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Reply to letter by Tulleken et al.

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Sir: We read with interest the letter of Dr. Tulleken and colleagues commenting on our paper “Ventilator-associated pneumonia: caveats for benchmarking” [1]. We note that the authors agree with the point we brought to the attention of the reader, summarized by the conclusion “clinicians and hospital management in charge of patient-care policies should be aware of how to read and compare nosocomial infection rates”, which is supported by their own experience.

They observed a persistently low rate of ventilator-associated pneumonia (VAP) which ranks as one of the lowest published in the recent literature [2]. Despite the fact that the discussion of the limitations of this information is much more comprehensive than the detailed measures implemented in their unit, the authors suggest that reducing VAP rates had no impact on patient outcome. This adds to the current controversy about the attributed mortality related to VAP.

The authors argue that any single-center observational study may be associated with methodological weaknesses that preclude its findings. Accordingly, they insist on the necessity to base guidelines on data obtained only from multi-center studies. We disagree with this opinion which is not supported by our experience.

Quality of care is a complex process that can be monitored on three levels: structure, process and outcome [3, 4]. Nosocomial infections frequently result from suboptimal quality of patient care and Donabedian’s model applies equally to infection prevention in critical care [5].

“Structure” includes architectural design of the unit, availability of negative pressure rooms, staffing, or presence of infection control specialists. Adequate structure is mandatory to ensure patient safety. High workload, high bed occupancy rate, and insufficient nurse-to-patient ratio are good examples of increased infectious

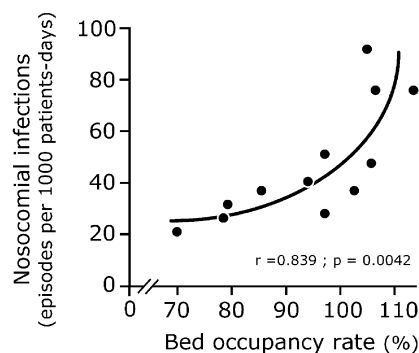


Fig. 1 Relation between the incidence-density of nosocomial infections and bed occupancy rate in the medical ICU of the University of Geneva Hospitals, October 1995 to September 1996. Case-mix of patients and type of medical activity did not change over the period [10]

risk. Thus, adjusting structure, could contribute to improve quality of care and patient safety (Fig. 1).

“Process” refers to current practice of care delivery. Compliance with hand hygiene recommendations is one of the most widely-used process indicators in the field of infection control and, sadly enough, is repeatedly reported to be below 50% [6]. Our institution was no exception to this rule [7]. We showed that promoting alcohol-based bedside hand disinfection was associated with a significant improvement in compliance in our intensive care units [8, 9].

Finally, “outcome” indicators, such as nosocomial infection rates, are definitely the most valuable and less questionable indicators, but surely the most difficult to obtain and interpret. We reported the effect of a multimodal intervention that resulted in an over 60% reduction of catheter-associated infections and a 30% reduction of all nosocomial infections in our medical intensive care unit [10]. Similar observations were made in other single medical centers [11, 12].

To conclude, we disagree that studies performed in single centers should systematically be disregarded. Our experience, and that of others, demonstrate that results obtained through well designed studies that carefully take into account basic epidemiological principles can be, for instance, extremely useful in daily practice and may be translated into general guidelines [13, 14], in particular when evidence-based medicine principles are respected.

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