



The Australian Group on Antimicrobial Resistance
<http://antimicrobial-resistance.com>

Australian Enterococcal Sepsis Outcome Programme (AESOP)

Background

Enterococci are recognised as significant nosocomial pathogens causing urinary tract, blood stream, sterile site and wound infections. Since 1988 resistance to vancomycin has emerged and increased worldwide and is now widespread in Europe and the USA. The first vancomycin resistant enterococcal isolate (VRE) was reported in Australia in 1994 and a report on the emergence and epidemiology of VRE in Australia was described in 1998 when 69 isolates had been documented. Prevalence or incidence rates of VRE in Australian hospitals are not routinely collected although there have been reports of individual hospital outbreaks of VRE infections and associated colonisation of other patients. The clinical impact of vancomycin resistance in enterococci has been reported to result in increases in mortality, length of stay and hospital costs. Infection control measures can be used to eradicate the organism from a hospital or to prevent it from becoming established.

The Australian Group on Antimicrobial Resistance (AGAR) performs period-prevalence surveys to monitor changes in antimicrobial resistance in a range of pathogens. From 1995 to 2010, seven *Enterococcus* species surveys (100 Enterococci collected from clinical samples) were performed. In recent AGAR Enterococcal surveys, an increase in the number of VRE isolated has been noted in several regions. In the 2009 and 2010 surveys more than one in three *E. faecium* were VRE. The number of enterococcal species isolated from blood cultures has also increased over the period of the surveys.

As participation in the AGAR enterococcal surveys was not compulsory, the Group felt that the true epidemiology of enterococcal disease was not captured by this subset and that a continuous collection of clinically significant enterococci was warranted.

Introduction

Our knowledge of the epidemiology of enterococcal bacteraemia in Australia is far from complete. Reports from Europe and the Americas indicate that the establishment of isolates belonging to clonal complex (CC) 17 in the hospital setting is responsible for the increase in VRE reported in these regions. In one Australian hospital, sequence type (ST) 203 belonging to CC17 was responsible for a marked increase in enterococcal bacteraemia in that institution (Johnson et al, 2010). As both vancomycin susceptible and vancomycin resistant CC17 are detected in an institution, it is proposed

that CC17 isolates are hospital adapted clones that are susceptible to lateral gene transfer of the *vanB* locus.

Objective

The aim of this programme is to monitor enterococcal bacteraemia in Australia through the prospective assessment of

- (i) clinical impact, as measured by 7- and 30-day mortality
- (ii) evolving antimicrobial resistance patterns, especially VRE
- (iii) the dominant clones; their distribution and evolution.

Collection and Storage of Isolates

From the 1st January 2011, AGAR members are to collect *Enterococcus* species isolated from blood cultures. Store isolates in glycerol broth at -80C. You will be required to forward cultures biannually to ACCESS Typing and Research at Royal Perth Hospital.

Case definition

If more than one *Enterococcus* (includes two isolates of the same species with different susceptibilities) is isolated from blood cultures collected on the same day this is considered as a single episode of enterococcal bacteraemia. Enter the more resistant isolate as the primary isolate and enter the other species or types in the 'polymicrobial bacteraemia' field.

Do not include repeat isolates from the same episode. Specifically, do not report again if the same isolate is found in blood cultures within a 14 day period, regardless of primary medical condition or treatment conditions that may have changed. If another isolate of the same species with an obviously different antibiogram occurs within the 14-day window, enter as a new episode. If patient has cleared this episode (>14 days) and contracted another enterococcal bacteraemia, either relapse or re-infection (mostly occurs when device related), then you may enter as a new episode.

Data Entry

AGAR scientific representatives are to identify *Enterococcus* species isolated from a blood culture in their laboratory and enter isolate details (date of collection, species identification and susceptibility, patient demographics) using an on-line data entry form available via the AGAR website. AGAR clinical representatives are to provide as much of the clinical data as possible. The nature of the demographic, risk factors and outcome data required is such that staff will need to gather the required information through a range of means including (i) case note review, (ii) discussion with the clinical staff caring for the patient, (iii) review of laboratory information system (LIS), and (iv) review of patient information system (PIS), or any combination of these. Overall, the data being collected are those which would normally be encountered or sought as part of direct or consultative patient management and follow-up. For outcome data, staff must not contact the patient or family directly if they have been unable to determine the outcome through the specified means.

Data will be entered directly onto a web database located at www.antimicrobial-resistance.com/aesop. Each site will have a unique code that requires an initial set up and password for login. Only approved staff from each participating site can enter data on screen. When an entry is completed a green tick appears on the left hand side of that entry on the summary page. Editing is still allowed even if entry is complete.

Data entry fields

Data will be entered at each participating site by AGAR representatives.

Log on

1. **Visit www.antimicrobial-resistance.com/aesop**
2. **Enter institution password**
You will be required to set an institution password on the second screen at the time of initial access. This screen will be bypassed subsequent to you changing your password
3. **Enter your surname** (name of person entering data)
4. **Data Summary Page**
Select **Add a New Case** to input details of a new case. A list of cases already entered will be visible. Select **Edit** or **Delete** to update or delete existing records.

Specimen Identification

1. **Episode identifier**
This is needed in order for the Data Administrator to be able to check on particular entries for data integrity and validity. The episode identifier should normally be the laboratory accession number of the positive blood culture. If you are unable to use the accession number, please create a secure electronic master list that cross-references the ID number system you have used so that you are able to identify the patient and check any patient details if asked by the Data Administrator. Do not use the patient's medical record number.
2. **Form number**
Only enter if this is required by your laboratory for specimen identification

Blood Culture

3. **Date of collection**
This is the date of collection of first positive blood culture set in an episode. This is taken to be the time of entry into the study for the purposes of analysis
4. **Part of polymicrobial bacteraemia (same blood culture set)**
No, Yes.
If yes: name of species free text (more than one can be added)

Patient Information

5. **Date of birth**
(dd.mm.yyyy)
6. **Sex**
M or F
7. **Post Code (of patient residence)**
This field is included in order to get a picture of incidence by demographic area
8. **Ethnicity**
(Choose one from the list)
This is the principal ethnic background of the patient as indicated in the medical records, not their country of birth/origin.
9. **Date of admission**
(dd.mm.yyyy)
or
Not admitted (*Tick only if not admitted*)
10. **Hospital where admitted (if admitted)**
Enter the name of the hospital where the patient was admitted.
11. **Date of discharge (if admitted)**
(dd.mm.yyyy)
This equates to the date of death at ≤ 30 days. If transferred to another hospital, has to include the time they spent there if this can be ascertained. If the patient has been hospitalised for more than 60 days select the ">60 days post admission" tick box.

Patient Risk Factors

Over the last 12 months, indicate whether there has been a history of the following risk factors. More than one risk factor can be chosen.

12. **Previous hospitalisation**
Yes, No or Unknown

- 13. Surgery**
Yes, No or Unknown
- 14. Long Term Dialysis**
Yes, No or Unknown
- 15. Long Term Care Facility Resident**
Yes, No or Unknown
- 16. Patient VRE status: previous VRE infection or colonisation**
Yes, No or Unknown
- 17. Intravenous Drug User (IVDU)**
Yes, No or Unknown
- 18. Source**
Select from list. If *Other* specify in free text field.
- 19. Endocarditis**
If the patient has endocarditis, specify if native or prosthetic valve.
- 20. Device related**
Select from list.
- 21. Main Underlying Clinical Problems**
Select from list.
- 22. Principal Clinical Manifestation of Enterococcal Sepsis**
Nominate the "Principal" manifestation, that is, the most prominent feature of the infection. It is recognised that there is often more than one clinical manifestation. Please choose the one that according to clinical judgement is the "Principal" one.
- 23. Admission to Intensive Care**
Answer No, Yes or in ICU at onset. Add date (dd.mm.yyyy) if patient was admitted to Intensive Care for management of enterococcal bacteraemia during the 30 day follow period (including onset of bacteraemia in ICU), or use Blood Culture collection date as previously entered if the onset was in ICU.
- 24. Principle Antimicrobial Treatment**
Choose the main agent used for definitive Intravenous antimicrobial treatment, i.e. after susceptibility results and not their initial IV therapy necessarily. Option to use "not treated" for patients who have died before therapy has commenced, have refused treatment or from whom treatment was withheld. If the agent used was in the *Other* category, please enter the generic name and only the main one when more than one active agent was used.
- 25. Length of Treatment**
Enter length of treatment in days.
- 26. Outcome at 7 days after collection of blood culture**
The default position is "Survived". i.e. we assume that the patient survived unless you specify otherwise. Note that we are asking for what is called "crude" mortality, i.e. death from any cause in the 7 days following collection of the initial blood culture. You are not required to assess so-called attributable mortality, i.e. you do not need to decide if the enterococcal infection was the cause of death. It is the deliberate decision of the programme not to force participants to decide on attributable mortality due to the difficulty of defining objective criteria for making that decision.
- 27. Outcome at 30 days after collection of blood culture**
We strongly recommend that outcome at this time be sought. If the patient has been discharged prior to the 30 day mark, options for determining the 30 day outcome include review of medical records, outpatient appointment systems, blood or other specimen results or contact with the clinician who was undertaking care post-discharge.

Laboratory Identification

- 28. Method**
Select method used to identify the isolate and species from the available options. More than one option can be selected
- 29. Identification**
Select species from available options. If *Other* specify in free text field.

Laboratory Susceptibility Results

- 30. Antimicrobial method and results**
Against the antimicrobials listed choose method of testing and result
- 31. Laboratory PCR results**

Select *Detected*, *Not detected* or *PCR not performed* for *vanA* and *vanB*. If other *van* gene detected enter as free text.

ACCESS Typing and Research

Do not enter results in this section.

Isolates (VRE and VSE) will be forwarded to ACCESS Typing and Research biannually for further analysis*. When requested, forward isolates on swabs or on agar slopes in Nunc® tubes (O-ring sealed) to:

Geoff Coombs
Department of Microbiology and Infectious Diseases
PathWest Laboratory Medicine WA
Royal Perth Hospital
6th Floor A Block
Wellington Street
Perth. WA 6000

*Confirmation of species identification/ and *van* gene PCR will be performed. Vancomycin and teicoplanin MIC will be determined by Etest. Pulsed field gel electrophoresis (PFGE) and multilocus sequence typing (MLST) will be performed and results entered by ACCESS Typing and Research staff.

Save case

On the bottom right is a button that allows you to save the case. If awaiting further data leave this **incomplete**. Once all information, including the 30 day outcome, has been entered mark as **complete**.

This will result as the patient being marked as complete on the patient list summary screen with a GREEN tick. However, if you do need to change or correct data at a later stage you can go back and edit.

Denominator data: Occupied Bed Days

This data need only be entered after the end of a defined data entry period. This is usually requested by the Data Administrator on an annual basis. It should cover the time from the date that the first patient was entered until the nominated end date, or the full year of data were entered from then.

Enter Occupied Bed Days (OBDs) on the right hand side of the summary screen for your institutions.

Two rates are required:

1. TOTAL occupied bed days including emergency, renal, rehab, mental health etc. as provided by the hospital clinical information system. This rate will include all single and multiday stays.
2. Only MULTIDAY stays and this will be used to calculate hospital onset enterococcal sepsis rates. This is defined as a patient who stays overnight or longer.

Trouble-shooting

For data entry and website issues please contact Julie Pearson (Julie.pearson@health.wa.gov.au).
For queries about clinical definitions contact John Turnidge (john.turnidge@health.sa.gov.au).