Can oral care for babies prevent future cavities?

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A recent University of Illinois study confirms the presence of bacteria associated with early childhood caries (ECC) in infant saliva. Credit: Jennifer Shike, University of Illinois

New parents have one more reason to pay attention to the oral health of their toothless babies. A recent University of Illinois study confirms the presence of bacteria associated with early childhood caries (ECC) in infant saliva.

ECC is a virulent form of caries, more commonly known as tooth decay or a cavity. Cavities are the most prevalent infectious disease in U.S. children, according to the Centers for Disease Control and Prevention.

"By the time a child reaches kindergarten, 40 percent have dental

cavities," said Kelly Swanson, lead researcher and U of I professor of animal science. "In addition, populations who are of low socioeconomic status, who consume a diet high in sugar, and whose mothers have low education levels are 32 times more likely to have this disease."

Swanson's novel study focused on infants before teeth erupted, compared to most studies focused on children already in preschool or kindergarten – after many children already have dental cavities.

"We now recognize that the "window of infectivity," which was thought to occur between 19 and 33 months of age years ago, really occurs at a much younger age," he said. "Minimizing snacks and drinks with fermentable sugars and wiping the gums of babies without teeth, as suggested by the American Academy of Pediatric Dentistry, are important practices for new parents to follow to help prevent future cavities."

In addition, his team used high-throughput molecular techniques to characterize the entire community of oral microbiota, rather than focusing on identification of a few individual bacteria.

"Improved DNA technologies allow us to examine the whole population of bacteria, which gives us a more holistic perspective," Swanson said. "Like many other diseases, dental cavities are a result of many bacteria in a community, not just one pathogen."

Through 454 pyrosequencing, researchers learned that the oral bacterial community in infants without teeth was much more diverse than expected and identified hundreds of species. This demonstration that many members of the bacterial community that cause biofilm formation or are associated with ECC are already present in infant saliva justifies more research on the evolution of the infant oral bacterial community, Swanson said.

Could manipulating the bacterial community in infants before tooth eruption help prevent this disease in the future?

"The soft tissues in the mouth appear to serve as reservoirs for potential pathogens prior to tooth eruption," he said. "We want to characterize the microbial evolution that occurs in the oral cavity between birth and tooth eruption, as teeth erupt, and as dietary changes occur such as breastfeeding vs. formula feeding, liquid to solid food, and changes in nutrient profile."

Swanson said educating parents-to-be on oral hygiene and dietary habits is the most important strategy for prevention of dental cavities.

Provided by University of Illinois at Urbana-Champaign

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