Introduction

- Hand hygiene crucial to preventing infections and transmitting pathogens
- Much attention has been paid to healthcare personnel hand hygiene and promotion
- Role of patient hand hygiene overlooked, particularly in long-term care and post-acute care facilities (PACFs) where time spent in common areas is significantly higher
- Risk of self-contamination and cross-transmission is high

Objective

- Determine prevalence and duration of selected antibiotic resistant organism (ARO) carriage on patients hands upon admission to a PACF.

Methods

- Multicenter prospective observational study
  - 6 PACFs in southeast Michigan
  - Newly admitted patients (within 10 days of admission)
  - 427/997 (43%) patients agreed to participate in the study
  - 357 patients (805 follow-ups) completed the study and were included in the analysis
- Bacterial swabs obtained from patient hands, at baseline, day 14 and monthly onwards, up to 180 days
- Standard microbiological methods to identify Methicillin-resistant *Staphylococcus aureus* (MRSA), Vancomycin-resistant Enterococcus (VRE) and resistant gram-negative bacteria (RGNB)
- RGNB: GNB resistant to ceftazidime, ciprofloxacin, or imipenem
- Statistical analysis conducted using SAS 9.3 and Microsoft Excel

Results

Table 1. Baseline Patient Hand Carriage of AROs

<table>
<thead>
<tr>
<th>Facility (n)</th>
<th>MRSA n (%)</th>
<th>VRE n (%)</th>
<th>RGNB n (%)</th>
<th>Any ARO n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (81)</td>
<td>8 (10)</td>
<td>7 (9)</td>
<td>2 (3)</td>
<td>16 (20)</td>
</tr>
<tr>
<td>2 (47)</td>
<td>6 (13)</td>
<td>6 (13)</td>
<td>0</td>
<td>12 (26)</td>
</tr>
<tr>
<td>3 (85)</td>
<td>9 (11)</td>
<td>9 (11)</td>
<td>2 (2)</td>
<td>19 (22)</td>
</tr>
<tr>
<td>4 (81)</td>
<td>8 (10)</td>
<td>16 (20)</td>
<td>2 (3)</td>
<td>21 (26)</td>
</tr>
<tr>
<td>5 (26)</td>
<td>3 (12)</td>
<td>5 (19)</td>
<td>3 (12)</td>
<td>8 (31)</td>
</tr>
<tr>
<td>6 (37)</td>
<td>5 (14)</td>
<td>6 (16)</td>
<td>0</td>
<td>10 (27)</td>
</tr>
<tr>
<td><strong>Total (357)</strong></td>
<td><strong>39 (11)</strong></td>
<td><strong>49 (14)</strong></td>
<td><strong>9 (3)</strong></td>
<td><strong>86 (24)</strong></td>
</tr>
</tbody>
</table>

Approximately 1 in 4 patients is colonized with any ARO when admitted to PACFs. Prevalence of gram-negative bacteria (RGNB) is less common and more transient.

Fig 1. Baseline and Newly Acquired Colonization on Patient Hands

34% (122/357) patient hands are colonized with ARO at some point, and 70% (86/122) is attributable to baseline colonization.

Fig 2. Patterns of MRSA Colonization

33% (19/58) of patient hands acquired MRSA colonization; 36% (21/58) of MRSA colonizations were recurrent (≥2 colonized visits).

Fig 3. Patterns of VRE Colonization

31% (22/71) of patient hands acquired VRE colonization; 23% (16/71) of VRE colonizations were recurrent (≥2 colonized visits).

Conclusions

- At study enrollment, one in four PAC patients is colonized with some ARO on hand.
- VRE and MRSA are the most prevalent organisms, often colonizing the hands of PAC patients persistently; while RGNB are less common and more transient.
- Patient hand hygiene is an important yet neglected link in infection control and merits further attention and promotion.