Enterococcus and the AURA Surveillance System

Information Series

The AURA Program have prepared this document on behalf of the Australian Commission on Safety and Quality in Health Care.

Use of this publication is welcomed, enquiries can be sent to AURA@safetyandquality.gov.au.
Enterococcus and the AURA Surveillance System

This information is drawn from AURA 2016: first Australian report on antimicrobial use and resistance in human health (AURA 2016), and provides a general summary of this report’s information on enterococcus, a key priority organism monitored through the AURA Surveillance System.

What is enterococcus?

Twelve bacteria, or bacterial families, have been identified as the most important for monitoring in Australia. Some of these bacteria are important to monitor because they are a common cause of infection or spread easily, while others are important to monitor because they can have a significant impact on a person’s health when they do cause infection. Enterococcus is one such bacteria.

Enterococcus is a family of bacteria which normally live in human intestines and animals. All of us carry one or two types of them. Because they can tolerate drying, enterococci are also often found in the environment. These bacteria can sometimes cause infections, but generally only in people who are having medical treatments and interventions.

The two types of enterococci which usually cause infections are Enterococcus faecalis (E. faecalis) and Enterococcus faecium (E. faecium). Enterococci are naturally resistant to many types of common antibiotics. Resistance to the antibiotic vancomycin is a particular concern, as it is an important treatment for serious infections.

What types of infections are caused by enterococci?

The most common types of infections caused by enterococci occur in the urinary tract and the abdomen (especially in the biliary tract which is the liver, gall bladder and bile ducts). Enterococci are often found in surgical wound infections mixed with other bacteria, but do not require specific treatment. Bloodstream infection may occur in combination with any of these infections and is particularly difficult to treat. Rarely, they can cause infection in heart valves (endocarditis).

Infections with E. faecalis are more common than those caused by E. faecium however E. faecium infections are more difficult to treat because the number of effective antibiotics available is very limited.

Who is at risk of infections caused by enterococci?

Risk of infection with enterococci is highest for patients who:

- have low immunity or are in intensive care units, renal (kidney-related), cancer or transplant wards
- have been previously treated with the antibiotic vancomycin or other antibiotics for long periods
- have had abdominal or chest surgery
- have urinary catheters or central intravenous (IV) catheters for long periods of time.

People who are colonised with vancomycin-resistant enterococcus (VRE) are at increased risk of serious infection if they are admitted to hospital or have surgery. Colonisation means that the VRE is living in the intestine or urinary tract of a person, without causing infection.
How are enterococci spread?

VRE and other enterococci are mostly spread by contaminated hands of healthcare staff and carers after contact with an infected or colonised patient or with contaminated surfaces and equipment. VRE can survive for long periods on hands, gloves and surfaces such as door handles, stethoscopes, bed tables, call bells, bedside monitors and on surfaces in bathrooms used by infected or colonised patients.

What can be done to prevent the spread of enterococci?

The spread of enterococci can be prevented by good hand-hygiene by patients and healthcare workers and other carers and careful cleaning of bathrooms and frequently touched surfaces. Good hand hygiene involves washing hands with soap and water and drying them thoroughly before and after patient contact and contact with surfaces in a room where an infected person is being cared for.

Hospitals also prevent the spread of VRE by screening to find patients who are colonised so that special infection control measures can be put in place. This might include a single room and use of protective equipment such as gowns and gloves for healthcare staff and visitors. Careful selection and use of antibiotics by doctors is also important.

What do we know about resistance to antibiotics in enterococci in Australia?

Enterococci have a natural ability to evolve rapidly and become resistant to antibiotics over and above the ones to which they are already resistant to. Resistance usually occurs due to high usage of certain antibiotics in hospitals. Resistance to the antibiotics ampicillin and amoxicillin in *E. faecium* has grown to high levels all around the world, including in Australia in the last 20 years. This has resulted in the use of vancomycin to treat serious enterococcal infections. Resistance to vancomycin has emerged more recently and created even more problems with treatment. VRE are more common in patients who have been previously treated with the antibiotic vancomycin or other antibiotics for long periods, either in the community or in hospital.

Monitoring of antibiotic resistance in enterococci in Australia is conducted by the Australian Group on Antimicrobial Resistance. Rates of resistance to ampicillin and vancomycin in *E. faecalis* have been found to be very low nationally (less than 1% in 2014 in blood and urine and other types of specimens). In 2014, national rates of resistance in *E. faecium* were high to the antibiotics ampicillin (89.4%) and vancomycin (46.2%).

What treatments are there for infections caused by resistant enterococci?

Most infections caused by resistant enterococci, including VRE, can be treated with currently available antibiotics. Infections with VRE require treatment with last-line reserve antibiotics or their combinations which can be associated with toxic side effects. There is also the risk that VRE will also develop resistance to the antibiotics during treatment.

What is being done to control antibiotic resistance enterococci and keep patients safe?

Australia has developed a National Antimicrobial Resistance Strategy which commenced in 2015. All Australian governments are working with doctors, nurses and hospitals on a nationally consistent approach to strengthen infection control and appropriate use of antibiotics.
The Australian Commission on Safety and Quality in Health Care (the Commission) is supporting the work as part of its Healthcare Associated Infection Program. The Commission is also leading the Antibiotic Use and Resistance in Australia (AURA) Project. AURA has partnered with laboratory groups which monitor antibiotic resistance and groups which monitor antibiotic prescribing and use to set up the AURA Surveillance System to regularly monitor changes in resistance patterns and appropriateness of prescribing.

AURA supports analysis and reporting on the information which is collected. AURA has also commenced a Critical Antimicrobial Resistance Alert System to inform the health system and governments of emerging and re-emerging highly resistant bacteria.

**Further information**

More information on VRE is available at: [Centres for Disease Control and Prevention](https://www.cdc.gov), Vancomycin-resistant Enterococci (VRE) in healthcare settings.