

# Toothbrushing and hospital infection prevention Q&A

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Rupak Datta, MD, Ph.D., MPH, is an assistant professor of medicine (infectious diseases) at Yale School of Medicine (YSM) and an assistant hospital epidemiologist in the Veterans Affairs Connecticut Healthcare

System. His research focuses on improving clinical outcomes and reducing adverse events among older adults through antimicrobial stewardship.

In his recent [commentary in \*JAMA Internal Medicine\*](#), Datta wrote about daily toothbrushing as a strategy for preventing hospital-acquired pneumonia. Below, he discusses the link between oral care and health.

## **How did you become aware of the connection between oral care and overall health?**

I learned about the link between oral care and health through my infectious diseases fellowship at YSM. Patients with poor oral hygiene are predisposed to [invasive infections](#), like bloodstream infections and endocarditis.

As an [infectious diseases](#) fellow, I learned that periodontal disease is a critical risk factor for infection. My interactions with surgeons and [dental professionals](#) reinforced this idea. For example, oral care is often required before complex cardiothoracic surgeries.

## **Tell us more about the science behind this link.**

The mouth is a vast reservoir for many microorganisms, such as bacteria, fungi, and protozoa. Many of these microorganisms, particularly bacteria, can enter the bloodstream or the local tissue if there is a breakdown, particularly in individuals with weakened immune systems. Toothbrushing and other mechanisms to promote oral health reduce the burden of these microorganisms.

Toothbrushing removes dental plaques, or biofilms, where microorganisms are prevalent. When dental plaques accumulate, bacteria

can invade the [oral cavity](#), respiratory tract, bloodstream, and even heart valves, or elsewhere. Mechanisms of reducing that biofilm, such as toothbrushing, have been shown to be effective in reducing infection.

## **What have you learned through recent studies in this area?**

A recent meta-analysis showed that brushing teeth can lower the risk of hospital-acquired pneumonia. Before this [meta-analysis](#), studies focused on chlorhexidine, which is used as an antiseptic mouthwash. The thought was that if we could use this mouthwash to reduce biofilms and the microbial burden in the oral cavity, we could minimize pneumonia. But there's been mixed evidence about that.

Toothbrushing is a different modality that mechanically removes those biofilms. Increasing evidence shows that toothbrushing is particularly effective in reducing pneumonia in patients on mechanical ventilators.

## **What can the average person take away from this research?**

Regular toothbrushing removes harmful bacteria, reduces the risk of oral infections, such as gingivitis and [periodontal disease](#), and, more importantly, may reduce severe infections, such as pneumonia, bloodstream infection and endocarditis.

Good oral hygiene is a simple and effective tool for infection prevention that may be analogous to hand hygiene. So, we may start to think about brushing teeth the same way we think about washing hands—both are critical infection prevention measures.

**More information:** Rupak Datta, Daily Toothbrushing to Prevent

Hospital-Acquired Pneumonia—Brushing Away the Risk, *JAMA Internal Medicine* (2023). [DOI: 10.1001/jamainternmed.2023.6807](https://doi.org/10.1001/jamainternmed.2023.6807)

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