CRITICAL CARE

LETTER

New tracheal tubes to prevent ventilator-associated pneumonia: where is the evidence?

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See related viewpoint by Zolfaghari and Wyncoll, http://ccforum.com/content/15/5/310

Zolfaghari and Wyncoll [1] propose that it may now be against good medical practice to continue to use a 'standard cuffed tube' given the weight of evidence supporting the use of newer tube designs to prevent ventilator-associated pneumonia (VAP).

There is strong evidence supporting the use of subglottic aspiration to prevent VAP [2]. However, other new tracheal tubes, such as polyurethane cuffed, silver-coated, or low-volume low-pressure tubes, could not be recommended to prevent VAP in routine practice. Although recent studies found polyurethane-cuffed tracheal tubes to be associated with significantly reduced VAP rate, major limitations of these studies preclude definitive conclusions; these limitations include the use of subglottic aspiration [3], before/after study design [4], and clinical criteria to define pneumonia [4,5].

One large multicenter study found the use of silver-coated tracheal tubes to be associated with significant reduction in VAP rate [6]. However, limitations of this study should be taken into account, such as the significant difference in the proportion of patients with chronic obstructive pulmonary disease between the two groups, and the small rate of late-onset VAP.

Low-volume, low-pressure tracheal tubes were found to be associated with significantly reduced leakage of blue dye in a randomized controlled study performed in a single ICU [7]. Similarly, some *in vitro* studies suggested beneficial effects of conical shaped and guayule latex double-layered cuffs [8]. However, to date no randomized controlled study has evaluated the effect of these tubes on VAP prevention [9].

Therefore, further well designed studies are required before recommending the use of new tracheal tubes in every critically ill patient requiring mechanical ventilation for longer than 24 hours.

Authors' response

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We thank Dr Nseir for his comments and his active involvement in innovations to reduce microaspiration leading to VAP. The main aim of our viewpoint article [1] was to highlight the pathophysiology of VAP and to encourage clinicians to question the viability of continued use of older PVC tubes. Clearly, reducing the burden of VAP requires a multifactorial approach as set out in our paper. The evidence base for some of these interventions is quite robust, that is, subglottic secretion drainage [2]. However, other interventions such as polyurethane and low-volume, low-pressure cuffed tubes have also shown promising results in *in vitro* and in limited *in vivo* studies [4,10,11]. We too would very much welcome further high quality randomised trials from those clinicians who still have equipoise, investigating the impact of such tubes on VAP prevention. However, assuming the correct pathogenesis of VAP and the properties of the new tubes with formation of better tracheal seal to reduce microaspiration and subglottic secretion drainage, we stand by our recommendations.

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Abbreviations
VAP, ventilator-associated pneumonia.

Competing interests
Potential conflict of interest: Covidien (advisory board).

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