Vancomycin Resistant Enterococci (VRE) screening quality assurance program: a five-year review of methods and performance

Norvie Aquino, Elizabeth Haremza, Debra Walker, Katherine Ryan, Allan Elsner, Juliet Elvy

Microbiology, The Royal College of Pathologists of Australasia Quality Assurance Programs (RCPAQAP) St. Leonards, NSW, Australia.

Background

VRE are strains of Enterococcus that have developed resistance to vancomycin, a glycopeptide antibiotic, used to treat serious enterococcal infections.

Vancomycin-resistant Enterococcus was first described in England in 1988. Since then, it has increasingly become a major nosocomial pathogen worldwide. In Australia, it was reported that the percentage of E. faecium bacteria resistant to vancomycin is now much higher than in all European countries. Given the importance of accurately reporting VRE, the RCPAQAP Microbiology introduced the program “Enterococci for identification, antimicrobial susceptibility and van gene detection” in 2011. It was renamed in 2013 to become the “Vancomycin Resistant Enterococcus (VRE) Screening” program to be more aligned with the relevant guidelines. Participants enrolled in this program are currently from Australia, New Zealand, Asia (Hong Kong, Thailand, Malaysia, China, Singapore) and Europe (Sweden, Spain and France). Enrolments grew from 52 participants in 2011 to 96 in 2018.

Material/methods

Four lyophilised simulated samples representing rectal swabs are sent twice a year. Once reconstituted, samples are suitable for enterococcal culture and/or molecular testing. Participants are asked to perform “VRE screen” testing as per their laboratory protocol. The RCPAQAP direct data entry is used to capture methods, results and overall comments. From 2014 to 2018, methods and algorithms used by participating laboratories to test for VRE were analysed and participant performance was assessed.

Results

From 2014 to 2018:

- Majority of participants used culture-based methods.
- 25% to 31% of laboratories employed molecular methods and/or with culture/other methods.
- Greater than 90% reported correct responses.

Figure 1. 2014–2018 enrolled participants, methods

Conclusions

1. The choice of methods used, culture-based and/or molecular, is still varying as per consideration of laboratories’ relevant guidelines, test sensitivity, complexity, turnaround time and cost.
2. Over the course of five years, whilst false positive and false negative results remain an issue for some participants, there was a high level of concordance.

References