The Dwindling Supply of Empty Beds: Implications for Hospital Surge Capacity

Academy Health Annual Research Meeting
Monday June 9, 2008
Washington, DC

Derek DeLia, Ph.D.
Elizabeth Wood, M.P.A.P.
Acknowledgements

Support from the Robert Wood Johnson Foundation

Comments & contributions from:
  Joel Cantor
  Michael Yedidia
  Bram Poquette
  Jose Nova
Hospital surge capacity

- Ability of hospitals to respond to mass casualty events (MCE’s)
- Most critically ill/injured
- Elements of surge capacity
  - Beds*
  - Equipment
  - Personnel
  - Rx caches
  - Planning
HRSA benchmark for surge capacity

500 hospital beds immediately available per million population potentially affected by a MCE
Research questions

1. How often is the benchmark met?

2. Is it being met more or less often over time?

3. What are the characteristics of areas that do not meet the benchmark?
Methodology

• AHA Survey/U.S. Census 2000-2005
• Key concept: beds immediately available
• Empty staffed beds (ESB)
• ESB = Staffed beds x (1-OR)

• Aggregate ESB at county level
• Divide by county population
• Multiply by 1 million

• Compare to HRSA benchmark
MAIN FINDINGS
There is a growing percentage of counties that fail to meet the HRSA benchmark.

Sources: AHA Annual Survey, U.S. Census Bureau
Counties with limited surge capacity are more likely to be urban, have larger populations, & have had faster population growth.

### Average county characteristics, 2005

<table>
<thead>
<tr>
<th></th>
<th>Limited surge cap</th>
<th>Not limited</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Urban (MSA)</td>
<td>53%</td>
<td>25%</td>
</tr>
<tr>
<td>Population</td>
<td>195,152</td>
<td>97,044</td>
</tr>
<tr>
<td>Population growth, 2000-2005</td>
<td>7%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Sources: AHA Annual Survey, U.S. Census Bureau
Counties with limited surge capacity have fewer beds per capita.

<table>
<thead>
<tr>
<th></th>
<th>Limited surge cap</th>
<th>Not limited</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empty staffed beds</td>
<td>292.21</td>
<td>1,727.0</td>
</tr>
<tr>
<td>Total staffed beds</td>
<td>1,044.3</td>
<td>3,262.0</td>
</tr>
<tr>
<td>Total ICU beds</td>
<td>70.4</td>
<td>125.5</td>
</tr>
<tr>
<td>Total pediatric ICU beds</td>
<td>1.2</td>
<td>3.4</td>
</tr>
<tr>
<td>Total burn unit beds</td>
<td>0.2</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Sources: AHA Annual Survey, U.S. Census Bureau
Despite higher OR’s, counties with limited surge capacity have less utilization per capita and slower utilization growth.

<table>
<thead>
<tr>
<th></th>
<th>Limited surge cap</th>
<th>Not limited</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupancy rate (OR)</td>
<td>61%</td>
<td>45%</td>
</tr>
<tr>
<td>ED visits per 100 residents</td>
<td>30.2</td>
<td>48.5</td>
</tr>
<tr>
<td>Inpt days per 100 residents</td>
<td>28.5</td>
<td>56.0</td>
</tr>
<tr>
<td>Growth in ED visits per 100 residents, 2000-2005</td>
<td>10%</td>
<td>23%</td>
</tr>
<tr>
<td>Growth in inpt days per 100 residents, 2000-2005</td>
<td>3%</td>
<td>22%</td>
</tr>
</tbody>
</table>

Sources: AHA Annual Survey, U.S. Census Bureau
Summary

• Growing #counties w/limited surge capacity

• Typically urban, growing, East Coast & West

• Limitations on the supply side
  Fewer beds per capita

• Utilization not excessive
  Utilization is lower & growing more slowly
Discussion

• **Decline in empty staffed beds**
  Incentives to reduce & redistribute capacity
  Focus on profitable places & services
  Competition from leaner/specialized facilities
  Difficult to maintain capacity for disaster response

• **How can hospital surge capacity be maintained?**
  Subsidies for “essential” hospitals
  Enhanced reimbursement (like DSH, Critical Access Hosp)
  Mobile hospitals/alternate sites of care
  (Esp when capacity cannot be expanded)

• **Need for continued surveillance**
  Market & demographic changes
  Anticipate where mobile hospitals & other assets most needed
D. DeLia & E. Wood, “The Dwindling Supply of Empty Beds: Implications for Hospital Surge Capacity.” Forthcoming in Health Affairs.