

ABSTRACT: "Novel" strain Vancomycin Resistant Enterococci (VRE)

October 2009, 88 yr. old female patient was admitted to medical unit with cellulitis (leg) and urine C&S was ordered as part of her workup. Specimen was collected and submitted to Microbiology for processing.

The urine culture yielded 10 - 100 CFU/mL *Enterococcus species*. Screening for vancomycin resistance is part of the protocol when isolating *Enterococcus* in clinically significant amounts. This particular isolate did not grow on the vancomycin screen plate with 6 ug of vancomycin however grew well on the control plate (without vancomycin). Using micro-broth dilution technique, this isolate was also vancomycin sensitive <1 mg/mL.

Since this *E. faecium* "like" organism was a new isolate, PCR was performed as well. Surprisingly, the isolate was ID as having the *vanA* gene for vancomycin resistance and confirmed as an *E. faecium* with the presence of the *ddlF* gene. All tests were repeated due to the discrepancy and all repeat test resulted the same as the original test results. Additionally a vancomycin E-test was performed and confirmed that this isolate was inhibited to grow at a concentration of 1 mg/mL.

Infection Prevention & Control (ICP) was contacted as per protocol and was explained that there maybe a new ("novel") strain of VRE circulating that phenotypically appears vancomycin sensitive however is genetically a VRE. Upon further investigation this index case patient had come from a nearby large tertiary healthcare centre and ICP deduced that this novel strain had originated from there to the current location.

During this investigation a validation was underway evaluating a new chromagar plate with vancomycin for VRE surveillance and so these novel strains were also cultured onto this media with success. According to a collegial partner that had also verified our earlier findings stated that this novel strain did not grow on their version of VRE chromagar (different manufacturer) and therefore it was plausible now to see why this index case had slipped through their "radar" during routine surveillance screening.

While this novel strain has never (to our knowledge) appeared before in our organization, this phenomenon is not unheard of. Initially, it seems that this novel strain has become vancomycin dependent for growth due to the overuse of vancomycin as an antimicrobial therapy choice. The chromagar that was used during the validation period has allowed the organism to grow via induction thus allowing PCR to be performed in order to confirm the presence of the *vanA* gene.

Further investigation is currently underway as to the exact nature of this transition from intrinsic vancomycin resistance to inducible vancomycin resistance as a result of vancomycin dependency for growth.