Oral Health Assessment in Children's Hospital Outpatient Center
Meaghan D. Barnett, MD

Background:

Childhood dental caries are the number one chronic medical condition affecting children today. It is five times more common than asthma and seven times more common than allergic rhinitis according to the AAP\textsuperscript{2}. However, many children have difficulty gaining access to proper oral health care for many reasons. Recently, the AAP started recommending the first oral health screening by a dentist occur at one year of age. However, children are typically getting their first set of teeth between 4 and 8 months. Dental screening and education needs to begin prior to their first seeing a dentist at one year of life\textsuperscript{3}.

Many pediatricians will examine teeth and feel it is within their scope of practice to provide dental care. According to a survey in 2009, 54% of pediatricians were examining half of their 0-3 year old patients' teeth and only 4% were applying fluoride varnish. Particularly at risk is the Medicaid population due to lack of access to proper dental care. Additionally 75% of pediatricians reported a lack of training on oral health during their medical school or residency\textsuperscript{5}.

In 2000 the surgeon general released a report on oral health. The report focused on the importance of oral health for quality of life and noted the difficulties with access to proper care for vulnerable populations\textsuperscript{4}. The report also showed that fewer than 1 out of 5 Medicaid eligible children had accessed to dental health care\textsuperscript{2}. This is particularly important in our patient population from Children's Hospital Outpatient Center that is largely Medicaid or self-pay patients. The AAP has launched a campaign for oral health after meeting in 2008.

I chose to look at our oral health screening and application of dental varnish in our patient population as this is part of the AAP policy statement and due to the high rate of dental caries affecting our patient population. The goal was to implement a change of practice at CHOC to more closely resemble the AAP recommendations for practice regarding oral health care.

Methods:

I first selected a patient population to focus on. The AAP recommends oral health screening to all patients ages 0-3 years old at their well visit. This age range was too large for an initial evaluation and I focused on patients aged 6 months to 18 months who presented to CHOC for their well child care. I used the AAPs form for the screenings to be done during well child care by the pediatric resident (See attached for a copy of this form). Initially, there was little area for the resident to document the health screening or reminders to do this. In the pre-intervention phase residents were told that they should be documenting oral health during their visits at their CHOC orientation. The date range for pre-intervention was October 2011 to December 2011.

The post-intervention included introduction of the oral health risk assessment tool and ran from January 2012 to March 2012. This form was described to the residents during orientation to CHOC and then was attached to the appropriate age well child forms that residents use during their well child checks. Additionally a shortcut to a click-box window for oral health risk was placed in the appropriate age charts for residents to use during documentation. The charts were then reviewed again for documentation of the patients' oral health risk.

Additionally, applying dental varnish is a large component of assessing oral health risk, if someone is high risk, varnish should be applied at least every 6 months. The second part of the intervention was screening if we are appropriately applying dental varnish to our patient population. Again, this was focused on the 6-18 month well child visits. In the pre-intervention and post-intervention
there was no change in telling residents to apply dental varnish. The risk assessment tool has a box to check for varnish as appropriate and there was a place inserted in the charting system during the post-intervention phase.

Results:

In the pre-intervention phase of the quality improvement, there was a large amount of patients not having any documentation or “form” in the chart discussing their oral health. The charts were reviewed for any mention during the physical exam of dentition quality and in the assessment and plan part of the note indicating that dental health was reviewed. Of the charts reviewed 73% did not have any mention of oral health screening documented, which is shown in the graph below).

Fluoride is to be applied starting at 6 months if teeth are present and then every 6 months thereafter. The charts in the pre-intervention were reviewed for appropriate application of varnish being documented. This included looking back at previous visits to see if the patient had previous appropriate varnish applied and therefore making the current visit not require varnish. This is particularly important in the age group of 6-18 months as visits are less than 6 months apart. If varnish had been applied appropriately and not required at this visit it was included in the “yes” for appropriate varnish application.

A “no” indicates that the patient did not receive varnish appropriately during their visit. This includes no documentation that varnish was not required or if it was done it was not documented in the chart. This does not include patients who had a previous documented appropriate application of varnish and were not due at the visit reviewed.

Of the charts reviewed there was a 47% correct application of varnish in the charts reviewed.
Post-Intervention

In the post-intervention phase of the project, there was improvement in both areas of both documentation and appropriate fluoride application. There was a 67% documentation rate of oral health risk. This was a 40% improvement over the pre-intervention phase.

Fluoride application also showed improvement in appropriate application and documentation. In the post-intervention there was a 67% correct application and documentation. This was a 20% improvement from the pre-intervention phase. The overall improvement is shown in the graphs below.
Discussion:

The patient population seen in CHOC is a generally high risk population who requires close monitoring of their oral health. This intervention did show a significant improvement in our documentation of patient oral health risk. The screening tool is more detailed than what was previously documented in the chart as well, making this a more thorough screening for our patients. There is a good prompt at the end of the chart to apply varnish or refer to a dentist based on findings on exam and history. While there was a significant improvement in our charting of patients’ oral health risk, there is still a large area for improvement in our documentation. While a 67% documentation rate is good, there is a large area for improvement here. The clinic has since transitioned to a new computer documentation system and it would be useful to continue this project in the new system to see if our documentation continues to be as good. In the new system there is no longer a prompt or pull up screen for residents to click on and fill in the oral health risk or document varnish application. I suspect the documentation will not be as good as it
was. This could be an area for another resident to continue this project to figure out ways to make this work within the new system.

Our application of varnish also had improvement, but not as much as it could have been. While we had a better rate of varnish application and documentation correctly in the pre-intervention than we did with documentation or overall oral health risk, we are again only at 67% documentation. There is likely a group of patients that did get varnish applied correctly, but it was not documented as being done so they were included in the not done category. This stresses the importance of documentation for multiple reasons. One, is patient care is improved and you do not have to rely on the family to remember if varnish was applied during a previous visit. Second is reimbursement, application of varnish is easy to do and should be documented and billed appropriately.

Conclusion:

While there were good improvements in our screening and documentation of oral health risk for patients, there is still a large area for improvement. With the new computer system this project could be redone in a similar fashion to see where we are with our new system and then devise a way to improve upon our documentation again. Similarly, our varnish application did improve, but there is still a large area for improvement here. As with the screening the application of varnish and documentation of this could be looked at again within our new system.

Sources:


4. AAP.org section on “Children Oral Health”

# Oral Health Risk Assessment Tool

The American Academy of Pediatrics (AAP) has developed this tool to aid in the implementation of oral health risk assessment during health supervision visits.

## Instructions for Use

This tool is intended for documenting caries risk of the child, however, two risk factors are based on the mother or primary caregiver's oral health. All other factors and findings should be documented based on the child.

The child is at an absolute high risk for caries if any risk factors or clinical findings, marked with a △ sign, are documented yes. In the absence of △ risk factors or clinical findings, the clinician may determine the child is at high risk of caries based on one or more positive responses to other risk factors or clinical findings. Answering yes to protective factors should be taken into consideration with risk factors/clinical findings in determining low versus high risk.

<table>
<thead>
<tr>
<th>Visit:</th>
<th>6 month, □ 9 month, □ 12 month, □ 15 month, □ 18 month, □ 24 month, □ 30 month, □ 3 years, □ 4 years, □ 5 years, □ 6 years, □ other.</th>
</tr>
</thead>
</table>

### RISK FACTORS

- △ Mother or primary caregiver had active decay in the past 12 months  
  - Yes □ No □

- Mother or primary caregiver does not have a dentist  
  - Yes □ No □

- Continual bottle/sippy cup use with fluid other than water  
  - Yes □ No □

- Frequent snacking  
  - Yes □ No □

- Special health care needs  
  - Yes □ No □

- Medicaid eligible  
  - Yes □ No □

### PROTECTIVE FACTORS

- Existing dental home  
  - Yes □ No □

- Drinks fluoridated water or takes fluoride supplements  
  - Yes □ No □

- Fluoride varnish in the last 6 months  
  - Yes □ No □

- Has teeth brushed daily  
  - Yes □ No □

### CLINICAL FINDINGS

- △ White spots or visible decalcifications in the past 12 months  
  - Yes □ No □

- Obvious decay  
  - Yes □ No □

- Restorations (fillings) present  
  - Yes □ No □

- Visible plaque accumulation  
  - Yes □ No □

- Gingivitis (swollen/bleeding gums)  
  - Yes □ No □

- Teeth present  
  - Yes □ No □

- Healthy teeth  
  - Yes □ No □

### Caries Risk:
- Low □ High □

### Completed:
- Anticipatory Guidance □ Fluoride Varnish □ Dental Referral

## Treatment of High Risk Children

If appropriate, high-risk children should receive professionally applied fluoride varnish and have their teeth brushed daily with an age-appropriate amount of fluoride toothpaste. Referral to a pediatric dentist or a dentist comfortable caring for children should be made with follow-up to ensure that the child is being cared for in the dental home.

Supported in part by [Live, Learn and Thrive](https://www.livelearnthrive.org)


The recommendations in this publication do not indicate an exclusive course of treatment or serve as a standard of medical care. Variations taking into account individual circumstances may be appropriate. Copyright © 2011 American Academy of Pediatrics. All Rights Reserved. The American Academy of Pediatrics does not review or endorse any modifications made to this document and in no event shall the AAP be liable for any such changes.

---

American Academy of Pediatrics  
Dedicated to the health of all children

Bright Futures  
Preventive services for children. 0-18 years.

Children's Oral Health  
An initiative of the American Academy of Pediatrics
Oral Health Risk Assessment Tool Guidance

Timing of Risk Assessment
The Bright Futures/AAP “Recommendations for Preventive Pediatric Health Care” (i.e., Periodicity Schedule) recommends all children receive a risk assessment at the 6- and 9-month visits. For the 12-, 18-, 24-, 30-month, and the 3- and 6-year visits, risk assessment should continue if a dental home has not been established. View the Bright Futures/AAP Periodicity Schedule—http://brightfutures.aap.org/clinical_practice.html.

Risk Factors

⚠️ Maternal Oral Health
- Studies have shown that children with mothers or primary caregivers who have had active decay in the past 12 months are at greater risk to develop caries. This child is high risk.

Maternal Access to Dental Care
- Studies have shown that children with mothers or primary caregivers who do not have a regular source of dental care are at a greater risk to develop caries. A follow-up question may be if the child has a dentist.

Continual Bottle/Sippy Cup Use
- Children who drink juice, soda, and other liquids that are not water, from a bottle or sippy cup continually throughout the day or at night are at an increased risk of caries. The frequent intake of sugar does not allow for the acid it produces to be neutralized or washed away by saliva. Parents of children with this risk factor need to be counseled on how to reduce the frequency of sugar-containing beverages in the child’s diet.

Frequent Snacking
- Children who snack frequently are at an increased risk of caries. The frequent intake of sugar/refined carbohydrates does not allow for the acid it produces to be neutralized or washed away by saliva. Parents of children with this risk factor need to be counseled on how to reduce frequent snacking and choose healthy snacks such as cheese, vegetables, and fruit.

Special Health Care Needs
- Children with special health care needs are at an increased risk for caries due to their diet, xerostomia (dryness of the mouth, sometimes due to asthma or allergy medication use), difficulty performing oral hygiene, seizures, gastroesophageal reflux disease and vomiting, attention deficit hyperactivity disorder, and gingival hyperplasia or overcrowding of teeth. Premature babies also may experience enamel hypoplasia.

Protective Factors

Dental Home
- According to the American Academy of Pediatric Dentistry (AAPD), the dental home is oral health care for the child that is delivered in a comprehensive, continuously accessible, coordinated and family-centered way by a licensed dentist. The AAP and the AAPD recommend that a dental home be established by age 1. Communication between the dental and medical homes should be ongoing to appropriately coordinate care for the child. If a dental home is not available, the pediatrician should continue to do oral health risk assessment at every well-child visit.

Fluoridated Water/Supplements
- Drinking fluoridated water provides a child with systemic and topical fluoride exposure, a proven caries reduction intervention. Fluoride supplements may be prescribed by the pediatrician or dentist if needed. View fluoride resources on the Oral Health Practice Tools Web Page http://aap.org/oralhealth/PracticeTools.html.

Fluoride Varnish in the Last 6 Months

Tooth Brushing and Oral Hygiene
- Pediatricians can reinforce good oral hygiene by teaching parents and children simple practices. Infants should have their mouths cleaned after feedings with a wet soft washcloth. Once teeth erupt it is recommended that children have their teeth brushed twice a day. For children under the age of 2 it may be appropriate to recommend a smear of fluoridated toothpaste if the child is at high risk for caries, but recommendations vary. Children older than 2 years old should use a pea-sized amount of fluoridated toothpaste twice a day. View fluoride resources in the AAP Protecting All Children’s Teeth Curriculum Fluoride Module http://www.aap.org/oralhealth/pact/ppt/fluoride.ppt.
White Spots/Decalcifications
This child is high risk.
White spot decalcifications present—immediately place the child in the high-risk category.

Obvious Decay
This child is high risk.
Obvious decay present—immediately place the child in the high-risk category.

Restorations (Fillings) Present
This child is high risk.
Restorations (Fillings) present—immediately place the child in the high-risk category.

Visible Plaque Accumulation
Plaque is the soft and sticky substance that accumulates on the teeth from food debris and bacteria. Pediatricians can teach parents how to remove plaque from the child's teeth by brushing and flossing.

Gingivitis
Gingivitis is the inflammation of the gums. Pediatricians can teach parents good oral hygiene skills to reduce the inflammation.

Healthy Teeth
Children with healthy teeth have no signs of early childhood caries and no other clinical findings. They are also experiencing normal tooth and mouth development and spacing.

For more information about the AAP's oral health activities email oralhealth@aap.org or visit www.aap.org/oralhealth.