



Module 15: Oral Health

Part 3: Childhood

Hello, I'm Erin Hartnett. I'm a pediatric nurse practitioner, and I'm the Program Director of NYU College of Nursing's oral health programs. I'd like to talk to you today about oral health in childhood. After this session, you will be able to identify the prevalence, risk factors, and prevention measures for caries in children and adolescents, and discuss the access problems for children and adolescents in the healthcare system.

The Healthy People 2020 objectives are to reduce the proportion of children and adolescents who have dental caries and reduce the proportion of children with untreated dental caries, and to increase the proportion of children and adolescents who use the healthcare system in the past year, and increase the proportion of children who receive dental sealants on their molar teeth.

Dental caries is the medical term for the infectious process that if left untreated becomes a cavity or a decay in the tooth. Early childhood caries is the most common chronic disease of children under 72 months of age. It's five times more common than asthma. Over 50 million school hours are lost each year because of oral health related illness, pain, and infection. 50% of all children have never even visited a dentist. One in four children living in poverty have untreated dental caries.

Yet most of these children have contact with a medical provider, and 13 times in the first 36 months. It's known that fluoride varnish can reduce caries by 25-45%, yet less than half of these children between age 2 and 17 were told by their healthcare provider about the need for routine dental care.

So just look at this graph about the prevalence of untreated dental caries. This is by race, ethnicity, and poverty level. As you can see, there is a big disparity between the white children and the black and Hispanic children. Untreated dental caries are much more prevalent in the children of minorities through all of the ages. Also, if you look at the poverty level, the children who are below the 100% poverty level have almost twice the amount of untreated dental caries as children above the poverty level.

But why is it an issue for untreated dental caries? They're just baby teeth. They're going to fall out anyway. Why is it important to treat them? It turns out baby teeth are important. They're important for speech, for feeding, nutrition, chewing, for smiling and socialization. Children who have dental caries are having chronic pain, and this pain they often can't even localize or tell someone what the problem is or where the pain is coming from. It can affect their behavior. They can have sleep problems, feeding problems. They can be irritable. In school they may not be able to pay attention, have learning problems. Nutrition, growth, and development. All because they haven't treated their dental caries.

Dental caries can actually be life-threatening. A young boy in Maryland, Diamante Driver, 12 years old, had a toothache, but he was unable to access the dental system because he couldn't find a dentist who took Medicaid. He developed a brain abscess and died from a toothache.

This is a graph which shows you again the percentage of children with untreated dental caries by age, poverty status, race, and ethnicity, but it looks at this over the past two decades. So as you can see, we are going in the right direction. We have much less untreated dental caries since 1988 until today, but there still is a big disparity. The Mexican American and the black children have much more untreated dental caries than the white children over all of these decades, and if you look at the poverty level, the children 100% below the poverty level have twice the amount of untreated dental decay over the past decade as children 200% over the poverty level.

One of the Healthy People 2020 objectives is to increase the prevalence of dental sealants in children and adolescents. Again, if you look at this graph of who is getting the dental sealants, you can see that the children, again the black and Hispanic children, are not



getting as many dental sealants as the white children, and the children who are below the poverty level also are not getting the dental sealants, in both school-age and adolescents.

In addition to the risk factors of minorities or lower socioeconomic status for caries, there are other risk factors to be aware of. One is a mother with caries history. If the mother has a history of caries, this means that she carries the bacteria, *Strep mutans*, and she can easily transmit this to her baby through food sharing. It is important for the mother to know that if she takes care of her caries and decreases her bacteria, she will decrease the risk of transmitting it to the baby.

Other risk factors in a child, if they have obvious staining, obvious spots on their teeth, a plaque accumulation. Or a child who sleeps with a bottle, who has poor nutrition, poor diet, or snacks frequently. And children with special healthcare needs, especially those who are on medications. These are all important risk factors to be aware of in development of caries.

The good news is dental caries are preventable. How to prevent them? The first thing is to start early. It's very important to let the mother or the primary caregiver know how important it is for her to decrease the bacteria in her mouth before she transmits it to the baby. It's important to educate new mothers on nutrition, encourage breastfeeding. If breastfeeding is not wanted by the mother and they choose bottle feeding, just be sure they know not to prop the bottle, not to send the baby to bed for naps or nighttime with a bottle, especially a bottle of milk. If they need a bottle, they can have water in the bottle if they're going to sleep. And to have no food sharing, not to taste the baby's food, or pre-chew the baby's food, or lick the baby's pacifier to clean it. These are all ways that that bacteria can be transmitted.

Oral hygiene is another important factor. It's important to clean the baby's gums, just with a little washcloth after feeding. Once any teeth erupt, you need to start the cleaning of the teeth as well. Mothers also need to know about what teething is, and what to expect, and comfort measures for teething.

It's not just what you eat, but how often, that really determines if you develop caries. What happens is carbohydrates in the mouth are attacked by the bacteria. Oral bacteria break down these carbohydrates into acids, and this acid lasts for 20-40 minutes in the mouth. Once the acid is gone, the saliva is there to buffer it. When the acid was there, the teeth are being demineralized, and when the acid is gone, the saliva starts to remineralize them. But with constant snacking or drinking juice from sippy cups, they don't have any time to remineralize because they're constantly in this danger zone of acid, and they never get their pH high enough to be in that safe zone to remineralize the teeth.

It's important for families to know that it's not only those sweets that cause this acid breakdown. It's any foods with carbohydrates, even good foods. Apples, organic breads, and cereals have carbohydrates and this can produce the acid, so it's very important not to let children be snacking or drinking juices all day long.

These are the stages of early childhood caries. If you look, usually teeth are supposed to be all one color, all white. But if you look at the top picture on the left, you can see these little white spots. Those are actually demineralization, the beginning of childhood caries. If allowed to progress, they can look like the picture on the top right, where they turn brown.

Now if intervention can take place at this time and fluoride varnish is applied to these teeth, then this can stop that process and they won't go on further decay, which if you look in the third picture, this child has serious decay which has actually gone into the gum and caused an abscess there. On the fourth picture, the teeth have actually rotted and broken off, and the child is just left with stumps.

There are lots of ways to prevent this from happening in children. The first is really healthy nutrition. To be sure that they are getting good food, not a lot of snacks, not a lot of sweets and juices, and not a lot of frequency, and that they get fluoride. Many community water supplies have fluoride in the water, but if the child is not in a community that does have fluoride, then they need fluoride supplements, and fluoride supplements are a prescription, and they can only be prescribed, or only should be prescribed, for children who are not having fluoridated water.



Fluoride varnish is a clear, colorless varnish that's painted on the teeth by a medical provider or a dental provider every six months, and this protects the teeth from demineralization. If these fluorides are taken correctly and used correctly, the child will not develop fluorosis, which is an abnormal staining of the teeth caused by too much fluoride.

The other important prevention measure besides nutrition and fluoride is tooth brushing. The whole reason for tooth brushing is to remove plaque and debris, and to spread the fluoride around the teeth. It's important for the child to brush their teeth two minutes a day, two times a day, and parental assistance is necessary, at least until the child is either age seven or able to tie their own shoes. Then they would have the dexterity necessary for brushing their teeth. They should be supervised so they are not using too much fluoridated toothpaste.

For a child under two, it's just a little smear of fluoridated toothpaste to put on the toothbrush, like a little rice grain. Over two, you can use a pea-size amount of fluoride. It's important for them to spit the toothpaste if they can, but not to rinse it off, because you want it to stay on the teeth after they brush. All children should be referred to a dental home by age one.

Oral health is also very important for adolescents. Even though they may have some of the same risk factors as young children, there are many different risk factors as well. They often have a poor diet, poor oral hygiene. They have risks such as hardware in their mouth from braces or piercing or grills that they're wearing. They also may be affected by trauma, because of sports trauma or accidents, so there are many different risks that adolescents may have. But they're very concerned about their appearance, so this is a good time where you can really educate these adolescents and empower them to have healthy oral health behaviors.

There are some very high-risk behaviors that can cause oral health problems. One is sexually transmitted disease. HPV can actually cause oral cancer. You can see gonorrhea in the mouth. There are many, many adolescents using tobacco. All kinds of tobacco can cause oral cancer, cigarettes, cigars, and chewing tobacco. There are also many adolescents who abuse drugs and alcohol, which can cause many problems in addition to oral problems. One of the serious oral problems is meth mouth in adolescents who are abusing methamphetamines. The teeth really are seriously affected, as in this photograph here, and they just disintegrate, basically.

One problem that's very important with dental care is access. Dental insurance has been a serious problem for children in the past, but now with the Affordable Care Act, hopefully all children will have dental insurance and be able to access the dental and oral health system. There's a problem in access with the dental care workforce. We really don't have enough dentists, especially in the rural areas. There are 31 million people who live in dental shortage areas, and 38% of the rural counties in this country are dental shortage areas. In many other areas, there are enough dentists, but often they don't want to participate in the public-financed oral health programs, like Medicaid.

There is some movement toward having other dental providers, such as dental hygienists, increase their scope of practice or to develop some mid-level providers like dental therapists in some of these areas. Schools have shown to be a great place for prevention and easy access. That's where the children are. There are many programs in schools that really are able to prevent a lot of oral disease. They have a lot of dental sealant programs, fluoride varnish programs, dental exam programs. They even have fluoride rinse programs. These are really showing to have a lot of good effect at preventing dental problems and access problems.

Oral health is mandated in the Head Start Program, and they have made a lot of headway with making dental homes for their students. The non-dental providers is really an important resource for access, because many patients who don't have a dental provider do have a medical provider, a physician, a nurse practitioner, a nurse midwife, a PA. These are all providers who can provide many areas of oral health care, prevention, and education.

For the primary care clinician, it's very important for them to include oral health in their care of all of their patients. In their assessment, in their health history, in their physical exam, to be sure that when they're looking in the mouth that they're examining the tongue, the teeth, the gums. And that they do a risk assessment, and see what problems their patients may have that could lead to oral health problems. There's lots of prevention they can do. Screening for oral cancer, fluoride varnish application, and giving parents anticipatory guidance on nutrition, on fluoride, on feeding, on oral hygiene.



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The primary care clinician can also monitor and manage any of their patients with chronic illness that could have an oral systemic health condition, such as cancer, diabetes, or celiac disease. They need to have a place in their electronic health record where they can put the oral health conditions of their patients. And then to collaborate with their dental colleagues, to share the information about their patients and refer their patients to the dentists as needed.

With all of these in place, we should be able to increase access for our children and improve the oral health of our children and adolescents. Thank you.