VANCOMYCIN RESISTANT ENTEROCOCCUS

REPORTING INFORMATION
- Class A (3)
- Report by the end of the work week
- Confidential Case Report Card (3812.11 rev. 12/81), Lab Report (3833.11), or Telephone
- VRE reporting form (HEA 3821, rev. 6/98) should be completed and submitted to ODH, Bureau of Infectious Disease Control, 246 N. High Street, PO Box 118, Columbus, OH 43266-0118.

AGENTS
Enterococcus isolates which have demonstrated resistance to the antibiotic vancomycin (VRE)

CASE DEFINITION
CDC has not published a case definition for vancomycin-resistant *Enterococcus*. The following guidelines are used for determining a case in Ohio.

Clinical description
Cases can be asymptomatic or symptomatic. Urinary tract infections are the most common type of disease caused by the *Enterococcus* bacterium. In addition, *Enterococci* cause between 5% and 15% of all cases of bacterial endocarditis (inflammation of the lining of the heart and its valves). This bacterium also causes infections of the gastrointestinal tract, kidneys, and meninges.

Laboratory criteria for diagnosis
Isolation of vancomycin-resistant *Enterococcus* from any anatomic site

Case classification
Confirmed: a case that is laboratory confirmed

DIAGNOSIS
See case definition.

EPIDEMIOLOGY
Certain patient populations have been found to be at an increased risk for VRE infection, whether or not the infection causes disease. These include: critically ill patients; patients with severe underlying disease; patients with weakened immune systems, such as intensive care unit patients or patients in cancer treatment or transplant units; patients who have had stomach, heart, or chest surgery; patients who have had a prolonged hospital stay; and patients who have received several different antibiotics, including vancomycin.

Because *Enterococci* are among the bacteria that normally inhabit the gastrointestinal tract and the female genital tract, most infections arise from the patient's own bacterial flora, at a time when the patient is subjected to illness and antibiotic therapy. Recent reports have demonstrated, however, that *Enterococci*, including VRE, can spread person-to-person (either patient-to-patient or from health care provider-to-patient), and might be acquired from environmental sources (such as from contaminated patient care equipment).

PUBLIC HEALTH MANAGEMENT

Prevention and Control

All hospitals and other health-care delivery services should a) develop a comprehensive, antimicrobial-utilization plan to provide education for their medical staff, b) oversee surgical prophylaxis, and c) develop guidelines for the proper use of vancomycin as applicable to the institution. Guidelines should include consideration of the following:

- *situations in which the use of vancomycin is appropriate or acceptable*
  - treatment of serious infections caused by beta-lactam--resistant gram-positive organisms
  - treatment of infections caused by gram-positive microorganisms in patients who have serious allergies to beta-lactam antimicrobials
  - when antibiotic-associated colitis fails to respond to metronidazole therapy or is severe and potentially life-threatening
  - prophylaxis, as recommended by the American Heart Association, for endocarditis following certain procedures in patients at high risk for endocarditis
  - prophylaxis for major surgical procedures involving implantation of prosthetic materials or devices at institutions that have a high rate of infections caused by methicillin-resistant *Staphylococcus aureus* (MRSA) or methicillin-resistant *Staphylococcus epidermidis*. A single dose of vancomycin administered immediately before surgery is sufficient unless the procedure lasts >6 hours, in which case the dose should be repeated. Prophylaxis should be discontinued after a maximum of two doses
- *situations in which the use of vancomycin should be discouraged*
  - routine surgical prophylaxis other than in a patient with life-threatening allergy to beta-lactam antibiotics
  - empiric antimicrobial therapy for a febrile neutropenic patient, unless initial evidence indicates that the patient has an infection caused by gram-positive microorganisms and the prevalence of infections caused by MRSA in the hospital is substantial
  - treatment in response to a single blood culture positive for coagulase-negative staphylococcus, if other blood cultures taken during the same time frame are negative (i.e., if contamination of the blood culture is likely)
  - continued empiric use for presumed infections in patients whose cultures are negative for beta-lactam--resistant gram-positive microorganisms
  - systemic or local prophylaxis for infection or colonization of indwelling central or peripheral intravascular catheters
  - selective decontamination of the digestive tract
  - eradication of MRSA colonization
  - primary treatment of antibiotic-associated colitis
  - routine prophylaxis for very low-birthweight infants
  - routine prophylaxis for patients on continuous ambulatory peritoneal dialysis or hemodialysis
  - treatment (chosen for dosing convenience) of infections caused by beta-lactam--sensitive gram-positive microorganisms in patients who have renal failure
  - use of vancomycin solution for topical application or irrigation
- *enhancing compliance with recommendations*
  - influencing prescribing practices of physicians
  - monitoring vancomycin use through the quality assurance/improvement process and drug utilization review

Control of VRE in hospitals requires a collaborative, institution-wide, multidisciplinary effort. In all hospitals, the following measures should be implemented.

- notify appropriate staff promptly when VRE are detected
- inform clinical staff of policies regarding VRE-infected or colonized patients
- establish system(s) for monitoring appropriate process and outcome measures
- initiate the following isolation precautions to prevent patient-to-patient transmission
  - place VRE-infected or colonized patients in private rooms or in the same room as other patients who have VRE
  - wear gloves when entering the room of a VRE-infected or colonized patient

- wear a gown (a clean, nonsterile gown is adequate) when entering the room of a VRE-infected or colonized patient if
    a. substantial contact with the patient or environmental surfaces is anticipated
    b. the patient is incontinent
    c. the patient has had an ileostomy or colostomy, has diarrhea, or has wound drainage not contained by a dressing
- remove gloves and gown before leaving the patient's room and immediately wash hands with an antiseptic soap or a waterless antiseptic agent
- after glove and gown removal and handwashing, clothing and hands should not contact environmental surfaces in the patient's room that are potentially contaminated with VRE

- dedicate the use of noncritical items to a single patient or cohort of patients infected or colonized with VRE.
- obtain a stool culture or rectal swab from roommates of patients newly found to be infected or colonized with VRE to determine their colonization status and apply isolation precautions as necessary.
- adopt a policy for deciding when patients infected or colonized with VRE can be removed from isolation precautions.
- establish a system for highlighting the records of infected or colonized patients so they can be promptly identified and placed on isolation precautions upon readmission to the hospital.
- consult the local and state health departments when developing a plan regarding the discharge of VRE-infected or colonized patients to nursing homes, other hospitals, or home-health care.

Hospitals with endemic VRE or continued VRE transmission need additional measures:

- focus initial efforts on ICUs and other areas where the VRE transmission rate is highest
- cohort the staff to minimize movement/contact between VRE-positive and VRE-negative patients
- as part of careful epidemiologic studies, examine personnel for chronic skin and nail problems and perform hand and rectal swab cultures
- verify adequate procedures for the routine care, cleaning, and disinfection of environmental surfaces and that these procedures are being followed by housekeeping personnel
- consider sending VRE isolates to reference laboratories for strain typing to aid in defining reservoirs and patterns of transmission

The above recommendations, plus additional considerations, are published in "Recommendations for Preventing the Spread of Vancomycin Resistance: Recommendations of the Hospital Infection Control Practices Advisory Committee (HICPAC)," *MMWR* Sept. 22, 1995;Vol. 44(RR-12):1-13, and are available on the Internet at http://search.cdc.gov/search97cgi/s97_cgi.exe.