RESEARCH ON INFECTION PREVENTION MEASURES IN NURSING HOMES

Pat W. Stone, PhD, MPH, FAAN, CIC
Centennial Professor of Health Policy
Director of the Center for Health Policy
Director of the Center for Improving Palliative Care
Editor, American Journal of Infection Control
Aims

1. Qualitatively explore the phenomenon of infection prevention and control in nursing homes

2. Describe the incidence of healthcare associated infections (HAIs) in nursing homes across the country

3. Describe infection prevention and control processes occurring in nursing homes
Methods

Structured, open-ended interviews
National survey of nursing homes
Linked national data sets
  • Minimum Data Set (MDS)
    - Resident clinical assessments
  • Certification and Survey Provider Enhanced Reporting (CASPER)
    - Facility characteristics
  • Medicare Claims
Qualitative Results

10 nursing homes
73 employees

Five Themes

Residents’ Needs: Tension exists between the facility being the residents’ home and the need for effective infection prevention and control procedures.

Roles and Training: Many employees involved in infection control program had multiple other responsibilities and frequently lacked formal training in infection prevention and control.

Using Infection Data: Infection data were used to improve care despite variations in surveillance methods/definitions.

External Resources: External resources were a source of information and support.

Focus on Hand Hygiene: All infection prevention programs focused on hand hygiene. Monitoring staff compliance with hand hygiene policies was often informal.
Trends in Infection Prevalence

2006 – 2010 (MDS 2.0)
• Prevalence of all infection types increased (p-values < .01)

2011 – 2013 (MDS 3.0)
• Prevalence of UTI, MDRO, and wound infections decreased (p-values < .0001)
• Prevalence of viral hepatitis increased (p-value < 0.0001)
UTI and pneumonia were the most commonly reported infections

Based on the 2013 data, we estimated there 1.13 to 2.68 million HAIs occurring in nursing home residents annually
### Hospital Transfers Caused By or With Infection

<table>
<thead>
<tr>
<th>Infection Type</th>
<th>Transfer Classification</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Respiratory:</strong></td>
<td>Caused By</td>
<td>11.9%</td>
<td>11.7%</td>
<td>11.5%</td>
<td>10.6%</td>
<td>10.1%</td>
<td>9.1%</td>
<td>8.9%</td>
</tr>
<tr>
<td></td>
<td>With</td>
<td>21.1%</td>
<td>22.2%</td>
<td>23.0%</td>
<td>22.2%</td>
<td>22.9%</td>
<td>21.9%</td>
<td>22.9%</td>
</tr>
<tr>
<td><strong>Sepsis:</strong></td>
<td>Caused By</td>
<td>12.1%</td>
<td>13.8%</td>
<td>15.0%</td>
<td>16.6%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>With</td>
<td>14.6%</td>
<td>16.3%</td>
<td>17.6%</td>
<td>19.4%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>UTI:</strong></td>
<td>Caused By</td>
<td>9.1%</td>
<td>8.7%</td>
<td>8.4%</td>
<td>8.3%</td>
<td>7.8%</td>
<td>7.4%</td>
<td>5.8%</td>
</tr>
<tr>
<td></td>
<td>With</td>
<td>32.1%</td>
<td>32.8%</td>
<td>32.4%</td>
<td>32.6%</td>
<td>32.6%</td>
<td>31.5%</td>
<td>29.7%</td>
</tr>
<tr>
<td><strong>All Infections:</strong></td>
<td>Caused By</td>
<td>35.8%</td>
<td>37.3%</td>
<td>38.1%</td>
<td>38.8%</td>
<td>40.1%</td>
<td>39.3%</td>
<td>40.1%</td>
</tr>
<tr>
<td></td>
<td>With</td>
<td>57.1%</td>
<td>58.9%</td>
<td>59.8%</td>
<td>60.0%</td>
<td>61.0%</td>
<td>60.3%</td>
<td>61.3%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NH Residents (Millions)</th>
<th>3.75</th>
<th>3.80</th>
<th>3.86</th>
<th>3.92</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital Transfers / Resident</td>
<td>0.373</td>
<td>0.387</td>
<td>0.372</td>
<td>0.365</td>
</tr>
</tbody>
</table>

**Note:** Caused by defined as infection was the primary diagnosis present on admission. Transfers classified as with infection include all those with any infection diagnosis present on admission and therefore include transfers that were caused by infection.
First Survey of Nursing Homes

- A random sample
- Conducted 2014
- 990 surveys returned (39% response rate)
- Survey linked to Certified and Survey Enhanced Reporting CASPER (CASPER) data

Person in charge of infection prevention had multiple hats

Citations in infection control were related to experience of Infection Preventionist (IP)

Less than 3% of IPs were certified
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- Personnel in charge of infection prevention had multiple hats
- Citations in infection control were related to experience of Infection Preventionist (IP)
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- Comprehensive antibiotic stewardship policies were rare
- IP training was related to having comprehensive antibiotic stewardship
Second Survey
(n = 892, 50% response rate)

- Characteristics of the infection control program in the facility
- Training of the person in charge of the program (i.e., the IP)
- Palliative care processes
- Infection management processes
- Integration of palliative care and infection management
Change in Infection Control Programs Over Time

- Questions on ICP program
  - Antibiotic Stewardship (5 policies)
  - Outbreak Control (7 policies)
  - UTI Prevention (7 policies)
  - Infection Preventionist Education & Training
- Calculated standardized intensity indices for the 3 policy groups
Change in Infection Programs Over Time

- Significant increased in policies in all categories ($p < 0.001$)
Improvements in outbreak control policies

All but cohorting significantly improved (all p values < 0.01)
Change in Infection Preventionist (IP) Training Over Time

Significant difference in all categories (p < 0.01)
Integration of Infection Management and Palliative Care in NHs
All integration scales small positive correlations with infection management and palliative care ($r = 0.11$ to $0.25$, $p$ values $< .01$)

Few associations between regional, state or nursing home characteristics and integration

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Policy Impact

• Many of the 27 Commission recommendations are about improving infection prevention and control including having full time trained infection preventionist.

• Palliative care and integration (i.e., providing comfort care in the NH for infections) are not mentioned.

• In a review of 21 COVID-19 NH guidance documents around the world, it’s been reported that the focus has been on infection prevention and control and only a few sentences on palliative care.
Discussion

- Even before COVID-19, infections were occurring frequently in NH residents

- Infection prevention and control in NHs is evolving (quickly with COVID-19)

- Infection management is suboptimal and treatments are often burdensome and inconsistent with palliative care goals

- It is still unclear how best to implement and coordinate infection prevention, palliative care and integration

- Strong, evidence based recommendations are needed
Preventing Infections in Multiple Healthcare Settings

April 28, 2020

Health care-associated infections (HAIs) are numerous, costly, and largely preventable events that can cause significant illness—and even death—particularly in vulnerable elderly patients. Nurses are responsible for most direct patient care in healthcare settings, so they are closely involved with infection control and prevention. Research led by nurse scientists on infection control has helped provide a foundation of evidence-guided best practices in multiple clinical settings.

With support from NINR, Drs. Elaine Larson, Jingjing Shang, and Patricia Stone of the Columbia University School of Nursing have led projects investigating hospital infections and prevention in hospitals, home healthcare, and nursing homes. Some highlights of their work in infection prevention and control (IPC) are described below.
Thanks to a fabulous interdisciplinary team, and all the nurses who have participated in our research!