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Abstract (oral session)

A prolonged outbreak of an extended-spectrum beta-lactamase producing Klebsiella pneumoniae (EKP) on an ICU due to contamination of sinks

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Background: K.pneumoniae may be transmitted from patient to patient and less often from an environmental source. In one of four ICU's, two separate outbreaks of EKP that occurred in 2008 and 2009 were linked based on identical PFGE patterns. Further research was done to investigate and control the outbreak. Methods: In our hospital all ICU patients are treated with selective digestive decontamination with routine surveillance cultures of sputum and rectum twice weekly. All ICU patients with EKP between July 2007 and July 2009 were included in the first fingerprint analysis. Subsequent isolates from the ICUs with the typical susceptibility pattern of the identified outbreak strain were subjected to molecular typing. An outbreak management team was formed and multiple measures were implemented to control the outbreak. Results: Of the 56 EKP isolates identified, 25 were clonal and all had identical susceptibility patterns and different from the remaining 31 isolates. Contact isolation was performed in all EKP positive patients until ICU discharge or, if admitted to the wards, until 2 negative cultures were obtained. A time-line was constructed that showed several episodes without EKP positive patients. An external source was suspected. Environmental screening cultures using a selective broth revealed the outbreak EKP strain in two sinks. Cleaning of the sinks was intensified (twice daily with chlorine 250 PPM), and tap water was no longer used in patient care. Overflow holes became apparent in the outbreak ICU when an item list was made for the outbreak ICU and another ICU with respect to patient care, water use, type of water supply and sewage, waste disposal. These were removed, S-traps were changed, and two sinks were disconnected. New patients were identified and sinks remained positive despite strict separation between clean and wastewater and between wet and dry areas, further reinforcement of isolation measures and cleaning protocols. Only after the closure of the unit in July and August 2010 and extensive cleaning of the unit, sinks, and sewage tubes, no more EKP positive patients have been identified. On the other hand the sinks have remained positive. Conclusions: Sinks can serve as an environmental source of EKP and may remain contaminated for many years. An outbreak with a low and fluctuating incidence due to an external source can remain undetected for long periods. Continuous fingerprinting of clinical isolates will lead to early detection