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## BACKGROUND AND AIMS

The incidence of vancomycin resistant *Enterococcus faecium* (VRE) was very low in the University Hospital Brussels until 2011. After a small cluster in 2012, the incidence stayed low with a slight increase in 2015. In June 2016, an increase of VRE was noted in surveillance and clinical samples of patients hospitalized at the nephrology department. An outbreak investigation was initiated.

The purpose of this study was to describe the course of this outbreak and the steps taken to control it.

## METHODS

**Setting:** Nephrology department of tertiary care facility with 29 beds (10 double and 9 single rooms). The hemodialysis unit consists of 5 rooms with multiple beds. In total 38 patients can be dialyzed a day, 6 days a week.

**Microbiology:** Rectal swabs were cultivated on selective ChromID VRE agar (bioMérieux). Suspect colonies were identified by MALDI-TOF MS (Bruker). Antibiotic susceptibility testing was performed according EUCAST. Enterococci were classified as VRE if the minimal inhibitory concentration of vancomycin was above 4 mg/L. A multiplex PCR was performed for the detection of *vanA*, *vanB*, *vanC-1* and *vanC-2/3* resistance genes. All VRE strains found were sent to the National Reference Laboratory (UZA, Antwerp) for typing.

## RESULTS

- From June 2016 until June 2017, patients admitted to the nephrology department and the outpatient dialysis units were screened rectally for the presence of VRE. In this period *Van-A*-positive VRE were detected in 33 carriers and in 4 clinical cases (Figure 1).
- Multilocus sequence typing and pulsed field gel electrophoresis revealed a polyclonal outbreak.
- A multidisciplinary outbreak team was set up, with representatives of both units.
- It was tried to contain the outbreak by cohorting *VanA*+ patients with dedicated healthcare workers, enhanced cleaning and disinfection procedures, together with good hand hygiene practices of health care workers.
- The 6<sup>th</sup> of July, all admissions on the nephrology ward were stopped due to a further increase of carriers. All new patients were admitted to another ward with trained personal.
- The infection control team looked for shortcomings in procedures and found several minor non-conformities and non-respect of procedures and was present on a daily base to control and adjust.
- In addition, the outbreak support team of the Federal Government was consulted. They took part in several meetings, did unplanned observations on the wards and took samples of the surfaces and hands of the health care workers. No VRE were detected, but some samples revealed a high total plate count.
- Unfortunately, despite all the efforts made, there was a new cluster in March. As a consequence, all new patients were immediately admitted to other wards and positive carriers were cared for by dedicated health care workers. Cleaning was checked with bacteriological samples. No VRE was found.
- In June 2017, the routine weekly screenings were stopped 4 weeks after the last detection of a new positive carrier.

Figure 1

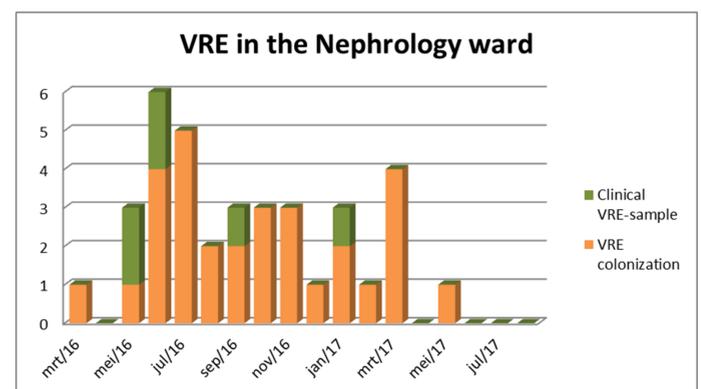
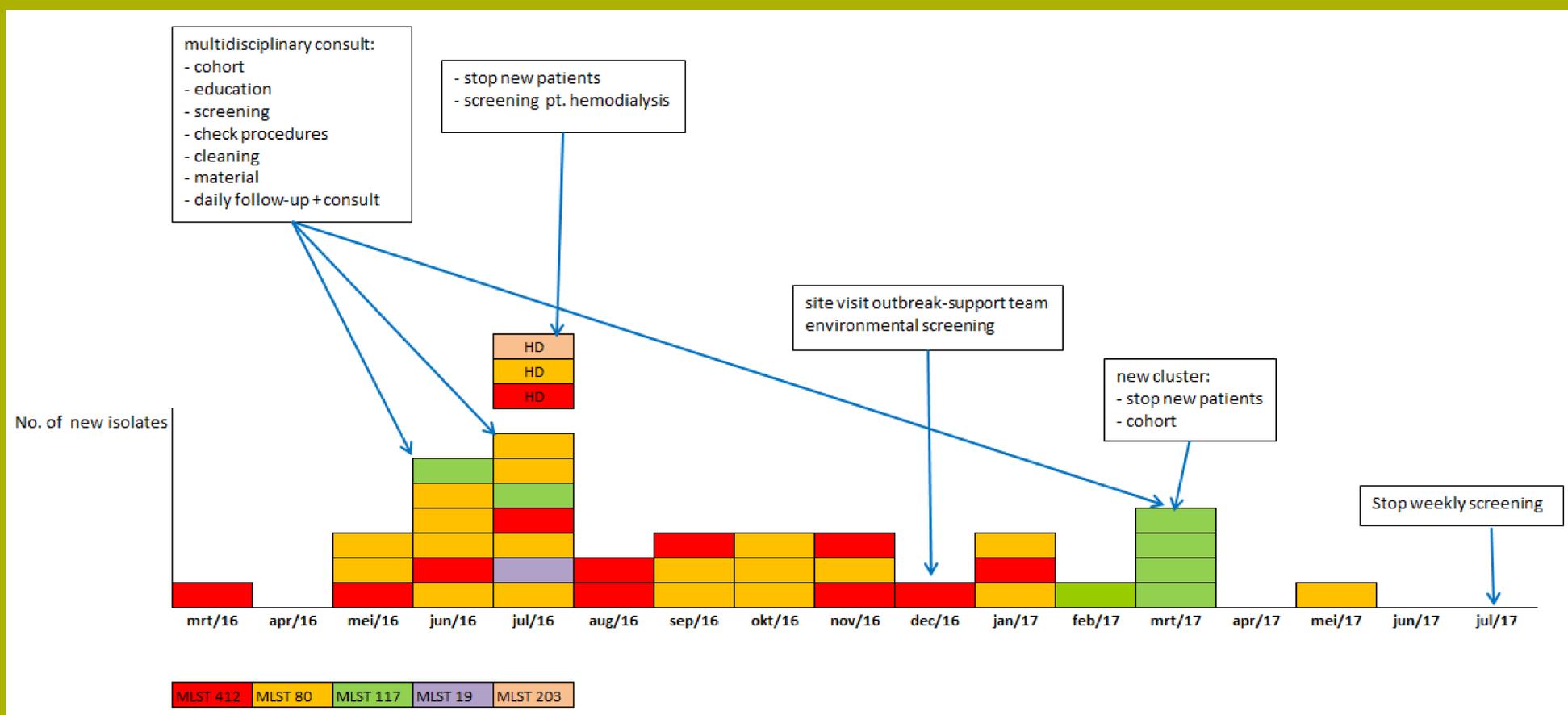


Figure 2: Actions during the outbreak in the nephrology ward and results screening hemodialysis (HD) patients.



## DISCUSSION AND CONCLUSION

- The year following the outbreak, we detected 3 new carriers of which one in a clinical sample in the nephrology ward. All new patients on this ward are still screened as are all new hemodialysis patients. After each holiday with dialysis in another centre, patients are also screened for VRE. Carriers are closely followed. Isolation precautions are only stopped after 3 negative screenings with an interval of 1 month.
- The outbreak and its introduced actions had a large impact on patients and health care workers.
- Continuous vigilance is necessary to prevent new clusters in this risk population.
- Cohorting, hand hygiene and intensified disinfection measures of reusable materials were key points in the control of this outbreak.