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Prevention of respiratory tract colonization: Assumptions and evidence

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Abstract

ICU patients are at the highest risk of acquiring nosocomial infections, especially ventilator associated pneumonia. This acquired infection is almost always preceded by colonization with Gram-negative bacteria in the respiratory tract. In mechanically ventilated ICU patients, it is assumed that the multiple use closed suction system (CSS) reduces exposure risk to patient secretions and subsequently a reduces risk of bacterial contamination of patients, health care workers, and inanimate environment. Therefore, use of CSS is often preferred instead of the single use, open suction system (OSS). We performed a prospective multicenter crossover trial to determine whether CSS, as compared to OSS, reduced the incidence of cross-transmission of Gram-negative bacteria in ICUs. In total 1,110 patients were included (585 with CSS and 525 with OSS), of which 37% acquired colonization with Gram- negative bacteria, both after closed and open suctioning. One fifth of the acquisitions occurred through cross-transmission, again without significant difference between both systems. We could not demonstrate a difference in overall cross-transmission, nor in overall acquisition of respiratory tract colonization, between CSS and OSS. However, the risk of colonization increased with duration of mechanical ventilation, while use of systemic antibiotics decreased the risk. The assumption on CSS could not be confirmed, and both suction systems can be considered equally safe in mechanically ventilated ICU patients. Choice of system can be based on personal preference and costs.

Biography

Irene Jongerden studied nursing and Clinical Health Sciences in the Netherlands. She has completed her PhD on airway management and respiratory tract colonization in 2011 at the University Utrecht, the Netherlands. She is researcher (post-doc) at the department of Intensive Care Medicine and lecturer at Clinical Health Sciences, Program Nursing Science. She has published in reputed journals and presented at national and international conferences.

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