How to contain VRE outbreaks in a large tertiary care hospital?

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Background

Over the last decades, vancomycin resistant Enterococcus faecium (VRE) has become an important nosocomial pathogen worldwide (inclusive Europe) because of its rapid spread, difficulty to treat, and possible transfer of vancomycin resistance to other more virulent microorganisms such as Staphylococcus aureus. Once introduced into a ward, they are difficult to eradicate. Between December 2011 and June 2012, University Hospitals Leuven experienced two VRE outbreaks on 2 different Intensive Care Units, striking 32 patients. The VRE incidence increased in that period from 0-2 cases/month to 4-5 cases/month.

Results

Measures taken were upgraded in several phases.
- Education and information sessions for health care workers were organized weekly or on demand.
- Hand hygiene compliance improved substantially: from 37.5% to 62%.
- Although environmental samples did not show VRE, presence of susceptible enterococci in the environment points at soiling and thus insufficient cleaning. In response, intensified cleaning procedures were established.
- To motivate the efforts taken, the infection-control team followed the number of cases and disseminated the results to nurses and physicians.

All these measures lead to contain the outbreak in June 2012.

Purpose and hypothesis

A description of the interventions to control the out-breaks with gradual implementation of infection control measures.

Materials and methods

In response to the first increase in VRE cases in December 2011, immediate infection control measures were taken.
- Teaching of all staff members on measures to be taken
- Compliance measurement with coaching of hand hygiene with stress on hand disinfection before entering and after leaving the room
- Verification of contact isolation precautions
- Environmental sampling
- Intensified cleaning and disinfection, especially of high touch surfaces
- Start of a twice a week screening program for rectal carriage
- Quarantining of the wards by limiting both admissions and transfers and by dedicating all staff
- Limitation of physiotherapist material in patient rooms
- Introduction of a vanA/vanB PCR (GeneXpert® Cepheid) limiting the quarantine period for suspected VRE positive patients
- Support from the hospital management
- Permanent message in patient record
- Pulsed field gel electrophoresis clonal typing

Conclusions

VRE can be transmitted by patient-to-patient contact, by transient carriage on hands of health care workers or by contaminated environmental surfaces. Although the measures to contain an outbreak are mostly multifaceted, improvement of hand hygiene combined with a better maintenance of the environment are the most important goals to achieve, making it possible to terminate an outbreak. Bundle measures based on similar measures as taken in our hospital have shown to be able to control VRE outbreaks in hospitals where VRE is emerging.

Literature

3. Fenelon C et al. Molecular characterisation of VRE from the hospital environment and correlation with clinical VRE samples during an outbreak in a tertiary referral centre. 22nd ECCMID 2012, London