

## LETTER

# Number needed to treat for subglottic secretion drainage technology as a ventilator-associated pneumonia prevention strategy

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See related letter by Wyncoll and Camporota, <http://ccforum.com/content/16/3/430>

### Abstract

The number needed to treat can be calculated for ventilator-associated pneumonia reduction strategies such as subglottic secretion drainage technology based on previous work establishing its relative risk reduction. Assuming an incidence of 4%, employing subglottic secretion drainage in 33 patients will prevent one case of ventilator-associated pneumonia, and thus potentially 4 cases annually in an average hospital in the United States. With a previously described limit of £300 (\$470 USD) additional cost per 10 days of ventilation as a threshold of investment for technologies to reduce ventilator-associated pneumonia, subglottic secretion drainage technology is both clinically and cost effective.

Wyncoll and Camporota's correspondence [1] provides a valuable tool allowing clinicians the ability to assess the number needed to treat (NNT) and cost-effectiveness of various ventilator-associated pneumonia (VAP) prevention strategies. Subglottic secretion drainage (SSD) technology is one VAP-reduction strategy for which NNT can easily be calculated based on its established relative risk reduction.

Smulders and colleagues [2] conducted a randomized clinical trial in 150 patients receiving mechanical ventilation and found that intermittent SSD reduced the risk of VAP by 75% ( $P = 0.014$ ). Utilizing Wyncoll and Camporota's table, and assuming a VAP incidence of 4%, utilizing SSD in 33 patients will prevent one episode of

VAP. In the United States, the average hospital has approximately 131 patients per year who require mechanical ventilation >96 hours (unpublished observations). Utilizing SSD in these average hospitals would likely prevent four cases of VAP per year. In addition, SSD is a cost-effective intervention. At the assumed VAP rate of 4%, Wyncoll and Camporota determined an upper threshold of £300 (\$470 USD) additional cost per 10 days of ventilation to be a cost-effective investment in technologies that reduce VAP by up to 75%. Costs of SSD technology interventions are beneath this threshold.

Wyncoll and Camporota's framework illustrates that use of SSD is both a clinically and cost-effective strategy to reduce VAP. The NNT demonstrates that average hospitals will observe and benefit from these strategies. SSD technologies warrant further adoption and appropriate utilization.

### Abbreviations

NNT, number needed to treat; SSD, subglottic secretion drainage; VAP, ventilator-associated pneumonia.

### Competing interests

SK is an employee of Covidien, and receives salary and equity compensation.

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### References

1. Wyncoll D, Camporota L: Number needed to treat and cost-effectiveness in the prevention of ventilator-associated pneumonia. *Crit Care* 2012, **16**:430.
2. Smulders K, van der Hoeven H, Weers-Pothoff I, Vandenbroucke-Grauls C: A randomized clinical trial of intermittent subglottic secretion drainage in patients receiving mechanical ventilation. *Chest* 2002, **121**:858-862.

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