Vancomycin-Resistant Enterococci (VRE)

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Vancomycin was introduced 40 years ago for use against penicillin-resistant staphylococci, but, because of its toxicity and the introduction of methicillin, vancomycin soon became an alternate agent and assumed the role of second-line therapy. With the appearance of methicillin resistance in Staphylococcus aureus (MRSA), coagulase-negative staphylococci in the past two decades and penicillin resistance in enterococci in the last decade, vancomycin has been reintroduced as an important therapeutic agent. The use of vancomycin has been increased further by the discovery of ***Clostridium difficile*** as the cause of antibiotic-associated colitis and by the finding that vancomycin given orally is effective therapy. The widespread use of vancomycin has led to the appearance of vancomycin resistance in enterococci.

A rapid increase in the incidence of infection and colonisation with vancomycin-resistant enterococci (VRE) has been reported from US hospitals since 1989. Although the majority of these isolates initially were recovered from patients in intensive care units, VRE are now becoming increasingly prevalent among patients hospitalised on other wards.

Enterococci are the third most commonly isolated gram-positive organism in most US hospitals. Most VRE are also resistant to multiple other drugs, previously used for the treatment of infections due to these organisms. Certain multi-drug resistant strains are difficult to treat and carry a high morbidity for the patient and a high cost to the healthcare system.

Although VRE are organisms of low pathogenicity, it has been shown in the laboratory that it is possible for MRSA to acquire vancomycin resistance from VRE. This has not yet happened outside the laboratory, but should it occur would be a most serious development.

An increased risk of VRE infection and colonisation has been associated with previous vancomycin and/or multi-antimicrobial therapy, extended hospital stays, severe underlying disease or immunosuppression, intra-abdominal surgery, invasive procedures/devices (including indwelling urinary or central venous catheter and enteral feeding tubes). Because enterococci can be found in the normal gastrointestinal and female genital tract, most enterococcal infections have been attributed to endogenous sources (self-infection) within the individual patient. Alternatively patients may become infected exogenously (cross-infection) from the hands of health-care workers or from the hospital environment.

Vancomycin has been widely used in animal feeds. Although several investigations in Europe have recovered VRE from farm animals and commercially processed chicken carcasses, additional studies are needed to determine if food products are the source of the organism.

In Queensland to date there have been five isolates from different hospitals. Recommendations for preventing the spread of vancomycin resistance were published by the Hospital Infection Control Practices Advisory Committee in the United States in September 1995, and have been adopted by this hospital to prevent patient-to-patient spread of VRE.

One of the primary means of preventing vancomycin-resistant enterococci was through the prudent use of vancomycin. The development of a comprehensive antimicrobial-utilisation plan should include the provision of education to all medical staff, overseeing antibiotic prophylaxis, and guidelines for the proper use of vancomycin.

In addition, isolation procedures should be initiated to prevent patient-to-patient transmission of VRE:

1. Place the VRE infected or colonised patients in private/isolation rooms, under 'Strict Isolation'. Cohort staff who provide regular ongoing care to patients to minimise the movement/contact of healthcare givers between VRE-positive and VRE-negative patients.
2. Wear gloves (clean nonsterile gloves are adequate) when entering the room of a VRE-infected or colonised patient because VRE can extensively contaminate such an environment. During the course of caring for a patient, a change of gloves may be necessary after contact with material that may contain high concentrations of VRE (eg, stool).
3. Wear a plastic apron when entering the room of a VRE-infected or colonised patient.
4. Remove gloves and gown before leaving the patients room and immediately wash hands with an antiseptic soap.
5. Ensure that after glove and gown removal and handwashing, clothing and hands do not contact environmental surfaces that are potentially contaminated with VRE (eg, door knob or curtain) in the patient's room.
6. Dedicate the use of noncritical items (eg, stethoscope, sphygmomanometer or rectal thermometer) to a single patient infected with VRE.
7. Obtain a stool culture or rectal swab from roommates of patients newly found to be infected or colonised with VRE to determine their colonisation status, and apply isolation precautions as necessary to these patients.
8. Adopt a policy for deciding when patients infected and/or colonised with VRE can be removed from isolation precautions. The optimal requirements remain unknown; however, since VRE colonisation may persist indefinitely, stringent criteria may be appropriate.
9. It is not known whether colonisation with VRE is transient or if it is possible to be colonised intermitttently, although one study showed patients to be colonised for up to one year. Because patients with VRE can remain colonised for long periods after discharge from hospital all patients detected with VRE will be entered onto the Computerised Patient Information System – Infection Control Alert screen by Infection Control, so that they can be promptly identified and placed in isolation upon readmission to hospital. Staff are to contact Infection Control or Bed Allocations if an alert is noted on the patient's admission screen.
10. The discharge of VRE-infected or colonised patients to nursing

homes, other hospitals, or home healthcare, should only occur if the receiving institution has a strategy for handling patients with resolving infections and patients colonised with antimicrobial-resistant microorganisms.

11. Terminal cleaning with detergent and water is sufficient. Curtains should be changed when the patient is discharged. No additional precautions need to be taken with linen, unless significantly contaminated.
12. Moving a patient into isolation will cause them a great deal of anxiety and concern. Time must be spent in counselling them and their family through this difficult time in hospital.
13. As this infection is a hospital problem, precautions do not need to be taken by the patient or their family after discharge.

(This information was disseminated to staff via the Infection Control Newsletter, which is distributed monthly).

Reference

Hospital Infection Control Practices Advisory Committee (1995). Recommendations for Preventing Spread of Vancomycin Resistance. Infection Control Hospital Epidemiology, 16:105-113.

Sterilising Research & Advisory Council of Australia (NSW) Inc.

The Sterilising Research and Advisory Council of Australia NSW Inc (SRACA), is pleased to announce the launch of its Advisory-Information Service-"SteriDial"©

The aim of the service is to assist Sterilising and healthcare professionals who may have issues of concern relating to Sterilisation and Disinfection in the healthcare setting.

The development of this service is partially a result of the introduction of AS4187. "Code of Practice for cleaning, disinfecting and sterilising of re-usable medical and surgical instruments and equipment, and maintenance of associated environments in health care facilities" in addition to revised Infection Control guidelines from NSW Health Department and the ANCA/NHMRC.

Whilst it is widely acknowledged these documents have greatly assisted and clarified the ambiguities which prevailed for so long concerning sterilisation, disinfection, infection control and prevention, they have at the same time created concern on a broader scale across healthcare as practitioners from many disciplines attempt to modify their practices to comply.

It is the intention of the SRACA to assist sterilisation and health professionals to over come concerns and obstacles in their compliance objectives and to add support to local issues where technical difficulties are encountered regarding sterilisation and disinfection.

The service will operate four evenings per week. Monday to Thursday. Callers will be able to register voice messages stating their issue of concern which will be collected each evening by SRACA technical advisors. A response will be formulated and relayed on the following day. Messages will also form the basis of information for publication in Sterilisation in Australia – the quarterly journal of SRACA (NSW).

The technical advisors who will respond to messages are drawn from across the NSW Hospital sterilising industry and who are members of the SRACA (NSW) executive committee.

Recorded information will be stored on the voicemail and will be updated to keep members informed of contemporary issues, workshops and other relevant industry information.

It would be appreciated if you could support this "Steridial"© initiative and circulate this information in your organisation. We sincerely look forward to being of assistance should your organisation require it now or in the future.