Objective: Trends of VRE are described for the incidence of VRE, VRE infection and VRE bacteremia in hospitals in Ontario and by geographical areas from 2000 to 2012.

Methods: Laboratory data were provided by the Quality Management Program – Laboratory Services (QMP–LS).

Results: The incidence of total VRE, VRE infections and VRE bacteremias significantly increased from 2000 to 2012. Compared to patients of Toronto hospitals, patients of hospitals in Southwestern and Southeastern Ontario were on average more likely to have patients with a VRE bacteremia.

Conclusions: Future VRE research is needed to explore reasons for regional variations in VRE and VRE bacteremias, the impact of VRE screening practices, and to assess the quality and validity of VRE surveillance systems.

Abstract

Introduction

Vancomycin-Resistant Enterococcus (VRE) are:
• Enterococci bacteria that are resistant to the antibiotic vancomycin
• Commonly known to be acquired in healthcare settings such as hospitals and long-term care homes.

Individuals in these healthcare settings may be at increased risk of infection due to immunosuppression, antibiotic therapy, and/or medical devices. VRE bacteremias are associated with increased morbidity and mortality:
• Particularly within high-risk populations
• Increased length of stay in hospitals
• Increased patient hospitalization costs

Results and Discussion

Data on VRE for 2000-2012 were collected by laboratories in Ontario and were obtained from the annual Antibiotic-Resistant Organism (ARO) surveys conducted by Quality Management Program – Laboratory Services (QMP–LS). Laboratories obtained information from the hospitals they serve to add completion of the surveys. The surveys:
• Were administered to all Ontario laboratories
• Collected laboratory data (including questions posed in Table 1)

Data were cleaned and analyzed with SAS software version 9.2 (SAS Institute).

Materials & Methods

Contact

Contact Information: Renate van Dorp
Renate.vandorp@pdhu.on.ca
Phone: 613-222-7133
Website: www.publichealthontario.ca

References


Results and Discussion, Cont’d

Compared to patients of Toronto hospitals, patients of hospitals in:
• Southwestern (RR = 1.7; 1.2-2.5) and Southeastern Ontario (RR = 1.6; 1.3-2.4) were on average more likely to have patients with total VRE
• Northern (RR = 0.2; 0.1-0.4) and Southcentral Ontario (RR = 0.5; 0.3-0.6) were on average less likely to have patients with a VRE bacteremia.

While the number of VRE bacteremias should be consistent, QMP–LS reports a lower number of VRE bacteremias compared to the number reported by MOHLTC (Figure 3). Differences in case definitions and occasional errors related to the submission of VRE colonizations NOT bacteremias in hospitals reporting to MOHLTC may contribute to these discrepancies. PHS is currently conducting an evaluation of VRE bacteremias in the province that includes a validation of the number of VRE bacteremias reported to MOHLTC via Health Quality Ontario (HQO).

Conclusions

The incidence of total VRE in Ontario increased significantly from 2000 to 2011 and was lower in 2012. This decrease coincided with cessation of screening for VRE by four academic teaching hospitals. The incidence of VRE bacteremias increased significantly from 2000-2012. Future research needs to explore:
• The quality and validity of VRE surveillance data within various reporting systems
• Periodic and regional variations in VRE bacteremias
• Changes to VRE screening and isolation precautions and their impact on Ontario’s patient populations

Data in Table 1:
Number of ARO survey question included

<table>
<thead>
<tr>
<th>Total VRE</th>
<th>How many new patients with VRE did your laboratory identify in 2012? (Please count only one isolate per patient)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VRE infection</td>
<td>How many of the patients identified had a VRE infection?</td>
</tr>
<tr>
<td>VRE bacteremia</td>
<td>How many of the patients identified had a positive blood culture for VRE?</td>
</tr>
</tbody>
</table>

Number of OAR survey question included

<table>
<thead>
<tr>
<th>Total VRE</th>
<th>How many new patients with VRE did your laboratory identify in 2012? (Please count only one isolate per patient)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VRE infection</td>
<td>How many of the patients identified had a VRE infection?</td>
</tr>
<tr>
<td>VRE bacteremia</td>
<td>How many of the patients identified had a positive blood culture for VRE?</td>
</tr>
</tbody>
</table>

Data on VRE for 2000-2012 were collected by laboratories in Ontario and were obtained from the annual Antibiotic-Resistant Organism (ARO) surveys conducted by Quality Management Program – Laboratory Services (QMP–LS). Laboratories obtained information from the hospitals they serve to add completion of the surveys. The surveys:
• Were administered to all Ontario laboratories
• Collected laboratory data (including questions posed in Table 1)

Data were cleaned and analyzed with SAS software version 9.2.