: 9.7%
- Indiana: 11.9%
- Iowa: 6.2%
- Kansas: 10.2%
- Kentucky: 8.5%
- Louisiana: 14.8%
- Maine: 10.1%
- Maryland: 7.9%
- Massachusetts: 3.3%
- Michigan: 8.5%
- Minnesota: 5.9%
- Mississippi: 14.5%
- Missouri: 11.7%
- Montana: 14.2%
- Nebraska: 9.7%
- Nevada: 15.2%
- New Hampshire: 9.2%
- New Jersey: 10.9%
- New Mexico: 14.5%
- New York: 8.7%
- North Carolina: 13.1%
- North Dakota: 7.9%
- Ohio: 8.4%
- Oklahoma: 15.4%
- Oregon: 9.7%
- Pennsylvania: 8.5%
- Rhode Island: 7.4%
- South Carolina: 13.6%
- South Dakota: 9.8%
- Tennessee: 12.0%
- Texas: 19.1%
- Utah: 12.5%
- Vermont: 5.0%
- Virginia: 10.9%
- Washington: 9.2%
- West Virginia: 8.6%
- Wisconsin: 7.3%
- Wyoming: 12.0%

82.4 Characteristics Of The Uninsured
An assessment by 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%

82.5 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%
83.1 Market Assessment

*Medicines Use and Spending in the U.S.: A Review of 2015 and Outlook to 2020*, published in April 2016 by IMS Health (www.imshealth.com), reported total spending on medicines in the U.S. reached $310 billion in 2015 on an estimated net price basis, up 8.5% from the previous year.

Total spending on an invoice price basis – without adjusting for the impact of estimated rebates and other price concessions – reached $425 billion in 2015, up 12.2% over 2014 levels. Invoice prices for branded medicines rose 12.4% in 2015, compared with 14.3% in the prior year. Heightened competition among manufacturers, along with more aggressive efforts by health plans and pharmacy benefit managers to limit price growth, resulted in concessions that reduced price increases on an estimated net basis to 2.8%, significantly lower than in prior years.

Specialty drug spending reached $121 billion on a net price basis, up more than 15% from 2014.

“The challenge of balancing access and the cost of care in an era of innovative but more expensive treatments continues as a theme across our healthcare system. The level of price concessions achieved in 2015 points to a shift in market dynamics as manufacturers accept lower price increases on existing products. At the same time, spending on new brands continued at near-historic levels.”

Murray Aitken, Sr. V.P.
IMS Health, 4/14/16

The following are findings of the IMS Health report:
Market Drivers
• The increase in 2015 spending of $24.3 billion on a net basis and $46.2 billion on an invoice basis was fueled by new brands and protected brand price increases, offset by the impact of patent expirations. The greater use of generics and a small increase in demand for branded drugs contributed to the spending growth.
• The surge of new medicines remained strong in 2015, and demand for recently launched brands maintained historically high levels. The savings from branded medicines facing generic competition were relatively low in 2015, and the impact of price increases on brands was limited due to higher rebates and price concessions from manufacturers.
• The market for prescription drugs was influenced by the Affordable Care Act and ongoing response to rising overall healthcare costs. Increasingly, healthcare is being delivered by different types of healthcare professionals and from different facilities, while patients face higher out-of-pocket costs and access barriers.

Growth in Specialty Drugs
• Spending on specialty medicines has nearly doubled in the past five years, contributing more than two-thirds of overall medicine spending growth between 2010 and 2015. Increased specialty spending was driven primarily by treatments for hepatitis, autoimmune diseases and oncology, which accounted for $19.3 billion in incremental spending. Overall, 2015 saw a 21.5% spending increase for specialty medicines to $150.8 billion on an invoice price basis.

Transformative New Medicines
• A total of 43 New Active Substances (NASs) was launched in 2015, a third of those receiving orphan drug designations from the FDA. An additional 30 brands were launched last year, bringing new combination therapies, alternative dosing and treatment administration options to patients. The strong momentum of breakthroughs and R&D productivity is reflected in the 2015 cohort of new medicines. Among last year’s launches, the number of non-orphan drugs with new mechanisms of action reached 14, double the number in 2014. Among the 2015 NAS launches were notable advances in precision medicines, rare disease therapeutics, and chronic disease medicines that could benefit large populations.

Prescription Volume Growth
• Total prescriptions dispensed in 2015 reached 4.4 billion, up 1% year-over-year. Demand was higher in some therapy areas such as antidepressants and anti-diabetes, each of which increased 10% in 2015. Among those therapy areas that declined, narcotic drugs saw a 16.6% drop in the number of prescriptions dispensed. Provisions under the Affordable Care Act for coverage to the uninsured through Medicaid expansion and Health Exchange Plans (HIX) have been the leading drivers of retail prescription growth in the past two years. At the same time, growth in Medicare Part D subscriptions has slowed, and the number of retail prescriptions filled through commercial plans (excluding HIX) and for cash have
Patient Cost Exposure

- The average patient cost exposure for brand prescriptions filled through a commercial plan has increased more than 25% since 2010, reaching $44 per prescription last year. The increased prevalence of health plans with pharmacy deductibles, co-payments, and co-insurance is contributing to the rise. In response, brand manufacturers are steadily increasing their use of mechanisms such as coupons or vouchers to help patients offset these expenses. Within the diabetes market, for example, coupons are being used by patients in commercial plans to reduce their costs. Of those diabetes patients facing $50 or more per prescription, about half were able to reduce their out-of-pocket cost to zero in 2015. The average patient cost exposure for generics has remained at approximately $8 per prescription since 2010.

Healthcare Delivery Changes

- Over the past five years, Integrated Delivery Networks (IDNs) have expanded their affiliations with healthcare professionals (HCPs) in an effort to increase negotiating power with insurers, leverage economies of scale, and drive pay-for-performance initiatives. More than 54% of all HCPs nationally now are affiliated with IDNs. Newer facility types addressing patient access and convenience, such as urgent care centers and pharmacy in-store clinics, have grown by 115% in the past five years and are part of an increasingly diverse set of healthcare facilities. The number of prescriptions written by Nurse Practitioners and Physician Assistants more than doubled over the past 5 years, reaching 676 million prescriptions in 2015.

2020 Growth Forecast

- U.S. spending on medicines on a net price basis is expected to reach $370 billion to $400 billion in 2020, growing at a compound annual growth rate of 4% to 7%. This growth will reflect increased spending on innovative medicines, offset by lower spending on brands that will lose market exclusivity over the next five years. While brand price increases are expected to continue in the 10% to 12% range on an invoice basis, they will be significantly offset by rebates, discounts, and other forms of price concessions. The prospects for additional innovative medicines becoming available for patients through 2020 are very bright. The late-phase pipeline holds 2,320 novel products, and an average 43 to 49 NASs are expected to be launched annually over the next five years.

83.2 Consumer Use

According to the National Center for Health Statistics (www.cdc.gov/nchs), 47% of people of all ages take prescription drugs, 21% take three or more, and 10% take five or more. By age, the percentages taking at least one prescription drug in the past 30 days are as follows:
• Under age 18: 23.5%
• 18-to-44: 38.1%
• 45-to-64: 67.2%
• 65 and older: 89.8%

The percentages of adults taking specific types of drugs are as follows:
• Heart drugs (ace inhibitors, beta blockers, etc.): 17.7%
• Cholesterol-lowering drugs: 10.7%
• Antidepressants: 10.6%
• Painkillers: 10.5%
• Acid-reflux medications: 9.0%

### 83.3 Pipeline
The number of new drugs approved by the U.S. Food and Drug Administration (www.fda.gov) has been as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>20</td>
</tr>
<tr>
<td>2006</td>
<td>22</td>
</tr>
<tr>
<td>2007</td>
<td>18</td>
</tr>
<tr>
<td>2008</td>
<td>25</td>
</tr>
<tr>
<td>2009</td>
<td>27</td>
</tr>
<tr>
<td>2010</td>
<td>21</td>
</tr>
<tr>
<td>2011</td>
<td>31</td>
</tr>
<tr>
<td>2012</td>
<td>38</td>
</tr>
<tr>
<td>2013</td>
<td>29</td>
</tr>
<tr>
<td>2014</td>
<td>41</td>
</tr>
<tr>
<td>2015</td>
<td>51</td>
</tr>
</tbody>
</table>

“2015 was a remarkable year for pharmaceutical innovation. New drug approvals hit a 66-year high.”

*Forbes, 1/4/16*

IMS Health project that 30 to 35 new drugs a year will come on the market through 2018, an increase from the average of 25 from 2000 to 2013.

### 83.4 Drug Shortages
University of Utah Drug Information Service (http://pharmacy.services.utah.edu) reports there were 185 drugs in shortage at year-end 2015; the figure has averaged about 257 since of 2011.

Drug shortages cost U.S. hospitals more than $200 million annually because of the higher cost of substitute drugs.
“The FDA says the three biggest causes of shortages are delays in manufacturing or other capacity issues, quality issues in the manufacturing process, and difficulty obtaining raw materials. Most of the drugs on the ASHP shortage list are generics. Sterile injectable drugs make up a majority of drugs in shortage because only seven manufacturers account for most of the market, and the drugs are difficult to manufacture safely.”

Modern Healthcare, 10/26/15

83.5 Specialty Drugs
Specialty drugs, defined as those costing $600 a month or more, account for 25% of all drug expenditures; they are used by less than 1% of privately insured patients. The average cost of specialty drugs is $2,500 per month.

Pew Research Center (www.pewresearch.org) projects that sales of specialty drugs will reach $400 billion in 2020, up from $87 billion in 2012 and $124 billion in 2014.

“One cause for high cancer drug prices can be traced to the 2003 Medicare Prescription Drug, Improvement and Modernization Act, which prevented Medicare from negotiating directly with pharmaceutical companies. Since its implementation in 2006, the law leaves drug companies as the sole deciders on the pricing of new cancer drugs, following approval from the U.S. Food and Drug Administration. It has created a financial bonanza ... in the pharmaceutical sector.”

Modern Healthcare, 4/6/16
Based on data from IMS Health, *Modern Healthcare* (December 2015) reports annual spending on specialty drugs as follows:

- Oncology: $32.6 billion
- Autoimmune: $22.2 billion
- HIV antivirals: $14.3 billion
- Multiple sclerosis: $13.8 billion
- Viral hepatitis: $12.3 billion
- Other special medicines: $28.9 billion
84

DISTRIBUTION CHANNELS

84.1 Channel Distribution Spending

According to IMS Health (www.imshealth.com), U.S. spending on prescription drugs in the U.S. on an invoice price basis – without adjusting for the impact of estimated rebates and other price concessions – was $425 billion in 2015.

Distribution by channel was follows:

Retail Channels
- Chain drug stores: 34%
- Mail order service: 20%
- Independent drug stores: 11%
- Food stores: 7%
- Total: 72%

Institutional Channels
- Clinics: 12%
- Community hospitals: 9%
- Long-term care: 4%
- Federal facilities: 1%
- Home healthcare: 1%
- HMOs: 1%
- Total: 28%

84.2 Retail Sales

According to County Business Patterns (April 2016 edition), published by the Census Bureau, there are 43,742 retail stores in the sector. Combined they have 703,757 employees.

According to the National Association of Chain Drug Stores (NACDS, www.nacds.org), stores and sales are distributed as follows:

<table>
<thead>
<tr>
<th>Stores</th>
<th>55%</th>
<th>72%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chains:</td>
<td>45%</td>
<td>28%</td>
</tr>
</tbody>
</table>

In addition, 9,300 supermarkets and 7,382 mass merchants have pharmacy departments.
According to the Census Bureau (www.census.gov) of the U.S. Department of Commerce, total sales at drug stores and pharmacies have been as follows:

- 2006: $191.02 billion
- 2007: $202.28 billion
- 2008: $210.86 billion
- 2009: $217.28 billion
- 2010: $222.26 billion
- 2011: $231.34 billion
- 2012: $230.42 billion
- 2013: $236.17 billion
- 2014: $251.41 billion
- 2015: $262.87 billion

These figures do not include pharmacy sales at supermarkets, mass merchants, and other general merchandise stores.

### 84.3 Marketshare Leaders

The largest drug store chains, ranked by annual prescription revenue, are as follows (change from previous year in parenthesis):

<table>
<thead>
<tr>
<th>Stores</th>
<th>Prescription Revenue</th>
<th>% Change</th>
<th>Stores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walgreen</td>
<td>$43.7 billion (15.8%)</td>
<td>7,651</td>
<td></td>
</tr>
<tr>
<td>CVS Pharmacy</td>
<td>$42.8 billion (15.5%)</td>
<td>7,345</td>
<td></td>
</tr>
<tr>
<td>Express Scripts</td>
<td>$32.9 billion (11.9%)</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Rite Aid</td>
<td>$17.7 billion (6.4%)</td>
<td>4,664</td>
<td></td>
</tr>
</tbody>
</table>

### 84.4 Market Resources

**Chain Drug Review**, 220 Fifth Avenue, 18th Floor, New York, NY 10001. (212) 213-6000. (www.chaindrugreview.com)


**Drug Store and HBC Chains**, Chain Store Guide, 3922 Coconut Palm Drive, Tampa, FL 33619. (813) 664-6800. (www.chainstoreguide.com)


85.1 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.

85.2 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, \(H_2\) 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
• $H_1$ antagonists

S - Sensory Organs
• Ophthalmologicals
• Otologicals

V - Other
• Antidotes
• Contrast media
• Dressings
• Radiopharmaceuticals

85.3 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.whocc.no)
86.1 Market Assessment

The Food and Drug Administration (FDA, www.fda.gov) defines a generic drug as a product that is comparable to a brand/reference listed drug product in dosage, form, strength, route of administration, quality and performance characteristics, and intended use.

According to IMS Health (www.imshealth.com), the percentage of all U.S. drug prescriptions that were filled with generics or branded generic drugs have been as follows:

- 2004: 57%
- 2005: 60%
- 2006: 63%
- 2007: 67%
- 2008: 72%
- 2009: 74%
- 2010: 78%
- 2011: 80%
- 2012: 84%
- 2013: 86%
- 2014: 88%

In 2014, 3.5 billion generic prescriptions were filled at a cost of $80 billion. According to a study for the Generic Pharmaceutical Association (GPhA; www.gphaonline.org) by IMS Health, generic drug use generates about $250 billion in savings for consumers each year. The cumulative savings over the past decade is estimated at $1.5 trillion.

Drug Trend Report, by Express Scripts (www.expresscripts.com), reported that since 2013, the price of brand drugs has almost doubled, but the price of generic drugs has been cut roughly in half.

There were more than 12,000 generic medicines available in the U.S. at year-end 2015, according to the GPhA. The Food and Drug Administration (www.fda.gov) approved or issued tentative approval for over 700 generic drugs in 2015, an all-time high.

86.2 Market Leaders

The largest generic drug companies, ranked by U.S. sales, are as follows (source: IMS Health):

- Teva Pharmaceutical Industries (www.tevapharma.com): $7.21 billion
- Activis/Watson Pharmaceuticals (www.watson.com): $6.47 billion
- Mylan (www.mylan.com): $6.13 billion
• Sandoz (www.sandoz.com): $3.92 billion
• Par Pharmaceuticals (www.parpharm.com/generics): $2.16 billion
• Ranbaxy Pharmaceuticals (www.ranbaxyusa.com): $1.88 billion
• Sun Pharmaceutical (www.sunpharma.com): $1.53 billion
• Boehringer Ingelheim (www.boehringer-ingelheim.com): $1.26 billion
• Greenstone LLC (www.greenstonellc.com): $1.17 billion
• Hospira (www.hospira.com): $1.15 billion

### 86.3 Consumer Preference

According to a survey by The Harris Poll (www.theharrispoll.com), 81% of adults who buy prescription drugs say they would purchase generics more often than brand name drugs; 42% would always choose to buy a generic drug. By age, those that would always do so are as follows:

- 18-to-37: 33%
- 38-to-49: 46%
- 50-to-68: 44%
- 69 and older: 50%

### 86.4 Patent Expirations

Generic drugs can be produced without patent infringement upon the expiration of the patent for a drug. The following products went off-patent, or will go off-patent, in 2011 through 2016 (source: IMS Institute for Healthcare Informatics):

**2011**
- Concerta
- Levaquin
- Lipitor
- Protonix
- Zyprexa

**2012**
- Actos
- Boniva
- Diovan
- Diovan HCT
- Geodon
- Lexapro
- Plavix
- Seroquel
- Singulair
- Viagra

**2013**
- Aciphex
- Asacol
- Opana ER
- Oxycontin
- Xeloda
- Zometa

**2014**
- Actonel
- Celebrex
- Cymbalta
- Evista
- Lunesta
- Nexium
- Restasis
- Sandostatin LAR
- Symbicort
2015
• Abilify
• Avodart
• Combivent
• Copaxone
• Gleevec
• Namenda
• Prezista
• Provigil
• Zyvox

2016
• Benicar
• Benicar HCT
• Crestor
• Cubicin

86.5 Market Resources
Generic Pharmaceutical Association (GPhA), 777 Sixth Street NW, Suite 510, Washington, DC 20001. (202) 249-7100. (www.gphaonline.org)
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LARGEST BIOTECHNOLOGY COMPANIES

87.1 Ranking By Worldwide Revenue

According to *Modern Healthcare* (August 2015), based on data from BioPharm Insight (www.biopharminsight.com), the largest biotechnology companies, ranked by worldwide sales, are as follows:

- Amgen (www.amgen.com): $20.76 billion
- Biogen Idec (www.biogenidec.com): $10.34 billion
- Celgene Corp. (www.celgene.com): $8.43 billion
- Regeneron Pharmaceuticals (www.regeneron.com): $3.40 billion
- Alexion Pharmaceuticals (www.alexion.com): $2.39 billion
- United Therapeutics Corp. (www.unither.com): $1.35 billion
- Bioclinic Pharmaceuticals (www.bioclinic.com): $861 million
- Myriad Genetics (www.myriad.com): $721 million
- Incyte Corp. (www.incyte.com): $644 million
- Vertex Pharmaceuticals (www.vtx.com): $628 million
- PDL BioPharma (www.pdl.com): $569 million
- Emergent Biosolutions (www.emergentbiosolutions.com): $476 million
- Amgen (www.amgen.com): $437 million
- Isis Pharmaceuticals (www.isispharm.com): $312 million
- Seattle Genetics (www.seattlegenetics.com): $309 million
- Insys Therapeutics (www.insysrx.com): $273 million
- Luminex Corp. (www.luminexcorp.com): $231 million
- Meridian Bioscience (www.meridianbioscience.com): $193 million
- Spectrum Pharmaceuticals (www.sppirx.com): $183 million
- Infinity Pharmaceuticals (www.infi.com): $174 million
LARGEST PHARMACEUTICAL COMPANIES

88.1 Ranking By Revenue
The largest pharmaceutical companies, ranked by worldwide revenue, are as follows (source: *Modern Healthcare*):

- **Novartis** (www.novartis.com): $57.9 billion
- **Roche Holdings** (www.roche.com): $52.7 billion
- **Pfizer** (www.pfizer.com): $51.6 billion
- **Sanofi** (www.sanofi.us): $45.5 billion
- **Merck & Co.** (www.merck.com): $44.0 billion
- **GlaxoSmithKline** (www.gsk.com): $31.3 billion
- **Johnson & Johnson** (www.jnj.com): $28.1 billion
- **Abbott Laboratories** (www.abbott.com): $21.8 billion
- **Teva Pharmaceuticals** (www.tevapharm.com): $20.3 billion
- **AbbVie** (www.abbvie.com): $18.8 billion
- **Amgen Corp.** (www.amgen.com): $18.7 billion
- **Bristol-Myers Squibb Co.** (www.bms.com): $16.4 billion
- **Novo Nordisk** (www.novonordisk.com): $15.5 billion
- **Gilead Sciences** (www.gilead.com): $11.2 billion
- **Actavis** (www.actavis.com): $8.68 billion
- **Biogen Idec** (www.biogenidec.com): $6.93 billion
- **Mylan** (www.mylan.com): $6.91 billion
- **Celgene Corp.** (www.celgene.com): $6.49 billion
- **Allergan** (www.allergan.com): $6.30 billion
- **Shire** (www.shire.com): $4.93 billion
- **Hospira** (www.hospira.com): $4.00 billion
- **Forest Laboratories** (www.frx.com): $3.13 billion
- **Endo Health Solutions** (www.endo.com): $2.62 billion
- **Mallinckrodt Pharmaceuticals** (www.mallinckrodt.com): $2.20 billion
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MEDICAL DEVICES & EQUIPMENT

89.1 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

89.2 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
  Life 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%)

### 89.3 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.

“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.

### 89.4 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, 9/21/15

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.

89.5 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)
TOP-SELLING BRAND & GENERIC DRUGS

90.1 Overview
Chain Drug Review publishes annual rankings of single-source brand name and generic drug sales based on data from RelayHealth (www.relayhealth.com). The top 25 drugs, ranked by annual supplier sales, are presented in this chapter.

90.2 Top Brand Drugs
Ranked by number of prescriptions filled, the top 25 brand drugs are as follows (source: Chain Drug Review):

- Nexium (AstraZeneca): 14.84 million
- Cymbalta (Eli Lilly): 10.97 million
- Advair Diskus (GlaxoSmithKline): 9.26 million
- Crestor (AstraZeneca): 8.55 million
- Spiriva (Boehringer Ingelheim): 8.44 million
- Lantus Solostar (Aventis): 8.07 million
- Nasonex (Merck/Schering): 7.53 million
- Lantus (Aventis): 7.28 million
- Celebrex (Pfizer): 7.25 million
- Suboxone (Reckitt Benckiser): 6.72 million
- Crestor (AstraZeneca): 6.28 million
- Viagra (Pfizer): 6.07 million
- Zetia (Merck): 5.51 million
- Januvia (Merck): 5.32 million
- Cymbalta (Eli Lilly): 4.82 million
- Dexilant (Takeda): 4.55 million
- Diovan (Novartis): 4.49 million
- Nuvaring (Organon): 4.45 million
- Symbicort (AstraZeneca): 4.29 million
- Lovaniza (GlaxoSmithKline): 4.15 million
- Cialis (Eli Lilly): 3.89 million
- Tamiflu (Roche): 3.86 million
- Loestrin 24 Fe (Warner Chilcott): 3.79 million
- Voltaren (Endo): 3.69 million
- Namenda (Forest): 3.63 million
90.3 Top Single-Source Generic Drugs

Ranked by number of prescriptions filled, the top 25 generic drugs are as follows (source: Chain Drug Review):

- 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
- Oxycodone-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 (Mylam): 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

90.4 Market Resources

RelayHealth, 1564 Northeast Expressway, Atlanta, GA 30329. (800) 778-6711. (www.relayhealth.com)
TOP-SELLING THERAPEUTIC DRUG CLASSES

91.1 Ranked By U.S. Sales
IMS Health (www.imshealth.com) reported the top therapeutic drug classes ranked by U.S. sales are as follows:

• Oncologics: $27.9 billion
• Antidiabetes: $24.3 billion
• Mental health: $23.8 billion
• Respiratory: $20.4 billion
• Pain: $18.7 billion
• Autoimmune diseases: $17.9 billion
• Lipid regulators: $13.6 billion
• Antihypertensives, plain and combined: $12.5 billion
• HIV antivirals: $12.5 billion
• Multiple sclerosis: $10.6 billion
• Anti-ulcerants: $10.1 billion
• ADHD: $9.9 billion
• Dermatologics: $8.9 billion
• Antibacterials: $8.6 billion
• Nervous system disorders: $8.1 billion
• Anticoagulants: $7.4 billion
• Vaccines (pure, combined, other): $6.0 billion
• Sex hormones: $5.8 billion
• Ophthalmology: $5.6 billion
• Hormonal contraceptives: $5.6 billion

91.2 Ranked By Number Of U.S. Dispensed Prescriptions
The top therapeutic drug classes ranked by number of U.S. dispensed prescriptions are as follows:

• Antihypertensives: 698 million
• Mental health: 519 million
• Pain: 477 million
• Antibacterials: 268 million
• Lipid regulators: 263 million
• Antidiabetics: 192 million
• Nervous system disorders: 166 million
• Anti-ulcerants: 164 million  
• Respiratory: 162 million  
• Antithyroid: 126 million  
• Dermatologicals: 105 million  
• Hormonal contraceptives: 95 million  
• ADHD: 80 million  
• Anticoagulants: 76 million  
• Vitamins & minerals: 74 million  
• Corticosteroids: 61 million  
• GI products: 58 million  
• Nasal preps, topical: 51 million  
• Other cardiovasculars: 49 million  
• Sex hormones: 45 million  

91.3 Ranked By Global Sales
The top therapeutic drug classes ranked by global sales are as follows (source: IMS Health):
• Oncologics: $67.1 billion
• Pain: $57.3 billion
• Antidiabetics: $54.4 billion
• Antihypertensives, plain & combined: $49.6 billion
• Antibacterials: $40.2 billion
• Mental health: $39.5 billion
• Respiratory agents: $38.1 billion
• Autoimmune diseases: $31.1 billion
• Lipid regulators: $28.9 billion
• Dermatologics: $26.8 billion
• Anti-ulcerants: $25.6 billion
• Anticoagulants: $24.1 billion
• GI products: $23.5 billion
• Other cardiovasculars: $21.9 billion
• HIV antivirals: $20.6 billion
• Nervous system disorders: $20.2 billion
• Other CNS: $18.6 billion
• Cough cold, including flu antiviral: $14.5 billion
• Vaccine (pure, combined, other): $14.1 billion
• Hematopoietic growth factors: $13.5 billion

91.4 Market Resources
IMS Health, 83 Wooster Heights Road, Danbury, CT 06810. (203) 448-4600. (www.imshealth.com)
PART VI: GENOMIC & REGENERATIVE MEDICINE
92.1 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 new 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.

“The project to understand the human genome has long promised to revolutionize the way that diseases are diagnosed, drugs are designed and even the way that medicine is practised. An ability to interpret human genetic information holds the promise of doing everything from predicting which drugs will work on a particular patient to identifying a person’s predisposition to develop diseases.”

The Economist, 6/25/16

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. More than 20% of the Novel New Drugs approved by CDER in 2015 were...
92.2 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

92.3 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
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, 11/23/15_
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.

### 92.5 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.

In 2015, President Barrack Obama announced plans for the Precision Medicine Initiative, with $215 million in funding.

“All bodes well for genome-based diagnostics. Nearly a third of drugs in clinical development are associated with either a known DNA variant or with a variation in the structure of a specific protein, ultimately traceable to DNA. The presence in, or absence from, a patient of such a variant allows drugmakers to know whether their products are likely to work in that individual. A new era of genome-based medicine is set to arrive.”

_The Economist, 5/7/16_

**92.6 Market Resources**

Personalized Medicine Coalition, 1710 Rhode Island Avenue NW, Suite 700, Washington, DC 20036. (202) 589-1770. (www.personalizedmedicinecoalition.org)


_The State Of Personalized Medicine_, Patrick Conway, M.D., Chief Medical Officer, CMS. (www.personalizedmedicinecoalition.org/Userfiles/PMC-Corporate/filePMC_conway_slides.pdf)
93

GENETIC TESTING

93.1 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.

There are now genetic tests for more than 4,000 diseases. Most major U.S. hospitals have genetic clinics.

93.2 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.
• As of June 2016, GeneTests listed 63,524 tests, 5,488 genes, and 4,638 disorders.

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.

OMIM
• OMIM, Online Mendelian Inheritance in Man® (www.omim.org), is an online catalog of human genes and genetic disorders that is freely available. OMIM is authored and edited at the McKusick-Nathans Institute of Genetic Medicine, Johns Hopkins University School of Medicine.

93.3 Clinics and Laboratories
As of June 2016, there were 1,068 genetic clinics and 687 laboratories in the United States, according to GeneTests.
93.4 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.

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).

93.5 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)
94.1 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

94.2 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 are currently under way in the U.S. Researchers at the University of Pennsylvania are using gene therapy to treat the eye disease Leber’s congenital amaurosis. In this condition, a defective version of a gene called RPE65 starves retinal cells of vitamin A, causing blindness. Putting normal copies of RPE65 into the retina leads to greater light sensitivity and sometimes clearer vision. Researchers at Oxford University, in the U.K., have successfully used a similar therapy, delivering versions of the RPE1 gene to the most light-sensitive part of the retina.

Another group at the University of Pennsylvania presented results at a recent meeting of the American Society of Hematology (www.hematology.org) showing the promise of CAR (chimeric antigen receptor) cells in treating people with acute lymphoblastic leukaemia. Led by Dr. Carl June, the researchers achieved full remission in all five adult patients treated and eradicated the cancer from two children. Dr. Michel Sadelain, at the Memorial Sloan-Kettering Cancer Center, has also reported success with tumor treatment using CAR cells.

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.

### 94.3 Approvals For Gene Therapies

China has approved gene therapies for medical use; the first applications are for two types of cancers.

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. Drugs for such rare disorders, called “orphan diseases,” typically carry high prices of $300,000 or more a year.

As of June 2016, the U.S. Food and Drug Administration (FDA, www.fda.gov) had not approved any gene therapy treatments.

### 94.4 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.

“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, 8/22/15

94.5 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, 210 King Street, San Francisco, CA 94107. (415) 396-9100. (www.cirm.ca.gov)

Gene Therapy News Network (www.genetherapy.me)

Gene Therapy Review (www.genetherapyreview.com)
95

STEM CELLS

95.1 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.

95.2 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 November 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. As of June 2016, CIRM had awarded grants totaling $1.9 billion. An overview of CIRM research funding is presented at www.cirm.ca.gov/about/where-cirm-funding-goes.

95.3 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.

“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, 1/23/16*

Another example is bone marrow transplants that are used to treat leukemia.
“Leukemia is mostly treated these days with hematopoietic stem cells.”

_The Economist, 1/23/16_

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.

95.4 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.

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.

As of June 2016, the NMDP registry, called the Be The Match Registry, included nearly 27 million potential donors and more than 680,000 umbilical cord blood units.

95.5 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 $1,995 for collecting, shipping, and processing the blood and an annual fee of $130 for storage.

95.6 Market Resources
California Institute for Regenerative Medicine, 210 King Street, San Francisco, CA 94107. (415) 396-9100. (www.cirm.ca.gov)

Genetics Policy Institute, 2875 South Ocean Boulevard, Palm Beach, FL 33480. (888) 238-1423. (www.genpol.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.marrow.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
96

ACID REFLUX

96.1 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 reflexing 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.

96.2 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.

96.3 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 $13 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.

96.4 Market Resources
American Society for Gastrointestinal Endoscopy, 3300 Woodcreek Drive, Downers Grove, IL 60515. (630) 573-0600. (www.asge.org)

The Society of Thoracic Surgeons, 633 North Saint Clair Street, Chicago, IL 60611. (312) 202-5800. (www.sts.org)
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ALLERGIES

97.1 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.

97.2 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.

97.3 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 2016:
• Jackson, MS
• Memphis, TN
• Syracuse, NY
• Louisville, KY
• McAllen, TX
• Wichita, KS
• Oklahoma City, OK
• Providence, RI
• Knoxville, TN
• Buffalo, NY

The following were the Fall Allergy Capitals in 2016:
• Louisville, KY
• Jackson, MS
• McAllen, TX
• Memphis, TN
• Syracuse, NY
• Knoxville, TN
• Oklahoma City, OK
• Dayton, OH
• Wichita, KS
• Baton Rouge, LA

97.4 Market Resources
Asthma and Allergy Foundation of America, 8201 Corporate Drive, Suite 1000, Landover, MD 20785. (800) 727-8462. (www.aafa.org)
98.1 Prevalence

2016 Alzheimer’s Disease Facts and Figures, by the Alzheimer’s Association (www.alz.org), estimates 5.4 million Americans of all age have Alzheimer’s disease. This figure includes 5.3 million people age 65 and over and 200,000 individuals under age 65 who have younger-onset Alzheimer’s.

“One in nine people age 65 and older (11%) has Alzheimer’s disease. About one-third of people age 85 and older have Alzheimer’s disease.”

2016 Alzheimer’s Disease Facts & Figures
Alzheimer’s Association, 3/16

Another 300,000 Americans under age 65 have a dementia other than Alzheimer’s disease. 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%.

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.

The Rand study assessed direct annual healthcare expenses for dementia, including nursing home care, at $109 billion. The bulk of the costs (estimated at 75% to 84%) involve helping patients in nursing homes or at home to manage the most basic activities of life as they become increasingly impaired cognitively and then physically.
For comparison, heart disease costs totaled $102 billion; for cancer, costs were $77 billion.

The cost of informal care for dementia, usually provided by family members at home, ranges between $50 billion to $106 billion, depending on whether the value is based on the income a family member loses or by what a family pays for a professional caregiver.

Each case of dementia costs $41,000 to $56,000 a year. Researchers project that the total costs of dementia care will more than double by 2040, to a range of $379 billion to $511 billion, from the current level of $159 billion to $236 billion. Because the general population will also increase, the burden of cost per capita will not grow quite as fast, but will still be nearly 80% more in 2040.

“The [Rand study] found that the financial burden [of dementia] is at least as high as that of heart disease or cancer, and is probably higher. And both the costs and the number of people with dementia will more than double within 30 years, skyrocketing at a rate that rarely occurs with a chronic disease. It’s going to swamp the [U.S. healthcare] system.”

*The New York Times*

The following are other facts about Alzheimer’s disease and dementia provided by the Alzheimer’s Association in 2016 Alzheimer’s Disease Facts and Figures:

• In 2015, over 15 million family and friends provided 18.1 billion hours of unpaid care to those with Alzheimer’s and other dementias – care valued at $221.3 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.

• 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 an designated caregiver.

• 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.
Nearly 70% of those afflicted with dementia or Alzheimer’s disease live at home and are cared for by family and friends. It is often necessary for those afflicted to be cared for in a nursing home in the last stages of the disease. Nearly 50% of all nursing home patients in the United States suffer from Alzheimer’s disease.

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*, 4/23/16

The National Alzheimer’s Project Act (NAPA), signed into law in 2011, aims to create a coordinated national strategy that deals with Alzheimer’s disease. The law establishes an interagency council that will work with the secretary of Health and Human Services to give a full assessment of what needs to be accomplished to stem the disease.

**98.2 Cost of Care**

*2016 Alzheimer’s Disease Facts and Figures* reports the direct costs of caring for those with Alzheimer’s Disease at roughly $236 billion, distributed as follows (source: Alzheimer’s Association):

- Medicare: $118 billion
- Medicaid: $ 44 billion
- Out-of-pocket: $ 46 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.

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%.
98.3 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.

98.4 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.”

2016 Alzheimer’s Disease Facts & Figures
Alzheimer’s Association, 3/16
98.5 Research For Treatments

The category of Alzheimer’s medications is a $1.4 billion business, according to IMS Health (www.imshealth.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.

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“For years, there have been unproven but persistent hints that cholesterol and inflammation are part of the disease process. People with high cholesterol are more likely to get the disease. Strokes and head injuries, which make Alzheimer’s more likely, also cause brain inflammation. Now, some of the newly discovered genes appear to bolster this line of thought, because some are involved with cholesterol and others are linked to inflammation or the transport of molecules inside cells.”

The New York Times

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98.6 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.

98.7 Mortality

*Deaths: Leading Causes for 2013*, published in February 2016 by the National Center for Health Statistics (www.cdc.gov/nchs), reported Alzheimer’s disease as the cause of 84,767 deaths.

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“Alzheimer’s is the sixth-leading cause of death in the country and the only cause of death among the top 10 in the United States that cannot be prevented, cured or even slowed.”

2016 Alzheimer’s Disease Facts & Figures
Alzheimer’s Association, 3/16

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98.8 Market Resources


Alzheimer’s Association, 225 North Michigan Avenue, 17th Floor, Chicago, IL 60601. (800) 272-3900. (www.alz.org)
99

ARTHritis

99.1 Prevalence

Arthritis is the number one cause of disability in America, affecting an estimated 50 million people, 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.

People with arthritis are significantly more likely to be physically inactive than those without the disease. According to a study published in *Morbidity and Mortality Weekly Report*, 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.

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“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

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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.

99.2 Economic Impact

Arthritis costs the U.S. economy $140 billion per year in medical care and 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 CDC reports a correlation between arthritis and diabetes. The inactivity caused by arthritis hinders the successful management of both diseases, and people with diabetes are nearly twice as likely to have arthritis.

According to Chad Helmick, M.D., an epidemiologist at CDC, people with arthritis face barriers to physical activity. Many have concerns about aggravating their arthritis pain, possibly causing further joint damage, and are uncertain about which types and amounts of activity are safe for their joints.

The disability caused by arthritis often robs people of the ability to live independently. People with arthritis commonly report needing help getting around inside their home, including getting out of bed or a chair, bathing, dressing, eating, and with other essential activities of daily living.

The Arthritis Foundation estimates an annual cost of $5,700 per person living with the disease.

99.3 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.

Genetic defects are the cause of approximately 25% of osteoarthritis cases. According to Roland Moskowitz, M.D., of Case Western Reserve University, who was the first to discover an osteoarthritis gene, identifying the genes in arthritis gives researchers a handle in treating and preventing the disease.

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.

### 99.4 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.

### 99.5 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

100.1 Prevalence and Mortality

According to the Centers for Disease Control and Prevention (CDC, www.cdc.gov), approximately 15 million adults suffer from asthma. An additional 4.8 million children have the disease.

The CDC reports that 7.4% of people of all ages in the U.S. living are with asthma, the lowest rate since 2003, when it reached 7.1%.

Approximately 1.8 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 Americans. 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 5,000 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


100.2 Cost

The total annual cost for asthma management is $19.7 billion, according to the CDC. Direct healthcare expenditures such as physician visits, hospitalization and emergency services, medications, and other interventions are estimated at $14.7 billion. Of these, hospital care accounts for $4.7 billion, physician services $3.8 billion, and pharmaceuticals $6.2 billion. Indirect costs, such as decreased worker productivity and days lost from work by adults who have asthma or care for children with asthma, and other losses are an estimated $5.0 billion.

100.3 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 2016:

• Memphis, TN
• Richmond, VA
• Philadelphia, PA
• Detroit, MI
• Oklahoma City, OK

The state with the highest rate of people currently suffering from asthma is Maine, with almost 9%. Louisiana has the lowest, at 5%.

100.4 Asthma In Children

The CDC estimates that 6.2% 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.

100.5 Treatment

There are more than 17 million physician visits for asthma each year, according to IMS Health (www.imshealth.com).

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 IMS Health.

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.

100.6 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)
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AUTISM

101.1 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, 4/16/16*

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 an 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.

### 101.2 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.

### 101.3 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 Society of America, 4340 East-West Highway, Suite 350, Bethesda, MD 20814.
(301) 657-0881.  (www.autism-society.org)

Autism Speaks, 1 East 33rd Street, 4th Floor, New York, NY 10016.  (212) 252-8584.
(www.autismspeaks.org)
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BARIATRIC SURGERY

102.1 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.

102.2 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 recent 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.

### 102.3 Risks

The Longitudinal Assessment of Bariatric Surgery (LABS) Consortium (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.

### 102.4 Centers of Excellence

In 2004, the ASMBS launched the Bariatric Surgery Center of Excellence (BSCOE) program. At year-end 2015, more than 800 surgeons and 475 facilities had been designated as Centers of Excellence, and an additional 300 surgeons and 150 facilities had been approved for provisional status. A list of Centers of Excellence is available at www.surgicalreview.org/patients/find-a-provider/.

### 102.5 Market Resources

American Society for Metabolic & Bariatric Surgery, 100 SW 75th Street, Suite 201, Gainesville, FL 32607. (352) 331-4900. (www.asmbs.org)
CANCER

103.1 Prevalence And Mortality
Cancer is the second-leading cause of death in the United States, exceeded only by heart disease. There are about 14.5 million Americans with a history of cancer.

*Cancer Facts and Figures 2016*, by the American Cancer Society (www.cancer.org), projects that 1.69 million people in the U.S. will be diagnosed with cancer in 2016; about 595,690 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.

103.2 Cancer In Men
The American Cancer Society projects 841,390 new cancer cases among men in 2016. The following are the leading types:

- Prostate: 180,890
- Lung and bronchus: 117,920
- Colon and rectum: 70,820
- Urinary bladder: 58,950
- Melanoma: 46,870
- Lymphoma: 44,960
- Kidney and renal pelvis: 39,650
- Oral cavity and pharynx: 34,780
- Leukemia: 34,090
- Liver: 28,410
- Pancreas: 27,670

The American Cancer Society projects that 314,290 men will die from cancer in 2016. The following are the leading types:

- Lung and bronchus: 85,920
- Prostate: 26,210
- Colon and rectum: 26,020
- Pancreas: 21,450
103.3 Cancer In Women

The American Cancer Society projects 843,820 new cancer cases among women in 2016. The following are the leading types:

- Breast: 246,660
- Lung and bronchus: 106,470
- Colon and rectum: 63,670
- Uterine corpus: 60,050
- Thyroid: 49,350
- Lymphoma: 36,120
- Melanoma: 29,510
- Leukemia: 26,050
- Pancreas: 25,400
- Kidney and renal pelvis: 23,050
- Ovary: 22,280

The American Cancer Society projects that 281,400 women will die from cancer in 2016. The following are the leading types:

- Lung and bronchus: 72,160
- Breast: 40,450
- Colon and rectum: 23,170
- Pancreas: 20,330
- Ovary: 14,240
- Leukemia: 10,270
- Uterine corpus: 10,470
- Lymphoma: 9,100
- Liver: 8,890
- Brain/nervous system: 6,610

103.4 Trends In Incidence And Mortality

The Annual Report to the Nation on the Status of Cancer, published in January 2016, reported that overall cancer death rates continued to decline in the United States among both men and women, among all major racial and ethnic groups, and for all of
the most common cancer sites, including lung, colon and rectum, female breast, and prostate. However, the report also noted that death rates continued to increase for melanoma of the skin (among men only) and for cancers of the liver, pancreas, and uterus.

The decline in overall cancer death rates continues a trend that began in the early 1990s. Cancer death rates decreased by 1.8% per year among men and by 1.4% per year among women. Death rates among children up to 14 years of age also continued to decrease by 1.8% per year. Death rates during the past decade among men decreased for 10 of the 17 most common cancers (lung, prostate, colon and rectum, leukemia, non-Hodgkin lymphoma, kidney, stomach, myeloma, oral cavity and pharynx, and larynx) and increased for melanoma of the skin and cancers of the pancreas and liver. During the same 10-year period, death rates among women decreased for 15 of the 18 most common cancers (lung, breast, colon and rectum, ovary, leukemia, non-Hodgkin lymphoma, brain and other nervous system, myeloma, kidney, stomach, cervix, bladder, esophagus, oral cavity and pharynx, and gallbladder) and increased for cancers of the pancreas, liver, and uterus.


The report can be accessed online at http://seer.cancer.gov/report_to_nation/.

103.5 The Medical Treatment Marketplace

The U.S. spends about $200 billion annually on cancer care. 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.aptiumoncology.com), which partners with hospitals. Hospitals maintain their own brand in centers co-developed and operated by Aptium.

103.6 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

_________________________________________________________________

In 2014, the American Society of Clinical Oncology (www.asco.org) launched an initiative to evaluate the clinical benefit, toxicity, and costs associated with oncology therapies. The goal is to develop comparison tools to help providers make better decisions about when to prescribe certain cancer drugs.

103.7 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 2016

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 2016

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%.

### 110.8 Episode Payment Model

According to the National Comprehensive Cancer Network (www.nccn.org), new payment schemes that provide optimal patient care and control healthcare costs are needed.

The results of a five-year, 801-patient study of an episode payment model for treatment of breast, lung, and colon cancers was reported in the *Journal of Oncology Practice*, an American Society of Clinical Oncology publication. In the pilot study, five medical oncology groups collaborated with UnitedHealthcare to reimburse physicians at a fixed price rather than on a fee-for-service basis. In treatment of the 801 patients, the oncology groups performed comparably well to the national average on more than 60 measures of quality and cost, including admissions for treatment-related symptoms, lengths of patient relapse, survival rates, radiology use, and drug costs per episode. There was an increase in the use of chemotherapy drugs overall, with actual costs more than $13 million greater than predicted. Overall, there was a $33 million savings, or 34% of total treatment costs.
“The ASCO supports payment reform ... new payment approaches should aim not only to improve efficiency, but to cover the full range of services that provide high-quality cancer care. That’s something that is not reimbursed by current payment systems.”

Richard Schilsky, M.D.
Chief Medical Officer
American Society of Clinical Oncology
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CARDIOVASCULAR DISEASE

104.1 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.

104.2 Prevalence And Mortality
According to 2016 Heart Disease and Stroke Statistics, by the American Heart Association (www.heart.org), 85.6 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

2016 Heart Disease and Stroke Statistics reports 800,937 annual deaths in the U.S. attributed to CVD: 398,086 women and 402,851 men. The following is the distribution of mortality by type of CVD:
- Coronary heart disease: 50%
- Stroke: 16%
- High blood pressure: 8%
“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.”

2016 Heart Disease and Stroke Statistics

104.3 Cost

According to 2016 Heart Disease and Stroke Statistics, direct costs of cardiovascular diseases and stroke are $193.1 billion, distributed as follows:

- Hospital inpatient stays: $90.1 billion
- Hospital outpatient or office-based provider visits: $42.4 billion
- Prescribed medications: $32.8 billion
- Home healthcare: $20.2 billion
- Hospital emergency department visits: $7.6 billion

The distribution of direct costs by type of cardiovascular disease is as follows:

- Coronary heart disease (included in the above total): $108.7 billion
- Hypertensive disease: $45.0 billion
- Stroke: $17.2 billion
- Other circulatory conditions: $22.2 billion

Indirect costs (i.e., lost productivity from morbidity and mortality) are estimated at $123.5 billion. Total direct and indirect costs are $316.6 billion.

104.4 Cardiac Surgery

2016 Heart Disease and Stroke Statistics reports the following number of inpatient cardiovascular procedures:
• Diagnostic cardiac catheterizations: 1,029,000 procedures
• Coronary Angioplasty (PCI): 955,000 procedures/492,000 patients
  - Stenting (in conjunction with angioplasty): 454,000 procedures
• Cardiovascular revascularization (bypass): 397,000 procedures/219,000 patients
• Pacemakers: 159,000 procedures
• Valve procedures: 106,000 procedures
• Endarterectomy: 100,000 procedures
• Implantable defibrillators: 97,000 procedures

Mean hospital charges for procedures are as follows:
• Heart transplantation: $676,328
• Valve procedures: $190,194
• Implantable defibrillators: $152,384
• Cardiovascular revascularization (bypass): $149,480
• Pacemakers: $74,515
• Coronary Angioplasty (PCI): $70,027
• Diagnostic cardiac catheterizations: $47,862
• Endarterectomy: $38,847

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 IMS Health (www.imshealth.com), the number of angioplasty procedures performed each year has declined by 10% to 15% since 2006.

104.5 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 arteries.
coronary arteries. Statins are assessed in section 105.2 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.

104.6 Market Resources
American College of Cardiology, 240 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)
105

CHOLESTEROL LEVELS

105.1 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.

105.2 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. Products include atorvastatin (Lipitor), fluvastatin (Lescol), lovastatin (Mevacor, Altocor), pitavastatin (Livalo), pravastatin (Pravachol), rosvastatin (Crestor)
and simvastatin (Zocor). 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.

Potential adverse side effects of statins include increased concentrations of liver enzymes, muscle problems, an increased risk of diabetes, and several other conditions with lower risks.
106

CHRONIC CONDITIONS

106.1 Prevalence

According to the Institute of Medicine (IOM, www.iom.edu), 133 million people have multiple (two or more) chronic illnesses. Chronic diseases account for 70% of all deaths.

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>
<tr>
<td>35-to-54</td>
<td>41.8%</td>
<td>24.8%</td>
<td>33.4%</td>
</tr>
<tr>
<td>55-to-64</td>
<td>22.7%</td>
<td>20.3%</td>
<td>57.0%</td>
</tr>
<tr>
<td>65 and older</td>
<td>8.5%</td>
<td>14.9%</td>
<td>76.6%</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
106.2 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

106.3 Healthcare Spending

According to the Institute of Medicine, treatment of patients with chronic illnesses accounts for 75% of U.S. healthcare spending.

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 study 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>
</tbody>
</table>
• 45-to-54: 15% 11%
• 55-to-64: 18% 5%
• 65-to-79: 29% 3%
• 80 and above: 14% 1%

Dartmouth researchers found that people with chronic illness account for about 32% of total Medicare spending during the last two years of life.

### 106.4 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).
107

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

107.1 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.

107.2 Prevalence
According to the American Lung Association (www.lungusa.org), COPD is the fourth-leading cause of death in America, claiming the lives of 120,000 Americans annually. More than 12 million people are diagnosed each year with COPD. The disease is associated with over 650,000 hospital discharges annually.

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.

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.

107.3 Cost
According to the American Lung Association, 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
107.4 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.

107.5 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, 1309 Pennsylvania Avenue, Suite 800, Washington, DC 20004. (202) 785-3355. (www.lungusa.org)
108

COLDS

108.1 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.

108.2 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.

108.3 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.
109

COSMETIC & RECONSTRUCTIVE SURGERY

109.1 Market Assessment
According to the American Society of Plastic Surgeons (www.plasticsurgery.org, ASPS), 15.9 million cosmetic procedures were performed in 2015, a 2% increase over 2014. Of the 15.9 million procedures, 14.2 million were minimally invasive; 1.7 million were surgical.

Reconstructive plastic surgery, which improves function and appearance to abnormal structures, increased 1% in 2015, with 5.8 million procedures performed.
Total spending for cosmetic surgery in 2015 was $13.2 billion.

109.2 Procedures
Cosmetic and reconstructive procedures performed in 2015 were as follows (change from 2014 in parenthesis):

Cosmetic Surgical Procedures
• Breast augmentation: 279,000 (-2%)
• Liposuction: 225,000 (5%)
• Nose reshaping: 218,000 (no change)
• Eyelid surgery: 204,000 (-1%)
• Tummy tuck: 128,000 (9%)

Cosmetic Minimally Invasive Procedures
• Botulinum toxin type A: 6.7 million (1%)
• Soft tissue fillers: 2.3 million (6%)
• Chemical peel: 1.3 million (5%)
• Laser hair removal: 1.1 million (no change)
• Microdermabrasion: 800,000 (-9%)

Reconstructive Procedures
• Tumor removal: 4.5 million (1%)
• Laceration repair: 253,000 (1%)
• Maxillofacial surgery: 200,000 (1%)
• Scar revision: 179,000 (1%)
• Hand surgery: 130,000 (no change)
109.3 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

109.4 Market Resources

American Society of Plastic Surgeons, 444 E. Algonquin Road, Arlington Heights, IL 60005. (847) 288-9900. (www.plasticsurgery.org)
110

DIABETES

110.1 Prevalence And Mortality

According to the Centers for Disease Control and Prevention (CDC, www.cdc.gov), 29.1 million Americans have diabetes, and an estimated 86 million U.S. adults have prediabetes. Diabetes affects 8.3% of all Americans and 11.3% among those ages 20 and older. About 1.9 million Americans are diagnosed with diabetes each year. An estimated 7 million Americans with diabetes do not know they have the disease.

Other conditions common among adults diagnosed with diabetes are as follows (source: CDC):

- Mobility limitation: 63%
- Heart disease: 22%
- Visual impairment: 19%
- Stroke: 9%

In 2015, diabetes was 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).

A study by the Robert Wood Johnson Foundation (www.rwjf.org) reported a dramatic increase in diabetes among children, a condition brought about almost entirely by the increasing rate of youth obesity.

Approximately 800,000 new cases of diabetes develop each year. By 2030, the total number of Americans with diabetes could reach 50 million, with at least 300 million cases worldwide.

Diabetes is the fifth-highest cause of death in the U.S., after heart disease, cancer, stroke, and respiratory illness. Deaths: Leading Causes for 2013, published in February 2016 by the National Center for Health Statistics (www.cdc.gov/nchs), listed 75,578 deaths with diabetes as the primary cause. It is estimated that double that number die each year from related complications.

The Yale Schools of Public Health and Medicine predicts that the number of annual deaths due to diabetes and related complications in the U.S. could triple by 2025, to 622,000.

There is no recognized cure for diabetes, although Type II diabetes symptoms disappear in many patients who undergo bariatric surgery.
110.2 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.

110.3 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.

The cost to patients averages $6,000 a year to manage the disease, excluding the costs of complications such as heart disease, stroke, and liver and kidney damage.

110.4 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.

Among the advances in diabetes treatments is Bydureon (Amylin Pharmaceuticals), a drug for Type II diabetes that is injected once a week, which was approved by the Food and Drug Administration (FDA, www.fda.gov) in 2012. In 2013, the FDA approved canagliflozin (Invokana), a new class of Type II diabetes medication that lowers blood sugar levels without increased hypoglycemia risks or causing weight gain.

_________________________________________________________________

“For decades, the promise has been that a diabetes cure is just five years away – a projected target that has not come any closer.”

*Time*, 2/9/16

_________________________________________________________________
110.5 Market Resources
American Diabetes Association, 1701 North Beauregard Street, Alexandria, VA  22311. (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://vesta.cumc.columbia.edu/wordpress/nbdiabetes)

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)
111

END-OF-LIFE CARE

111.1 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

111.2 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 in 2016 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.
111.3 Hospice And Palliative Care

Hospice and palliative care, which is further assessed in Chapter 26, 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.

111.4 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.

111.5 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.
“The great majority of health systems and hospitals make every effort to encourage patients and their families to complete these documents. Yet various surveys indicate that only about one-third of Americans have made their choices known through these documents.”

Peter Fine, CEO
Banner Health
Modern Healthcare

111.6 Market Resources
National Hospice and Palliative Care Organization, 1731 King Street, Suite 100, Alexandria, VA 22314. (703) 837-1500. (www.nhpco.org)
112

GERIATRIC MEDICINE

112.1 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 represent 16% of the U.S. population in 2016, 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.

112.2 Healthcare Needs Of The Elderly

Hospital & Health Networks (January 2016) provides the following assessment of healthcare needs of the elderly:

- 15.3% of people ages 65 and older had one or more hospital stays in the past year; 22.4% of those ages 85 and older did so.
- 21.3% 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.
- 19.7% of people ages 65-to-74 and 27.6% of people ages 75 and older report that they are in fair or poor health.

Hospitals are adapting certain departments and service lines to meet the needs of aging patients.
“From the emergency department to the OR, hospitals are taking a fresh approach to treating an aging population. In addition to geriatric EDs, innovations encompass hospital-at-home programs, senior-oriented service line adaptations, and wellness programs. Although these offerings require an investment ... they can be seen as a business opportunity as the Baby Boom generation ages.”

Hospitals & Health Networks, 1/16

112.3 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, 3/2/16
112.4 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, 7/20/15*

At the 2015 White House Conference on Aging, President Barack Obama pledged to pursue policies to help seniors remain in their homes. He promised more food assistance for the homebound and time for federal workers who provide care for aging parents.

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, 7/20/15*
112.5 Market Resources
American Geriatrics Society, 40 Fulton Street, 18th Floor, New York, NY 10038. (212) 308-1414. (www.americangeriatrics.org)
113.1 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.
- 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.

113.2 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.

113.3 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.

113.4 Market Resources
MAGNUM - National Migraine Association, 100 N. Union Street, Suite B, Alexandria, VA 22314. (www.migraine.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)
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HIV & AIDS

114.1 Prevalence And Mortality

The *HIV Surveillance Report*, published annually by the Centers for Disease Control and Prevention (CDC, [www.cdc.gov](http://www.cdc.gov)), reports prevalence and mortality data for human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS). According to the 25th edition, published in November 2015, which reported on prevalence in 2014, 1.22 million persons ages 13 years and older are living with HIV infection, including 156,300 (13%) who are unaware of their infection. The number of people infected with AIDS is 490,696.

The estimated incidence of HIV has remained stable overall in recent years, at about 50,000 new HIV infections per year.

In 2014, an estimated 47,352 people were diagnosed with HIV infection in the United States; an estimated 26,688 people were diagnosed with AIDS.

*Deaths: Leading Causes for 2013*, published in February 2016 by the National Center for Health Statistics ([www.cdc.gov/nchs](http://www.cdc.gov/nchs)), listed 6,955 deaths with HIV disease as the primary cause.

*HIV Surveillance Report 2015* estimated the cumulative number of deaths of persons with an AIDS diagnosis in the United States in the 50 states and the District of Columbia at 658,507 adults and adolescents and 4,949 children under age 13 years. This included deaths due to all causes of persons with an AIDS diagnosis.

114.2 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](http://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.
114.3 The AIDS Epidemic

America’s AIDS epidemic has changed dramatically since the late 1990s. Two 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 2016 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.

114.4 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 IMS Health (www.imshealth.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.

### 114.5 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

114.6 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)
HYPERTENSION

115.1 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, 5/16

115.2 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.

115.3 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.

115.4 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.

“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

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
ational “Million Hearts” campaign of getting 70% of hypertension patients to lower their blood pressure to recommended levels by 2017.

“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*
116 INFECTIONS

116.1 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 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 home. The high mortality is, in part, because patients being treated for chronic conditions often have weakened immune systems that make them especially vulnerable.

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.

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.

116.2 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.

**116.3 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.

“In 2014, 11% of patients discharged from an acute care hospital had a sepsis diagnosis and 48% of patients who died in a hospital suffered from sepsis. Nationally, the mortality rate for sepsis is between 25% and 50.”

*Hospitals & Health Networks, 1/16*

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.

**116.4 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)
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INFECTION DISEASES

117.1 Overview

Various infectious diseases are assessed in this handbook, as follows:

- Colds: Chapter *
- HIV/AIDS: Chapter *
- Influenza: Chapter *

Other infectious diseases are assessed in this chapter.

117.2 Prevalence

The National Center for Health Statistics (HCHS, www.cdc.gov/nchs) reports the following number of cases for common infectious diseases (most recent data available; reporting year varies by disease):

- Salmonellosis: 53,800
- Whooping cough (pertussis): 48,277
- Lyme Disease (confirmed): 27,203
- Chickenpox (Varicella): 13,447
- Tuberculosis: 9,945
- 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

117.3 Mortality

Deaths: Leading Causes for 2013, published in February 2016 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:
<table>
<thead>
<tr>
<th>Disease</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza and pneumonia:</td>
<td>56,979</td>
</tr>
<tr>
<td>Septicemia or sepsis (blood infection):</td>
<td>38,156</td>
</tr>
<tr>
<td>Viral hepatitis:</td>
<td>8,157</td>
</tr>
<tr>
<td>Human immunodeficiency virus (HIV/AIDS) disease:</td>
<td>6,955</td>
</tr>
<tr>
<td>Tuberculosis:</td>
<td>555</td>
</tr>
<tr>
<td>Meningococcal infection:</td>
<td>59</td>
</tr>
<tr>
<td>Syphilis:</td>
<td>49</td>
</tr>
<tr>
<td>Salmonella infections:</td>
<td>40</td>
</tr>
<tr>
<td>Other intestinal infections:</td>
<td>6,007</td>
</tr>
<tr>
<td>Other and unspecified infectious and parasitic diseases:</td>
<td>10,766</td>
</tr>
</tbody>
</table>

### 117.4 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 December 2013, the FDA approved Sovaldi (sofosbuvir) or 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 $6 billion during the first six months of 2014, making it the most successful drug launch in U.S. pharmaceutical history.

### 117.5 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 2014, there were 25,359 confirmed Lyme disease cases, a 7% drop from the prior year; 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

**117.6 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 644 reported cases in 2014, 397 during the first six months of the year.

Following an outbreak tied to Disneyland in January 2015, 121 cases were reported during the first five weeks of 2015.

**117.7 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
- 2010: 14
- 2011: 14
- 2012: 16
- 2013: 9
- 2014: 9
- 2015: 12

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.

117.8 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.

117.9 Sexually Transmitted Diseases

According to the CDC, 15 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 2014 for STDs are as follows:

<table>
<thead>
<tr>
<th>STD</th>
<th>Cases</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlamydia</td>
<td>1,441,789</td>
<td>456.1</td>
</tr>
<tr>
<td>Gonorrhea</td>
<td>350,062</td>
<td>110.7</td>
</tr>
<tr>
<td>Syphilis, all stages</td>
<td>19,999</td>
<td>6.3</td>
</tr>
</tbody>
</table>
117.10 Tuberculosis

According to the CDC, there were 9,421 tuberculosis (TB) cases reported in the U.S. in 2014, a 2.2% decline from the prior year, to 3.0 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. In March 2014, the CDC reported that 1,100 TB cases were identified among those preparing to enter the U.S. in 2012.

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.

117.11 West Nile Virus

The effects of West Nile virus, which is spread through bites of infected mosquitos, 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>Year</th>
<th>Cases</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>4,269</td>
<td>177</td>
</tr>
<tr>
<td>2007</td>
<td>3,630</td>
<td>124</td>
</tr>
<tr>
<td>2008</td>
<td>1,356</td>
<td>44</td>
</tr>
<tr>
<td>2009</td>
<td>720</td>
<td>32</td>
</tr>
<tr>
<td>2010</td>
<td>981</td>
<td>45</td>
</tr>
<tr>
<td>2011</td>
<td>690</td>
<td>43</td>
</tr>
<tr>
<td>2012</td>
<td>5,674</td>
<td>286</td>
</tr>
<tr>
<td>2013</td>
<td>2,469</td>
<td>119</td>
</tr>
<tr>
<td>2014</td>
<td>2,122</td>
<td>85</td>
</tr>
<tr>
<td>2015</td>
<td>2,060</td>
<td>119</td>
</tr>
</tbody>
</table>

117.12 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 1990s, to 10,000-to-30,000 annually between 2003 and 2010, to over 48,000 cases in 2012. There were 28,639 and 32,971 cases, respectfully, in 2013 and 2014.

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.
117.13 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)
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INFLUENZA

118.1 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.

118.2 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 a 2014 report by the Centers for Disease Control and Prevention (CDC, www.cdc.gov).

Annual productivity losses associated with influenza are $77 billion.

118.3 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.

In the 2007-2008 season, which was considered severe, the vaccine was only 44% effective. For comparison, the strains in the 2011-2012 influenza vaccine were well matched to the viruses and the strains were similar to the prior season, giving many people additional immunity. The 2011-2012 flu season did not start until late February 2012 and was considered very mild.
“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
*Fortune*, 2/1/15

The 2012-2013 flu season was severe and a national flu epidemic was declared by the CDC; Boston and New York State declared public-health emergencies.

The 2013-2014 flu season started mild, with 2.5 cases per 100,000 in December, but increased in intensity to 9.7 per 100,000 in January.

The CDC reported the 2014-2015 flu season at an epidemic level, meaning a higher than usual number of cases. During the last week of 2014, overall flu-related hospitalizations were 12.6 per 100,000 people, a 41.6% increase from the prior year.

The CDC reported that the 2015-2016 influenza season was milder than the previous three seasons and peaked later than normal. The Influenza Hospitalization Surveillance Network (FluSurv-NET) reported the rate of influenza hospitalizations at 21.4 per 100,000 people, a sharp decline from 60.7 per 100,000 people during the 2014-2015 flu season. There were 33 influenza-associated pediatric deaths reported to the CDC, far fewer than in each of the past three seasons when they ranged from 111 to 171.

### 118.4 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](http://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.

According to the CDC, getting a flu vaccine reduces a child’s risk of flu-related intensive care hospitalization by 74%.

The 2014-2015 influenza vaccine was only 23% effective, chiefly because the majority of circulating influenza A (H3N2) viruses – the most prevalent subtype – did not match the vaccine’s H3N2 component. The 2015-2016 influenza vaccine showed 59% effectiveness.
According to Francis Collins, M.D., director of the National Institutes of Health (www.nih.gov), a universal flu vaccination replacing annual shots developed for specific flu viruses is possible within five years.

“A universal flu vaccine seemed completely out of reach only a few years ago. That’s because flu viruses mutate yearly, causing small changes in surface coatings, which make old vaccines obsolete. However, scientists have recently found there are parts of the viral coat that don’t change. If you designed a vaccine to go after the constant part of the virus, you’d be protected against all strains.”

Francis Collins, M.D., Director
National Institutes of Health
INJURIES

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INJURIES

119.1 Incidence

The Centers for Disease Control and Prevention (CDC, www.cdc.gov) reported 28,728,927 admissions to U.S. hospital emergency departments in 2014 (most recent data available) due to unintentional injury.

Injury admissions by cause were as follows:

- Non-Transportation: 24,179,780
  - Fall: 9,163,980
  - Struck by/against: 4,083,298
  - Overexertion: 3,132,271
  - Cut/pierce: 1,989,505
  - Poisoning: 1,231,033
  - Bites (other than dog)/stings: 1,216,927
  - Foreign body: 531,277
  - Fire/burn: 392,811
  - Dog bite: 349,734
  - Machinery: 174,939
  - Inhalation/suffocation: 67,713
  - Natural/environment: 57,680
  - Firearm: 15,928
  - Pellet/BB gun: 11,123
  - Drowning/submersion: 9,642
  - Other specified: 1,751,918

- Transportation: 3,826,336
  - Motor Vehicle Occupant: 2,412,109
  - Pedal cyclist (bicyclist, etc.): 480,212
  - Motorcyclist: 224,545
  - Pedestrian: 189,581
  - Other: 519,890

- Unknown/unspecified: 722,511

Emergency rooms also reported 2,109,815 admissions in 2014 (most recent data available) for non-fatal violence-related injuries.
119.2 Fatalities

Deaths: Leading Causes for 2013, published in February 2016 by the National Center for Health Statistics (www.cdc.gov/nchs), reported accidents (i.e., unintentional injuries) as the cause of 130,577 deaths, distributed as follows:

- Transport accidents: 37,938
  - Motor vehicle accidents: 35,369
  - Water, air and space, and other transport accidents and their sequela: 1,569
  - Other land transport accidents: 1,000
- Non-transport accidents: 92,619
  - Accidental poisoning and exposure to noxious substances: 38,851
  - Falls: 30,208
  - Accidental drowning and submersion: 3,391
  - Accidental exposure to smoke, fire and flames: 2,760
  - Accidental discharge of firearms: 505
  - Other and unspecified accidents and their sequela: 16,904

119.3 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 went to the emergency department and nearly 200,000 were then hospitalized for crash injuries in 2012. 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.

119.4 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.

119.5 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.

119.6 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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KIDNEY DISEASE

120.1 Prevalence And Expenditures

According to the National Kidney Foundation (NKF, www.kidney.org), approximately 26 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 of those at risk are not even aware of it.

According to the 2015 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), 661,648 patients suffer from end-stage renal disease (ESRD), distributed by level of care as follows:

- Hemodialysis: 63.7%
- Transplant: 29.2%
- Peritoneal dialysis: 6.8%

2015 Annual Data Report reported 117,162 incident (newly reported) ESRD cases, distributed as follows:

- Hemodialysis: 88.2%
- Peritoneal dialysis: 9.0%
- Transplant: 2.6%

About 18,000 people die each year of kidney disease.

120.2 Kidney Transplants

In 2015, 17,878 kidney transplants were performed in the U.S., according to the Organ Procurement and Transplantation Network (http://optn.transplant.hrsa.gov). The U.S. Renal Data System reported inpatient and outpatient costs per person for transplants at $158,138.

As of June 2016, 107,921 people were on a wait list for a kidney transplant. Organ transplants are assessed in Chapter 124 of this handbook.

More and more people with failing kidneys are skipping dialysis and going directly to transplant. Pre-emptive kidney transplants represented 15% of all
transplants in 2014, according to the U.S. Renal Data System, an increase from 9% in the early 1990s.

120.3 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 400,000 people in the United States are receiving dialysis 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 $38 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 $17.1 billion and $14.2 billion, respectively, in 2015.

120.4 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.

120.5 ESCOs
In 2013, the CMS introduced 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.
A pilot program launched in 2015.
“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

120.6 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 Kt/V 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.

120.7 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)
OBESITY

121.1 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.

121.2 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%

121.3 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.

121.4 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

121.5 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 June 2016, 1,590 physicians had been certified.

121.6 Market Resources
American Board of Obesity Medicine, 3515 S. Tamarac Drive, Suite 200, Denver, CO 80237. (303) 770-9100. (www.abom.org)

Obesity Action Coalition, 4511 North Himes Avenue, Suite 250, Tampa, FL 33614. (800) 717-3117. (www.obesityaction.org)

State of Obesity, a project of the Trust for America’s Health and the Robert Wood Johnson Foundation. (http://stateofobesity.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, 8757 Georgia Avenue, Suite 1320, Silver Spring, MD 20910. (301) 563-6526. (www.obesity.org)
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OBSTETRICS

122.1 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 NVSS Birth Data, published in September 2015 by the National Center for Health Statistics (www.cdc.gov/nchs), there were 3,988,076 births in the U.S. in 2014, a birth rate of rate 12.5 per 1,000 population. This is slightly higher than the 3,957,577 births in the U.S. in 2013, and 8% below the all-time high of 4,316,233 in 2007.

Although the overall number of births held steady in 2014, the fertility rate fell to a new all-time low of 62.9 births per 1,000 women ages 15-to-44. This is 9% below the rate of 69.3 in 2007.

The fertility rates of women ages 15-to-19, 20-to-24, and 25-to-29 all fell to new record lows. In 2014, 40.2% of mothers were unmarried.

The first-birth rates for women in their late 30s and early 40s were 11.0 per 1,000 and 2.6 per 1,000, respectively, in 2014.

“The average age of women giving birth for the first time has risen over the past four decades. Older mothers face increased health risks, but these women are generally better educated and have more resources than those of younger mothers.”

Hospitals & Health Networks
122.2 Birthing Centers

The American Association of Birthing Centers (www.birthcenters.org) reports the number of birthing centers as follows:

- 2010: 200
- 2011: 230
- 2012: 240
- 2013: 255
- 2014: 290
- 2015: 313

“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, 1/16_

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122.3 Infant and Maternal Mortality

The U.S. infant mortality rate fell by 1.5% in 2013 to a historic low of 597.8 infant deaths per 100,000 live births, according to the Centers for Disease Control and Prevention (CDC, www.cdc.gov).

There were 18.5 maternal deaths per 100,000 live births in the U.S. in 2013, an increase from 12.4 in 1990. The global rate is 209.1, according to the World Health Organization (www.who.org).

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%

122.4 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.

122.5 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.

A 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 (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.
122.6 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.

Because of the lag in federal statistics, it will take time to determine if the recommendation impacts the cesarean delivery rate.

_________________________________________________________________

“The prevention of maternal complications and C-sections stands to save significant costs. The mean cost per stay for a vaginal delivery without complications was $2,900 in 2008, compared with $3,800 for vaginal delivery with complications, $4,700 for a C-section without complications, and $6,500 for a cesarean with complications, according to the Agency for Healthcare Research and Quality.”

Hospitals & Health Networks

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122.7 Market Resources

American Association of Birthing 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)
OPHTHALMOLOGY & OPTOMETRY

123.1 Cost

The American Academy of Ophthalmology (AAO, www.aao.org) estimates that eye disease costs the U.S. about $51.4 billion each year. Costs to Medicare for indirect expenses related to eye disease, including nursing care and assisted-living facilities, are about $2 billion.

To increase public awareness of eye diseases, the AAO has launched EyeSmart, a campaign focusing on five major eye diseases: age-related macular degeneration, cataracts, diabetic retinopathy, dry eye, and glaucoma.

123.2 Prevalence

Blindness or low vision affects 4.2 million Americans ages 40 and older, or one in 28, according to the National Eye Institute (NEI, www.nei.nih.gov). This figure is projected to reach 5.5 million by 2020.

Low vision and blindness increase significantly with age, particularly among people over age 65. People 80 years of age and older currently make up 8% of the population, for example, but account for 69% of blindness.

Of the 4.2 million vision-impaired Americans, 1.3 million are blind (0.8% of the population) and 2.4 million have low vision.

Approximately 30% of the U.S. population is 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.

123.3 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, a figure that is projected to increase to 7.2 million by 2020.
• 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.
• The number of Americans affected by the disease is expected to increase by about 600,000 by 2020.

123.4 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 Centers for Disease Control and Prevention (CDC, www.cdc.gov), 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%).

123.5 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.

### 123.6 Market Resources

American Academy of Ophthalmology, P.O. Box 7424, San Francisco, CA 94120. (415) 561-8500.  ([www.aao.org](http://www.aao.org))

American Optometric Association, 243 N. Lindbergh Boulevard, First Floor, St. Louis, MO 63141. (800) 365-2219.  ([www.aoa.org](http://www.aoa.org))

Market Scope, 9859 Big Bend Boulevard, Suite 202, St. Louis, MO 63122. (314) 835-0600.  ([www.market-scope.com](http://www.market-scope.com))

National Eye Institute, 2020 Vision Place, Bethesda, MD 20892. (301) 496-5248.  ([www.nei.nih.gov](http://www.nei.nih.gov))

Prevent Blindness, 211 West Wacker Drive, Suite 1700, Chicago, IL 60606.  ([www.preventblindness.org](http://www.preventblindness.org))

Vision Council of America, 225 Reinekers Lane, Suite 700, Alexandria, VA 22314. (703) 548-4560.  ([www.thevisioncouncil.org](http://www.thevisioncouncil.org))
124.1 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.

124.2 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.

124.3 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:

- 2005: 28,113
- 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: 30,969
Of transplants in 2015, 24,980 were through deceased donors; 5,989 from living donors.

The number of transplants in 2015 by organ were as follows (source: OPTN):

- Kidney: 17,878
- Liver: 7,127
- Heart: 2,804
- Lung: 2,057
- Kidney/pancreas: 719
- Pancreas: 228
- Intestine: 141
- Heart/lung: 15

### 124.4 Wait List

There were 123,067 candidates waiting on organs as of June 2016, of which 65.8% were classified as active candidates. Some transplant candidates are temporarily classified as “inactive” by their transplant center because they are medically unsuitable for transplantation or need to complete other eligibility requirements.

The wait list by organ in June 2016 was as follows (source: OPTN):

- Kidney: 107,921
- Liver: 15,199
- Heart: 4,179
- Kidney/pancreas: 1,979
- Lung: 1,478
- Pancreas: 1,001
- Intestine: 270
- Heart/lung: 40

### 124.5 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.donatelifeline.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.

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“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

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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.

124.6 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. Organs would go into the donor system, not be sold to individuals. A Pennsylvania plan to offer a $300 “funeral benefit” several years ago was blocked by the federal ban.
- LifeSharers (www.lifesharers.org), a not-for-profit network of organ donors, is working to increase the organ supply by putting incentives to work now. LifeSharers’ members direct that their organs first be offered to other members. Non-members can have a member’s organs if no member can use them when they become available. As 9,000-member LifeSharers grows (people can join at no charge), so too does the incentive to become a registered donor. This should make the system more fair because chances of receiving an organ will be greater for those who have agreed to be a donor.
Since 2004, MatchingDonors.com, a not-for-profit website, has aided patients who need a liver or kidney in finding living donors. Patients seeking to bypass the normal wait for an organ can join MatchingDonors for fees starting at $295. There are some 2,000 donors who offer organs for nothing more than goodwill. There are ethical concerns about the process of online-assisted organ procurement, however. UNOS has come out against the website, saying it takes advantage of vulnerable transplant candidates and donors and subverts the equal allocation of organs.

Arkansas, Georgia, Iowa, Minnesota, New Mexico, North Dakota, Utah, and Wisconsin allow tax deductions of up to $10,000 to compensate living donors for travel, expenses, or lost income. This is legal because the money comes from the state. Still, it is controversial.

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.

124.7 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.

124.8 Market Resources
American Society of Transplant Surgeons, 2461 South Clark Street, Suite 640, Arlington, VA 22202. (703) 414-7870. (www.asts.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)

OrganDonor.gov, the U.S. government website for organ and tissue donation and transplantation.

Organ Procurement and Transplantation Network (http://optn.transplant.hrsa.gov)

Scientific Registry of Transplant Recipients, 914 South 8th Street, Suite S-4.100, Minneapolis, MN 55404. (877) 970-7787. (www.srtr.org)

United Network for Organ Sharing, P.O. Box 2484, Richmond, VA 23218. (804) 782-4800. (www.unos.org)
125.1 Orthopedic Surgery

The American Academy of Orthopedic Surgeons (AAOS, www.aaos.org) lists the following as the primary orthopedic subspecialties:

- Hand surgery
- Shoulder and elbow surgery
- Total joint reconstruction (arthroplasty)
- Pediatric orthopedics
- Foot and ankle surgery
- Spine surgery (also performed by neurosurgeons)
- Musculoskeletal oncology
- Surgical sports medicine
- Orthopedic trauma

According to applications for board certification, the most common procedures (in order) performed by orthopedic surgeons are as follows:

- Knee arthroscopy and meniscectomy
- Shoulder arthroscopy and decompression
- Carpal tunnel release
- Knee arthroscopy and chondroplasty
- Removal of support implant
- Knee arthroscopy and anterior cruciate ligament reconstruction
- Knee replacement
- Repair of femoral neck fracture
- Repair of trochanteric fracture
- Debridement of skin/muscle/bone/fracture
- Knee arthroscopy repair of both menisci
- Hip replacement
- Shoulder arthroscopy/distal clavicle excision
- Repair of rotator cuff tendon
- Repair fracture of radius (bone)/ulna
- Laminectomy
- Repair of ankle fracture (bimalleolar type)
- Shoulder arthroscopy and debridement
• Lumbar spinal fusion
• Repair fracture of the distal part of radius
• Low back intervertebral disc surgery
• Incise finger tendon sheath
• Repair of ankle fracture (fibula)
• Repair of femoral shaft fracture
• Repair of trochanteric fracture

125.2 Back Pain And Spinal Surgery

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

According to data compiled by researchers from the University of Washington School of Medicine, annual spending on spine problems is approximately $85 billion. Studies suggest that much of the spending for x-rays, CT scans, injections, and surgeries is unnecessary. Most acute back problems resolve themselves on their own.

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. Many of the cases are work-related back conditions, the leading cause of disability in adults. Workers’ compensation pays for a higher proportion of spine surgeries than for any other condition.

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.

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 87% of spinal procedures in 2013 were fusion-based. There were more than 465,000 fusion operations in the U.S. in 2011, compared with 252,400 in 2001, according to the Agency for Healthcare Research and Quality. The estimated cost of spinal fusion procedures was more than $12.8 billion in 2011, according to AHRQ. Hospital costs alone for a procedure average $27,568. Total costs can hit six figures for major spinal fusion procedures.”

Modern Healthcare

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.

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.
125.3 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 2015 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).

125.4 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, 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 consider 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.

125.5 Implant Device And Procedure Costs
Hip and knee implant devices constitute up to 40% of the total cost of replacement procedures.

Hospitals paid an average of $4,320 for a knee implant device in 2014, 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.

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“If a hospital doesn’t agree to accept the reference price, CalPERS and Anthem will not reimburse beyond that $30,000 limit and the insured would be responsible for the difference.”

Hospitals & Health Networks, 2/14

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125.6 Implant Failures
Some artificial implants, generally designed to last 15 years or more, have been failing at unusually high rates after just a few years. Of particular concern is the artificial hip.

A study based on the Australian orthopedic registry, reported in The Journal of Bone and Joint Surgery, showed that not a single new artificial hip or knee introduced over a recent five-year period was any more durable than older ones. In fact, 30% of them fared worse. Another paper in the same journal by researchers in England, which has a registry, also pointed out problems with newer implant designs.

As a result of the growing body of worldwide evidence showing metal-on-metal hip devices have a higher failure rate than those made of plastic or ceramic, the Food
and Drug Administration (FDA, www.fda.gov) has made specific recommendations for follow-up care for patients with the devices.

125.7 Foot And Ankle Problems
According to the American Academy of Orthopaedic Surgeons (www.aaos.org), one in six people in the U.S., or 43 million, have foot problems. Of those, 36% regard theirs as serious enough for medical attention.

According to the AOFAS, the national expenditures for surgery to correct foot problems from tight-fitting shoes is $2 billion a year. If time off from work for the surgery and recovery is included, the annual cost is $3.5 billion. Women have approximately 90% of the almost 530,000 surgeries annually.

More than three million Americans each year seek treatment for inflammation of the plantar fascia, a gristle-like connector that runs between the heel and toes and helps support the arch. Runners and women in their 40s and 50s are especially vulnerable. Anyone who spends a lot of time on his or her feet, walks or runs on hard surfaces, is overweight, or has tight Achilles tendons is susceptible. The worst chronic cases have traditionally been treated with surgery to snip part of the fascia to loosen it. According to Glenn Pfeffer, M.D., president of the American Orthopaedic Foot & Ankle Society (AOFAS, www.aofas.org), about 5% of recalcitrant cases require surgery. For moderate sufferers, simple, inexpensive home remedies such as stretching exercises to loosen the Achilles tendon can be sufficient to provide relief.

125.8 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.

“Medicare will save money by bundling the payment for the entire care episode and reducing its payment slightly from the previous year's average. The hospital is at risk if costs are above that price, and it gets to keep any savings if they are below the price.”

Modern Healthcare, 4/11/16
The CMS estimates the program will reduce payments to hospitals by $153 million over the next five years.

125.9 Market Resources
American Academy of Orthopedic Surgeons, 9400 West Higgins Road, Rosemont, IL 60018. (847) 823-7186. (www.aaos.org)

American Association of Hip and Knee Surgeons, 9400 W. Higgins Road, Rosemont, IL 60018. (847) 698-1200. (www.aahks.org)

American Orthopaedic Foot & Ankle Society, 9400 West Higgins Road, Rosemont, IL 60018. (800) 235-4855. (www.aofas.org)
OSTEOPOROSIS

126.1 Prevalence and Diagnosis
According to the National Osteoporosis Foundation (NOF, www.nof.org), an estimated 9 million individuals in the U.S. have osteoporosis, and almost 54 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.

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.

In 2011, the NOF issued a recommendation 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.

126.2 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.

126.3 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

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“Adults under age 50 need a total of 1,000 mg of calcium from all sources every day. Adults 50 and older need a total of 1,200 mg of calcium from all sources every day.”

National Osteoporosis Foundation

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126.4 Market Resources

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PAIN MANAGEMENT

127.1 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 25.3 million U.S. adults suffer from pain daily, while 126.1 adults reported some pain in the previous three months, according to a 2015 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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127.2 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

It is estimated that treating soldiers returning from Iraq and Afghanistan for chronic pain will cost $340 billion in coming years.

The pain drug market is approximately $18 billion a year.

### 127.3 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 (http://medicine.umich.edu/medschool) 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 (www.jointcommission.org) 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.
“Each year hospitals perform about 10 million inpatient surgeries and 17 million outpatient surgeries, virtually all of which require some form of pain management.”

Hospitals & Health Networks

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.

127.4 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.

127.5 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.
Fearful about the widespread abuse of prescription narcotics, some doctors are worrying about legal risks in prescribing pain medications while some pharmacists are balking at dispensing pain medications for ethical reasons.

127.6 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)
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PARKINSON’S DISEASE

128.1 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.

128.2 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
128.3 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.

128.4 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.

128.5 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)
129.1 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.

129.2 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...
affects about 500,000 people. Remicade was subsequently approved as a treatment for 16 indications, including rheumatoid arthritis, and is being used off-label for 15 additional indications.

“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*

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**129.3 Top-Selling Orphan Drugs**

*Medical Pharmacy Trend Report, 6th Edition*, published in 2015 by Magellan Rx Management (www.magellanrxinsights.com), ranked the top-selling orphan drugs as follows:
129.4 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)

Magellan Rx Management, 6870 Shadowridge Drive, Suite 111, Orlando, FL 32812. (866) 664-2673. (www.magellanhealth.com)

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)
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ROBOTIC SURGERY

130.1 Overview
Considered the leading edge technology in surgery, more than 450,000 robotic procedures were performed in U.S. hospitals in 2015.

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.makosurgica.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).

130.2 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.
130.3 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.
130.4 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)

“Hospitals of all size say they are developing credentialing programs and limiting access to the system to the most experienced and skilled surgeons. 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. Experts say surgeons need experience with 20 to 30 robot-assisted procedures before they are adequately trained.”

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SCREENING

131.1 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 2016:

131.2 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.
132

SHARED DECISION MAKING

132.1 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.

132.2 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.”

*Modern Healthcare, 1/25/16*

### 132.3 Primary Care Demonstration Sites

To demonstrate the integration of shared decision making, the Foundation for Informed Medical Decision Making ([www.informedmedicaldecisions.org](http://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)
132.4 **Breast Cancer Initiative**

An initiative launched by the Foundation for Informed Medical Decision Making ([www.informedmedicaldecisions.org](http://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)

132.5 **Market Resources**

Informed Medical Decisions Foundation, 40 Court Street, Suite 300
Boston, MA 02108. (617) 367-2000. ([www.informedmedicaldecisions.org](http://www.informedmedicaldecisions.org))
SLEEP DISORDERS

133.1 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.

### 133.2 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
133.3 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

133.4 Sleep-Deprived Demographics

Prevalence Of Healthy Sleep Duration Among Adults, published in February 2016 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 Experian Simmons (www.experian.com/simmons) 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

133.5 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 IMS Health (www.imshealth.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 market share of about 75%. Lunesta (Sepracor) and Rozerem (Takeda Pharmaceutical), introduced in 2005, are designed for longer-term use than drugs previously on the market. The use of some of these medications has come under attack because of dangerous (although rare) side effects, such as occurrences of sleepwalking and even driving under the drug’s influence.

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.
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.

133.6 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/ncsdr)

National Sleep Foundation, 1010 N. Glebe Road, Suite 310, Arlington, VA 22201. (703) 243-1697. (www.sleepfoundation.org)
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SURGERY

134.1 Overview

Including surgeries performed at hospitals, ambulatory surgery centers, and in physicians offices, over 99 million surgical procedures are performed annually, according to the U.S. Department of Health & Human Services (HHS, www.hhs.gov). Of these, 53 million are outpatient procedures and 46 million are inpatient procedures. More than a quarter of surgeries are performed at hospitals; the majority are performed in surgery centers, outpatient clinics, and physicians' offices.

“Each year hospitals perform about 10 million inpatient surgeries and 17 million outpatient surgeries.”

Hospitals & Health Networks

134.2 Ambulatory and Inpatient Surgery

The percentage of surgeries done in an ambulatory setting varies widely by body system. Hospital-Based Ambulatory Surgery, by the Agency for Healthcare Research and Quality (AHRQ, www.ahrq.gov), reports the distribution as follows:

<table>
<thead>
<tr>
<th>Body System</th>
<th>Ambulatory</th>
<th>Inpatient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular</td>
<td>29.4%</td>
<td>70.6%</td>
</tr>
<tr>
<td>Digestive</td>
<td>66.8%</td>
<td>32.2%</td>
</tr>
<tr>
<td>Ear</td>
<td>96.3%</td>
<td>3.7%</td>
</tr>
<tr>
<td>Endocrine</td>
<td>46.0%</td>
<td>54.0%</td>
</tr>
<tr>
<td>Eye</td>
<td>99.3%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Male genital</td>
<td>9.3%</td>
<td>90.7%</td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>54.0%</td>
<td>46.0%</td>
</tr>
<tr>
<td>Nervous</td>
<td>47.9%</td>
<td>52.1%</td>
</tr>
</tbody>
</table>
• Nose, mouth, pharynx: 93.8% 6.2%
• Respiratory: 31.2% 68.8%
• Skin: 70.4% 29.6%
• Urinary: 61.7% 38.3%

134.3 Surgeries At Community Hospitals
In 2015, the AHRQ reported 26.8 million surgeries annually at U.S. community hospitals, a 17% increase from 1992, distributed as follows:
• Outpatient (ambulatory): 17.3 million (65% of all surgeries)
• Inpatient: 9.5 million (35% of all surgeries)

The most common ambulatory and inpatient procedures at community hospitals are assessed in Section 134.2 of this handbook.

134.4 Quality Standards
The American Hospital Association (www.aha.org) teamed with the Centers for Medicare and Medicaid Services (www.cms.gov), the Agency for Healthcare Research and Quality, the American College of Surgeons (www.facs.org), and the Institute for Healthcare Improvement (www.ihi.org), among others, to launch 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.
134.5 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
PREVALENCE OF MENTAL ILLNESS

135.1 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.

135.2 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% received 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 have experienced 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.

135.3 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>

• Nevada: 16.05% 327,000 3
• New Hampshire: 18.53% 190,000 23
• New Jersey: 14.66% 982,000 1
• New Mexico: 19.59% 300,000 37
• New York: 18.61% 2,792,000 24
• North Carolina: 16.84% 1,213,000 5
• North Dakota: 17.21% 90,000 9
• Ohio: 19.64% 1,709,000 39
• Oklahoma: 21.88% 609,000 50
• Oregon: 20.89% 624,000 48
• Pennsylvanian: 17.99% 1,765,000 18
• Rhode Island: 18.80% 154,000 25
• South Carolina: 19.56% 688,000 36
• South Dakota: 17.77% 108,000 14
• Tennessee: 20.25% 979,000 44
• Texas: 16.86% 3,104,000 6
• Utah: 22.35% 431,000 51
• Vermont: 19.39% 96,000 33
• Virginia: 17.50% 1,063,000 12
• Washington: 20.77% 1,074,000 47
• West Virginia: 21.38% 308,000 49
• Wisconsin: 17.98% 778,000 17
• Wyoming: 19.60% 84,000 38
<table>
<thead>
<tr>
<th>State</th>
<th>Prevalence</th>
<th>Population</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kansas</td>
<td>7.90%</td>
<td>165,000</td>
<td>11</td>
</tr>
<tr>
<td>Kentucky</td>
<td>7.42%</td>
<td>242,000</td>
<td>6</td>
</tr>
<tr>
<td>Louisiana</td>
<td>8.48%</td>
<td>285,000</td>
<td>23</td>
</tr>
<tr>
<td>Maine</td>
<td>8.52%</td>
<td>89,000</td>
<td>24</td>
</tr>
<tr>
<td>Maryland</td>
<td>7.92%</td>
<td>350,000</td>
<td>12</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>9.33%</td>
<td>479,000</td>
<td>37</td>
</tr>
<tr>
<td>Michigan</td>
<td>8.92%</td>
<td>668,000</td>
<td>29</td>
</tr>
<tr>
<td>Minnesota</td>
<td>9.22%</td>
<td>372,000</td>
<td>35</td>
</tr>
<tr>
<td>Mississippi</td>
<td>7.24%</td>
<td>157,000</td>
<td>4</td>
</tr>
<tr>
<td>Missouri</td>
<td>8.14%</td>
<td>367,000</td>
<td>17</td>
</tr>
<tr>
<td>Montana</td>
<td>10.38%</td>
<td>79,000</td>
<td>49</td>
</tr>
<tr>
<td>Nebraska</td>
<td>8.97%</td>
<td>122,000</td>
<td>31</td>
</tr>
<tr>
<td>Nevada</td>
<td>10.31%</td>
<td>210,000</td>
<td>47</td>
</tr>
<tr>
<td>New Mexico</td>
<td>9.54%</td>
<td>146,000</td>
<td>41</td>
</tr>
<tr>
<td>New Jersey</td>
<td>8.03%</td>
<td>538,000</td>
<td>15</td>
</tr>
<tr>
<td>New York</td>
<td>8.36%</td>
<td>1,255,000</td>
<td>19</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>8.73%</td>
<td>90,000</td>
<td>25</td>
</tr>
<tr>
<td>North Dakota</td>
<td>10.30%</td>
<td>54,000</td>
<td>46</td>
</tr>
<tr>
<td>North Carolina</td>
<td>7.37%</td>
<td>532,000</td>
<td>5</td>
</tr>
<tr>
<td>Ohio</td>
<td>8.86%</td>
<td>771,000</td>
<td>28</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>9.94%</td>
<td>276,000</td>
<td>43</td>
</tr>
<tr>
<td>Oregon</td>
<td>9.49%</td>
<td>283,000</td>
<td>39</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>8.40%</td>
<td>824,000</td>
<td>20</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>10.91%</td>
<td>89,000</td>
<td>50</td>
</tr>
<tr>
<td>South Dakota</td>
<td>10.24%</td>
<td>62,000</td>
<td>45</td>
</tr>
<tr>
<td>South Carolina</td>
<td>8.20%</td>
<td>289,000</td>
<td>18</td>
</tr>
<tr>
<td>Tennessee</td>
<td>7.95%</td>
<td>384,000</td>
<td>13</td>
</tr>
<tr>
<td>Texas</td>
<td>8.07%</td>
<td>1,484,000</td>
<td>16</td>
</tr>
<tr>
<td>Utah</td>
<td>6.79%</td>
<td>131,000</td>
<td>2</td>
</tr>
<tr>
<td>Vermont</td>
<td>9.61%</td>
<td>48,000</td>
<td>42</td>
</tr>
<tr>
<td>Virginia</td>
<td>7.56%</td>
<td>459,000</td>
<td>7</td>
</tr>
<tr>
<td>Washington</td>
<td>9.50%</td>
<td>491,000</td>
<td>40</td>
</tr>
<tr>
<td>West Virginia</td>
<td>7.85%</td>
<td>113,000</td>
<td>10</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>9.08%</td>
<td>393,000</td>
<td>32</td>
</tr>
<tr>
<td>Wyoming</td>
<td>9.35%</td>
<td>40,000</td>
<td>38</td>
</tr>
</tbody>
</table>

### 135.4 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.
135.5 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)

136

COST OF MENTAL ILLNESS

136.1 Direct Expenditures

A May 2016 assessment, published in Health Affairs, assessed annual mental health and substance abuse direct spending at $201 billion, distributed as follows:

- Medicaid: $59.9 billion
- Private insurance: $51.2 billion
- Other government: $45.7 billion
- Medicare: $26.5 billion
- Out-of-pocket: $21.3 billion
- Other private: $5.9 billion

_________________________________________________________________

“Caring for people with mental disorders now exceeds the cost of cardiovascular disease ($147 billion), still the nation’s No. 1 killer. 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, 5/30/16

_________________________________________________________________

According to the Healthcare Cost and Utilization Project, from the Agency for Healthcare Research and Quality (AHRQ, www.ahrq.gov), the following are the top five behavioral health-related hospitalizations (primary diagnosis) and total charges:

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Discharges</th>
<th>Charges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mood disorders</td>
<td>713,377</td>
<td>$8.9 billion</td>
</tr>
<tr>
<td>Schizophrenia and other psychotic disorders</td>
<td>372,749</td>
<td>$6.9 billion</td>
</tr>
<tr>
<td>Substance-related disorders</td>
<td>229,269</td>
<td>$2.5 billion</td>
</tr>
<tr>
<td>Screening</td>
<td>71,507</td>
<td>$2.4 billion</td>
</tr>
<tr>
<td>Delirium, dementia, amnestic, and other cognitive disorders</td>
<td>133,004</td>
<td>$2.3 billion</td>
</tr>
</tbody>
</table>

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According to IMS Health (www.imshealth.com), annual sales in the U.S. of anti-psychotic and anti-depressant medications are $18.2 billion and $11.0 billion, respectively.

### 136.2 Indirect Costs

NIMH estimates loss of earnings due to serious mental illness at $193.2 billion; disability benefits total $24.3 billion each year.

Other indirect costs place the estimate of 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*
137.1 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.

Behavioral health facilities 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.

137.2 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*, February 2016):

**For-Profit and Not-For-Profit Facilities**

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Revenue</th>
<th>Total Acute Beds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheppard &amp; Enoch Pratt Hospital (Baltimore, MD)</td>
<td>$116 million</td>
<td>333</td>
</tr>
<tr>
<td>McLean Hospital (Partners HealthCare System; Belmont, MA)</td>
<td>$108 million</td>
<td>328</td>
</tr>
<tr>
<td>Rogers Memorial Hospital (Rogers Behavioral Health System; Oconomowoc, WI)</td>
<td>$ 94 million</td>
<td>168</td>
</tr>
<tr>
<td>South Oaks Hospital (North Shore-Long Island Jewish Health System; Amityville, NY)</td>
<td>$ 93 million</td>
<td>177</td>
</tr>
<tr>
<td>Pine Rest Christian Mental Health Services (Grand Rapids, MI)</td>
<td>$ 76 million</td>
<td>84</td>
</tr>
<tr>
<td>Butler Hospital (Care New England Health System; Providence, RI)</td>
<td>$ 74 million</td>
<td>143</td>
</tr>
</tbody>
</table>
• Alexian Brothers Behavioral Health Hospital (Hoffman Estates, IL): $72 million 141
• College Hospital Cerritos (Cerritos, CA): $71 million 187
• Christian Health Care Center (Wyckoff, NJ): $70 million 58
• Sharp Mesa Vista Hospital (Sharp HealthCare; San Diego, CA): $67 million 149
• Westwood Lodge Hospital (Universal Health Services; Westwood, MA): $67 million 250
• Brattleboro Retreat (Brattleboro, VT): $62 million 122
• Lakeside Behavioral Health System (Memphis, TN): $61 million 276
• Jewish Home of San Francisco (San Francisco, CA): $59 million 13
• Philhaven Behavioral Healthcare Services (Mount Gretna, PA): $58 million 103

**Government-Run Facilities**
• Napa State Hospital (Napa, CA): $260 million 151
• Spring Grove Hospital Center (Cantonsville, MD): $220 million 569
• Metropolitan State Hospital (Norwalk, CA): $157 million 1,132
• Oregon State Hospital (Salem, OR): $156 million 172
• Western State Hospital (Tacoma, WA): $133 million 771
• North Texas State Hospital (Wichita Falls, TX): $127 million 297
• Greystone Park Psychiatric Hospital (Morris Plains, NJ): $114 million 468
• Ancora Psychiatric Hospital (Hammonton, NJ): $112 million 709
• Central Regional Hospital (Butner, NC): $104 million 404
• Trenton Psychiatric Hospital (West Trenton, NJ): $87 million 400

**137.3 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.

137.4 Market Resources
138.1 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.

138.2 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.

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“The mentally ill still face major barriers to accessing care years after states and municipalities slashed their mental health budgets, resulting in sharp cuts in capacity at inpatient and outpatient treatment facilities. There’s also a dwindling supply of behavioral health professionals.”

Modern Healthcare
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.

In an effort to expand access, the Department of Health and Human Services (HHS, www.hhs.gov) authorized $50 million in funding in 2014 to help community health centers establish or expand behavioral health services for people living with mental illness or addiction. An additional $50 million was made available to finance the construction, expansion, or improvement of mental health facilities in rural areas through 2017.
139

ALCOHOL ADDICTION

139.1 Prevalence

The National Institute on Alcohol Abuse and Alcoholism (NIAAA, www.niaaa.nih.gov) estimates that almost 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.

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.

139.2 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.delancystreetfoundation.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 are alcoholics, 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.

### 139.3 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)
140

SUBSTANCE ABUSE

140.1 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.

**140.2 Opioid Use**

Prescription painkillers account for 16,000 deaths and 475,000 hospital emergency department visits annually in the United States, according to the Trust For America’s Health (www.healthyamericans.org). Opioid analgesics, such as OxyContin and methadone, are involved in about three of every four pharmaceutical overdose deaths.

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.

Recognizing the rise in opioid addiction, many states have tighten laws regarding prescriptions for painkillers.

According to the Centers for Disease Control and Prevention (CDC, www.cdc.gov), 71% of all prescription drug overdose deaths involve prescription opioids.

“The number of deaths from prescription drug overdoses jumped 242% in less than 20 years, from 7,523 in 1999 to more than 25,000 by 2014, according to the National Institutes of Health. The number of opioid prescriptions also rose significantly in the U.S., from 116 million in 1999 to 207 million in 2013.”

*Modern Healthcare, 2/15/16*

**140.3 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 2014 from 370,000 in 2007. There were 8,257 heroin deaths in 2014, according to the CDC.

“After a decline in the 1990s, heroin has come roaring back. The dishing-out of prescription painkillers earlier this century got millions in the West hooked on opioids; a tightening-up of the rules then sent them looking for substitutes. The heroin dealers were waiting. In America, where this trend is most acute, the number of annual users has almost doubled in the six years to 2013; overdoses have risen faster still.”

The Economist, 11/7/15

140.4 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

140.5 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.

140.6 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)

Substance Abuse and Mental Health Services Administration, P.O. Box 2345, Rockville, MD 20847. (www.samhsa.gov)
141.

SUICIDE

141.1 Suicides and Attempts


The American Association of Suicidology (www.suicidology.org) reports 42,773 suicide deaths in 2014, a rate of 13.4 per 100,000 population. There about 1 million suicide attempts in U.S. each year.

*Healthcare Cost and Utilization Project*, from the Agency for Healthcare Research and Quality (AHRQ, www.ahrq.gov), reports that 487,700 people were treated in emergency departments for self-inflicted injuries.

141.2 Demographics Of Suicide Deaths

The American Association of Suicidology reports suicide rates in 2014 as follows:

**Gender**
- Female: 6.0 per 100,000
- Male: 21.1 per 100,000

**Age**
- 5-to-14: 1.0 per 100,000
- 15-to-24: 11.6 per 100,000
- 25-to-34: 15.1 per 100,000
- 35-to-44: 16.6 per 100,000
- 45-to-54: 20.2 per 100,000
- 55-to-64: 18.8 per 100,000
- 65-to-74: 15.6 per 100,000
- 75-to-84: 17.5 per 100,000
- 85 and older: 19.3 per 100,000
Ethnicity

- African-American: 5.5 per 100,000
  - Female: 2.1 per 100,000
  - Male: 9.2 per 100,000
- Asian: 6.1 per 100,000
- Caucasian: 15.4 per 100,000
  - Female: 6.9 per 100,000
  - Male: 24.1 per 100,000
- Hispanic: 5.9 per 100,000
- Native American: 10.8 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

141.3 Suicides By State

By state, the number of suicides and rate in 2014 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>
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<tr>
<td>Alabama:</td>
<td>715</td>
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<td>25</td>
</tr>
<tr>
<td>Alaska:</td>
<td>167</td>
<td>22.7</td>
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<tr>
<td>Arizona:</td>
<td>1,244</td>
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<td>Arkansas:</td>
<td>515</td>
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<tr>
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<td>4,214</td>
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<td>5 (tie)</td>
</tr>
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<td>Connecticut:</td>
<td>379</td>
<td>10.5</td>
<td>46</td>
</tr>
<tr>
<td>Delaware:</td>
<td>126</td>
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<td>33 (tie)</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>52</td>
<td>7.9</td>
<td>51</td>
</tr>
<tr>
<td>Florida:</td>
<td>3,035</td>
<td>15.3</td>
<td>24</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>1,294</td>
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<td>39</td>
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<tr>
<td>Hawaii</td>
<td>204</td>
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<td>28 (tie)</td>
</tr>
<tr>
<td>Idaho</td>
<td>320</td>
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<td>9</td>
</tr>
<tr>
<td>Illinois</td>
<td>1,398</td>
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<td>43 (tie)</td>
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<tr>
<td>Indiana</td>
<td>948</td>
<td>14.4</td>
<td>28 (tie)</td>
</tr>
<tr>
<td>Iowa</td>
<td>407</td>
<td>13.1</td>
<td>37</td>
</tr>
<tr>
<td>Kansas</td>
<td>455</td>
<td>15.7</td>
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<tr>
<td>Kentucky</td>
<td>727</td>
<td>16.5</td>
<td>20</td>
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<td>Louisiana</td>
<td>679</td>
<td>14.6</td>
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<tr>
<td>Maine</td>
<td>220</td>
<td>16.5</td>
<td>18 (tie)</td>
</tr>
<tr>
<td>Maryland</td>
<td>606</td>
<td>10.1</td>
<td>47</td>
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<tr>
<td>Massachusetts</td>
<td>596</td>
<td>8.8</td>
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<tr>
<td>Michigan</td>
<td>1,354</td>
<td>13.7</td>
<td>31</td>
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<tr>
<td>Minnesota</td>
<td>686</td>
<td>12.6</td>
<td>41</td>
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<tr>
<td>Mississippi</td>
<td>380</td>
<td>12.7</td>
<td>40</td>
</tr>
<tr>
<td>Missouri</td>
<td>1,017</td>
<td>16.8</td>
<td>17</td>
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<tr>
<td>Montana</td>
<td>251</td>
<td>24.5</td>
<td>1</td>
</tr>
<tr>
<td>Nebraska</td>
<td>251</td>
<td>13.3</td>
<td>36</td>
</tr>
<tr>
<td>Nevada</td>
<td>573</td>
<td>20.2</td>
<td>5 (tie)</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>247</td>
<td>18.6</td>
<td>13</td>
</tr>
<tr>
<td>New Jersey</td>
<td>786</td>
<td>8.8</td>
<td>48 (tie)</td>
</tr>
<tr>
<td>New Mexico</td>
<td>449</td>
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<td>3</td>
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<tr>
<td>New York</td>
<td>1,700</td>
<td>8.6</td>
<td>50</td>
</tr>
<tr>
<td>North Carolina</td>
<td>1,351</td>
<td>13.6</td>
<td>32</td>
</tr>
<tr>
<td>North Dakota</td>
<td>137</td>
<td>18.5</td>
<td>14 (tie)</td>
</tr>
<tr>
<td>Ohio</td>
<td>1,491</td>
<td>12.9</td>
<td>38</td>
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<tr>
<td>Oklahoma</td>
<td>736</td>
<td>19.0</td>
<td>11 (tie)</td>
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<tr>
<td>Oregon</td>
<td>782</td>
<td>19.7</td>
<td>8</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>1,817</td>
<td>14.2</td>
<td>30</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>113</td>
<td>10.7</td>
<td>45</td>
</tr>
<tr>
<td>South Carolina</td>
<td>753</td>
<td>15.6</td>
<td>23</td>
</tr>
<tr>
<td>South Dakota</td>
<td>141</td>
<td>16.5</td>
<td>18 (tie)</td>
</tr>
<tr>
<td>Tennessee</td>
<td>948</td>
<td>14.5</td>
<td>27</td>
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<tr>
<td>Texas</td>
<td>3,254</td>
<td>12.1</td>
<td>42</td>
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<tr>
<td>Utah</td>
<td>559</td>
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<td>11</td>
</tr>
<tr>
<td>Vermont</td>
<td>124</td>
<td>19.8</td>
<td>7</td>
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<tr>
<td>Virginia</td>
<td>1,122</td>
<td>13.5</td>
<td>33 (tie)</td>
</tr>
<tr>
<td>Washington</td>
<td>1,119</td>
<td>15.9</td>
<td>21</td>
</tr>
<tr>
<td>West Virginia</td>
<td>359</td>
<td>19.4</td>
<td>10</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>769</td>
<td>13.4</td>
<td>35</td>
</tr>
<tr>
<td>Wyoming</td>
<td>120</td>
<td>20.5</td>
<td>4</td>
</tr>
</tbody>
</table>
141.4 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.

141.5 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

142.1 Ranking 2016

The State Of Mental Health In America 2016, 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 ranked on overall need and access to mental health services as follows:

1. Minnesota 11. New Hampshire
5. South Dakota 15. Kansas
7. North Dakota 17. Maine
8. Iowa 18. Georgia
<table>
<thead>
<tr>
<th></th>
<th>State</th>
<th></th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>Kentucky</td>
<td>37</td>
<td>Wisconsin</td>
</tr>
<tr>
<td>22</td>
<td>Hawaii</td>
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<td>South Carolina</td>
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<td>23</td>
<td>California</td>
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<td>West Virginia</td>
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<td>Ohio</td>
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<td>Florida</td>
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<td>Arkansas</td>
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<td>Oklahoma</td>
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<td>Virginia</td>
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<td>27</td>
<td>North Carolina</td>
<td>43</td>
<td>Louisiana</td>
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<td>28</td>
<td>District of Columbia</td>
<td>44</td>
<td>Indiana</td>
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<td>29</td>
<td>Wyoming</td>
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<td>Idaho</td>
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<td>Missouri</td>
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<td>Utah</td>
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<td>Alabama</td>
<td>47</td>
<td>Washington</td>
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<td>32</td>
<td>Michigan</td>
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<td>Rhode Island</td>
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<td>33</td>
<td>Texas</td>
<td>49</td>
<td>Nevada</td>
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<td>34</td>
<td>Montana</td>
<td>50</td>
<td>Arizona</td>
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<tr>
<td>35</td>
<td>Mississippi</td>
<td>51</td>
<td>Oregon</td>
</tr>
</tbody>
</table>

### 142.2 Adult And Youth Ranking

States ranked on adult and youth overall need and access to mental health services as follows:

**Adult**

<table>
<thead>
<tr>
<th></th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<tr>
<td>2</td>
<td>Massachusetts</td>
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<tr>
<td>3</td>
<td>New Jersey</td>
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<tr>
<td>4</td>
<td>Iowa</td>
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<tr>
<td>5</td>
<td>Hawaii</td>
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<tr>
<td>6</td>
<td>Maryland</td>
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<tr>
<td>7</td>
<td>Minnesota</td>
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<tr>
<td>8</td>
<td>Pennsylvania</td>
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<tr>
<td>9</td>
<td>New York</td>
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<tr>
<td>10</td>
<td>Illinois</td>
</tr>
<tr>
<td>11</td>
<td>Delaware</td>
</tr>
<tr>
<td>12</td>
<td>South Dakota</td>
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<tr>
<td>13</td>
<td>Alabama</td>
</tr>
<tr>
<td>14</td>
<td>Vermont</td>
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<td>15</td>
<td>New Hampshire</td>
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<td>16</td>
<td>Kansas</td>
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<tr>
<td>17</td>
<td>Virginia</td>
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<tr>
<td>18</td>
<td>North Carolina</td>
</tr>
<tr>
<td>19</td>
<td>North Dakota</td>
</tr>
<tr>
<td>20</td>
<td>Wisconsin</td>
</tr>
</tbody>
</table>
41. Tennessee
42. Rhode Island
43. Idaho
44. Indiana
45. District of Columbia
46. Mississippi

Youth
1. Minnesota
2. Massachusetts
3. Vermont
4. South Dakota
5. Connecticut
6. North Dakota
7. Alaska
8. Iowa
9. New Jersey
10. District of Columbia
11. New Hampshire
12. Kentucky
13. New York
14. Pennsylvania
15. Kansas
16. Georgia
17. Illinois
18. Ohio
19. Colorado
20. West Virginia
21. Maryland
22. Nebraska
23. Delaware
24. Mississippi
25. Michigan
26. Maine

27. Utah
28. Indiana
29. Washington
30. Missouri
31. Florida
32. Louisiana
33. Oklahoma
34. Rhode Island
35. California
36. North Carolina
37. Tennessee
38. Wyoming
39. Alabama
40. New Mexico
41. Texas
42. Idaho
43. South Carolina
44. Wisconsin
45. Nevada
46. Virginia
47. Arizona
48. Montana
49. Oregon
50. Arkansas
51. Hawaii

142.3 Prevalence Ranking
States ranked on prevalence of mental health problems as follows:
1. Georgia
2. New Jersey
3. Illinois
4. Minnesota
5. South Dakota
6. North Dakota
7. Florida
8. Connecticut
| 10. New York                | 32. Louisiana       |
| 11. Mississippi             | 33. Arkansas        |
| 12. Kentucky                | 34. New Hampshire   |
| 14. Kansas                  | 36. Indiana         |
| 15. Massachusetts           | 37. Idaho           |
| 16. Tennessee               | 38. Montana         |
| 17. Pennsylvania            | 39. West Virginia   |
| 18. Iowa                    | 40. Arizona         |
| 19. Texas                   | 41. District of Columbia |
| 20. Oklahoma                | 42. Michigan        |
| 21. Alaska                  | 43. Utah            |
| 22. Ohio                    | 44. New Mexico      |
| 23. South Carolina          | 45. Vermont         |
| 24. Nebraska                | 46. Wyoming         |
| 25. Nevada                  | 47. Wisconsin       |
| 27. California              | 49. Maine           |
| 28. Missouri                | 50. Rhode Island    |
| 29. Virginia                | 51. Oregon          |
| 30. Hawaii                  |                       |

### 142.4 Access To Care Ranking

States ranked on access to mental health services as follows:

1. Vermont  
2. Massachusetts  
3. Minnesota  
4. Connecticut  
5. New Hampshire  
6. Maine  
7. Iowa  
8. South Dakota  
9. District of Columbia  
10. Rhode Island  
11. Pennsylvania  
12. Alaska  
13. Delaware  
14. Colorado  
15. New York  
16. New Jersey  
17. Maryland  
18. Wisconsin  
19. North Dakota  
20. Michigan  
21. Oregon  
22. Kansas  
23. North Carolina  
24. New Mexico  
25. Wyoming  
26. California  
27. Washington  
28. Hawaii  
29. Ohio  
30. Nebraska  
31. Illinois  
32. Missouri

HEALTHCARE BUSINESS MARKET RESEARCH HANDBOOK 2017-2018  
• 526 •
<table>
<thead>
<tr>
<th></th>
<th>State</th>
<th></th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>33</td>
<td>Kentucky</td>
<td>43</td>
<td>Arkansas</td>
</tr>
<tr>
<td>34</td>
<td>West Virginia</td>
<td>44</td>
<td>Florida</td>
</tr>
<tr>
<td>35</td>
<td>Utah</td>
<td>45</td>
<td>Texas</td>
</tr>
<tr>
<td>36</td>
<td>Virginia</td>
<td>46</td>
<td>Alabama</td>
</tr>
<tr>
<td>37</td>
<td>Indiana</td>
<td>47</td>
<td>Georgia</td>
</tr>
<tr>
<td>38</td>
<td>Montana</td>
<td>48</td>
<td>South Carolina</td>
</tr>
<tr>
<td>39</td>
<td>Louisiana</td>
<td>49</td>
<td>Mississippi</td>
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<td>40</td>
<td>Arizona</td>
<td>50</td>
<td>Tennessee</td>
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<tr>
<td>41</td>
<td>Idaho</td>
<td>51</td>
<td>Nevada</td>
</tr>
<tr>
<td>42</td>
<td>Oklahoma</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 142.5 Market Resources

Mental Health America, 2000 N. Beauregard Street, 6th Floor, Alexandria, VA 22311. (703) 684-7722. (www.mentalhealthameric.net)
PART XI: EDUCATION
MEDICAL SCHOOLS

143.1 Overview

The Association of American Medical Colleges (AAMC, www.aamc.org) represents the 141 accredited U.S. medical schools. For the 2015-2016 academic year, medical schools had 52,550 applicants; 20,630 were accepted for enrollment. Total enrollment for the 2015-2016 school year was 86,746. The class of 2015 had 20,630 medical school graduates.

The American Association of Colleges of Osteopathic Medicine (AACOM, www.aacom.org) represents the 33 accredited colleges of osteopathic medicine in the United States. There were 20,447 applicants to osteopathic medical colleges in the 2015-2016 academic year. Total enrollment was 25,876; there were 5,323 graduates.

143.2 Largest Medical Schools

The largest medical schools, ranked by 2015-2016 enrollment, are as follows (source: AAMC):

• Indiana University School of Medicine: 1,442
• University of Illinois College of Medicine: 1,425
• Wayne State University School of Medicine: 1,238
• Drexel University College of Medicine: 1,102
• Jefferson Medical College of Thomas Jefferson University: 1,102
• University of Washington School of Medicine: 1,025
• University of Texas Medical School at Houston: 1,015
• University of Texas Medical Branch at Galveston: 1,005
• University of Texas Southwestern Medical School: 976
• Medical College of Georgia: 957
• Case Western Reserve University School of Medicine: 941
• University of Texas Health Science Center at San Antonio: 889
• Virginia Commonwealth University School of Medicine: 880
• Medical College of Wisconsin: 882
• Temple University School of Medicine: 887
• University of Minnesota Medical School: 869
• Tufts University School of Medicine: 865
• Harvard Medical School: 850
• New York Medical College: 836
• Michigan State University School of Medicine: 855
• University of Miami Miller School of Medicine: 847
• Albert Einstein College of Medicine of Yeshiva University: 836
• Louisiana State University School of Medicine New Orleans: 824
• SUNY Downstate Medical Center College of Medicine: 821
• Baylor University School of Medicine: 817
• Ohio State University College of Medicine: 816
• Georgetown University School of Medicine: 809


The largest colleges of osteopathic medicine, ranked by 2015-2016 enrollment, are as follows:
• Lake Erie College of Osteopathic Medicine: 1,480
• Edward Via College of Osteopathic Medicine: 1,333
• Western University of Health Sciences/College of Osteopathic Medicine of the Pacific: 1,245
• Michigan State University College of Osteopathic Medicine: 1,224
• Philadelphia College of Osteopathic Medicine: 1,077
• Kansas City University of Medicine and Biosciences College of Osteopathic Medicine: 1,037
• Arizona College of Osteopathic Medicine at Midwestern University: 1,005

The 2017 Osteopathic Medical College Information Book which lists all colleges of osteopathic medicine is available at (www.aacom.org/docs/default-source/cib/cib_web_full-publication.pdf?sfvrsn=28)

143.3 New Medical Schools

Between 2002 and 2016, 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)
• Florida International University, Herbert Wertheim College of Medicine (Florida)
• Hofstra University, Hofstra Northwell School of Medicine (New York)
• Oakland University, William Beaumont School of Medicine (Michigan)
• San Juan Bautista School of Medicine (Puerto Rico)
• Texas Tech University Health Sciences Center, Paul L. Foster School of Medicine (Texas)
• The Commonwealth Medical College (Pennsylvania)
• University of Central Florida, College of Medicine (Florida)
• University of South Carolina School of Medicine, Greenville (South Carolina)
• Virginia Tech Carilion School of Medicine (Virginia)

Schools with Provisional Accreditation*
• Quinnipiac University, Frank H. Netter MD School of Medicine (Connecticut)
• Rowan University, Cooper Medical School (New Jersey)
• University of Arizona, College of Medicine (Arizona)
• University of California Riverside, School of Medicine (California)
* 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 (California)
• Central Michigan University, College of Medicine (Michigan)
• CUNY School of Medicine (New York)
• University of Texas at Austin, Dell Medical School (Texas)
• University of Texas Rio Grande, Valley School of Medicine (Texas)
• Western Michigan University, Homer Stryker MD School of Medicine (Michigan)
* 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 (Nevada)
• University of Nevada Las Vegas, School of Medicine (Nevada)
• Washington State University, Elson S. Floyd College of Medicine (Washington)
* Candidate schools are not accredited and may not recruit or advertise for applicants or accept student applications.

Schools with Applicant Status*
• College of Henricopolis, School of Medicine (Virginia)
• California University of Science and Medicine, College of Medicine (California)
• Seton Hall–Hackensack School of Medicine (New Jersey)
• TCU and UNTHSC School of Medicine (Texas)
* Applicant schools are not accredited and 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 *.3 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 2015 Annual Report of the American Association of Colleges of Nursing (AACN, www.aacn.nche.edu), there are 921 nursing schools in the U.S. with baccalaureate and graduate programs. Combined enrollment is as follows:

- Baccalaureate: 320,074
- Master's degree: 113,788
- Doctoral (practice-focused): 18,352
- Doctoral (research-focused): 5,290

Graduations in 2015 were as follows:

- Baccalaureate: 111,634
- Master's degree: 32,250
- Doctoral (practice-focused): 3,065
- Doctoral (research-focused): 743

In the 2014-2015 academic year, 265,954 applications were received for entry-level baccalaureate nursing programs; 119,428 applications were accepted; the acceptance rate was 44.9%.

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 2015, 16,935 students were enrolled in the nation's 293 accelerated baccalaureate programs; there were 11,080. In the 62 accelerated master's degree programs now available, 6,219 students were enrolled and 2,325 students graduated in 2015.

144.2 Largest Nursing Schools

Ranked by number of graduates, the following are the largest U.S. nursing schools (source: National League for Nursing [www.nln.org] and Modern Healthcare):

- Excelsior College, School of Nursing: 2,229
- Maricopa Community Colleges, District Nursing Program: 1,115
- Galen College of Nursing: 1,042
- St. Petersburg College, Department of Nursing: 685
- Baptist Health Schools, Little Rock School of Nursing: 664
- Kent State University, College of Nursing: 610
More than 200 nursing schools have established or plan to launch Doctorate of Nursing Practice (DNP) programs. This advanced degree in nursing would equip 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.

### Market Resources

American Association of Colleges of Nursing, One Dupont Circle NW, Suite 530, Washington, DC 20036. (202) 463-6930. (www.aacn.nche.edu)

National League For Nursing, 2600 Virginia Avenue NW, Eighth Floor, Washington, DC 20037. (800) 669-1656. (www.nln.org)
UNIVERSITY PROGRAMS IN HEALTH ADMINISTRATION

145.1 Overview

The 2016 Healthcare Management Education Directory of Programs of the Association of University Programs in Health Administration (www.aupha.org) lists 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.

145.2 Largest Master’s Programs

The largest master’s programs in health administration, ranked by number of full-time enrolled students in the 2015-2016 academic year, are as follows (source: Modern Healthcare, March 2016):

- University of Alabama at Birmingham: 154
- Seton Hall University: 120
- St. Louis University: 120
- University of Missouri: 116
- California State University at Long Beach: 107
- University of Scranton: 105
- Columbia University: 94
- Georgia State University: 89
- University of North Carolina at Chapel Hill: 80
- Trinity University: 75
- Xavier University: 68
- George Washington University: 62
- New York University: 61
- University of North Carolina Charlotte: 56
• Ohio State University: 54
• Johns Hopkins University: 51
• Texas A&M Health Science Center: 50
• Texas Woman’s University: 50
• Indiana University: 47
• Army-Baylor University: 45
• University of Kentucky: 41
• Georgetown University: 34
• University of Memphis: 30
• Armstrong State University: 28
• Baylor University: 28

145.3 Business Graduate Schools For Physician-Executives
The largest business graduate schools for physician-executives, ranked by number of full-time enrolled students in the 2015-2016 academic year, are as follows (source: Modern Healthcare, May 2016):
• Florida International University, Chapman Graduate School of Business: 216
• Columbia University, Mailman School of Public Health: 94
• Temple University, Fox School of Business: 90
• St. Louis University: 85
• University of Miami School of Business Administration: 81
• University of Tennessee: 74
• George Washington University School of Business: 73
• Trinity University: 72
• Carnegie Mellon University: 64
• University of Missouri: 63
• Brown University: 56
• Emory University, Goizueta Business School: 56
• California State University at Long Beach: 55
• Johns Hopkins University, Bloomberg School of Public Health: 52
• Auburn University, Raymond J. Harbert College of Business: 46
• UCLA, Fielding School of Public Health: 44
• University of Iowa: 20
• Virginia Commonwealth University: 20

145.4 Market Resources
Association of University Programs in Health Administration, 2000 14th Street North, Suite 780, Arlington, VA 22201. (703) 894-0940. (www.aupha.org)
APPENDIX A

ANALYSTS

Billian’s Health Data, 2100 RiverEdge Parkway, Suite 1200, Atlanta, GA 30328. (800) 533-8484. (www.billianshealthdata.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, 800 District Avenue, Burlington, MA 01803. (781) 993-2500. (www.decisionresourcesgroup.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)

IMS Health, 83 Wooster Heights Road, Danbury, CT 06810. (203) 448-4600. (www.imshealth.com)

Jobson Healthcare Information, 100 Avenue of the Americas, New York, NY 10013. (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)

Qforma, 22 South Street, Morristown, NJ 07960.  (973) 656-0011. (www.qforma.com)

Rand Corporation, 1776 Main Street, Santa Monica, CA 90401.  (310) 393-0411.  
(www.rand.org)

RelayHealth, 1564 Northeast Expressway, Atlanta, GA 30329.  (800) 778-6711.  
(www.relayhealth.com)

(888) 928-7562.  (www.rkma.com)

Robert Wood Johnson Foundation, Route 1 and College Road East, P.O. Box 2316, 
Princeton, NJ 08543.  (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)

(www.gallup.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)

Truven Health Analytics, 100 Phoenix Drive, Ann Arbor, MI 48108.  (855) 878-8361.  
(www.truvenhealth.com)

UnitedHealth Foundation, 9900 Bren Road East, Minnetonka, MN 55343.  
(www.unitedhealthfoundation.org)

VHA Inc., 290 E. John Carpenter Freeway, Irving, TX 75039.  (972) 830-0000.  
(www.vha.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, 11400 Tomahawk Creek Parkway, Leawood, KS 66211. (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 Private Physicians, P.O. Box 5129, Glen Allen, VA 23058. (877) 746-7301. (www.aapp.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 Board of Obesity Medicine, 3515 S. Tamarac Drive, Suite 200, Denver, CO 80237. (303) 770-9100. (www.abom.org)

American Association of Colleges of Nursing, One Dupont Circle NW, Suite 530, Washington, DC 20036. (202) 463-6930. (www.aacn.nche.edu)

American Association of Orthopedic Surgeons, 6300 North River Road, Rosemont, IL 60018. (847) 823-7186. (www.aaos.org)

American Cancer Society, 2200 Lake Boulevard, Atlanta, GA 30319. (404) 816-7800. (www.cancer.org)

American Chronic Pain Association, P.O. Box 850, Rocklin, CA 95677. (800) 533-3231. (www.theacpa.org)

American College of Cardiology, 240 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, One North Franklin, Chicago, IL 60606. (312) 424-2800. (www.ache.org)

American College of Medical Genetics, 7220 Wisconsin Avenue, Suite 300, 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, 1701 North Beauregard Street, Alexandria, VA 22311. (800) 342-2383. (www.diabetes.org)
(202) 842-4444.  (www.ahcancal.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, 1301 Pennsylvania Avenue NW, Suite 800, Washington, DC 20004.  
(202) 785-3355.  (www.lungusa.org)

American Medical Association, AMA Plaza, 330 N. Wabash Avenue, Chicago, IL 60611.  
(800) 621-8335.  (www.ama-assn.org)

American Nurses Association, 8515 Georgia Avenue, Suite 400, Silver Spring, MD 20910.  
(301) 628-5000.  (www.nursingworld.org)

American Orthopaedic Foot & Ankle Society, 6300 North River Road, Suite 510, 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)

American Seniors Housing Association, 5225 Wisconsin Avenue NW, Suite 502, Washington, DC 20015.  
(202) 237-0900.  (www.seniorshousing.org)

American Society for Healthcare Risk Management, One North Franklin, 28th Floor, 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)

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

Association For Professionals In Infection Control and Epidemiology, 1275 K Street NW, Suite 1000, Washington, DC 20005. (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, 2000 14th Street North, Suite 780, Arlington, VA 22201. (703) 894-0940. (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, 1500 Market Street, Philadelphia, PA 19102. (215) 731-7140. (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)

MAGNUM - National Migraine Association, 100 N. Union Street, Suite B, Alexandria, VA 22314. (www.migraine.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 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 Alliance on Mental Illness, 3803 North Fairfax Drive, Suite 100, Arlington, VA 22203. (703) 524-7600. (www.nami.org)


National Hospice and Palliative Care Organization, 1731 King Street, Suite 100, Alexandria, VA 22314. (703) 837-1500. (www.nhpco.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, 387 Shuman Boulevard, Suite 235W, Naperville, IL 60563. (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, 220 Fifth Avenue, 18th Floor, 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)

Journal of the American Medical Association, 515 N. State Street, Chicago, IL 60610. (312) 464-2402. (www.jama.ama-assn.org)

Modern Healthcare, 150 North Michigan Avenue, Chicago, IL 60601. (312) 649-5200. (www.modernhealthcare.com)

New England Journal of Medicine, 10 Shattuck Street, Boston, MA 02115. (617) 734-9800. (www.nejm.org)
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Chapter 12: Accountable Care Organizations


Chapter 15: Best Practices

Chapter 16: Children’s Hospitals


Chapter 19: Corporate Wellness Programs
**Chapter 20: Design & Construction**  

**Chapter 22: Electronic Health Records**  

**Chapter 26: Hospice & Palliative Care**  

**Chapter 29: Hospital Profile**  

**Chapter 31: Hospital Utilization**  

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**Chapter 35: Largest Healthcare Systems**  


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**Chapter 37: Marketing**  


**Chapter 38: Medical Liability**  


**Chapter 44: Patient Satisfaction**


**Chapter 48: Population Health Management**

**Chapter 54: Primary Care**

**Chapter 55: Professional Services**


**Chapter 60: Readmissions**


**Chapter 61: Rural Hospitals**

Chapter 62: Telemedicine


Chapter 65: Top Health Industry Issues

Chapter 68: Top-Ranked Hospitals In Specialty Fields

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**Chapter 86: Generic Drugs**


**Chapter 89: Medical Devices & Equipment**

**Chapter 92: Personalized Medicine**


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**Chapter 94: Gene Therapy**

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**Chapter 95: Stem Cells**

**Chapter 98: Alzheimer’s Disease & Dementia**
Chapter 103: Cancer

Chapter 104: Cardiovascular Disease

Chapter 109: Cosmetic & Reconstructive Surgery

Chapter 110: Diabetes

Chapter 112: Geriatric Medicine


Chapter 116: Infections

Chapter 122: Obstetrics

Chapter 125: Orthopedics


Chapter 128: Parkinson’s Disease

Chapter 132: Shared Decision Making

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Chapter 136: Cost Of Mental Illness


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Chapter 137: Behavioral Health Providers

Chapter 140: Substance Abuse


Chapter 141: Suicide


Chapter 145: University Programs In Health Administration
“Largest Business Graduate Schools For Physician Executives,” Modern Healthcare, May 9, 2016, p. 34.

“Largest Master’s Programs In Health Administration,” Modern Healthcare, March 14, 2016, p. 54.