

# Evidence-Based Review and Discussion Points

By Ruth Kleinpell, RN, PhD

**Evidence-Based Review (EBR)** is the journal club feature in the *American Journal of Critical Care*. In a journal club, attendees review and critique published research articles: an important first step toward integrating evidence-based practice into patient care. General and specific questions such as those outlined in the "Discussion Points" box aid journal club participants in probing the quality of the research study, the appropriateness of the study design and methods, the validity of the conclusions, and the implications of the article for clinical practice. When critically appraising this issue's EBR article, found on pp 523-532, consider the questions and discussion points outlined in the "Discussion Points" box. Visit [www.ajconline.org](http://www.ajconline.org) to discuss the article online.

**T**his study evaluated the effect of implementing an oral and dental care protocol and the impact of the protocol on rates of ventilator-associated pneumonia (VAP) in adult patients receiving mechanical ventilation for more than 48 hours in a medical intensive care unit (MICU) in 2 consecutive 24-month periods. The study compared 779 patients in the preintervention group that had no specific

oral assessment, subglottic suctioning, toothbrushing, or oral cavity secretion suctioning compared to an intervention group of 759 patients treated with a protocol that included deep suctioning every 6 hours, oral tissue cleansing every 4 hours, toothbrushing twice daily, and oral cavity assessment. The rate of VAP between the 2 groups was significantly different, with VAP decreasing in the intervention group. In

addition, duration of mechanical ventilation and ICU length of stay were decreased in the intervention group, highlighting the impact of a focused advanced oral-dental care protocol on ICU mechanically ventilated patients.

## Investigator Spotlight

This feature briefly describes the personal journey and background story of the EBR article's lead investigators, discussing the circumstances that led them to undertake the line of inquiry represented in the research article featured in this issue.



**Robert Garcia**

**L**ead investigator Robert Garcia offered this advice to new authors writing a study: "Writing is a very long process. I always remember this saying: 'I don't love writing, I love having written.'"

When it comes to the research, he advised new authors to follow the scientific methodology as closely as possible when conducting studies. He said, "Read as many studies as you

can and make an outline of the structure of the study and the article sections that will need to be written: Introduction, Background, Methods, Statistical Determination, Results, Discussion, Conclusion."

He also suggested reaching out to others, "Not good at statistics? Find someone who is and ask what will need to be determined up front, and what variables will need to be controlled."

Garcia also advised new authors to seek help with writing. "Find someone you know who has writing experience or someone who is recommended to you. When you are done with an initial draft, send it to him or her to be reviewed for content, structure, and suggestions for extra article reviews. This person has been invaluable to me. This study took more than a year to write and was revised several times due to suggestions from peer reviewers. This is often a frustrating process, but it is very satisfying when you see your work in print."

## Information From the Authors

Robert Garcia, BS, MMT (ACSP) CIC, lead author for the study, said that the research team focused on VAP prevention for several reasons, "First, VAP had become a critical issue for the institution. Surveillance of critical care areas and the medical units indicated that VAP rates were much higher than the national data published by (at that time) the National Nosocomial Infections Surveillance System of the Centers for Disease Control and Prevention (CDC)." He said many of these cases were also being caused by serious multidrug resistant organisms found in sputum/bronchial cultures.

He continued, "Second, I conducted a thorough review of the literature and it became clearer that interventions needed to be directed at the source of colonization: the oropharyngeal cavity."

Garcia added that the protocol was specifically developed with feedback from key individuals. "Persons involved in the initial evaluation of processes conducted in the MICU were the nurse manager, assistant director of infection control, medical director of the MICU, associate director of respiratory therapy, materials manager, educators, and anesthesia representative."

The evaluation began with an examination of how oral-dental status was assessed and a review of

what oral care interventions were being performed as part of postintubation processes. Revisions to the system were made from the ground up: an assessment tool was devised that addressed admitting conditions related to oral tissues, plaque on teeth, and overall cleanliness of the tongue. A new oral care kit was introduced with tools specifically designed for tooth-brushing with antiseptic solution, suction catheters of appropriate length to reach above the subglottic space above the endotracheal tube cuff, and oral tissue brushes with suction with appropriate solutions to loosen any encrusted materials.

The group considered but did not implement a protocol that would use oral chlorhexidine gluconate. At the time there was no strong evidence for its use as a means to reduce VAP, and there was no unit dose packaging for the solution.

Garcia said that the protocol for oral care was developed in conjunction with the study. He explained, "Prior to the study, there was no formal oral care protocol. A hard Yankaeur was used for oral suctioning, and oral tissue brushes were used. No time frames for their use was established. There also was no compliance monitoring conducted for the use of these items."

Garcia further noted that the education and training provided to the nursing staff prior to the intervention was structured and multifactorial. It included handouts, new areas of documentation, and posters hung in key locations.

### Implications for Practice

The study's results have several implications for critical care practice. "Most hospitals have implemented the VAP bundle as advocated by many expert groups and some have achieved success in reducing VAP rates," Garcia explained. "However, the CDC's recommendation for implementing comprehensive oral care is not defined." He said in addition to improved knowledge of the pathogenesis of hospital-acquired pneumonia, this study adds considerably to our understanding that it is not enough to use indirect methods of reducing aspiration into the respiratory tract, but interventions also must be directed at

the site where the bacteria proliferate. "This is even more important for hospitals with large numbers of vented patients, and where patients frequently exhibit colonization with multidrug resistant organisms."

Garcia further noted that AJCC's readers can best use this information by evaluating it in relation to practice methods. "Determine your current practices in oral care and strive to make them 'best' practices," he said.

According to Garcia, research makes a difference to patients when it is translated into practice changes. "In the end, bedside workers care about one thing: providing the best care that can be given. If they are given the best tools and encouraged to use them (with their feedback on details for usage) it eventually becomes part of their everyday practice."

#### eLetters

Now that you've read the EBR article and accompanying features, discuss them with colleagues. To begin an online discussion using eLetters, just visit [www.ajcconline.org](http://www.ajcconline.org), select the article in its full-text or PDF form from the table of contents, and click "Respond to This Article" from the list on the right side of the screen. All eLetters must be approved by the journal's coeditors prior to publication.

### Discussion Points

#### A. Description of the Study

- ☐ What was the purpose of the research?
- ☐ Why is the problem significant to practice?

#### B. Literature Evaluation

- ☐ How does the study add to the body of literature on care of mechanically ventilated patients and VAP prevention?

#### C. Sample

- ☐ How were the control group and study (intervention) groups designated?

#### D. Methods and Design

- ☐ How was surveillance for VAP conducted?

#### E. Results

- ☐ What were the findings of the research?
- ☐ What was the compliance rate with the intervention protocol and how was it determined?

#### F. Clinical Significance

- ☐ What are the implications of this study for clinical practice?
- ☐ How does the study extend the evidence base on VAP prevention in the ICU?

#### About the Author

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Am J Crit Care 2009;18 533-534 10.4037/ajcc2009254

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