Patient Safety and Nurse Staffing

Joanne Spetz, Ph.D.
School of Nursing &
Center for California Health Workforce Studies
University of California, San Francisco

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This presentation will...

- Review research on the relationship between staffing and quality of care
- Present data on hospital staffing in the United States
- Explore staffing-related policy options for ensuring quality of care
- Describe the policy approach underway in California
What do we mean by staffing?

- Staffing of licensed personnel
- Staffing of assistive and ancillary personnel
- Staffing in hospitals
- Staffing in long-term care facilities
Research on nurse staffing has changed in recent years

• In the 1990s:
  – IOM said there was insufficient evidence to determine whether nurse staffing changes were detrimental (1996)
  – ANA said there was insufficient scientific evidence to establish ratios (1999)
The newest research shows that nurse staffing is important

- Evidence suggests that an increase in nurse staffing is related to decreases in:
  - risk-adjusted mortality
  - nosocomial infection rates
  - thrombosis and pulmonary complications in surgical patients
  - pressure ulcers
  - readmission rates
  - failure to rescue

- Evidence that higher ratios of RNs to residents in long-term care has positive effects
The most influential studies

- Needleman, Buerhaus, et al. (2001)
  - Report for Health Resources and Services Administration
  - Use of administrative hospital data from states
  - Key outcomes associated with nurse staffing:
    - Urinary tract infections
    - Pneumonia
    - Length of stay
    - Upper gastrointestinal bleeding
    - Shock
    - Failure to rescue
The most influential studies

• Aiken, Clarke, et al. (2002)
    • Surveyed nurses about staffing and work environment in Pennsylvania, linked surveys to discharge data
    • Poor nurse staffing associated with higher:
      – 30-day mortality
      – Failure to rescue
    • Same data as 2002 paper
    • Hospitals with more baccalaureate-educated RNs had lower:
      – 30-day mortality
      – Failure to rescue
The most influential studies

- **Kovner and Gergen (2002)**
    - National data on hospitals, 1990-1996
    - Poor nurse staffing increased pneumonia rates
    - National data from 1983
    - Focus on postsurgical events
    - Poor RN staffing raised rates of:
      - Pneumonia
      - Urinary tract infection
      - Thrombosis
      - Pulmonary compromise
Nurse staffing also affects job satisfaction

• High workload and poor staffing ratios are associated with:
  – Nurse burnout
  – Low job satisfaction
  – Increased nurse stress

• Nurse stress is related to:
  – Adverse patient events
  – Nurse injuries
  – Quality of care
  – Patient satisfaction
The research has limits

- Data on hospitals do not recognize different staffing on different units
- Studies at the nursing unit level involve primary data collection and are costly
- Single-year studies cannot prove a causal relationships
- No study identifies the “ideal” staffing ratio
This presentation will…

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• Present data on staffing in the United States
• Explore staffing-related policy options for ensuring quality of care
• Describe the policy approach underway in California
There are many sources for nurse staffing data

- American Hospital Association
- State data, such as California Office of Statewide Health Planning and Development (OSHPD)
- Original surveys
There are many ways to measure nurse staffing

- Nurse-to-patient ratios
- Hours per patient day (HPPD)
- Full-time equivalent employment (FTEE)
- Skill mix
There is wide variation in HPPD nationally

<table>
<thead>
<tr>
<th></th>
<th>10(^{th}) Percentile</th>
<th>20(^{th}) Percentile</th>
<th>Median</th>
<th>80(^{th}) Percentile</th>
<th>90(^{th}) Percentile</th>
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</thead>
<tbody>
<tr>
<td>RNs</td>
<td>4.28</td>
<td>4.66</td>
<td>5.26</td>
<td>6.05</td>
<td>6.63</td>
</tr>
<tr>
<td>LPNs</td>
<td>0.66</td>
<td>0.74</td>
<td>1.03</td>
<td>1.49</td>
<td>2.01</td>
</tr>
</tbody>
</table>

Source: AHA
Nevada’s average staffing is above the national median

<table>
<thead>
<tr>
<th>State</th>
<th># Hospitals</th>
<th>RN HPPD</th>
<th>RN+LPN HPPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>NM</td>
<td>60</td>
<td>9.14</td>
<td>11.15</td>
</tr>
<tr>
<td>AZ</td>
<td>91</td>
<td>7.27</td>
<td>9.67</td>
</tr>
<tr>
<td>OR</td>
<td>68</td>
<td>7.47</td>
<td>8.14</td>
</tr>
<tr>
<td>NV</td>
<td>32</td>
<td>6.05</td>
<td>7.31</td>
</tr>
<tr>
<td>CO</td>
<td>83</td>
<td>6.13</td>
<td>7.02</td>
</tr>
<tr>
<td>CA</td>
<td>488</td>
<td>5.91</td>
<td>7.02</td>
</tr>
<tr>
<td>USA</td>
<td>6299</td>
<td>5.32</td>
<td>6.63</td>
</tr>
<tr>
<td>ID</td>
<td>47</td>
<td>5.10</td>
<td>6.50</td>
</tr>
<tr>
<td>MT</td>
<td>61</td>
<td>3.64</td>
<td>4.62</td>
</tr>
</tbody>
</table>

Source: AHA
What is staffing in “best practices” hospitals?

• Best practices hospitals identified by:
  – American Nurses Association Magnet Hospitals
  – Pacific Business Group on Health (CA)
    • Low mortality for AMI
    • Low rate of newborn readmission
  – Bay Area Consumer Checkbook
  – JCAHO Commendation of CA hospitals
  – US News rankings – national honor roll
  – USA Today Top 100
### Average HPPD in best practices hospitals

<table>
<thead>
<tr>
<th></th>
<th># Hospitals</th>
<th>RN HPPD</th>
<th>LPN HPPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANA Magnet</td>
<td>20</td>
<td>7.35</td>
<td>0.69</td>
</tr>
<tr>
<td>PBGH AMI</td>
<td>12</td>
<td>6.65</td>
<td>0.84</td>
</tr>
<tr>
<td>PBGH newborn</td>
<td>43</td>
<td>6.30</td>
<td>1.21</td>
</tr>
<tr>
<td>Bay Area Consumer Checkbook</td>
<td>22</td>
<td>6.45</td>
<td>0.66</td>
</tr>
<tr>
<td>JCAHO</td>
<td>13</td>
<td>7.22</td>
<td>0.82</td>
</tr>
<tr>
<td>US News honor roll</td>
<td>20</td>
<td>7.45</td>
<td>0.45</td>
</tr>
<tr>
<td>USA Today</td>
<td>100</td>
<td>6.13</td>
<td>0.93</td>
</tr>
<tr>
<td><strong>Nevada average</strong></td>
<td><strong>32</strong></td>
<td><strong>6.05</strong></td>
<td><strong>1.26</strong></td>
</tr>
<tr>
<td><strong>US average</strong></td>
<td><strong>5127</strong></td>
<td><strong>5.75</strong></td>
<td><strong>1.42</strong></td>
</tr>
</tbody>
</table>

Source: AHA
How do nurses feel about staffing? 

ANA’s 2001 survey

- 56% of nurses say their time for direct patient care has decreased
- 75% say quality of nursing care has declined in their work setting in the past 2 years
- Inadequate staffing is the top reason for the decline in quality of nursing care
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Many states are considering legislation

- In May 2003, the ANA identified staffing legislation in 16 states
  - This includes Nevada
- Types of staffing legislation:
  - Minimum staffing ratios
  - Staffing systems based on acuity must be maintained by hospitals
- None of the legislation had passed by May 2003
Some states have adopted rules

- **Texas (2002)**
  - Hospitals must adopt, implement, and enforce a written staffing plan
- **Florida (2002)**
  - Established a staffing plan pilot for one subacute pediatric transition care center
- **Oregon (2001)**
  - Hospitals must develop and implement staffing plans
  - Provisions for inspections and penalties established
Some states have adopted rules

- **Kentucky and Virginia (1998)**
  - Hospitals must establish appropriate staffing methodology

- **California**
  - Hospitals must have a patient acuity system to determine staffing (1995)

- **Nevada (1999)**
  - Hospitals must have a staffing methodology based on acuity
Approaches to staffing standards

- Patient acuity/patient classification systems
- Fixed ratios
- Formula-based ratios
- Skill-mix requirements
Patient acuity/patient classification systems

- Inputs: number of patients, acuity of illness
- Output: appropriate staffing levels
- Widely marketed systems and home-grown systems
- Problems:
  - Systems best for long-term, not short-term, prediction
  - Difficulty of staffing up if necessary
  - Enforcement – hard to monitor
Fixed ratios

- Fixed, specific nurse-to-patient ratios are mandated
- Problems:
  - Minimum staffing could become average staffing
  - Hospitals could eliminate ancillary and support staff
  - Enforcement – do you close hospitals?
  - Loss of flexibility and innovation
Formula-based ratios

• Nurse workload = function of:
  – RN staff expertise
  – Patient acuity, work intensity
  – Support staff, MD availability
  – Unit physical layout

• Problems:
  – Defining the function
  – Establishing new staffing ratios every week/month/year
  – Enforcement
Skill-mix requirements

• Hospitals must have a minimum fixed ratio of licensed staff relative to all staff

• Problems:
  – What is the appropriate ratio?
  – Minimum ratio could become average
  – Total staffing may not be adequate
  – Loss of flexibility and innovation
  – Enforcement
An overriding question

• How much are we willing to spend to increase quality of care?
  – Do we take money from schools?
  – Do we take money from salaries?
  – Do we increased the number of uninsured?
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AB 394 was signed in October 1999

- Department of Health Services must establish minimum licensed-nurse-to-patient ratios
- Regulations were implemented January 1, 2004
Previous regulations in California

• All hospitals must staff 1 licensed nurse per 2 patients in ICU

• California Code of Regulations Title 22:
  – All hospitals have a valid patient classification system
  – Hospitals are expected to staff according to their system
Share of hospitals not in compliance before 2004

<table>
<thead>
<tr>
<th></th>
<th>DHS survey data</th>
<th>OSHPD data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Initial ratios</td>
<td>Later ratios</td>
</tr>
<tr>
<td>Med-Surg</td>
<td>~20%</td>
<td>~50%</td>
</tr>
<tr>
<td>Pediatric</td>
<td>~40%</td>
<td>~40%</td>
</tr>
<tr>
<td>Obstetrics</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>L &amp; D</td>
<td>5%</td>
<td>5%</td>
</tr>
</tbody>
</table>

Source: OSHPD; Kravitz, et al.
## Estimated statewide FTE shortage from DHS survey data

<table>
<thead>
<tr>
<th></th>
<th>Initial ratios</th>
<th>Later ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>4,880</td>
<td>7,230</td>
</tr>
<tr>
<td>Med-Surg</td>
<td>1,030</td>
<td>2,460</td>
</tr>
<tr>
<td>Pediatric</td>
<td>490</td>
<td>490</td>
</tr>
<tr>
<td>Obstetrics</td>
<td>520</td>
<td>520</td>
</tr>
<tr>
<td>L &amp; D</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

Source: Kravitz, Sauve, et al.
Cost estimates require some assumptions

• Are new hires RNs or LVNs?
• Do wages change?
• Hospitals do not reduce staffing if they are above the new minimum ratios
Predicted per-hospital cost of minimum ratio proposals

<table>
<thead>
<tr>
<th>Source of data</th>
<th>Cost of Initial ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSHPD data</td>
<td>$57,540,000</td>
</tr>
<tr>
<td>DHS survey data</td>
<td>$266,729,000</td>
</tr>
</tbody>
</table>

Source: OSHPD; Kravitz, et al.
Are the ratios “working”?

- Hospital complaints
  - Rules are inflexible
  - Nursing shortage persists
- Union triumphs
  - Survey of nurses reports that they are happy with ratios
- Access to care problems?
  - Small, financially troubled hospital closed
  - Emergency system data in Santa Clara County showed more ER diversions
What next?

• More nurses lead to better patient outcomes
• Legislative approaches have potential pitfalls
• To improve nurse staffing:
  – Hospitals need money to pay more staff
  – More nurses are needed in the labor market