

What's New in the Patient Safety World

February 2024

Remember the Toothbrush!

Our June 2022 What's New in the Patient Safety World "[Guideline Update: Preventing Hospital-Acquired Pneumonia](#)" reported on the 2022 update of "Strategies to prevent ventilator-associated pneumonia, ventilator-associated events, and nonventilator hospital-acquired pneumonia in acute-care hospitals" ([Klompas 2022](#)). This is the first update since 2014 and is the collaborative work of the Society for Healthcare Epidemiology (SHEA), the Infectious Diseases Society of America (IDSA), the American Hospital Association, the Association for Professionals in Infection Control and Epidemiology, and The Joint Commission. Representatives from multiple other organizations and societies also contributed.

One of the items listed under "major changes" was a recommendation for daily toothbrushing. The recommendation for daily toothbrushing for prevention of VAP was based on moderate evidence. Though there was less evidence for daily toothbrushing for prevention of non-ventilatory hospital-acquired pneumonia (NVHAP), it was still recommended as a practical intervention.

A new systematic review and meta-analysis ([Ehrenzeller 2023](#)) of studies assessing the impact of daily toothbrushing on hospital-acquired pneumonia (HAP) included 15 trials with a total of 10,742 patients (2033 in the ICU and 8709 in non-ICU locations). Toothbrushing was associated with significantly lower risk for HAP (risk ratio 0.67) and ICU mortality (RR 0.81). Reduction in pneumonia incidence was significant for patients receiving invasive mechanical ventilation (RR 0.68) but not for patients who were not receiving invasive mechanical ventilation (RR 0.32). Toothbrushing for patients in the ICU was also associated with fewer days of mechanical ventilation (mean difference, -1.24 days) and a shorter ICU length of stay (mean difference, -1.78 days). Brushing twice a day vs more frequent intervals was associated with similar effect estimates. Non-ICU hospital length of stay and use of antibiotics were not associated with toothbrushing.

The authors conclude that these findings suggest that routine toothbrushing should be considered an essential component of standard care in hospitalized patients, particularly in patients receiving invasive mechanical ventilation.

However, as pointed out in the accompanying editorial ([Datta 2023](#)), there is still uncertainty regarding the role of daily toothbrushing in NV-HAP. Ehrenzeller and Klompas could only identify 2 studies with nonventilated patients that met their inclusion criteria. Among these, the effect estimate suggested toothbrushing could prevent NV-HAP, but the small sample size and wide confidence interval underscore the need for more data on NV-HAP.

The new study adds credence to the importance of maintaining oral hygiene in hospitalized patients.

Some of our prior columns on HAI's (hospital-acquired infections):

December 28, 2010	“HAI's: Looking In All The Wrong Places”
October 2013	“HAI's: Costs, WHO Hand Hygiene, etc.”
February 2015	“17% Fewer HAC's: Progress or Propaganda?”
April 2016	“HAI's: Gaming the System?”
September 2016	“More on Preventing HAI's”
November 2018	“Privacy Curtains Shared Rooms and HAI's”
December 2018	“HAI Rates Drop”
January 2019	“Oral Decontamination Strategy Fails”
February 2019	“Infection Prevention for Anesthesiologists”
March 2019	“Does Surgical Gowning Technique Matter?”
May 2019	“Focus on Prophylactic Antibiotic Duration”
July 2019	“HAI's and Nurse Staffing”
February 2020	“NICU: Decolonize the Parents”
June 16, 2020	“Tracking Technologies”
August 2020	“Surgical Site Infections and Laparoscopy”
December 2020	“Do You Have These Infection Control Vulnerabilities?”
May 2021	“CLABSI's Up in the COVID-19 Era”
August 2021	“Updated Guidelines on C. diff”
October 2021	“HAI's Increase During COVID-19 Pandemic”
June 2022	“Guideline Update: Preventing Hospital-Acquired Pneumonia”
June 21, 2022	“Preventing Post-op Pneumonia”
June 28, 2022	“Pneumonia in Nervous System Injuries”
August 2022	“Resistant Infections Up During COVID-19 Pandemic”
November 15, 2020	“Which Antiseptic?”
December 2022	“Game Changer to Prevent SSI's in Abdominal Surgery?”
May 30, 2023	“Non-Ventilator-Hospital-Acquired Pneumonia Finally Gets Attention”
August 2023	“New MRSA Guidelines”
September 12, 2023	“Radiology and Hospital-Acquired Infections”
January 2024	“HAI's Drop Sharply Post-Pandemic”

References:

Klompas M, Branson R, Cawcutt K, et al.. Strategies to prevent ventilator-associated pneumonia, ventilator-associated events, and nonventilator hospital-acquired pneumonia in acute-care hospitals: 2022 Update. *Infect Control Hosp Epidemiol* 2022; 20: 1-27
<https://www.cambridge.org/core/journals/infection-control-and-hospital-epidemiology/article/strategies-to-prevent-ventilator-associated-pneumonia-ventilator-associated-events-and-nonventilator-hospital-acquired-pneumonia-in-acute-care-hospitals-2022-update/A2124BA9B088027AE30BE46C28887084>

Ehrenzeller S, Klompas M. Association Between Daily Toothbrushing and Hospital-Acquired Pneumonia: A Systematic Review and Meta-Analysis. *JAMA Intern Med* 2023; Published online December 18, 2023
<https://jamanetwork.com/journals/jamainternalmedicine/article-abstract/2812938>

Datta R. Daily Toothbrushing to Prevent Hospital-Acquired Pneumonia—Brushing Away the Risk. *JAMA Intern Med* 2023; Published online December 18, 2023
<https://jamanetwork.com/journals/jamainternalmedicine/article-abstract/2812944?resultClick=1>

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