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Short Report

COVID-19 isolation measures did not prevent vancomycin-resistant enterococci transmissions

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Vancomycin-resistant enterococci (VRE) survive for a long time in the environment allowing contact transmission with contaminated environmental surfaces or contaminated health-care workers' hands [1,2]. Our hospital follows the updated Swiss guidelines for the containment of the propagation of VRE which includes isolation of cases and contacts, use of personal

protective equipment (PPE), implementation of screening strategies and control of the environment [3]. We also apply a multi-drug-resistant organism (MDRO) screening policy in selected wards for epidemiological surveillance, including a weekly screening in the intensive care unit (ICU), and perform a genomic surveillance with whole-genome multi-locus sequence typing (wgMLST). In the context of the coronavirus disease 2019 (COVID-19) pandemic, we reorganized our healthcare facilities to create dedicated COVID-19 wards with systematic wearing of PPE by healthcare workers (HCWs) as well as systematic implementation of droplet and contact precautions to limit the risk of nosocomial SARS-CoV-2 transmission [4].

Between March 2020 and June 2021, we identified 16 cases of VRE colonization in our hospital (*E. faecium* van A). Genotyping with wgMLST revealed 10 patients with unique isolates (>200 loci differences), and a cluster of six patients with isolates genetically closely related (0–8 loci differences, MLST ST-80). Epidemiological investigation allowed identification of two transmission chains (Figure 1). The first one including patient A and two other cases identified retrospectively, patients B and E (Figure 1), occurred in a COVID-19-dedicated intermediate care unit (InCU). All three cases were identified at different times as part of the weekly ICU screening. The second transmission chain included patient C and two patients tagged as 'contacts' as they shared the same room with patient C and screened positive when readmitted to the hospital several days later (patients D and F). Patient C had a negative screening test two weeks before testing positive. He was patient D's roommate between the two tests suggesting patient D could be the index case of the second chain. We further studied the list of patient D's roommates and identified patient G who could be the link between the two chains (Figure 1) but was never

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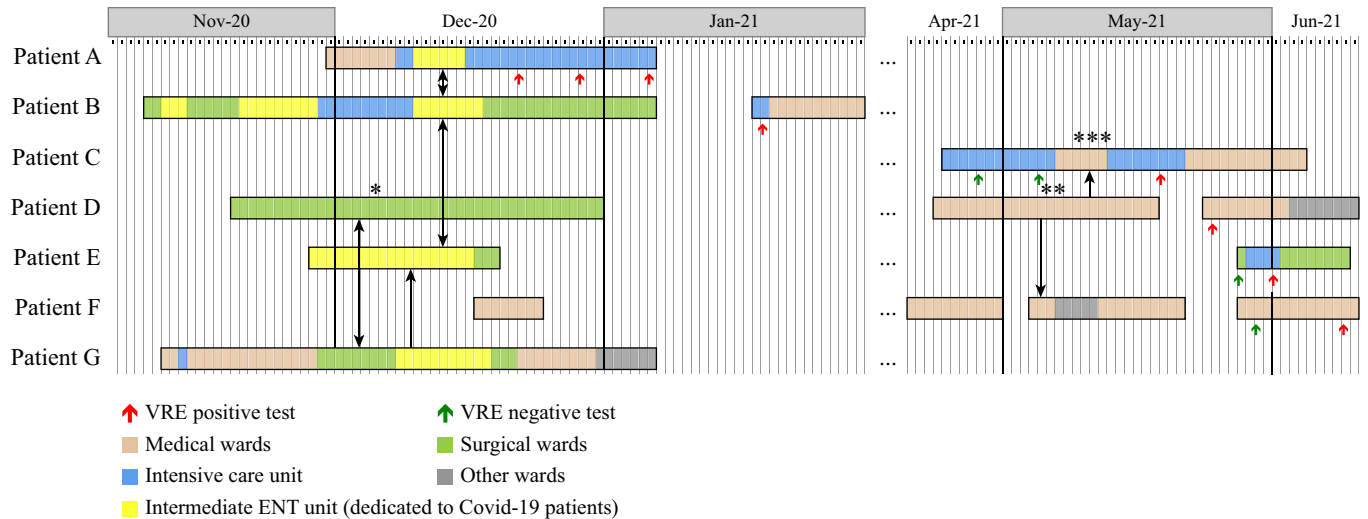


Figure 1. Hospital pathways for patients A to F harbouring the VRE ST80 cluster isolate with dates of positive and negative tests and the possible missing link (patient G). Arrows symbolize transmission hypotheses. * D and G were roommates between 29th November and 7th December. ** D and F were roommates between 3rd and 5th May. *** C and D were roommates between 9th and 13th May. ENT, ear, nose and throat; VRE, vancomycin-resistant enterococci.

screened for VRE. He was a roommate of patient D before the first chain occurred and subsequently stayed with patients A, B and E in the COVID-19-dedicated InCU. As all patients in this COVID-19-dedicated InCU were under droplets precautions, they were not tagged as ‘contacts’ after the identification of patient A and thus not initially screened for VRE. Our hypothesis was that a first transmission occurred between patients G and D in a surgical ward and then patient G was the source of secondary cases in the InCU (patients A, B and E). Five months later, patient D was readmitted to hospital and contaminated patients C and F.

This outbreak demonstrates that droplet precautions, including contact precautions, for COVID-19 was not sufficient to prevent VRE transmission, a phenomenon previously described elsewhere [5,6]. Exhaustion and HCW shortage in the context of a pandemic with a focus on the respiratory tract and person-to-person transmission, may have distracted medical staff from hand hygiene and other components of the additional contact measures (disinfection of the patient’s immediate environment and excreta management) [7]. In our COVID-19 units, use of shared toilets was allowed and gowns were not changed between care of multiple patients if not macroscopically soiled, which may have favoured transmission. If patient A’s roommates in the InCU, including patients B, E and G, had been identified as VRE contacts, it would probably have allowed earlier identifications of the other cases and might have prevented the second chain of transmission.

Since this outbreak, we changed our usual practice and now identify as VRE contacts all patients hospitalized in the same room (or the same InCU) even if they are isolated for another pathogen. Our experience pinpoints the importance of applying standard precautions and appropriate transmission-based precautions with a high level of observance even in an

unusual context such as a pandemic to limit the risk of MDRO transmission.

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Conflict of interest statement

The authors declare that they have no conflict of interest.

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