Reply to Khosrowshahi

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I wish to thank Dr. Khosrowshahi for his letter[1] regarding the Society for Healthcare Epidemiology of America (SHEA), Infectious Disease Society of America (IDSA), and Association for Professionals in Infection Control and Epidemiology (APIC) practice recommendations to prevent ventilator-associated pneumonia.[2] Dr. Khosrowshahi's letter expressed concern over the reclassification of subglottic secretion drainage from an Essential Practice to an Additional Approach given that multiple meta-analyses of randomized trials have reported that subglottic secretion drainage is associated with lower VAP rates.[3–5] The reason the panel nonetheless downgraded their recommendation for subglottic secretion drainage was because the balance of evidence suggests that subglottic secretion drainage does not improve patient outcomes.

The panel deemed decreases in VAP rates alone as insufficient evidence to merit an Essential Practice recommendation because of the uncertainty that attends VAP diagnoses. The criteria typically used to define VAP (fever, leukocytosis, increased secretions, new infiltrate, and positive respiratory cultures) are neither sensitive nor specific.[6] As such, perceived decreases in VAP may reflect fewer infections, less colonization, or stricter interpretation of subjective signs (e.g. changes in secretions or radiographic opacities).[7] This a particular concern when trying to evaluate prevention measures that target the same clinical signs that are themselves part of the diagnostic criteria for VAP.[8,9] Such is the case with subglottic secretion drainage which is designed to reduce respiratory secretions and bioburden. This may lead to fewer positive respiratory cultures and thus fewer patients meeting VAP criteria but it is not clear if this reflects less invasive disease, less colonization, or both. The Practice Recommendations addressed this challenging by restricting Essential Practices to prevention measures with collateral evidence of benefit beyond a decrease in VAP rates alone. Collateral benefits could include a reduction in mortality, duration of mechanical ventilation, ICU or hospital length-of-stay, ventilator-associated events, antibiotic utilization, and/or costs.[2] In the case of subglottic secretion drainage, the evidence reviewed by the panel, including the two meta-analyses cited by Dr. Khosrowshahi, found no positive impact on any of these outcomes.

New data published since the release of the SHEA/IDSA/APIC practice recommendations amplify the concern that subglottic secretion drainage may not improve patient outcomes. The PreVent 2 study randomized 1,068 patients requiring endotracheal intubation to either a polyurethane-cuffed endotracheal tube with subglottic secretion drainage or a conventional endotracheal tube without subglottic suction.[10] The investigators found no significant differences between groups in ventilator-associated events, infection-related ventilator-associated complications, possible VAP, duration of mechanical ventilation, ICU length-of-stay, antibiotic use, antibiotic duration, ICU mortality, in-hospital mortality, 6-month mortality, or 6-month quality of life indicators.

The PreVent 2 trial is the largest and most rigorous evaluation of subglottic drainage to date. It both supports and strengthens the panel's decision to downgrade subglottic secretion drainage from an Essential Practice to an Additional Approach. Hospitals are advised to preferentially implement other VAP prevention strategies which have been associated with collateral benefits. These include avoiding intubation, minimizing sedation, maintaining and improving physical conditioning, elevating the head of the bed, providing toothbrushing without chlorhexidine, providing early enteral feeding, and changing the ventilator circuit only if visibly soiled or malfunctioning (or per manufacturer's instructions).[2] The balance of evidence suggests these Essential Practices are more likely to improve patient outcomes compared to subglottic secretion drainage.

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