ABSTRACT

Background: Multidrug-resistance among Acinetobacter infections reported in healthcare-associated infections (HAIs) through the National Healthcare Safety Network (NHSN) decreased by 34% in the South Atlantic region between 2011 and 2014. NHSN data were largely from acute care hospitals and do not measure colonization rates, resistance in long term care facilities (LTCFs), nor infections that are not healthcare-associated. MDRA is classified as an urgent threat by the Centers for Disease Control and Prevention. A collaborative of HCFs conducted a point prevalence study to determine a baseline in Washington, DC. Methods: The study was designed primarily to measure the prevalence of carbapenem-resistant Enterobacteriaceae in DC HCFs. Samples were also evaluated using the Acuitas® MDRO Gene Test (OpGen, Gaithersburg MD) that detects the OXA 23 and OXA 51 genes, commonly associated with MDRA. We assessed 2,217 patients from 16 HCFs (all acute care hospitals (AH), 1 inpatient rehabilitation hospital (IRH), and 7 long term care facilities (LTCF)). A total of 1,036 patients met inclusion criteria and consented to participate. Results: The overall MDRA point prevalence rate (PR) was 6.6%. The PR for AHs, IRH, and LTCFs were 3.7, 0.0, and 16.4, respectively. OXA 23, a gene associated with carbapenem-resistance in Acinetobacters, was detected in 0.8% of samples from AHs (range: 0.0-2.0), and from 4.9% of samples from LTCFs (range: 0.0-15.4). Conclusions: This study showed a significantly greater prevalence of MDRA in LTCFs in the setting of decreasing HAIs due to MDRA in AHs. Although the reason for the difference in PR is unknown, DC HCFs can use these data to collaborate for improved information on patients’ resistance profiles as they traverse the continuum of care.

METHODS

• Prevalence period from January 11, 2016 to April 14, 2016
• Surveillance conducted over a 1–3 day interval for each facility
• Individual facility principal investigators coordinated sample collection in respective facilities
• Exclusion criteria:
  • on psychiatric or obstetric–gynecological wards
  • unable to provide verbal consent (due to language barrier, cognitive inability, or emotional inappropriateness)
  • clinically inappropriate time for participation
  • Written informed consent waived; verbal consent obtained
• Patient based variables collected: age, sex, and zip code
• Location variables: critical care, step-down units, wards, inpatient rehabilitation, and long term care (with long term care and long term acute care combined)
• Facility-based variables: source of samples from peri-anal site
• Peri-anal samples processed at OpGen laboratories (Gaithersburg, MD) using the Acuitas® MDRO Gene Test

RESULTS

• 1,036 patients consented; acceptance rate of 68.9%
• Prevalence of MDRA by facility ranged from 0.0% to 16.4%

<table>
<thead>
<tr>
<th>Patient Care Type</th>
<th>n Facilities</th>
<th>n Sampled Patients</th>
<th>MDRA</th>
<th>% MDRA</th>
<th>Prevalence Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inpatient Rehabilitation</td>
<td>1</td>
<td>52</td>
<td>0</td>
<td>0.0</td>
<td>-</td>
</tr>
<tr>
<td>Long Term Care Facility</td>
<td>7</td>
<td>244</td>
<td>40</td>
<td>16.4</td>
<td>4.7 (3.0-7.5)</td>
</tr>
<tr>
<td>Subtotal Short Term Acute Care Facilities</td>
<td>8</td>
<td>726</td>
<td>27</td>
<td>3.7</td>
<td>0.3 (0.2-0.4)</td>
</tr>
<tr>
<td>Critical Care</td>
<td>8</td>
<td>90</td>
<td>2</td>
<td>2.2</td>
<td>0.3 (0.1-1.3)</td>
</tr>
<tr>
<td>Step down</td>
<td>4</td>
<td>61</td>
<td>3</td>
<td>4.9</td>
<td>0.8 (0.2-2.3)</td>
</tr>
<tr>
<td>Ward</td>
<td>8</td>
<td>575</td>
<td>22</td>
<td>3.8</td>
<td>0.4 (0.2-0.6)</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>1022</td>
<td>67</td>
<td>6.6</td>
<td>-</td>
</tr>
</tbody>
</table>

• PCR testing indicated overall Acinetobacter prevalence of 6.6%
• Prevalence in long term care facilities 4.7 times greater than other facility types

DISCUSSION AND CONCLUSIONS

• Point-prevalence screening of both acute care and LTCFs in a region is important to understand the prevalence and distribution of MDRA infection and the potential for inter-facility spread.
• Using data from only acute care settings to assess MDRA infections in healthcare facilities most likely underestimate the overall prevalence.
• Facilities may consider periodic screening of high-risk patients, including those admitted from LTCFs.

ACKNOWLEDGEMENTS

The HARP-DC Study was collaborative in concept and execution.

The following facilities participated:
• BridgePoint Capitol Hill
• BridgePoint National Harbor
• Children’s National Medical Center
• George Washington University Hospital
• Howard University Hospital
• MedStar Georgetown University Hospital
• MedStar National Rehabilitation Hospital
• MedStar Washington Hospital Center
• Providence Hospital
• Sibley Memorial Hospital
• Sibley Renaissance
• Transitions Healthcare
• United Medical Center

LIMITATIONS

• Few patient variables collected; limited risk factor analysis
• Results de-identified; precluded from being used for clinical decisions or to isolate identified colonized patients
• Challenges obtaining consent for patients unable to verbally consent for themselves
• Difficult to sample patients who were obese, bed-bound, or situated upright in a chair
• Variability in sampling rate across facilities