Letter to the Editor

Chlorhexidine-related ventilator-associated events: Toward recognition?

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To the Editor—Despite all the efforts in prevention, the concept of ventilator-associated events (VAEs), including but not restricted to ventilator-associated pneumonia, remains an important quality indicator in critically ill patients because these bundled events are associated with increased morbidity and possibly mortality.¹–³ Ventilator care bundles have been widely implemented to target the optimization of adherence with evidence-based prevention measures. In a recent issue of Infection Control and Hospital Epidemiology, Harris et al⁴ explored the impact of ventilator bundle compliance on the risk of VAE by means of nested case-control study.

Control subjects were matched for type of ICU and exposure time on the ventilator prior to the VAE. Total bundle compliance was 73% for cases and was 70% for controls; compliance to individual components of the bundle ranged from 83% to 99%. No difference in VAE risk was observed between cases and controls, probably because of the insignificant differences in compliance between the 2 groups. Interestingly, however, higher compliance with chlorhexidine oral care (in the 3 days preceding the event) was associated with a higher risk for VAE in multivariate analysis adjusted for age and sex (odds ratio, 1.45; 95% confidence interval, 1.10–1.90). Restricting the analysis to infection-related ventilator-associated complications and probable ventilator-associated pneumonia revealed identical results.

As the authors themselves point out, the data must be interpreted cautiously because no adjustment was obtained for severity of illness. Nevertheless, this observation adds to the mounting controversy about chlorhexidine oral care and the suggestion of possible harm. Two meta-analyses of randomized controlled trials have indicated a potential link between chlorhexidine oral care and mortality.⁵,⁶ A retrospective cohort study evaluating associations between ventilator bundle components and outcomes found chlorhexidine oral care to be associated with increased ventilator mortality.⁷ However, this observation is complicated by the absence of a convincing pathogenic mechanism. Microaspiration of chlorhexidine along folds in the endotracheal cuff wall resulting in VAEs has been proposed as an explanation, albeit without obvious proof.⁸–¹⁰ Recently, Deschepper et al¹⁰ found increased mortality among patients exposed to chlorhexidine oral care in a large hospital-wide cohort, thereby broadening the scope of the issue to all hospitalized patients.¹⁰ Notably, in this study, no adverse effect of chlorhexidine oral care was observed among ICU patients, either ventilated or non-ventilated. Actually, the association of chlorhexidine oral care with mortality was strongest in categories with lower risk of mortality. In this regard, the study by Deschepper et al contradicts previous reports and thereby undermines the hypothesis of microaspiration being the pathogenic mechanism. Of course, the Deschepper study was observational and, as such, had a high risk of bias.¹¹ However, in the light of accumulating reports warning of potential harm associated with chlorhexidine oral care, it is time to carefully reconsider this practice. Bouadma and Klompas stressed the relatively low evidence for the use of chlorhexidine in terms of pneumonia reduction.¹² Indeed, chlorhexidine oral care has been perceived as inexpensive, logical, and completely safe, favoring promotion of the practice. However, the situation turns with increasing indications of associations with potentially deleterious effects. It is correct that warnings about safety of chlorhexidine oral care are derived from meta-analyses and observational cohorts, but how much evidence do we need to omit a potentially harmful practice for which the evidence in favor is also marginal? A significantly reduced risk of pneumonia has only been demonstrated in cardio-surgical patients, and when meta-analyses were restricted to blinded trials, no difference remained.¹²–¹³

Several alternatives are available for chlorhexidine mouthwashes. Thus far, none of these have proven efficacious in reducing pneumonia risk. However, antiseptic mouthwash does have other indications as well, such as the care for patients with stomatitis or gingival-periodontal disease. Also, for these indications, the use of chlorhexidine should be questioned. In any case, oral care either in critically or noncritically ill populations needs to be reassessed and given new attention in research. Solid standard oral care, including 2–3 times daily mechanical cleaning and/or tooth-brushing without the use of antiseptics, must be the starting basis for evaluation, against which the benefit of any other additional intervention should be measured.

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