

a Very Reasonable Explanation

The widespread use of broad spectrum antibiotics and vancomycin has led to the emergence of **Vancomycin Resistant Enterococcus (VRE)**. Attention has been drawn to Saskatchewan with the increasing number of VRE isolated. This article will address a number of frequently asked questions about VRE.

How does enterococcus become resistant to vancomycin?

Organism based antimicrobial resistance can be divided into two categories, **intrinsic** (resulting from the normal genetic, structural or physiological state of the organism) or **acquired** (resulting from changes in a microorganism's usual genetic makeup by mutation, gene transfer from other organisms, or a combination of mutational and gene transfer). Enterococci are intrinsically resistant to a wide variety of antimicrobial agents, and they are resistant to killing by any single antimicrobial agent alone. As part of the normal intestinal flora, enterococci are exposed to antibiotics that are excreted via the gastrointestinal tract facilitating acquisition of vancomycin resistance genes. Broad spectrum antibiotics kill the normal flora and select out those that have acquired the VRE gene.

Why is it important to screen patients for VRE, when it is not making them sick?

Carriers of VRE have intestinal colonization that leaves them at risk for developing VRE infection. Also, they may spread VRE to the hands of health care workers, to the environment, or to other patients.

Why is it important to the Infection Control Department to know about any VRE?

Controlling the spread of VRE is important to prevent susceptible patients from developing life threatening infections with VRE. Also, there is potential for vancomycin resistance genes to be transferred from VRE to *Staphylococcus aureus*.

Why isn't the Infection Control staff concerned with vancomycin resistant *Enterococcus* species other than *Enterococcus faecium* and *Enterococcus faecalis*?

Enterococcus gallinarum and *Enterococcus casseliflavus* exhibit low-level intrinsic vancomycin resistance. Also, the vancomycin resistance genes of these species are not transferrable.

Who should be screened for VRE?

All patients at risk of developing VRE infections or at risk of being colonized, should be screened with peri-rectal swab or stool culture specimens. High risk groups include:

- patients hospitalized for long periods of time
- patients previously treated with vancomycin, third generation cephalosporins, antibiotics with activity against anaerobes, or multiple antibiotics e.g. ICU patients
- patients with increased severity of illness e.g. dialysis patients, immunosuppressed patients
- patients in proximity to individuals colonized with VRE
- patients admitted from VRE endemic areas
- patients with diarrhea caused by *Clostridium difficile*

How do you treat people with VRE?

People colonized with VRE do not require treatment. Treatment options for those infected with VRE are limited, and among those tried, a combination of amoxicillin and gentamicin was considered best. However, new antimicrobial agents with activity against VRE have been developed. These include new glycopeptides, quinolones, and streptogramins. Studies indicating the efficacy of these agents are limited.

How long does a person stay colonized with VRE?

VRE colonization may last weeks, months, or an indefinite period of time. Carriage is prolonged by factors that alter bowel flora e.g. antibiotic use. Therefore, it is necessary to stress to the VRE positive individual, the importance of notifying any health care staff when receiving medical attention. The health care member can then take the appropriate precautions, in order to prevent the spread of VRE.

Should our Microbiology laboratory be screening for VRE and what procedure(s) should be used?

A variety of media and procedures are available for VRE screening, and those used are dependent upon the size and extent of services offered by each laboratory. A review of the most recent literature and consultation with staff from laboratories performing VRE screen tests, may assist the microbiologist in determining what is best for the laboratory in question. The decision of whether to screen or not is usually made by the Infection Control staff, and is dependent upon the prevalence of the organism in the community and the patient population.

References

Available upon request

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