

Oral Health in Primary Care

December 2012

U.S. Department of Health and Human Services

Health Resources and Services Administration



The publication was produced for the U.S. Department of Health and Human Services, Health Resources and Services Administration by the American Academy of Pediatrics under contract number HSH250201100123P.

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Suggested Citation: U.S. Department of Health and Human Services, Health Resources and Services Administration. *Oral Health in Primary Care*. Rockville, Maryland: U.S. Department of Health and Human Services, 2012

Table of Contents

INTRODUCTION	6
DENTAL HOME	7
1. Establish a Dental Home	7
2. Concept of Dental Home	8
3. The Role of the Pediatric Primary Health Care Providers	8
Role in facilitating the Age One Dental Visit	9
Role in establishing a dental home	9
4. Referral	10
5. Educating and Training Staff	11
6. Building Your Oral Health Team	12
7. Increasing Cultural Competency	12
8. Finding a Dental Home	13
9. Setting Up an Office Protocol	14
How to start?	14
What might some of these responsibilities look like?	14
What's next?	14
When the patient comes to you	14
10. Developing a System for Documentation	15
11. Dental Coverage	15
12. Educating Families	15
13. Teaching It to Your Families	16
14. Quality Improvement	17
Summary	18
RISK ASSESSMENT	19
1. Oral Health Risk Assessment	19
2. Responsibilities of the Pediatric Primary Health Care Provider (PPHP)	19
3. Dental Caries Process	20
4. Stages in the Caries Process	21
5. Impact of ECC	23
6. High-Risk Groups	23
7. Performing Caries Risk Assessment	24
8. Tooth and Gum Exam	25
9. Things to Look For	25
10. Documenting Oral Health Risk Assessment	26
11. What if I find something?	27
12. Referral	27
13. Dental Coverage	28
14. Educating Staff and Families	28
15. Oral Hygiene—Brushing and Flossing	29
16. Families Oral Health	30
17. Fluoride Exposure	30
18. Fluoride Discussion	31
19. Feeding, Eating, and Drinking Habits	32
20. Quality Improvement	33
Summary	33
ANTICIPATORY GUIDANCE	35
1. Provide Oral Health Anticipatory Guidance and Education	35
2. What is Anticipatory Guidance?	35
3. Guidelines and Policies	36
AAP Preventive Oral Health Intervention for Pediatricians Policy Statement	36
Bright Futures Guidelines for Health Supervision, 3rd Edition	37
American Academy of Pediatric Dentistry (AAPD)	37
4. Developing a System	37
5. Time Management	39
6. Documentation	41

7. Educating Staff	42
8. Educating Family	43
9. Age-Appropriate Recommendations	44
10. Nutrition and Eating Practice	46
11. Fermentable Carbohydrates	46
What are fermentable carbohydrates?	47
What about food frequency?.....	47
What does this look like in anticipatory guidance?	47
12. Brushing and Flossing	47
How can you advise your patients on brushing?	48
What about flossing?	48
13. Fluoride.....	49
14. Injury and Trauma Prevention	50
15. Quality Improvement.....	51
Summary	52
FLUORIDE VARNISH	54
1. Ensure Fluoride Varnish Application for High-Risk Patients	54
2. Definition	55
3. The Role of Pediatric Primary Healthcare Provider.....	55
4. Educating Staff	55
5. Addressing Staff Reservation	56
6. Addressing Family Hesitancy	57
7. Determining Patient Eligibility	58
8. Reimbursement	59
9. Application Technique	59
Knee-to-Knee Examination	60
10. Incorporating Fluoride Varnish into Practice	60
11. Ordering, Storing, and Handling.....	61
12. Quality Improvement.....	61
Summary	62
CASE STUDIES	63
Case 1. Recognizing Obvious and Subtle Risk Factors	63
Introduction	63
Case Objectives	63
Before You Begin.....	64
Patient and Family Profile	64
History and Physical Examination	64
Today's Examination Findings	65
Diagnosis	65
Family Concerns	66
Family Oral Health Assessment and Recommendations	66
Management and Treatment	66
Case Summary	67
Epilogue	68
Assessment	68
Case 2. Fluoride Varnish During a Routine Well Visit.....	70
Introduction	70
Case Objectives	70
Before You Begin.....	70
Patient Profile.....	71
History and Physical Examination	71
Today's Examination Findings	72
Diagnosis	72
Management and Treatment	73
Team Approach	74
Case Summary	75

Next steps:	75
Epilogue	76
Assessment	76
Case 3. Injury Treatment—A 14-Year-Old Boy with Avulsed Tooth	77
Introduction	77
Case Objectives	77
Patient Profile.....	78
History and Physical Examination	78
Today's Examination Findings	79
Family Concerns	79
Diagnosis	79
Management and Treatment	80
Post-Operative Recommendations.....	81
Case Summary	82
Assessment	83
REFERENCE DOCUMENTS AND LINKS	84

INTRODUCTION

Dental caries is the most common chronic disease encountered by children in the United States.¹ In 2009–2010, 14% of children aged 3 to 5 years and 17% of children aged 6 to 9 years had untreated dental caries.² Poor oral health can lead to malnutrition, childhood speech problems, and serious, and sometimes fatal infections.³ Non-dental health care professionals have a unique and important role in oral health care because young children visit pediatricians and family physicians earlier and more frequently than they visit dentists.³ In this module, the importance of the dental home, caries risk assessment, anticipatory guidance, and fluoride varnish application are discussed. All of these can be performed by pediatric primary health care providers (PPHPs) in their office.

Caries risk assessment evaluates the child's oral health with the goal of preventing caries through PPHP interventions and referral to the pediatric or general dentist to establish a dental home. Routine anticipatory guidance promotes health and wellness for all pediatric populations and their families via educational instruction and interventions. Fluoride varnish is a concentrated topical fluoride that is well tolerated by infants and young children. In combination with the risk assessment and anticipatory guidance, fluoride varnish has been shown to reduce cavities. Throughout this module, PPHP refers to pediatric primary health care providers, which include pediatricians, physicians, nurse practitioners, physician assistants, and others who care for children.

By the end of this module, you should be familiar with:

- The concept of a dental home
- The roles of PPHP in facilitating the establishment of a dental home
- The various facets involved and barriers in setting up a dental home
- The dental caries process and impact of Early Childhood Caries (ECC)
- The process of performing a caries risk assessment
- Groups that are at high risk for dental caries
- The importance of maternal oral health
- Age-specific oral health anticipatory guidance
- Oral health and injury prevention patient education
- Fluoride varnish—who should apply it and how it is applied
- Families' concerns about fluoride varnish and how to address them
- The process for procuring, storing, and billing for fluoride varnish

1. Centers for Disease Control and Prevention. Using fluoride to prevent and control tooth decay in the United States. http://www.cdc.gov/fluoridation/fact_sheets/fl_caries.htm Accessed July 12, 2012.
2. National Center for Health Statistics. NCHS Data Brief: Oral Health Disparities as Determined by Selected Healthy People 2020 Oral Health Objectives for the United States, 2009–2010. Number 104, August 2012 <http://www.cdc.gov/nchs/data/databriefs/db104.htm> Accessed Dec 11, 2012.
3. IOM. 2011. *Advancing oral health in America*. Washington, DC: The National Academies Press.

DENTAL HOME

1. Establish a Dental Home



Many medical conditions require collaboration between PPHPs' office and community resources to provide the patient and family with consistent and continuing care. Childhood dental caries prevention requires this same collaboration between the PPHP's office and dental providers through facilitating the establishment of a dental home. To accomplish this, the PPHP needs to build partnerships with community dental providers, facilitate and track dental referrals, and regularly update a dental resource guide. There are a number of useful resources that can assist you in building your practice's dental home such as:

- American Academy of Pediatric Dentistry (AAPD): Policy on the Dental Home -
http://www.aapd.org/media/policies_guidelines/p_dentalhome.pdf
- Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents 3rd Edition—Promoting Oral Health -
http://brightfutures.aap.org/Oral_Health_Risk_Assessment_Resources.html
- ADA Clinical Recommendations -
http://www.ada.org/sections/publicResources/pdfs/patient_11.pdf

This topic helps to address the following questions:

- What is the concept of a dental home?
- What roles do PPHPs have in facilitating the establishment of a dental home?
- What are the various facets involved in setting up a dental home?
 - Where to find oral health education and training resources
 - Where to find dental providers in your community
 - How to create a dental resource guide
 - What to consider when setting up an office protocol
- What are the barriers to establishing a dental home?
 - Where to find community dentists who see young children or children covered by Medicaid
 - How to address differing families' attitudes and beliefs regarding the importance of oral health
 - Ways to advocate to establish a dental home for my patients and their families

2. Concept of Dental Home

A dental home is built on the preventive health foundation of good oral hygiene, exposure to systemic and topical fluoride, and the elimination of prolonged exposure to simple sugars in the diet.¹ Dental home can be set up differently in various communities. In some communities such as federally qualified health centers, dental homes may be co-located within the same building as the medical home. In other communities where there is a lack of dental providers who see young children, comprehensive dental services may not be available locally. Ideally, the dental home should be expected to provide:¹



- An accurate risk assessment for dental diseases and conditions
- An individualized preventive dental health program based on the risk assessment
- Anticipatory guidance about growth and development issues (ie, teething, digit or pacifier habits, feeding practices)
- Information regarding proper nutrition and dietary practices
- Information about proper care of the child's teeth and gingival tissues
- Comprehensive dental care in accordance with accepted guidelines and periodicity schedules for pediatric dental health
- A plan for emergency dental trauma
- Referrals to other dental specialists such as endodontists, oral surgeons, orthodontists, and periodontists when care cannot be provided directly within the dental home
- Culturally sensitive oral health care service
- Support for relationship building between the patient and family
- Support for community prevention

1. American Academy of Pediatrics. Oral health risk assessment timing and establishment of the dental home. Policy reaffirmed on 124(2):845.
<http://pediatrics.aappublications.org/content/111/5/1113.full> Accessed March 29, 2012.

3. The Role of the Pediatric Primary Health Care Providers

PPHPs play an important role in the context of a dental home. They are uniquely positioned to educate their families regarding the importance of oral health and to begin the process of primary prevention of early childhood caries (ECC), which is the term for dental caries that occur in children age 5 and under. The periodicity of well child care visits affords numerous opportunities for the PPHP to assess their patients' risk for ECC, which includes assessing the establishment of a dental home.

Role in facilitating the Age One Dental Visit

Historically, the teaching was that children should see the dentist after age 3 years. The new teaching is to begin assessing the risk as early as the first well child care visit and help facilitate the Age One Dental Visit with the goal of preventing ECC. This process can even start at the prenatal visit where pregnant mothers are told about the importance of oral health both for the mother and infant.

Just as PPHPs are beginning to recognize their role in maintaining the oral health of their patients, dental providers are also beginning to recognize their role in early primary prevention of ECC. Traditionally, general dentists have not all incorporated the Age One Dental Visit into their practice while pediatric dentists, who specifically see children, usually do.¹ However, many communities lack dental providers, especially pediatric dentists.

The Preventive Oral Health Intervention for Pediatrician's AAP Policy Statement describes the roles of the PPHPs as follows:²

- Refer a child for an oral health examination by a dental provider.
- Promote the Age One Dental Visit by facilitating the establishment of a dental home for the child by 12 months of age.
- Encourage preventive dental health habits that meet each child's unique needs and keep the child free from dental or oral disease.

A child's risk for ECC is a dynamic process. The establishment of a dental home should be periodically assessed and documented in the patients' medical record. This practice will help PPHPs identify important barriers that the family might have in accessing dental care and determine the appropriateness of applying fluoride varnish.

Role in establishing a dental home

PPHPs can have a role in helping a family establish a dental home. Establishing systems within the practice can help standardize this process and help streamline the initiation and completion of referrals to a dental home and the documentation of this process in the medical record. A practice "dental champion" can help build these systems and monitor their effectiveness. The dental champion can help develop practice guidelines and standards of care to improve practice efficiencies and the quality of care provided to families. These tools will look different in every practice but can include the role of each member of the health care team, starting with the role of the front clerical staff to the PPHP.

¹. American Academy of Pediatric Dentistry. Policy on the dental home. http://www.aapd.org/media/Policies_Guidelines/P_DentalHome.pdf Accessed May 17, 2012.

². American Academy of Pediatrics Section on Pediatric Dentistry and Oral Health. Preventive oral health intervention for pediatricians. *Pediatrics*. 2008;122(6):1387-1394. <http://pediatrics.aappublications.org/content/122/6/1387.full.pdf+html> Accessed May 17, 2012.

4. Referral

Consider a referral to a dental home equal to a referral to any other type of specialist. Often, a practice has already established internal processes to both initiate and track completion of referrals outside of the practice. This process commonly includes identifying specialists to whom patients can be referred, having phone and fax numbers to the specialists readily available, and perhaps knowing staff in the specialist's office to whom they can personally speak. These same strategies can be used in referring patients to a dental home.

One of the challenges that the PPHP can face is a lack of community dental providers to whom they can refer patients. Additionally, some dental providers either don't see children less than 5 years of age or don't see children who are publicly insured. Investigating dental home options for patients can be more successful by contacting area dental schools, searching local Medicaid and Children's Health Insurance Program Web sites at <http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Childrens-Health-Insurance-Program-CHIP/CHIP-Benefits.html>, for area dental providers who accept these insurance types, or talking to their own personal dentist to see if they can be a referral resource for your patients.

A dental home will be a place where your patients can go for all their dental needs. Some of these needs will be more urgent than others. The process begins with understanding your patients' oral health care needs. Triage risk for ECC, existing dental disease, and injuries is important in determining the urgency of the dental referral. If a child is assessed to be within one of the following risk groups, the care requirements could be significant and may require dental surgery; therefore, these infants should be referred to a dental provider between 6 and 12 months of age for establishment of a dental home:¹

- Children with special health care needs
- Children of mothers with caries in the past year or without a dental home
- Children with demonstrable caries, plaque, demineralization, or staining
- Children who sleep with a bottle or have frequent night feeds without proper oral hygiene after feeding
- Children with poorer health literacy

Once a practice has established a list of community dental providers to whom families can be referred, this information can be kept in a practice dental referral guide. Periodic updating will improve the success of referrals. As the guide is updated, consider having your staff make personal phone calls to the dental

providers on the list to make sure that they are still accepting new patients, will see children at the Age One Dental Visit, and accept the various insurances that your families might have. Having an office-to-office personal contact can be a bridge to successfully getting your patients into the dental home.

Once triaged, having an effective way to communicate your patients' needs to the dental home is the next important step. Just like any other specialist to whom you refer your patients, effective communication will facilitate a successful referral. This communication process may include using a referral tool. In some practices with an electronic medical record (EMR), systems may already be in place for automating referrals. In more paper-based practices, there might be a paper referral. Consider faxing the referral to the dental home and ask for a fax back discussing the outcome of the visit.

¹: American Academy of Pediatrics. Oral health risk assessment timing and establishment of the dental home. Policy reaffirmed on 124 (2):845.
<http://pediatrics.aappublications.org/content/111/5/1113.full> Accessed March 29, 2012.

5. Educating and Training Staff

Incorporating oral health into a pediatric practice might be a new concept for practice staff. Understanding the “why” and “how” of this new concept will promote its adoption. Many states have local oral health programs that can teach practice staff on these new concepts. One of the first such programs was the Into the Mouths of Babes Program, <http://www.ncdhhs.gov/dph/oralhealth/partners/IMB.htm>, in North Carolina. One of the newer programs is the Cavity-Free at Three Program, <http://www.cavityfreeatthree.org/>, in Colorado. In some states, medical providers are required to receive an oral health training in order to receive Medicaid reimbursement for providing basic preventive dental services such as fluoride varnish application. You can find what your state requires at <http://www2.aap.org/oralhealth/State.html>.

PPHPs who are ready to incorporate oral health into the dental home in their practice may find various resources available to them. One of these resources is the AAP Chapter Oral Health Advocate (COHA), <http://www2.aap.org/oralhealth/COHA.html>. COHAs deliver oral health training and advocate for children's oral health issues at the state and local levels. Through state COHAs, PPHPs can find resources and build collaborative relationships with stakeholders in their communities who are working on improving children's oral health. The AAP has other helpful resources that can be found on the AAP Oral Health Initiative Web site, particularly the Protecting All Children's Teeth (PACT), <http://www2.aap.org/ORALHEALTH/pact/index-cme.cfm>, training. The online Smiles for Life curriculum, <http://smilesforlifeoralhealth.org/>, is another useful educational tool.

6. Building Your Oral Health Team



Like other new concepts being introduced into a practice, successful program adoption depends on engaging various practice staff. Building your oral health team begins by identifying staff members with a particular interest in oral health and disease prevention and time to dedicate to the process. Effective teams are led by an effective leader. Developing a practice dental champion who can lead the practice's oral health team will facilitate program sustainability. The dental champion can be responsible for establishing practice standards and initiating and tracking dental referrals. Providing continuing education for the practice's interdisciplinary team, including nurse practitioners, physician assistants, and allied health staff, is another way to educate them on preventive oral health and build awareness of the importance of oral health care.

As the primary care practice develops an oral health team led by a dental champion, consider the various responsibilities that each team member might have. These various members can be responsible for assessing if a child has a dental home, documenting the name of the dental home in the medical record, initiating the referral process if a child does not have a dental home, or maintaining an up-to-date dental resource guide. Determining the responsibilities of the various team members will guide the practice through the development of a practice protocol.

7. Increasing Cultural Competency

It is being increasingly recognized that cultural competency and language proficiency are necessary skills for reducing oral health disparities while improving access and outcomes, especially among the poor and low-income minority populations. Therefore, PPHPs who work with a diverse group of patients need to understand and respond effectively to the cultural and linguistic needs of their patients.

A good way to start is by investigating cultural competency training such as the Office of Minority Health's Think Cultural Health cultural competency e-learning programs for health professionals at www.thinkculturalhealth.hhs.gov; and the National Center for Cultural Competence, <http://www11.georgetown.edu/research/gucchd/nccc/AZresources.html#D>, for information on cultural and linguistic competencies in health care to enable you and your staff to manage specific groups of patients more effectively. University, Public Health Departments, Area Health Education Center (AHEC), <http://www.nationalahec.org/AHECDirectory.taf>, or community advocacy groups may also be able to provide information to your office team on cultural

competency concerns for specific populations. You could also make use of case managers to help families get to their appointments and address language and cultural barriers. Both publicly and privately insured children have access to a case manager. Case managers should be aware of available translation and interpretation services to optimize patient encounters.

8. Finding a Dental Home

Both general and pediatric dentists can provide dental care to children. While pediatric dentistry is the specialty of dentistry that focuses on the oral health and unique needs of young people, they may not be available—or accessible—in all communities. Some families may feel there are fewer barriers when the same general dentist sees all family members. To find the resource guide with a listing of dental providers who see children in your area, look into these sources:

- State Medicaid
- State Department of Health—they will have list of providers who are Medicaid providers
- City or County Department of Health
- AAPD Web site - <http://www.aapd.org/finddentist>
- Insure Kids Now - Connecting Kids to Coverage - <http://www.insurekidsnow.gov/state/index.html>
- Dental schools
- State or county dental societies
- Oral health coalitions—many states have oral health coalitions that may either have a formal dental provider list or be willing to assist in creating one
- Community health clinics
- Federally qualified health centers (community clinics) as referral resource
- Federally qualified health centers as referral
- Early Head Start programs

If there is nothing specific to your area, create a listing of your own. You may find that there is limited dental access in your area and the closest dental home may be many miles away. Under this circumstance, you may lead your practice into searching for funding to improve access to dental homes in the community and developing a relationship with dental providers, community health centers, or a university dental school within that region. Partnering with community service organizations (eg, Rotary, Kiwanis, Parent Teacher Associations/Organizations) or local philanthropic foundations has been an effective strategy for PPHPs to increase awareness and support for concerns such as oral health or vaccinations. Funding opportunities are also available on the AAP Children's Oral Health Web site. Depending on the state law for dental hygiene practice, some

practices will hire or co-locate dental hygienists or dental auxiliaries into the pediatric office to provide preventive dental services.

9. Setting Up an Office Protocol

Many times, busy office schedules and lack of comfort and expertise in asking oral health-related questions may cause the PPHP to lose the opportunity to ask the patient about a dental home. Therefore, facilitating the establishment of a dental home for your patients and promoting oral health as a part of all health supervision visits require efforts on the part of the entire office staff.

How to start?

Begin by building your oral health team with an identified dental champion. Use this team to develop an office protocol (see Appendix A) with information about the purpose, responsibility, and procedure for your oral health program. Track the route of your patient through your office and consider delegating components of care to the various staff that the patient encounters along the way.

What might some of these responsibilities look like?

Consider the journey of the patient through the visit and all of their contacts and hand-offs along the way. As they start their visit, office staff could ask the patient's family to fill out a previsit questionnaire (parent or adolescent) (see Appendix B). The office staff checking them in could also ask them what kind of medical **and** dental insurances they have. Documentation of the patient's dental insurance in the medical record will assist the rest of the care team in facilitating the establishment of a dental home for the patient.

What's next?

As the medical assistant or nurse is obtaining information on the patient, such as height, weight, up-to-date status of immunizations, they could also ask and document when the patient last saw a dental provider. Have the medical assistant or nurse deliver oral health anticipatory guidance as they check in the patient and provide them with an educational handout. Previsit caries risk assessment tools could be collected by staff as they check in the patient.

When the patient comes to you...

You will continue and complete the caries risk assessment, examine the child and identify any urgent or non-urgent dental needs, decide if fluoride varnish is necessary, and determine when a dental referral is necessary. In some states, the application of fluoride varnish can be delegated to a member of the health care team. You can find out what you can do in your state:
<http://www2.aap.org/oralhealth/State.html>.

10. Developing a System for Documentation

Practices may capture oral health information through the use of encounter form documentation or oral health previsit questionnaire (parent or adolescent) (see Appendix B) that asks if the child has a dentist, date of last dental visit, and contact information. If the family could not remember the last visit to a dentist, ask for the family dentist contact information and send him or her a dental referral form to fill out (Dental Referral Resource template) (see Appendix C). Have the dental office staff fax the form or return it in a self-addressed, stamped envelope. Implementing a practice protocol might include in-service discussions and incentives to facilitate this process.

As you build or expand on your practice protocol, consider automating as many steps as possible to ensure that the steps are completed. For instance, add dental visit prompts or oral health risk assessment tool into the electronic or paper-based health record (see EMR Specific prompts) (see Appendix D). These prompts can be age-specific to the visit. The AAP Bright Futures has age-appropriate Bright Futures Visit Forms, http://brightfutures.aap.org/tool_and_resource_kit.html#infancy, to remind providers to record dental home information as well.

To increase staff comfort level in discussing oral health issues with family, use the strength-based approach (see Appendix E) and motivational interviewing (see Appendix F) technique as a guide. This approach emphasizes patients' self determination and strengths to facilitate change. It focuses on exploring and resolving ambivalence and centers on motivational processes for that individual.

11. Dental Coverage

Many families do not have dental coverage to cover their children's oral health care needs. They may also be unaware of their existing dental benefits or the importance of dental insurance. Some of these issues can be remediated with education. Sometimes families are concerned about the financial aspect of dental insurance. In this instance, you can help them obtain dental coverage by asking your practice benefits coordinator/enrollment officer to provide dental coverage information to them. For example, inform them that dental insurance is included in government plans such as Medicaid/CHIP, which focus on prevention, early diagnosis, and treatment of medical conditions.

12. Educating Families



The impact of caries on patients' lives is often not well understood and overlooked. Families, especially disadvantaged families, may have been living with caries

all of their lives and have come to accept that their children will have caries too. The U.S. Surgeon General's report, *Oral Health in America*, identifies oral disease as a disease of poverty.¹ The PPHP is well positioned to educate families on the negative consequences of ECC and teach families that they have a role in caries prevention.

The notion of "Who cares? They are just baby teeth," is no longer acceptable because:

- Oral disease may impact a child's speech development, nutrition, self-esteem, sleep, and performance in school.
- Millions of hours of school are lost annually due to tooth-related pain.
- Oral disease is associated with decreased quality of life.
- Young children with oral disease may need to go to the operating room for restoration under general anesthesia if they cannot tolerate procedures in the dental office.
- The cost of the operative cases is commonly paid for by public insurances such as Medicaid and average \$10,000 to \$15,000 a case.
- Oral disease in the primary teeth puts the child at increased risk for having oral disease in their permanent teeth.
- Early loss of primary teeth may affect the eruption and spacing of the permanent teeth.

13. Teaching It to Your Families

Patient education is very important in early childhood oral caries prevention. Empowering families with education is one tool in reversing the disparity of oral disease. Families may be unaware that ECC is an infectious disease and that cariogenic bacteria such as *Streptococcus mutans*. Families may not be aware that sugars, including lactose in milk, fuel the cariogenic bacteria that result in acids that erode the enamel surface of teeth and the importance of teaching their children how to sleep through the night without a baby bottle with sugary drinks. Families may also be unaware of the role of fluoride in the caries prevention pathway. Also, they may be unaware of the recommendation of the Age One Dental visit. The pediatric practice can improve the oral health literacy of their patients on all of these elements and more through oral health education.

Aside from low oral health literacy and financial constraints, fear of the dentist is among the many barriers that may be stopping families from going to a dentist. You can assure your patients and their families that the dentist and office staff will spend time welcoming them into an environment that allows the child to have a favorable experience with the dental provider. You can also discuss the impact of preventive dental care and oral health on overall health with families by educating them that a healthy mouth promotes a healthy body.

It is important to build positive incentives into the discussion of dental care.

Many people do not realize how poor oral health impacts the overall health of an individual. Make parents aware that early childhood caries can mean lost school days and can lead to much more expensive dental interventions in the future. When children have to stay home from school, the parents may also have to stay home and lose potential income. Increase families' confidence in keeping a regular dental checkup and oral health practice using the strength-based approach and motivational interviewing method to improve their oral health literacy and facilitate successful referrals.

¹ U.S. Department of Health and Human Services. *Oral Health in America: A Report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services; National Institute of Dental and Craniofacial Research, National Institutes of Health, 2000.
<http://silk.nih.gov/public/hck1ocv.@www.surgeon.fullrpt.pdf> Accessed May 17, 2012

Lee JY, Bouwens TJ, Savage MF, Vann WF Jr. Examining the cost-effectiveness of early dental visits. *Pediatr Dent*. 2006;28(2):102-105, 192-198.

Savage MF, Lee JY, Kotch JB, Vann WF Jr. Early preventive dental visits: effects on subsequent utilization and costs. *Pediatrics*. 2004;114(4):e418-e423.
<http://pediatrics.aappublications.org/content/114/4/e418.full.pdf+html> Accessed May 17, 2012.

14. Quality Improvement

If gaps in establishing a dental home for your patients and families exist in your practice, use the suggested ideas for change below to help you improve patient care and address the gap.

Review the following:

- Oral Health Risk Assessment Timing and Establishment of the Dental Home -
<http://aappolicy.aappublications.org/cgi/content/full/pediatrics;111/5/1113>
- Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents 3rd Edition—Promoting Oral Health -
http://brightfutures.aap.org/Oral_Health_Risk_Assessment_Resources.html
- American Academy of Pediatric Dentistry (AAPD): Policy on the Dental Home - http://www.aapd.org/assets/1/7/P_DentalHome.pdf
- ADA Clinical Recommendations: Baby's First Teeth -
http://www.ada.org/sections/publicResources/pdfs/patient_11.pdf

Consider the following:

- Develop a relationship with dental providers or university dental schools within your region.
- Tip: Speak directly to the dentist and not front-office staff.
- Find the dental providers in your community who will give you confidence to refer your patients to them.
- Ask your own dentist if he or she treats young children and if not, ask why.
- Speak at local dental societies meetings.

Summary

Oral health is an important part of overall health and having a dental home is important in promoting oral health. The pediatric practice has an important role in assisting families in establishing a dental home. The frequent well child care visits that PPHPs have with families provide them with multiple opportunities to address the issue. The concept of a dental home may be new to pediatric practices and to families.

Your practice should make establishing dental homes one of your practice's priorities. Building an oral health team led by a dental champion can start the process. Educating the oral health team on the importance of oral health and the concept of a dental home may require bringing in outside resources. These resources can be found through the AAP Section on Oral Health, <http://www2.aap.org/oralhealth/SOPDOH.html>. Oral health education for your practice will help them build practice protocols that will streamline the delivery of preventive oral care and establishment of dental homes for families.

Part of assisting families in establishing dental homes includes understanding what dental resources exist in your community. These resources may look different in each community. Contacting your local dental coalitions, community health centers, and dental schools is one way to begin identifying available resources. Recognize that not all dentists will see young children. Find the ones in your community that do and build positive relationships and efficient referral systems with them. Consider a referral to a dental home like any other referral you make for your patient to an outside specialist and utilize any existing systems your practice might have for these referrals. Practicing efficiencies in these processes will help guarantee that they get done.

RISK ASSESSMENT

1. Oral Health Risk Assessment



Dental caries is the most common chronic disease encountered by children in the United States. Pediatric Primary Health care Providers (PPHPs) can assess all children's oral health and assist them in accessing dental care. Caries risk assessment evaluates the child's oral health with the goal of preventing caries through PPHPs interventions and referral to the pediatric or general dentist to establish a dental home.

This topic helps to address the following questions:

- What are my responsibilities as a PPHP regarding children's oral health?
- What is the dental caries process?
- What is the impact of ECC
- What groups are at high risk for the development of dental caries?
- How do I perform a caries risk assessment and at what age should I begin?
- What techniques can I incorporate into my practice to ensure proper care delivery and documentation of the oral health risk assessment?
- How can my staff be utilized to improve the oral health education and care we provide?
- What high-yield anticipatory guidance points I should focus on when talking to families?
- Why is maternal oral health so important?
- What are the most important points to remember?

2. Responsibilities of the Pediatric Primary Health Care Provider (PPHP)

In providing a medical home, PPHPs are responsible for meeting a patient's health care needs or for appropriately arranging care with other qualified professionals. This includes oral health care.

According to the AAP Oral Health Risk Assessment Timing and Establishment of the Dental Home¹ policy statement, PPHPs should:

1. Integrate family education into their practices regarding effective caries prevention methods.
2. Perform oral health risk assessments by 6 months of age on all children, including a proper oral examination.

3. Enter infants and children identified as having significant risk of caries into an aggressive anticipatory guidance and intervention program provided by a dentist starting between 6 and 12 months of age.
4. Support the concept of the dental home as an ideal for all children in the early toddler years.

These guidelines are also supported by the AAP Preventive Oral Health Intervention for Pediatricians Policy Statement² and the Bright Futures Health Supervision Guidelines,
http://brightfutures.aap.org/Oral_Health_Risk_Assessment_Resources.html

¹. American Academy of Pediatrics. Oral health risk assessment timing and establishment of the dental home. Policy reaffirmed on 124 (2):845.
<http://pediatrics.aappublications.org/content/111/5/1113.full> Accessed March 29, 2012.

². American Academy of Pediatrics Section on Pediatric Dentistry and Oral Health. Preventive oral health intervention for pediatricians. *Pediatrics*. 2008;122(6):1387-1394.
<http://pediatrics.aappublications.org/content/122/6/1387.full.pdf+html> Accessed May 17, 2012.

3. Dental Caries Process

Dental caries is a multifactorial, infectious disease that affects children and adults of all ethnic and racial backgrounds.

The vast majority of people in the United States have at least one cavity by adulthood. In fact, dental caries is the most common chronic disease of childhood, affecting:

- 14% of 3- to 5-year-olds¹
- 17% of 6- to 9-year-olds¹
- 11% of 13- to 15-year-olds¹

There are four necessary components required in the caries process: Teeth, bacteria, carbohydrates, and time. Caries is the term for the disease process by which oral bacteria metabolize dietary sugars and produce acid. If the acid is not buffered by saliva in or removed by rinsing or brushing in a timely way, enamel begins to demineralize, which ultimately results in a cavity, or a hole in the tooth enamel.

Multiple factors contribute to a person's risk for caries, including:

1. **Environmental factors** including diet, oral hygiene, fluoride exposure, and the level of colonization of cariogenic bacteria such as the *Streptococci mutans* and *Lactobacillus*
2. **Host factors** such as salivary flow, salivary buffering capacity, position of teeth relative to each other, and surface characteristics of tooth enamel. Medications that reduce salivary flow contribute to xerostomia (dry mouth) and put a child at increased risk for caries. Such

medications include glycopyrrolate, antihistamines, some antidepressants, some antihypertensive medications, some ADHD medications (stimulants and atomoxetine), and trihexyphenidyl. Recent evidence suggests that genetic factors also contribute to caries risk. This is supported by twin studies as well as a genome-wide association study.^{2,3}

1. National Center for Health Statistics. NCHS Data Brief: Oral Health Disparities as Determined by Selected Healthy People 2020 Oral Health Objectives for the United States, 2009–2010. Number 104, August 2012 <http://www.cdc.gov/nchs/data/databriefs/db104.htm> Accessed Dec 11, 2012.
2. Bretz WA, Corby PM, Schork NJ, et al. Longitudinal analysis of heritability for dental caries traits. *J Dent Res.* 2005;84(11):1047-1051. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1855154/pdf/nihms15054.pdf> Accessed May 8, 2012.
3. Shaffer JR, Wang X, Feingold E, et al. Genome-wide association scan for childhood caries implicates novel genes. *J Dent Res.* 2011;90(12):1457-1462.

4. Stages in the Caries Process

Although everyone has risk factors for dental caries, the presence of protective factors can act to balance out the risk factors and prevent the disease. A shift in the balance caused by excess dietary carbohydrates, virulent cariogenic bacteria, and the resultant acid produced can cause poor oral hygiene or reduced salivary buffering that leads to caries. Fluoride acts to remineralize enamel and can reverse the demineralization process. When the balance is shifted towards demineralization and away from remineralization, the caries process continues and results in a cavitation of the enamel surface. Once cavitated, it is not possible to remineralize the surface and a dental filling is required.

There are 4 basic stages in the caries process:

1. White spot (incipient) lesions—enamel demineralization that usually begins along the gum line
2. Development of subsurface demineralization that may be visible radiographically but is not always clinically evident
3. Cavitation of the enamel surface
4. Continued destruction of the underlying dentin with progression to the pulp (pulpitis)



Figure 1. White spots on tooth surface¹



Figure 2. Enamel defects on maxillary and mandibular canines. This is not caries.



Figure 3. White spot lesions on primary incisors with small areas of cavitation.



Figure 4. Cavitation of enamel.¹



Figure 5. Severe decay.¹

If this process continues unabated, the infection will lead to necrosis of the pulp of the tooth and result in a localized dental abscess. Continued progression of the infection into the dental-alveolar ridge causes bone loss and an alveolar (the bone surrounding the teeth) abscess. The infection can continue to spread into nearby tissue and cause facial cellulitis, Ludwig's angina, meningitis, or septicemia. As the pulp is the innervated portion of the tooth, it is not until the pulp tissue is infected (pulpitis) stage that pain signals a problem.

Because the early stages of the dental caries process can be halted and even reversed, it is imperative that the PPHP recognize the early stages of white spot lesions to allow for risk reduction and treatment. At this stage, fluoride varnish is

most effective. Once cavitation has occurred, a filling is required to prevent further progression of the lesion. If an abscess is present, antibiotics are only a temporary treatment and the source of the problem must be addressed, which requires removal of the pulp tissue (root canal therapy) or extraction of the tooth.

¹. These images are taken from http://www2.aap.org/oralhealth/docs/OralHealthFCpagesF2_2_1.pdf

5. Impact of ECC

Dental caries can adversely affect general health at any age. The impact of ECC on health and well-being has been especially well studied. The presence of caries in children age 5 and under is known to:

- Result in oral infections such as dental abscesses, which can lead to other head and neck infections. In fact, more than 50% of all facial cellulitis infections result from untreated dental decay.¹
- Result in tooth loss, which can lead to decreased self-esteem and impaired socialization
- Damage permanent teeth—ECC increases the risk of caries development in permanent teeth.
- Interfere with chewing, which may lead to poor weight gain (failure-to-thrive)²
- Interfere with articulation
- Impact education—51 million school hours per year are missed due to dental problems. Missed school for children also translates into missed work and lost wages for caregivers.¹
- Result in pain, which in turn can cause loss of sleep, difficulty concentrating, and interrupted learning¹
- Impose great financial burdens for families and society as a whole because it is much more expensive to restore affected teeth than to do primary prevention

¹. U.S. Department of Health and Human Services. *Oral Health in America: A Report of the Surgeon General*. Rockville, MD: National Institute of Dental and Craniofacial Research, National Institutes of Health; 2000. NIH publication 00-4713. <http://silk.nih.gov/public/hck1ocv.@www.surgeon.fullrpt.pdf> Accessed May 1, 2012.

². Acs G, Shulman R, Ng MW, Chussid S. The effect of dental rehabilitation on the body weight of children with early childhood caries. *Pediatr Dent*. 1999;21(2):109-113.

6. High-Risk Groups

According to the AAP Oral Health Risk Assessment Timing and Establishment of the Dental Home policy, an Oral Health Risk Assessment Tool can be used to determine the caries risk of an infant or child. Children at high caries risk should

be referred to a dentist by 12 months of age or within 6 months of the first tooth erupting.¹

As stated in this policy, “characteristics that put an infant or child at high risk for dental caries include:¹

- Children with special health care needs
- Children of mothers with a high caries rate:
 - Bacteria that cause cavities have been shown to be transmitted from mother or caregiver to child through saliva-sharing activities.
 - Decreasing cariogenic bacteria in the mother’s oral flora minimizes the negative outcomes of transmission.
- Children with cavities, plaque, demineralization, and/or staining
- Children who sleep with a bottle that contains milk or other cariogenic liquids.
- Children in families of low socioeconomic status:
 - Children from low-income families more frequently have limited access to health care and families may have poorer health literacy, contributing to higher risk of oral health problems.”

¹ American Academy of Pediatrics. Oral health risk assessment timing and establishment of the dental home. Policy reaffirmed on 124 (2):845.
<http://pediatrics.aappublications.org/content/111/5/1113.full> Accessed March 29, 2012

7. Performing Caries Risk Assessment

An oral health risk assessment should be conducted at a routine visit for every child by 6 months of age. Formal tools are available to assist the PPHP in determining the caries risk, such as the AAP/Bright Futures Oral Health Risk Assessment Tool, <http://www2.aap.org/oralhealth/RiskAssessmentTool.html>. This tool for documenting caries risk in the child is easy to incorporate into your practice. In fact, the pilot test conducted by the Brightening Oral Health Expert Group and the AAP Quality Improvement Innovation Network (QIIN) revealed that over 80% of the 20 practices who participated found that implementing the risk assessment tool was easy and did not significantly alter their current practice.¹

All risk assessment tools basically consist of identifying and documenting risk factors for early childhood caries, protective factors, and physical exam findings. It should be emphasized that caries risk changes over time and should be reassessed on a regular basis. Performing oral health risk assessment also provides an opportunity to modify risk through education. Additional information can be obtained by reviewing the Bright Futures caries–risk assessment tool or

by contacting your COHA, <http://www2.aap.org/oralhealth/COHA.html> to find out if there are state-specific tools.

For further training in oral health, please consider taking a nationally recognized oral health training program, such as:

- Protecting All Children's Teeth (PACT) - <http://www2.aap.org/commpeds/doch/oralhealth/pact/pact-home.cfm>
- Smiles for Life - <http://www.smilesforlifeoralhealth.org/>

¹ American Academy of Pediatrics. Oral Health Risk Assessment Tool. http://brightfutures.aap.org/Oral_Health_Risk_Assessment_Resources.html Accessed May 28, 2012.

8. Tooth and Gum Exam

Historically, PPHPs have been examining the child's throat, tonsils, and pharynx but leaving the teeth to the dentist. To incorporate oral health in the office setting, you must examine the teeth and gums as well. The more you perform this brief exam, the easier it becomes. Start by regularly examining a subset of your patients, such as infants, and then gradually include older children as your comfort level increases.

Examination Technique



The most important things you need for a thorough examination are a good light source (eg, flashlight, otoscope, headlamp) and proper visualization of the patient's mouth. A disposable mirror improves visualization of tooth surfaces and a toothbrush or gauze can be used to clean off plaque and debris.

A knee-to-knee examination is often best for infants and small children. To perform this exam, sit down facing the parent, knee-to-knee, with the child sitting on the parent's lap facing the parent. The child will lie back onto your lap and the parent can gently hold the arms while you control the head. Exam gloves should be worn. Watch an instructional video at <http://illinoisAAP.org/2010/08/bright-smiles-from-birth-training-video> on fluoride varnish application and positioning of child. You can also adequately screen a supine, cooperative child from the top of the examination table. Older children and adolescents can sit up or lie down on the exam table.

9. Things to Look For

When examining the child's mouth, it is important to include the lips, gums, cheeks, tongue, palate, and teeth.

- **Lips** should be pink and moist with no evidence of chapping, ulceration, or other lesions.
- **Gums** should be pink, firm, and stippled (like an orange peel). The part of the gums between the teeth should fill the space between the teeth and be flat, not swollen.
- The **buccal mucosa** should be pink and smooth with no evidence of cheek biting or ulceration.
- The **tongue** is normally smooth and pink, not coated with a whitish film.
- The **palate** should be arched without signs of a cleft and the teeth and alveolar ridge should form a “C” shape.
- **Teeth** should be an even whitish, or light yellowish color with no pitting or staining. All 20 primary teeth should be present between 2 and 3 years of age. Stains in the grooves on the tops of the molar teeth and whitish semi-circular spots on the front of the incisor teeth are signs of early caries. Identification of the caries process at the earliest stage allows for interventions that can halt and potentially reverse the process.

10. Documenting Oral Health Risk Assessment

Documentation is one of the most vital components in health care, but not all practices have a procedure established to document oral health risk assessments. To begin, you may use the age-appropriate Bright Futures Visit Forms, http://brightfutures.aap.org/tool_and_resource_kit.html#infancy, as a reminder to record oral health information and build in dental visit prompts or a risk assessment tool into the electronic medical record (EMR) for all routine visits after 6 months of age, see an example of an EMR prompt (see Appendix D).

Asking office support staff to initiate the screening process using an oral health previsit questionnaire (parent and adolescent) (see Appendix B) can save clinician time and ensure this process is undertaken. Encounter form flags can remind the provider that an assessment needs to be done and prompt appropriate questions.

Utilize a Pediatric Care Plan found at http://www.pediatricmedhome.org/pdfs/3_Pediatric_Care_Plan.pdf to document the health conditions and special needs of the child, along with the name and contact information of the child’s dentist. This form can facilitate communication with dental providers.

11. What if I find something?



Many providers lack oral health training and may feel uncertain of their ability to interpret the child's tooth and gum exam findings and triage those findings. When the provider determines that a child is at high risk for dental caries, referral to a pediatric or general dentist is indicated and should be documented in the health record of the findings and the referral. As with many types of specialty referrals, it is more important for the practitioner to be able to recognize normality and deviations from normality, rather than to be able to identify specific pathologies. Comprehensive training programs are offered

through the Protecting All Children's Teeth (PACT) Online Curriculum at http://www.pediatricmedhome.org/pdfs/3_Pediatric_Care_Plan.pdf, and the Smiles for Life: National Oral Health Curriculum at <http://smilesforlifeoralhealth.org/>.

The goals of PACT are to train PPHPs to become more knowledgeable about pediatric oral health, more competent in providing guidance and preventive care, and more comfortable sharing the responsibility with dental colleagues. The Smiles for Life: National Oral Health Curriculum is designed for individual clinicians and educators to promote oral health in all age groups through the development and dissemination of educational resources.

If you want more guidance, reach out to your state COHA at <http://www2.aap.org/oralhealth/COHA.html> for additional training at your institution or practice.

12. Referral



When dealing with high-risk patients, PPHPs will need to develop a management plan including referral to a dental home. However, dental homes may not be readily available in all areas and families may not be aware of dental resources that do exist in the community.

You can find or create a resource guide listing pediatric dental providers to help families locate dental providers in their area. Helpful information to have in the guide might be: name, contact number or email, types of insurances accepted, and lower age limit accepted. These resources may be available from community health clinics, county or state dental societies, dental schools, and from the following sources:

- State Medicaid office
- State Department of Health

- AAPD Web site - <http://www.aapd.org/finddentist>
- Insure Kids Now Web site - <http://www.insurekidsnow.gov/professionals/dental/index.html>

Networking with your own dental providers and building a relationship with the dental community in your region may increase your confidence in referring your patients to them. Use a dental referral form (see Appendix C) to facilitate the process or automate the referral in EMR and include a list of pediatric dental providers. To ensure a successful referral, have the office care coordinator follow up to determine if the patient attended the dental visit.

Another option is to co-locate dental hygienists in your office to provide preventive dental services. In many states dental hygienists can practice independently; in other states they can practice outside of a dental office setting. PPHPs should ensure they learn their state's rules for independent dental hygiene practice.

13. Dental Coverage



Unfortunately, not all patients we encounter have dental coverage, including undocumented patients. When this happens, you can help patients or families obtain dental coverage. Your benefits coordinator or enrollment officer may be able to provide dental coverage information. For certain insurances under government plans, dental coverage may be included but the family may not be aware of this coverage. This is especially true of Medicaid and some state Children's Health Insurance Programs (CHIP). Family dental insurance plans in certain states also cover the child's dental health. Families need to be made aware of and educated on the issues of dental insurance.

For undocumented patients, there may be monies set aside by certain communities to care for these children. One of these is the Head Start program, <http://www.acf.hhs.gov/programs/ohs>, a federal program administered through grants to community-based organizations. Other possible funding sources are United Way and the National Children's Oral Health Foundation, <http://www.ncohf.org/>.

14. Educating Staff and Families



Equipping office staff and patients with knowledge about oral health helps it become priority in overall health supervision. A knowledgeable staff can help relieve the provider of the burden of patient education by promoting simple oral health practices such as healthy feeding and

drinking habits and regular tooth brushing with fluoridated toothpaste.

Continuing education among nurses and allied health staff should be encouraged to promote standardized care. To ensure that staff understands the importance of oral health care, perform quality improvement audits and remind staff regularly.

What are the high-yield anticipatory guidance points you should focus on when talking to families? Next, we will discuss oral hygiene (brushing and flossing); maternal/caregiver oral health; fluoride exposure; and feeding, eating, and drinking habits in greater details. As your guide, use a strength-based approach (see Appendix E) or motivational interviewing (see Appendix F) technique when discussing the impact of oral health with patients and families.

15. Oral Hygiene—Brushing and Flossing

Regular, effective oral hygiene is imperative for good oral health. The purpose of oral hygiene is to remove plaque and debris from the tooth surfaces (by brushing) and from between the teeth (by flossing) and to deliver a topical fluoride toothpaste to the teeth to aid in enamel remineralization. Plaque is a complex biofilm that contains hundreds of bacteria and the byproducts of their metabolism. Tooth brushing disrupts this biofilm transiently, because it returns after a few hours. High-carbohydrate diets or frequent exposure to simple carbohydrates increases caries risk because bacteria, particularly *Streptococcus mutans*, convert sugars into acid. The longer that plaque stays in contact with the teeth, the more time the acid has to demineralize the enamel.

Teeth should be brushed at least twice per day. After the nighttime brushing, the child should not be allowed to drink anything except plain water. Children need supervision during brushing to ensure that only a pea-sized amount of toothpaste is applied to the brush and to make sure that all surfaces of the teeth are thoroughly cleaned. Families should continue to assist with brushing until the child demonstrates adequate coordination and motivation to brush effectively. This may be until age eight or older, typically until the child can tie their own shoes.



Starting early with oral hygiene procedures will get the child used to having their mouth cleaned. Before teeth are present, families should clean the mouth after feeding using a damp cloth. Once teeth are present, a small, soft toothbrush can be used. A smear of toothpaste is safe to use with children under two years of age. After the child turns two, a pea-sized amount can be used.

16. Families Oral Health



Why is maternal oral health so important? Dental caries is transmitted from caregivers to children vertically, usually from the mother by sharing of saliva. This is particularly true if the mother has poor oral health and/or active caries. Therefore, it is essential that you address this issue when the mother or primary caregiver is accompanying the child for a visit. It is important to explain the impetus behind these questions so that a caregiver does not feel you are blaming them for the child's dental status. Rather, discussing bacterial transmission is both an explanation for the questions and the provision of education. Mothers and primary caregivers should be encouraged to seek dental care for themselves to limit transmission of the bacteria to their child.

With a physician's busy schedule and competing priorities, one can overlook the steps of asking and documenting the mother's or primary caregiver's oral health status. Therefore, setting up an office protocol using a standardized form that contains maternal oral health questions will ensure that oral health risk assessments are regularly performed. This data can also be stored in the family history section to allow for a quick review and consideration regarding treatment plan and appropriate referral. Perform regular quality-improvement audits and remind staff to ask about the family's oral health status. A good way to do this is to assess your practice using the practice survey (see Appendix G) and use the results to create improvement plan.

17. Fluoride Exposure

Providers may not document patient systemic and topical fluoride exposure because they are unaware or unsure of what guidance to provide to their patients. Confusion about fluoride policies; uncertainty of the differences between systemic and topical fluoride; and doubt about the type of anticipatory guidance to provide regarding brushing, toothpaste, and supervision deter the providers from addressing and documenting fluoride exposure.

Fluoride levels in local water supplies affect the fluoride intake for your patient population. More information is available on the CDC Web site at <http://apps.nccd.cdc.gov/MWF/Index.asp> for fluoridated cities. Not all cities report these data to the CDC. If a city is not listed on this Web site, families can contact the local water department to determine the fluoride level for their community.

To ensure that the level of fluoride exposure is addressed, we recommend:

- Establish fluoride questions as a part of all health supervision visits with paper or EMR prompts.

- Utilize an EMR template to document questions regarding fluoride. These are contained in the formal oral health risk assessment tools referenced above.

18. Fluoride Discussion

Knowledge of the benefits of fluoride (topical and systemic forms) and exposure to the fluoride debate can raise your awareness and confidence in addressing family concerns of excessive fluoride exposure, tooth discoloration (enamel fluorosis), and other adverse health effects. In light of the amount of misinformation in the media, your reassurance regarding the safety and proven benefits of fluoride may help to address some family concerns.

We suggest that you guide fluoride discussions with the following points in mind:



- Focus the discussion on the specific patient and/or family concerns. Some people have a vague sense that fluoride is dangerous, but have no concrete sense of risks and benefits. Alternately, there may be a very specific, isolated concern for you to address. Broadening to the general will only increase the length of discussion and may bring up new concerns.
- Fluoride helps to prevent dental decay. Most effectiveness is shown with systemic exposure to very low concentrations during tooth development via community water fluoridation or supplements, in combination with higher topical concentrations, which should not be swallowed.
- Remember that fluoride, when properly used, is safe. Like all other medications and supplements, more is not better. Many scientific studies showed the benefits of fluoride on dental caries, as well as documented its safety.
- Fluoride can cause enamel fluorosis in developing teeth and is dose-dependent. This is mainly an aesthetic concern and is not relevant for incisor teeth after age 8. Therefore, the risks and benefits of fluoride need to be weighed, especially in young children who are at risk of tooth decay now and possible enamel discoloration in the future. Other than enamel and skeletal fluorosis (incredibly rare in the United States because very few areas having high naturally occurring levels of fluoride), there are no other scientifically proven adverse effects of fluoride.
- For more information, see Fluoride Varnish content in this module.
- Provide patients and families with a written list of reliable resources to review, such as this one on the HealthyChildren.org site at <http://www.healthychildren.org/English/healthy-living/oral-health/Pages/default.aspx>.

- Keep the discussion open during future visits if caregivers continue to be hesitant.

19. Feeding, Eating, and Drinking Habits

Starting infants off with good oral care can help protect their teeth for decades to come. Most families are not aware that bacteria grow in the mouth and cause tooth decay when a baby is put to bed with a bottle or drinks sugary liquids like fruit juice.

To increase awareness of this subject among families, use the age-appropriate oral health anticipatory guidance table (see Appendix H) as a conversation lead. For families with infants, you may begin by asking if the families prop the bottle or put the baby to sleep with a bottle of formula, milk, or juice. For families with toddlers and older children, ask if they eat sticky foods that adhere to the teeth (ie, gummy bears, gummy bear vitamins, fruit roll-ups, or raisins) and encourage moderate or reduced intake of such foods. Encourage washing or brushing of the teeth after eating sticky foods. Discourage the use of bottles or sippy cups containing liquids other than water. Consumption of soft drinks, sports drinks, juice, and other sugar-containing liquids should be minimized. Frequency of exposure to foods and liquids containing refined carbohydrates should be minimized. Healthy between-meal snacks of fresh fruits, vegetables, and cheese should be encouraged.

The following resources may give providers more information about good oral health practices:

- AAP Policy Statement: Preventive Oral Health Intervention for Pediatricians - <http://aappolicy.aappublications.org/cgi/reprint/pediatrics;122/6/1387.pdf>
- AAPD patient education brochures and parent resource center - http://www.aapd.org/resources/parent_resources/
- Health Resources and Services Administration (HRSA) Oral Health Web site - <http://www.hrsa.gov/publichealth/clinical/oralhealth>
- National Maternal and Child Oral Health Resource Center consumer brochures (English and Spanish) - <http://www.mchoralhealth.org/materials/consumerbrochures.html>

The following educational materials may be shared with families regarding the importance and longevity of primary teeth and how nutrition, bottles, and sippy cups may contribute to dental caries:

- [How to Prevent Tooth Decay in Your Baby](http://patiented.aap.org/content.aspx?aid=6014)
- [First Steps to a Healthy Smile](http://patiented.aap.org/content.aspx?aid=6139)

- Thumbs, Fingers, and Pacifiers
<http://patiented.aap.org/content.aspx?aid=5874>
- A Guide to Children's Dental Health
<http://patiented.aap.org/content.aspx?aid=5293>

20. Quality Improvement

If gaps in providing oral health risk assessment for infants and children exist in your practice, use the suggested ideas for change below to help you improve patient care and address the gap.

- Identify list of tools to use such as the AAP Bright Futures Oral Health Risk Assessment Tool and Guidance found at <http://www2.aap.org/oralhealth/RiskAssessmentTool.html>.
- Ensure that an oral health protocol (see Appendix A) is created and implemented, then done at all ages (routine visits).
- Contact your AAP COHA, <http://www2.aap.org/oralhealth/COHA.html>, to determine if there are state-specific tools.
- Create encounter form documentation to flag providers that the assessment needs to be completed and prompt appropriate questions with a place to document results.

Summary

This topic discussed the importance of providing oral health risk assessments for infants and children in your practice. It also emphasized the need for risk assessment findings documentation to monitor the child's oral health and follow up with the family.

Here are some key points to remember:

- It is essential that PPHPs be familiar with the policies, programs, and tools that guide oral health risk assessment and have a clear understanding of their own roles and responsibilities.
- It is important to document all oral health findings for every patient; document the caries risk status and the factors that contribute to that risk; and document all family discussions and education provided. Adequate documentation is the cornerstone of effective care coordination.
- Begin performing oral health risk assessments at all routine visits starting at 6 months of age. Children identified as high risk for dental caries should be prioritized for referral to establish a dental home by 12 months of age.
- Developing relationships with local pediatric dentists and general dentists who are willing to provide care for young children can help you access dental care for these high-risk children.

- Identify your local COHA and establish a working relationship with that person as a resource for questions, concerns, and information.
- The following are some strategies to achieve regular high-quality oral health risk assessment and documentation:
 1. Understand the PPHP's responsibilities for oral health risk assessment and communicate the importance to all staff members.
 2. Regularly discuss with patients caries risk factors and protective factors, and provide age-appropriate anticipatory guidance regarding oral hygiene, healthy eating, use of topical and systemic fluorides, and preventive dental care.
 3. Create or locate a resource list of dentists in your community who provide care for young children, children with special health care needs, and/or children who are enrolled in Medicaid.
 4. Create a library of oral health educational materials to share with families.
 5. Join the AAP Section on Oral Health and participate in CE courses sponsored by the section at the NCE.

ANTICIPATORY GUIDANCE

1. Provide Oral Health Anticipatory Guidance and Education



Anticipatory guidance is embedded in all pediatric practices and is designed to promote health and wellness for each patient and family¹ via educational instruction and interventions. National statistics demonstrating the overall poor oral health status of our nations' children implies that anticipatory guidance for prevention of tooth decay and injuries to the oral cavity is lacking. Henceforth, it is time for pediatric practices to implement routine anticipatory guidance on oral health care for all pediatric populations and their families at each well-child/adolescent visit. Anticipatory guidance in oral health has the potential to promote the well-being of patients, prevent tooth decay, and reduce mouth injuries. In addition, an anticipatory guidance system that promotes oral health care in your practice will provide longitudinal documentation that you or your staff supported good oral health practices in the home throughout the patient's growth and development.

This topic covers answers to the following questions:

1. What is anticipatory guidance?
2. What age-specific oral health anticipatory guidance should be provided at routine child health visits?
3. What strategies best support office-based oral health anticipatory guidance?
4. Why should education about oral health and injury prevention be a routine part of your day-to-day office practice?

2. What is Anticipatory Guidance?

Anticipatory guidance is a critical component of every child health care and episodic visit and is provided to families, children, and adolescents as a strategy for health promotion and disease prevention. Decisions on what specific anticipatory guidance should be provided to each individual child and family is based upon information obtained during the history and physical examination. In the past, oral health anticipatory guidance by PPHPs has primarily focused on tooth eruption and the use of pacifiers. It is time to add evidence-based, age-appropriate anticipatory guidance that highlight best practice for promotion of oral health for all patients and families.

The 2000 U.S. Surgeon General's Report on Oral Health in America provided startling statistics including these facts:

“Dental caries is the single most common chronic childhood disease, over 50 percent of 5- to 9-year-old children have at least one cavity or filling and that there are striking disparities in dental disease by income.”¹

This compelling report has created numerous national initiatives to improve the oral health status of our nation’s children. PPHPs who include oral health anticipatory guidance as part of their routine practice will make a difference in children’s lives.

Oral health anticipatory guidance should be an integral part of each visit. Age-appropriate discussions can include patterns of tooth eruption, oral hygiene, dietary habits, behavioral issues, fluoride exposure, culturally sensitive oral health care habits, injury prevention, substance abuse, intraoral/perioral piercing, and language development and promotion of the dental home.²

1. U.S. Department of Health and Human Services. *Oral Health in America: A Report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health, 2000. <http://silk.nih.gov/public/hck1ocv.@www.surgeon.fullrpt.pdf> Accessed May 18, 2012.

2. American Academy of Pediatric Dentistry (AAPD). Guideline on Periodicity of Examination, Preventive Dental Services, Anticipatory Guidance/Counseling, and Oral Treatment for Infants, Children, and Adolescents. http://www.aapd.org/media/Policies_Guidelines/G_Periodicity.pdf Accessed April 24, 2012.

3. Guidelines and Policies



The three oral health references listed below provide similar information for office-based oral health assessments by PPHPs and implementation of evidence-based oral health care for pediatric and adolescent patients. PPHPs who familiarize themselves with these guidelines and policy recommendations will be prepared to lead office-based initiatives to reduce the high incidence of dental caries in the pediatric and adolescent populations.

AAP Preventive Oral Health Intervention for Pediatricians Policy Statement

This statement on Preventive Oral Health Intervention for Pediatricians¹, <http://aappolicy.aappublications.org/cgi/reprint/pediatrics;122/6/1387.pdf>, provides evidence-based scientific recommendations as the foundation for implementation of practice-based oral health assessments and anticipatory guidance. The concepts of cariology and the relationship to preventive strategies and oral health anticipatory guidance are presented, along with recommendations for implementation of oral health care in primary care settings. Prevention strategies are emphasized in the policy statement. Primary prevention involves “optimization of the maternal dental flora before and during colonization of the oral flora of the infant” that occurs at tooth eruption. Secondary prevention consists of dietary counseling, which is considered the most important secondary

prevention strategy, followed by oral hygiene instructions and fluoride applications.

Bright Futures Guidelines for Health Supervision, 3rd Edition

The Bright Futures Guidelines for Health Supervision, 3rd Edition, http://brightfutures.aap.org/pdfs/Guidelines_PDF/8-Promoting_Oral_Health.pdf, on oral health provides a succinct summary for the promotion of oral health and disease prevention strategies that are identified as 10 health promotion themes. Oral health care for children with special needs are discussed in the introductory chapter. In addition, strategies for integrating the theme of “promoting oral health” during each pediatric primary care office visit are presented.

American Academy of Pediatric Dentistry (AAPD)

Establishing interprofessional partnerships between PPHPs and pediatric dentists provides families with the opportunity to receive expert anticipatory guidance concerning oral health care that is complimentary and goal-directed at reducing the incidence of dental caries and oral health diseases in children and adolescents. The AAPD emphasizes the importance of establishing a dental home for infants when the first tooth erupts or by the first birthday to establish professional oral health interventions from infancy through adolescents and into adulthood. The AAPD guidelines provide information on caries risk assessments, prophylaxis and topical fluoride treatments, fluoride supplementation, age-appropriate anticipatory guidance, treatment of dental disease and injuries, treatment of malocclusion, sealants, third molars, current radiographic decision-making, and timing of regular and periodic dental care examinations (Guideline on Periodicity of Examination, Preventive Dental Services, Anticipatory Guidance/Counseling, and Oral Treatment for Infants, Children, and Adolescents - http://www.aapd.org/media/Policies_Guidelines/G_Periodicity.pdf).

4. Developing a System



Oral health anticipatory guidance can begin during pregnancy. During the perinatal period (five months before and one month after birth), you may ask the pregnant woman or new mother questions about changes in her teeth or gums, oral hygiene practices, fluoride use, infections and medications. In fact, the best time to introduce caries prevention strategies is during the newborn period. The AAPD recommends additional oral health education at the 6-month-old visit and efforts to establish a dental home by one year old. Learn more about pregnancy and postpartum oral health supervision from the Bright Futures Oral Health

Pocket Guide, <http://www.mchoralhealth.org/pocketguide/pp1.html>. Specific details on what oral health anticipatory guidance should be presented at each developmental age can be found in Bright Futures oral health (Bright Futures

Guidelines for Health Supervision, 3rd Edition -
http://brightfutures.aap.org/pdfs/Guidelines_PDF/8-Promoting_Oral_Health.pdf).

The goal for the practice is to have a system in place for delivering oral health anticipatory guidance to the children and families at each appropriate office visit. Suggestions for developing a system are discussed below:

- Develop a systematic, practice-wide approach to provide anticipatory guidance at each age-appropriate health supervision visit.
- Establish an oral health team:
 - A PPHP in the practice should assume the leadership responsibilities and be designated as the oral health team leader. Teams coalesce when individuals are invited to join a team, feel valued, and are asked for input into team activities. As the team leader, begin by asking the team members to select a team name that reflects the vision and mission of the team. Ask the team to vote for their favorite team name and reward the person who created the team name selected.
 - As the team leader, you should provide oral health anticipatory guidance educational strategies to all staff members and allow input from staff to determine who will assume responsibility for each role. Based on the number of staff members in the office practice, one staff member may assume responsibility for oral health anticipatory guidance for all children under the age of 6; one for children 6 to 12; and another the adolescents. This permits staff ownership of specific content and the opportunity to develop expertise in oral health for a particular age range. Consider inviting two parents to become part of the oral health team. Consider cultural diversity when asking parents to join the team so that cultural issues are represented on your team. Ask the parents to attend your oral health team meetings. Listen to their suggestions for best ways to convey messages to parents about oral health practices. Design ways to implement their suggestions.
- Recruit an office dental champion (can be a nurse, medical assistant, or other staff member).
 - The dental champion should be someone you get along with well. Another quality would be a person who is a natural leader and gets along with all staff members. Once you have selected one or two potential individuals for the role of dental champion, have an individual conversation with him or her to determine the individual's interest and potential to succeed.
 - Make the announcement of the new appointment during staff meetings to bring everyone on board by presenting brief details on the project and thanking everyone in advance for their cooperation. Consider ways to reward the dental champion and the team as they achieve their goals. The dental champion can assume a leadership

role by assuring staff members by providing oral health anticipatory guidance and encouraging the staff to update their educational materials as new information becomes available.

- Ask the dental champion to report directly to you about any concerns expressed by the team members, patients or family members. Praise the dental champion and team members for jobs well done and offer support when improvements in performance are needed. Be certain team meetings are planned and held regularly. You may not be able to attend all team meetings but always ask for a report. Plan to attend some of the team meetings to show your continued support and interest in improving the oral health status of your patients.
- Ensure that Age-Appropriate Anticipatory Guidance Recommendations (see Appendix H) are easily accessible for providers to review what oral health anticipatory guidance topics to cover at the visit.
 - Keep a Bright Futures Oral Health Pocket Guide, <http://www.brightfutures.org/oralhealth/about.html>, in all exam rooms.
 - Keep a Child Oral Health Pocket Card, <http://www.brightfutures.org/oralhealth/about.html>, in all exam rooms.
- Consider implementation of the Bright Futures Visit Forms, http://brightfutures.aap.org/tool_and_resource_kit.html#infancy, as a prompt for anticipatory guidance discussion topics.
- See if there is a COHA, <http://www2.aap.org/oralhealth/State.html>, in your state who can facilitate a Lunch and Learn Session for all employees in which strategies for implementation of oral health assessments and education are discussed so that everyone is empowered as part of the oral health office-based team. If there is no COHA, consider leading this initiative.

5. Time Management



Office practices that run smoothly have effective time management strategies not only for the PPHP but also for all office staff members. These strategies are critical to the successful day-to-day operation of the office and equally important for patient and family satisfaction. Office practices have competing priorities with so many facets of anticipatory guidance and so little time to

accomplish all that is considered evidence-based best practice.

To make anticipatory guidance for oral health a priority that does not place an extra burden on yourself or the office staff, you must consider ways that fit into

the current office practices. One suggestion is to consider a previsit questionnaire completed by the parent either prior to coming for the visit or while the parent is in the waiting area. When making the decision, consider your parents: How dependable are they? Do they remember to bring the immunization record or baby book record with them to each visit? If yes, then they most likely will complete a previsit questionnaire form and bring it to the office. If no, then it would be best to ask them to complete the questionnaire in the office waiting area.

Below are some strategies to consider:

- Use a previsit questionnaire (parent or adolescent, see Appendix B) to identify oral health concerns to help prioritize discussion topics. Previsit questionnaires are effective in time management. For example, by asking a question on whether or not the child has had a dental visit within the last year and the outcome of that visit, you know that you do not need to focus on establishing a dental home if they provided that information. It is also recommended that the child and adolescent previsit questionnaires be separate since their oral health problems are very different and to encourage adolescents to assume a greater role in their health and medical care. In addition, teenagers should complete the questionnaire as part of their confidential paperwork.
- Establish oral health as part of all appropriate health supervision visits:
 - See the recommendations from the AAP Policy Statement on Preventive Oral Health Intervention for Pediatricians - <http://aappolicy.aappublications.org/cgi/reprint/pediatrics;122/6/1387.pdf>.
 - Establish targeted-time visits to implement primary prevention strategies for oral health anticipatory guidance. “Targeted times” refers to a specific age health care visit in which a particular topic is highlighted. Suggested targeted times for infant visits would be the newborn period, the 4- to 6-month- old visit as you see tooth eruption, the 12-month-old visit, and then the 24-month-old visit and each annual health care visit. It is also important to never miss an opportunity to discuss oral health care if your assessment reveals a possible oral health problem. Here are some examples of content for the targeted visits:
 - Newborn period—advise the family against putting the pacifier in the adult mouth and then putting it in the baby’s mouth. Advise against continuous bottle feeding (no propping of bottles) or continuous night breastfeeding with the infant in the same bed as the mother for safety reasons and as the first step in prevention of decay. Gums and teeth of infants and young children should not be continuously exposed to the natural sugars in formula and breast milk.

- Twelve month—offer first fluoride varnish application in the primary care office and offer oral health education. Discussion on establishing the dental home should be a major part of the anticipatory guidance at this visit.
- Adolescent visit—after review of the previsit questionnaire and the oral health assessment, include pertinent information in your anticipatory guidance. For example, if the adolescent is unhappy with his or her smile and your assessment reveals that the teeth have cavities, review the diet and then discuss a dental referral.
- Delegate some of the education (hygiene, varnish, education) and varnish application to address time issue.
- Continue to increase practice efficiency.

6. Documentation



Documentation of anticipatory guidance provides a record of what information has been given to the families, children, and adolescents. For office efficiency, oral health documentation can be available as part of the electronic medical record (EMR) or can be an age-appropriate list of information that is shared with the families. Here are some

suggestions:

- Have families complete an oral health previsit screening questionnaire (parent and adolescent, see Appendix B) either at home or in the waiting room.
- Have a space on the questionnaire for documentation of the anticipatory guidance provided.
- You may want to include a checklist on the questionnaire where educational materials provided can be checked. For example, you can list all the brochures that available on oral health and then just check the ones that you give to the parent. This strategy serves two purposes:
 - There is a quick and accurate way to document the information you have given to the families.
 - It provides a way to efficiently manage time in busy office practices.
 - Here is an example of items that can be included on the checklist:
 - Date provided
 - Oral health educational materials
 - Infant oral health brochure
 - Toddler oral health brochure
 - Establishing a dental home
 - Bright Futures oral health
 - AAP information on oral health
 - Create a list with contact information for other providers (dentists, subspecialists, etc.) to coordinate care.

- Have a place for patients to update the information either on a paper form or via a kiosk/tablet device/ patient portal.
- Build EMR prompts (see Appendix D) and places to document the oral health risk assessment, delivery of anticipatory guidance and educational materials (handouts, videos, etc) and delivery of care (include preventive oral health in previsit planning).

7. Educating Staff



Educating your office staff on anticipatory guidance for oral health is the first step toward efficiency in your office. The better prepared the staff are to provide accurate and timely information to the families and the better prepared they are to answer families questions, the more satisfied your patients and families will be and the outcome of improved oral health status for children can be achieved. The office staff must read all the information that you assign them to present and understand the information.

A lunch-and-learn in your office is a great way to increase the knowledge base for your office staff. Well-designed lunch-and-learns are planned, informal educational meetings that provide an opportunity for learning new information, sharing ideas, and a discussion on ways to implement new office policies. Lunch-and-learns also provide an opportunity to evaluate office practices through an informal discussion. The tone for each lunch-and-learn is established by the provider at the beginning of each meeting. A lunch-and-learn provides an opportunity for all members of an office practice to gather at designated lunchtime to learn new information. Various topics on anticipatory guidance on oral health could be developed and dates for presentation and discussion of the topics could be established. All members of the team would be asked to read specific materials before the meeting and to be prepared to participate in the discussion. It is a nice idea to provide lunch for the first meeting and then ask members to bring their own lunches for future meetings.

A lunch-and-learn is also an opportunity to invite a local dentist to meet the staff and discuss ways to collaborate on referrals. You can also invite your local COHA representative to come to one of the lunch-and-learn sessions to present information and to have a discussion with all staff members.

Below are some ways to increase the knowledge base of the office staff:

- Post the Bright Futures Handout, http://brightfutures.aap.org/pdfs/Health_Promotion_Information_Sheets/or_alhealth.pdf, to educate staff about the importance of promoting oral health.

- Educate clinical staff in practices by encouraging continuing education.
- Review the Oral Health Risk Assessment Tool Guidance - <http://www2.aap.org/oralhealth/docs/RiskAssessmentTool.pdf>.
- Utilize existing educational materials found in:
 - AAPD patient education brochures and parent resource center - http://www.aapd.org/resources/parent_resources/
 - National Institute of Dental and Craniofacial Research (NIDCR) - <https://www.nidcr.nih.gov/orderpublications>
 - HRSA funded free oral health brochures (English and Spanish) - <http://www.mchoralhealth.org/materials/consumerbrochures.html>
 - National Maternal and Child Oral Health Resource Center consumer brochures (English and Spanish) - <http://www.mchoralhealth.org/materials/consumerbrochures.html>
- Develop open dialogue using strength-based approach (see Appendix E)/motivational interviewing (see Appendix F) for patient with oral health concerns:
 - Educate regarding relationship between oral health and systemic health.
 - Use oral health risk assessment tool to direct education and anticipatory guidance.
- You may want to select appropriate videos and reading materials for your office staff from the Smiles for Life program <http://www.smilesforlifeoralhealth.org>

8. Educating Family



There are many ways to reach out to your patients to create awareness about the importance of oral health. Some practices utilize office staff or waiting room media such as television, posters, and handouts (Cavity Free at Three -

<http://www.cavityfreeatthree.org/docs/assets/anticipatoryGuidance.pdf>, National Institute of Dental Craniofacial Research [NIDCR] - <http://www.nidcr.nih.gov/OralHealth/OralHealthInformation/ChildrensOralHealth>) to communicate with patients to get the word out. Others create a centralized information area in the waiting area and in each exam room devoted to oral health education for families, including discussion prompts like: *Don't forget to ask about oral health care; When did your child last see the dentist?* Alternatively, you may send out an email informing family of the recommendations regarding dental home by age 1 year as well as other anticipatory guidance information. See a customizable email template (Appendix I).

You may structure the education so that at each preventive visit oral health is assessed and age-appropriate oral health education (see Appendix H) is

provided. You may want to provide the anticipatory guidance on oral health yourself along with your routine anticipatory guidance already in place. Alternatively, as mentioned in **Time Management** section, you may delegate staff to provide the oral health anticipatory guidance. Either way, providing education to the families and patients on oral health at each visit is critical to a PPHP's overall practice goal to provide the best care possible so children grow into healthy and happy adults.

As many adults and children have high-level Internet skills and enjoy reviewing online information, here are some additional resources that you may want to recommend to the children and adults:

- Healthy Children.org Web site: <http://www.healthychildren.org>
- First Steps to a Healthy Smile - <http://www.healthychildren.org/English/healthy-living/oral-health/Pages/First-Steps-to-a-Healthy-Smile.aspx>
- Preventing Tooth Decay in Children - <http://www.healthychildren.org/English/healthy-living/oral-health/Pages/Preventing-Tooth-Decay-in-Children.aspx>
- Preventing Tooth Decay - <http://www.healthychildren.org/English/ages-stages/baby/teething-tooth-care/Pages/Preventing-Tooth-Decay.aspx>
- Brushing Up on Oral Health: Never Too Early to Start - <http://www.healthychildren.org/English/healthy-living/oral-health/Pages/Brushing-Up-on-Oral-Health-Never-Too-Early-to-Start.aspx>
- A Guide To Children's Dental Health - <http://www.healthychildren.org/English/ages-stages/baby/teething-tooth-care/Pages/A-Guide-to-Childrens-Dental-Health.aspx>

9. Age-Appropriate Recommendations

Specific age-appropriate recommendations from the AAP Bright Futures include the following that can be used by the pediatrician:

Table 1. Specific age-appropriate recommendations

Time	Recommendations
4-Month Visit	<ul style="list-style-type: none"> • Maintain good maternal oral health care. • Avoid spoon sharing or cleaning pacifier in your mouth. • Avoid bottle in bed, propping, “grazing.”
6-Month Visit	<ul style="list-style-type: none"> • Maintain good oral hygiene. • Assess fluoride source. • Brush with soft toothbrush/cloth and water. • Avoid bottle in bed, propping, “grazing.”
12-Month Visit	<ul style="list-style-type: none"> • Establish a dental home. First dental checkup, dental hygiene • Visit the dentist by 12 months or after first tooth. • Brush teeth twice a day with plain water, soft toothbrush.* • If still using bottle, offer only water. <p>* A smear of fluoride containing toothpaste can be used for patients at risk for caries.</p>
15-Month Visit	<ul style="list-style-type: none"> • Schedule first dental visit if child hasn’t seen dentist yet. • Brush teeth twice a day with soft brush and plain water. • Prevent tooth decay by good family oral health habits (brushing, flossing) • If nighttime bottle, use water only.
2- to 4-Year Visit	<ul style="list-style-type: none"> • Promote oral health by adhering to a daily routine. • Brush teeth twice a day with pea-sized toothpaste.
5- to 6-Year Visit	<ul style="list-style-type: none"> • Visit dentist twice a year. • Give fluoride supplement after assessing sources of fluoride. • Brush teeth twice a day; help child with brushing if needed.
7- to 8-Year Visit	<ul style="list-style-type: none"> • Take child to dentist twice a year. • Give fluoride supplement after assessing sources of fluoride. • Brush teeth twice a day, floss once. • Wear mouth guard during sports.
9- to 10-Year Visit	<ul style="list-style-type: none"> • Visit dentist twice a year. • Give fluoride supplement if dentist recommends. • Brush teeth twice a day, floss once. • Wear mouth guard during sports.
11- to 14-Year Visit	<ul style="list-style-type: none"> • Visit dentist twice a year. • Give fluoride supplement if dentist recommends it. • Brush teeth twice a day, floss once.
15- to 17-Year Visit	<ul style="list-style-type: none"> • Visit dentist twice a year. • Brush teeth twice a day, floss once.
18- to 21-Year Visit	<ul style="list-style-type: none"> • Visit dentist twice a year. • Brush teeth twice a day, floss once.

Adapted from *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents*. 3rd ed. Pocket Guide. American Academy of Pediatrics. 2008.

Consider cultural sensitivity when providing the above anticipatory guidance. For example, if English is not the families and child's primary language, provide handouts in the patient's language. Consider such cultural issues as who makes the decisions about the need for health and dental care. If the decisions are made by the family elder or the father as head of the household, ask the mother to bring the father to the office for at least one of the health care visits. Ask about cultural practices they use as part of their health care.

10. Nutrition and Eating Practice



Oral health and nutrition go hand in hand. Without our teeth to chew food, it is difficult to nourish our body and without proper nutrition, we compromise the health of our teeth. As we think about the importance of our teeth, we should remind ourselves and educate our families that our teeth need to last us a lifetime. Teaching families about the importance of good nutrition is a win-win proposal. They gain the knowledge that can help them promote both a healthy weight and optimal oral health. At well child care visits, PPHPs already provide ample anticipatory guidance around healthy eating. Nutritional assessments are commonly one of the first topics discussed at the visit, with questions ranging from assessment of how breastfeeding is going to how many sugary beverages are being consumed by the family. Communicating how nutrition plays a role in the caries disease process can easily be incorporated into this discussion.

Materials that may be helpful include:

- [How to Prevent Tooth Decay in Your Baby](http://patiented.aap.org/content.aspx?aid=6014) - <http://patiented.aap.org/content.aspx?aid=6014>
- [First Steps to a Healthy Smile](http://patiented.aap.org/content.aspx?aid=6139) - <http://patiented.aap.org/content.aspx?aid=6139>
- [A Guide to Children's Dental Health](http://patiented.aap.org/content.aspx?aid=5293) - <http://patiented.aap.org/content.aspx?aid=5293>

11. Fermentable Carbohydrates

Explaining the role that fermentable carbohydrates have in the caries disease process is often new information for families. They will benefit from understanding how cariogenic bacteria that inhabit in the mouth, such as *Streptococcus mutans*, metabolize fermentable carbohydrates and produce acid, which then erodes the enamel surface of the tooth and creates a cavity.

What are fermentable carbohydrates?

Most forms of sugar are fermentable carbohydrates, so they come in many varieties. The “sugar” that we most commonly think of as a sugar is sucrose. Sucrose is found in the sugar bowl and is added to candies, baked goods, sugary beverages, etc. There are more subtle sugars that we might not think of, such as lactose, the sugar in milk. While some may not consider milk as a sugary beverage, cariogenic bacteria do. *S. mutans* digest lactose similar to sucrose and produce enamel-decaying acids in both cases. Remember “baby bottle tooth decay”? The milk in the bottle that the child receives through the night can lead to dental decay. We now understand that it isn’t just the nighttime bottle that leads to dental decay, so the term “baby bottle tooth decay” is now less commonly used.

What about food frequency?

Families will also benefit from learning that the **frequency** of carbohydrate exposure is important in the pathogenesis of ECC and breaks from carbohydrates benefit the mouth.

What does this look like in anticipatory guidance?

Educate your families regarding how both the **type** of carbohydrate and **frequency** of consumption play a role in the caries process. The anticipatory guidance provided will differ based on the age of the child. For example:

- For infants: Ask if the family props the bottle or puts the baby to sleep with a bottle of formula, milk, or juice. Advise them on ways to encourage their baby to sleep without a bottle in their mouth.
- For toddlers and older children: Create awareness about foods that stick to the teeth. Avoid snacks such as gummy bears, raisins, and fruit leather and instead suggest fresh fruit or whole wheat snacks.
- Avoid grazing or eating snacks throughout the day in place of full meals. The sippy cup is often a grazing tool for toddlers and can impact their appetite as well as expose their teeth to frequent carbohydrates. Offer water to the child.

12. Brushing and Flossing



Promoting good oral health includes cleaning teeth. Carbohydrates that adhere to teeth can be removed by brushing and flossing the teeth. Brushing is important to remove the food particles and plaque on the surfaces of the teeth, and flossing is important to remove them from between the teeth where a brush can’t reach. Encourage families to start brushing their child’s gums in infancy and their teeth when they first erupt. If brushing becomes part of a daily routine, then families are less likely to forget to brush and their children will

come to expect it.

Besides brushing the food particles and plaque off the teeth, tooth brushing also provides topical fluoride to the teeth through the use of toothpaste. Toothpaste was invented as a vehicle to carry fluoride to the tooth. When children are older, fluoride can also be topically delivered to the tooth in fluoride rinses and mouthwashes.

How can you advise your patients on brushing?

Start by recommending that families wipe off their infant's gums with either a washcloth or finger brush. As babies lose their suck reflex and begin to be orally inquisitive, they often like to suck on a finger brush. As soon as the first tooth erupts, it can be brushed twice a day. If you have assessed a child to be at high risk for ECC, then they will benefit from having their teeth brushed with a small smear of toothpaste twice a day. When the toddler learns how to spit, then the amount of toothpaste on the brush can be increased to a pea-size amount. The optimal time for brushing is two minutes.

You might hear from your families that their child won't let them brush their teeth. In this circumstance, remind families that brushing only takes a minute or two each morning and night and that establishing an expected routine may reduce the rebellion. Until a child is able to write their name well or tie their own shoes, usually around 6 to 8 years of age, they do not have the manual dexterity to adequately brush their teeth. The child may be happiest if they get to brush their own teeth—and we want them to learn how—but the families should also help the child brush to make sure that the teeth get clean. As soon as any child has at least two teeth touching, they should have their teeth flossed. Here are some ideas:

- Discuss various strategies to motivate child to want to brush:
- Sing a song through brushing.
- Brush in various parts of house/car that are convenient.
- Model brushing by brushing as a family.
- Let the child pick out their favorite toothbrush in the store.
- Have the parent get behind the child while brushing so that if the child is squirming, the parent can hold the child's hands with one hand and use the other to brush the child's teeth.
- Electric toothbrushes can be used adequately before 4 years of age. There is no difference in the effectiveness of electric toothbrush or manual toothbrush if children are taught how to brush properly. The optimal brushing time is 2 minutes.

What about flossing?

Flossing is an important part of oral hygiene. Food accumulates anywhere on the tooth including between teeth, and if left on the tooth, dental plaque forms. Cariogenic bacteria house themselves in dental plaque, which leads to cavities. The bristles of a toothbrush can't reach between two teeth that touch each other,

but dental floss can. However, just as young children don't have the manual dexterity to adequately brush their teeth, they also lack the necessary coordination to floss. Floss aids can help. Floss aids are small plastic devices that securely hold a piece of dental floss and provide a handle that a small hand can grip and control. Floss aids can be found next to toothbrushes in most stores. Recommend these tools to your families. You might even suggest tricks like having them in places where kids can easily access them, such as in the car, on their homework desk, or by the computer or television. Readily available aids can be picked up any time to remove bothersome plaque.

13. Fluoride

An important piece of oral health anticipatory guidance is educating families about fluoride. Fluoride both promotes the remineralization as well as prohibits demineralization of the tooth enamel. What does that mean? Remember that demineralization begins when cariogenic bacteria digest fermentable carbohydrates, which produces acids that erode the enamel surface of the tooth. These acids break down the enamel's hydroxyl-apatite crystal, which results in a hole in the enamel—a cavity. Fluoride is incorporated into the hydroxyapatite crystal, making it into a fluoro-apatite crystal. This process promotes the remineralization (or reforming) of the enamel and reduces the demineralization (or breakdown) of the tooth enamel. Children benefit from both topical and systemic fluoride. How can you educate families on fluoride? Start by asking them about their systemic and topical exposure to fluoride.

Systemic fluoride: Children benefit from consuming properly fluoridated water. Encourage fluoridation of your municipal water supplies. Before prescribing fluoride drops, consider all the water that the child might drink in a day, such as at school or the daycare environment. Nursery water is purified water with added fluoride. Natural spring water may have small amounts of fluoride but purified bottled water has been processed with an osmotic filter that removes all of the fluoride. Distilled water also has had its fluoride removed.

Topical fluoride: Children benefit from the use of fluoridated toothpastes. If a child is determined to be at high risk for ECC, encourage families to use fluoridated toothpaste even if the child only has one or two teeth. If the child is less than two and isn't adequately spitting yet, advise families to use a small smear of fluoridated toothpaste twice a day. When the child can spit, a pea-size amount of fluoridated toothpaste can be used.

Fluorosis: Families may have questions about fluorosis. Fluorosis is a development disturbance of the tooth's enamel that occurs if the developing tooth is exposed to too much fluoride. Daily overexposure to systemic fluoride as the tooth is being formed (between 3 months and 8 years), such as drinking water high in fluoride content or swallowing large amounts of toothpaste, can result in

fluorosis. Well water sometimes has high natural levels of fluoride. If a patient's home does not receive community water, it should be sampled and tested for fluoride content. Fluorosis is a cosmetic change in the tooth. It is often unnoticeable, but can appear as white specks on the tooth. Severe fluorosis appears as brown, possibly pitted markings on the tooth. While mild fluorosis is preferable to cavities, it is best to prevent severe fluorosis. The risk of fluorosis goes away after the tooth has developed. Advise families to keep toothpaste in a safe part of the house to prevent accidental ingestion and help their child apply the proper amount of toothpaste.

14. Injury and Trauma Prevention



Anticipatory guidance regarding injury prevention has long been an important part of well child care. As you talk to your families about such things as car seats and making homes safe, include guidance about how to prevent mouth and teeth injuries. Many recommendations will address injuries of all sorts. Here are a few things to think about regarding injuries to the mouth and teeth.

Traumatized teeth have the best chance of survival if they are managed immediately. Prepare plans with your families regarding what to do for oral injuries that might occur at home or at school. Educate your families that if their child falls and breaks a tooth, knocks it out, or impacts it, that they should readily access their dental home. Managing trauma to primary teeth is slightly different than trauma to permanent teeth. Dentists will rarely replace a primary tooth that has been knocked out; however, it can be difficult to know if the tooth was knocked out or impacted. Sometimes an x-ray is necessary to identify the location of the tooth. Trauma to permanent teeth can first be managed in the PPHP's office, but it is preferable to get them to a dentist as soon as possible. If a patient comes into your office with a knocked-out tooth, replace the tooth in the socket as soon as possible to maximize the tooth's chance for survival and then immediately refer the child to the dentist. The tooth also can be stored in normal saline or Save-a-Tooth(tm) solution with immediate referral to a dentist. No attempts should be made to clean the tooth or remove attached tissue. To learn more about managing dental trauma in your office, visit these helpful websites:

Review the ADA dental emergency procedures (see Appendix J).

Review <http://dentaltraumaguide.org>.

Review AAPD Emergency Care Q&A at <http://www.aapd.org/publications/brochures/>

Many injuries to the mouth and teeth are preventable. For younger children, advise families to cover electric outlets and not let children near electric wires

because biting into live wires can cause serious mouth burns. Recommend they cover sharp corners such as those around fireplaces and coffee tables. Of course, recommend age-appropriate car seats and seat belts and discuss the risks of trampolines. As children start to play sports, including sports around the home such as skating and bicycling, encourage the use of mouth guards along with helmets and pads. If a few families begin having their child wear mouth guards during team sports, the other children might follow along. Recommend that families keep an extra mouth guard in the car in case the child forgets theirs. Also suggest that they keep products intended for traumatic tooth storage in their team's first aid kit.

As most PPHPs know, piercing is becoming more prevalent in our pediatric patients. While we want to encourage our patients, especially our growing adolescent patients, to express themselves and develop their own character, we want them to do this in as safe of a manner as possible. Body piercing, especially oral piercing, can lead to serious infections. The mouth is teeming with bacteria than can and do infect oral piercings. Encourage your patients to find other ways to express themselves such as in writing, drawing, painting, composing music, or wearing expressive clothing.

Review the HealthyChildren.org tooth injury information at <http://www.healthychildren.org/English/tips-tools/Symptom-Checker/Pages/Tooth-Injury.aspx>.

15. Quality Improvement

If gaps in providing oral health anticipatory guidance for patients and families exist in your practice, use the suggested ideas for change below to help you improve patient care and address the gap.

Develop a systematic, practice-wide approach to provide anticipatory guidance at every health supervision visit:

- Establish an oral health team.
- Recruit an office dental champion (can be a nurse, medical assistant, or other staff member).
- Determine if there is a COHA, <http://www2.aap.org/oralhealth/State.html>, in your state that can facilitate a lunch-and-learn session for employees to discuss strategies for implementation of oral health assessments and education to make everyone empowered as part of the oral health office team.
- Implement use of Bright Futures Visit Forms, http://brightfutures.aap.org/tool_and_resource_kit.html#infancy, as a prompt for anticipatory guidance discussion topics.
- Ensure that Age-Appropriate Anticipatory Guidance Recommendations (see Appendix H) covered at the visit are easily accessible to providers.

- Keep a Bright Futures Oral Health Pocket Guide, <http://www.brightfutures.org/oralhealth/about.html>, in all exam rooms.
- Keep a Child Oral Health Pocket Card, http://eqipp.courses.aap.org/File%20Library/Courses/Oral%20Health/Tools/STFM_Smiles_for_Life_Child_Oral_Health_Pocket_Card.pdf, in all exam rooms.

Ensure the system includes anticipatory guidance and education to families regarding eating/feeding/drinking oral health risks, including injuries. For example:

- For infants: Ask if the family props the bottle or put the baby to sleep with a bottle of formula, milk, or juice. Offer information on foods to avoid (ie, foods stick to the teeth for infants), or if given, wash the teeth after feeding.
- For toddlers and older children: Create awareness about foods that stick to the teeth (ie, candies such as gummy bears, fruit roll-ups or raisins).
- Review AAP Policy Statement on Preventive Oral Health Intervention for Pediatricians - <http://aappolicy.aappublications.org/cgi/reprint/pediatrics;122/6/1387.pdf>.
- Utilize existing educational materials found in: AAPD patient education brochures and parent resource center - http://www.aapd.org/resources/parent_resources/
- National Institute of Dental and Craniofacial Research (NIDCR) - <https://www.nidcr.nih.gov/orderpublications>
- HRSA funded free oral health brochures (English and Spanish) - <http://www.mchoralhealth.org/materials/consumerbrochures.html>
- National Maternal and Child Oral Health Resource Center consumer brochures (English and Spanish) - <http://www.mchoralhealth.org/materials/consumerbrochures.html>

Summary

PPHPs have the opportunity to impact the oral health status of our nation's children through implementation of planned office-based oral health anticipatory guidance for children, adolescents, and families. Several resources are available to PPHPs, such as Bright Futures on promoting oral health, the AAPD practice guidelines, and the AAP policies on oral health care, to guide office-based oral health care. The goal for the pediatric office practice is to have a system in place for delivering oral health anticipatory guidance to the children and families at each appropriate office visit. Office practices that run smoothly have effective time management strategies for the PPHP and for all office staff members.

These strategies are critical to the successful day-to-day operation of the office and for patient and family satisfaction.

Documentation of the oral health anticipatory guidance provided to the families and patients can be done with pop-up reminders on the EMR or on the bottom of a previsit questionnaire. PPHPs should educate and update as needed all staff, families, children, and adolescents on oral health care. Age-appropriate anticipatory guidance completed by office staff who received oral health education is one strategy to support efficient office practices. While anticipatory guidance in oral health is age dependent, nutritional counseling, brushing and flossing, the benefits of fluoride, and injury prevention are topics that should be reviewed and documented on an annual basis.

FLUORIDE VARNISH

1. Ensure Fluoride Varnish Application for High-Risk Patients



For families with limited access to dental homes and patients who are at high risk for dental caries, additional treatment should be considered within the medical home. In combination with the risk assessment and anticipatory guidance, fluoride varnish has been shown to reduce cavities. Because fluoride varnish can be applied only by a professional, there are some options for providers who want to incorporate this into their practice.

Fluoride varnish is a concentrated topical fluoride applied to the teeth using a small brush, after which it sets on contact with saliva. Advantages of this modality are that it is well tolerated by infants and young children, has minimal risk for ingestion, has a prolonged therapeutic effect, and can be applied by both dental and non-dental health professionals in a variety of settings. One data set shows a 50% to 90% decrease in caries in young children following two to four applications of varnish over 2 years.¹

Fluoride is effective as a caries preventive agent because of its main mechanisms of action. Fluoride promotes enamel remineralization, reduces enamel demineralization, inhibits bacterial metabolism and acid production, and has antimicrobial effects, especially at a lower pH. The mechanisms of fluoride are both topical and systemic, but the topical effect is the most important.²

This topic helps to address the following questions:

- What is fluoride varnish and how it is applied?
- Who should apply it and when it should be applied?
- What concerns might families have and how should they be addressed?
- What is fluorosis and can fluoride varnish cause fluorosis?
- Where can fluoride varnish be purchased and how does it need to be stored?
- Can I bill for fluoride varnish application? If so, how do I do that?

1. Weintraub JA, Ramos-Gomez F, Jue B, et al. Fluoride varnish efficacy in preventing early childhood caries. *J Dent Res*. 2006;85(2):172-176.
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2257982/pdf/nihms38028.pdf> Accessed May 16, 2012.

2. Featherstone JD. Prevention and reversal of dental caries: role of low level fluoride. *Community Dent Oral Epidemiol*. 1999;27(1):31-40.

2. Definition

Fluoride varnish is a highly concentrated dose of topical fluoride that is professionally applied to all tooth surfaces. It contains 5% sodium fluoride (22,500 ppm) in a resin base. Generally, fluoride varnish is painted on the teeth of a child at high risk for caries. Varnish has been proven to adhere to each tooth surface for a longer period than other concentrated fluoride products; because it sticks to teeth, there is less risk for ingestion of excess amounts. It protects teeth from decay and is effective in reducing caries progression.¹

1. Weintraub JA, Ramos-Gomez F, Jue B, et al. Fluoride varnish efficacy in preventing early childhood caries. *J Dent Res*. 2006;85(2):172-176.
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2257982/pdf/nihms38028.pdf> Accessed May 16, 2012.

3. The Role of Pediatric Primary Healthcare Provider



PPHPs will see infants for at least eight well visits during the first 3 years of life, and commonly at least four times by age 1 year. Caries risk assessment should be performed by 6 months of age and no later than 6 months after the first tooth erupts. When infants and children are found to be at high risk for caries or when they don't have a dental home, AAP and AAPD recommend that the PPHP makes a referral to a dentist and addresses the risk by applying fluoride varnish at the well child visit, along with discussion of risk reduction.

As of August 2011, there are 44 states that reimburse PPHPs for the application of fluoride varnish. It is an activity that can be delegated to support staff in the office so that it does not become burdensome to the practice. Also, while uncommon, there are some reports of allergic reaction to ingredients in fluoride varnish. Take a look at the PEW map on reimbursing physicians for fluoride varnish found at <http://www.pewstates.org/research/analysis/reimbursing-physicians-for-fluoride-varnish-85899377335>.

Review the AAP Policy Statement: Preventive Oral Health Intervention for Pediatricians (see Appendix K).

4. Educating Staff

Incorporating oral health into pediatric practice might be a new concept for practice staff. In fact, in some states, medical providers are required to receive oral health training in order to receive Medicaid reimbursement for basic preventive dental services such as fluoride varnish application.¹ Many states have oral health initiatives aimed at training medical providers. PPHPs that are ready to incorporate oral health into their practice will find resources available to

them. One of these resources is the AAP COHA. The AAP, with funding from the American Dental Association Foundation (ADAF), has trained pediatricians in most states to be COHA. Once trained, COHA are asked to do the following:

- Deliver at least four trainings annually on how to incorporate oral health into the medical home.
- Advocate for children's oral health issues at the state and local levels.
- Serve as an access point for others working in their community on improving children's oral health through pediatric involvement.
- Build relationships with dental colleagues in their communities and dental societies to improve access to oral health care.

The AAP has other helpful resources found on the AAP Oral Health Initiative Web site, particularly the Protecting All Children's Teeth (PACT) training found at <http://www2.aap.org/ORALHEALTH/pact/index-cme.cfm>. The online Smiles for Life curriculum found at <http://smilesforlifeoralhealth.org/> is another useful educational tool.

PPHPs know that children under the age of 5 years are undergoing critical years of growth and development. However, many are not aware that oral health plays a big part in the overall health of a child. Through education, staff can learn about their responsibility in preventive oral health, including applying fluoride varnish in high-risk patients.

In a busy practice, nurses and allied health personnel can take responsibility for oral health education and for fluoride varnish application. Many of the same nutritional concepts related to general health and obesity prevention are also appropriate for good oral health. In fact, stressing oral health as the reason for appropriate nutrition often lessens some of the stigma of discussing the child's obesity.

1. American Academy of Pediatrics. Caries prevention services reimbursement table. <http://www2.aap.org/oralhealth/docs/OHReimbursementChart.pdf> Accessed May 16, 2012.

5. Addressing Staff Reservation

Office staff may have reservations about the safety and necessity of applying fluoride varnish. If they don't see the necessity, they are unlikely to want to spend the extra time required for education and varnish application. This may be addressed by identifying someone to serve as the office dental champion. This person can be a medical assistant, nurse, or other staff member. The role of the dental champion is to:

- Educate staff on the importance of oral health care, help address the unmet dental needs within your practice and facilitate program sustainability.

- Be knowledgeable about the connection between oral health and overall health.
- Be eager to engage in continuous learning about oral health.
- Be motivated to share the message about the successes of oral health, mentor other office staff, and tackle challenges as they arise.
- Assume a leadership role by creating an environment for open discussion to work toward consensus and achieve standardized care:
 - Support the efforts of the physician by quoting fluoride safety data. For example: Studies show that urine fluoride levels are the same or lower following varnish application compared to routine brushing with fluoridated toothpaste.¹
- Review the Academic Pediatrics Special Issue on Children's Oral Health, <http://www2.aap.org/oralhealth/SummitOralHealth.html>, that explains the importance of:
 - Understanding oral disease, primarily dental caries
 - Reducing the prevalence of caries in children
 - Easing the disparities in access to oral health care among poor and minority children
 - Creating the paradigm shift in the collaboration between pediatric community and dental professionals
 - Making advances in clinical care, education, research, and policy to promote children's oral health

1. Association of State and Territorial Dental Directors Fluoride Committee. Fluoride varnish: an evidence-based approach. Research Brief. September 2007. <http://www.astdd.org/docs/Sept2007FINALFivarnishpaper.pdf> Accessed April 9, 2012.

6. Addressing Family Hesitancy

There are many myths and misunderstandings about fluoride in the lay literature that may cause families to be concerned or hesitant about having fluoride varnish applied to their child's teeth. It is important to have an open dialogue with families to determine the basis of their concern.

Techniques that can be effective for this include motivational interviewing (see Appendix F) and strength-based approaches (see Appendix E) to address concerns, present data about fluoride varnish, and recognize cultural issues that might contribute to concerns.

- Families may question why fluoride varnish is necessary when they already get fluoride from fluoridated toothpaste.
- The greatest preventive benefit of fluoride in caries prevention is the frequent topical exposure to low levels of fluoride. This is accomplished with fluoridated toothpaste when it is used to brush the teeth at least two times daily.

- Fluoride varnish provides an additional preventive benefit for children at high risk for caries because it stays in contact with the teeth for a longer period of time than toothpaste and is more concentrated.
- Families may be willing to pay if it is not a covered service once they understand the importance.
- Address patient's discomfort or pine nuts allergy issue (other nut allergies, including peanuts, are not an issue) by referring the patient to the dental home for a gel or foam treatment.
- Fluoride varnish adheres to teeth because of the ingredient colophony resin from pine tree sap. This ingredient is not derived from pine nuts and the manufacturers have stated that it is safe for individuals with a pine nut allergy.
- In the last 10 years, there has been one documented case of a patient with an allergic reaction to the colophony in fluoride varnish.¹ This individual had no history of allergy to pine or other nuts. There have been few reports of contact dermatitis/stomatitis from direct skin contact to products using colophony as an ingredient in a hypersensitive person. These have primarily been products made for use on the skin such as cosmetics, nail varnish, sticking plasters, chewing gum, and some dental materials.²
- Provide education as to why fluoride varnish is important:
- Use your dental champion and oral health team.
- Post the Smiles for Life Fluoride Varnish Posters in English and Spanish found at <http://www2.aap.org/oralhealth/SmilesForLife.html> to show families why and how it is applied.

At the end of the day, reaching common ground with your patient's family and educating them to make informed decisions on good health is important. A child that now has a proper diet, brushes and flosses, and sees a dentist will likely have a better outcome.

1. Sharma PR. Allergic contact stomatitis from colophony. *Dent Update*. 2006;33(7):440-442.

2. Association of State and Territorial Dental Directors Fluorides Committee. Fluoride varnish: an evidence-based approach. Research Brief. September 2007. <http://www.astdd.org/docs/Sept2007FINALFlvarnishpaper.pdf> Accessed June 1, 2012.

7. Determining Patient Eligibility

Infants and children who do not have a dental home or who are determined to be at high risk for dental caries should be considered eligible for fluoride varnish application. Reimbursement for this treatment is dependent on the type of insurance the patient has and the state they live in. In the United States, 44 states permit Medicaid to reimburse nondental health care professionals for fluoride varnish application. Some will also reimburse for oral health risk

assessment. To determine your state's reimbursement policy, access the AAP Children's Oral Health Web site at <http://www2.aap.org/oralhealth>.

- The highest-risk children have:
 - White spots
 - History of caries
 - Mother with caries
- All patients at risk are eligible, but only some have state payment.
- Review the AAP/Bright Futures Oral Health Risk Assessment Tool and Guidance at <http://www2.aap.org/oralhealth/RiskAssessmentTool.html>.
- Review ADA Professionally Applied Topical Fluoride: Evidence-Based Clinical Recommendations chart at http://ebd.ada.org/contentdocs/fluoride_chairside.pdf.

Following completion of this content area, if you'd like to learn more about risk assessment, please see the risk assessment content module.

8. Reimbursement



Fluoride application by PPHPs may be a billable procedure. Payment codes may only be allowed for two to three applications by medical providers per year. It is true that most private payers do not pay for oral health screening and fluoride varnish application because their systems do not recognize the dental service codes under their medical claims platform.¹

Some state Medicaid programs pay on the D (dental) codes. Review the State Medicaid Payment Information table at <http://www2.aap.org/oralhealth/State.html> that explains the requirements related to payment, including payment codes, age limits of children eligible for services, approved frequency of varnish application, required training, and delegation, if allowed. The Oral Health Coding Fact Sheet for Primary Care Physicians found at <http://www2.aap.org/commpeds/doch/oralhealth/docs/OHCoding.pdf> may provide additional information.

9. Application Technique

The application of fluoride varnish takes less than 1 minute, with minimal disruption to the practice. Most brands of varnish are supplied as a unit dose and include a small application brush. Having all necessary armamentarium prepared in advance in small plastic bags can facilitate this process.

Knee-to-Knee Examination



For infants, it is recommended to use the knee-to-knee position with a parent or caregiver. To accomplish this, the infant sits on the parent's lap facing the parent. The practitioner sits facing the parent with their knees touching. The parent leans the child back so he or she is lying down with the head on the practitioner's knees. Parents should be asked to hold the infant's hands. Parents should

also be told that the child might cry from being restrained, but that the procedure is painless. As soon as the varnish is applied, the child sits up and they will probably stop crying immediately. To apply the varnish, use a 2x2 gauze square to wipe saliva from the teeth. Using the brush supplied with the varnish, apply varnish to all tooth surfaces. The most susceptible surfaces are the chewing surfaces of the molars and the front and back surfaces of the upper incisors.

Older, cooperative children can be reclined on the examination table during fluoride varnish application.

Additional instruction about fluoride application is available in the Resources section on the AAP Oral Health Web site. A video demonstrating this technique is available from Bright Smiles from Birth at <http://illinoisAAP.org/2010/08/bright-smiles-from-birth-training-video> and from the Smiles for Life curriculum at <http://smilesforlifeoralhealth.org/>. For hands-on training, consider contacting your local COHA. In addition, some state and regional foundations as well as regional and state CME meetings offer hands-on training.

10. Incorporating Fluoride Varnish into Practice

Adding fluoride varnish into practice is not dissimilar to adding any new procedure. Start small with one provider or one pod and work out the bugs. In one afternoon you can have several Plan-Do-Study-Act (PDSA) cycles. Prepare your patients and staff with announcements so the new procedure is not a surprise. With any new activity, celebrate successes early and often.

- Establish oral health as part of all health supervision visits.
- Prepare each visit as if you would be providing fluoride varnish—a “be prepared” concept:
 - Lay out handouts for 6-month check and fluoride varnish supplies, or
 - Set up EMR to automatically prompt nursing staff to have fluoride varnish supplies available for that visit; these prompts can also be programmed according to the schedule you set up.
- Delegate to staff some of the education (hygiene, varnish) and varnish application to address time issue and increase efficiency.

- Review the AAP *Pediatrics* article: Fluoride Varnish Use in Primary Care: What Do Providers Think? at <http://pediatrics.aappublications.org/content/115/1/e69.full.pdf+html>

11. Ordering, Storing, and Handling

Starting new procedures can be challenging and requires advance planning so the needed supplies are available and the fluoride varnish is not past the expiration date. Varnish is quite simple compared to vaccines. No refrigeration is required, typical shelf life for varnish is around two years, and for safety it should be out of reach of children. Suggestions for addressing this include:

- Assign a point person for fluoride varnish ordering (delegate responsibility to staff member or to the dental champion in the office).
- Review the Fluoride Varnish Product List and Dental Supply Companies at <http://www2.aap.org/oralhealth/docs/fluoride-varnish-manufacturers.pdf>.
- Expand your process for ordering medical supplies to include fluoride varnish.
 - NOTE: Remember that fluoride varnish should be treated as any other medication—inventory, handling, storage, and expiration dates should be monitored regularly.
 - Some EMR systems can help track the supply and expiration date, document fluoride varnish as a medication, and to whom and when it was applied, which helps with ease of documentation.
- Your COHA can help with advice and troubleshooting on ordering and storing supplies.

12. Quality Improvement

If gaps in providing fluoride varnish application for infants and children exist in your practice, use the suggested ideas for change below to help you improve patient care and address the gap.

Review the Pediatric Guide to Oral Health Flip Chart and Reference Guide (in English and Spanish) at <http://www2.aap.org/oralhealth/PediatricGuides.html> that assists pediatric primary healthcare providers in counseling patients about oral health and applying fluoride varnish.

- Review videos of fluoride varnish application and positioning of child:
 - Bright Smiles from Birth - <http://illinoisAAP.org/2010/08/bright-smiles-from-birth-training-video>
 - Smiles for Life - <http://smilesforlifeoralhealth.org/>
- Contact COHA, <http://www2.aap.org/oralhealth/COHA.html>, for training at your institution, practice, or AAP chapter meeting.
- Visit the Oral Health Initiative Web site for resources:

- Take the Smiles for Life Course #6: Fluoride Varnish at <http://fluoridevarnish.talariainc.com/default.aspx?tut=584&pagekey=64563&s1=1653026> to learn the benefits, appropriate safety precautions, and dosing for fluoride, as well as how to apply fluoride varnish and provide adequate follow-up care.

Summary

With chronic illness, there is often not much we can do to change the course of a disease. Caries is a preventable disease; when you identify a high-risk child in the office, you can intervene to improve his or her health that day. Fluoride varnish is an effective and safe topical treatment that prevents decay, reverses early decay, and reduces decay rates.

Barriers do exist, such as provider uncertainty with a new procedure or family resistance. However, excellent resources are available to help train providers to overcome these barriers. Applying fluoride varnish to the teeth of the high-risk child is part of the overall treatment plan that includes anticipatory guidance on nutrition, oral hygiene, and establishment of a dental home to improve the child's oral and overall health.

CASE STUDIES

Case 1. Recognizing Obvious and Subtle Risk Factors

Introduction



Anticipatory guidance has always been an essential component of pediatric medical visits and addresses a broad range of topics ranging from nutritional counseling to injury prevention. Oral health anticipatory guidance is included in this range of topics and should also be incorporated into pediatric medical visits. Knowing what anticipatory guidance will most benefit patients is determined by their age and risk factors. For instance, guidance regarding not sleeping with a bottle of milk at night is relevant for a 12-month-old but not a 12-year-old. However, the 12-year-old patient will benefit from guidance regarding wearing a mouth guard for sports.

Understanding risk factors for oral health issues such as early childhood cavities requires an assessment of oral health behaviors and an examination of the teeth and gums. Not seeing obvious cavities on physical examination does not mean that your patient is not at risk for caries. A patient has an increased risk for developing caries when they lack protective factors such as brushing with fluoridated toothpaste, drinking fluoridated water, having regular dental visits, or when their teeth have increased exposure to fermentable carbohydrates such as frequent snacks or eating foods that stick to the teeth or are high in sugar content. A family history of caries can put a child at increased risk for caries.

Anticipatory guidance on oral health should be provided to all families at each age-appropriate primary health care visit and at episodic visits when problems with oral health are observed. The case presented here provides an opportunity to implement anticipatory guidance on oral health care for a family with young children who have not established a dental home.

Case Objectives

After completing this case study, you should be able to do the following:

1. Identify children with both obvious risk factors for developing dental caries and subtle risk factors.
2. Provide age-appropriate anticipatory guidance on oral health preventive care to families of young children, school-age children, and to adolescents during primary care office visits.
3. Identify anticipatory guidance that supports family efforts to establish a dental home.
4. Evaluate which children require an immediate dental referral.

Before You Begin

For successful completion of this case study, you may want to review the *Provide Anticipatory Guidance and Education* and *Perform Oral Health Risk Assessment* content in this course as well as the following:

- Bright Futures Guidelines for Health Supervision, 3rd Edition - http://brightfutures.aap.org/pdfs/Guidelines_PDF/8-Promoting_Oral_Health.pdf
- Oral Health Risk Assessment Timing and Establishment of the Dental Home - <http://pediatrics.aappublications.org/content/111/5/1113.full>

Patient and Family Profile

Tomas is the head of the household. He is a day laborer. He and his wife, Danita, have four children: 2-year-old Bella, 4-year-old Jacob, 9-year-old Jasper, and 13-year-old Maria. The mother brings the four children to the pediatric primary care office for initial routine physical examinations prior to starting the new school year and the day care center for the youngest child. Your front-office staff asked the family to complete a previsit questionnaire for each of the children. Click to see the prefilled previsit questionnaire (see Appendix B).

The family does not have dental insurance and the children have never been to the dental provider. They have income-based medical insurance that requires copay, so the family limits health care visits to those required for the children and occasionally use the emergency room when they deem necessary.

History and Physical Examination

Present Medical History: The mother reports that all children have been well but that they are all picky eaters and prefer sweets before mealtime and always want dessert. The mother reports that she does not have control over their eating behaviors because of her work schedule and that the grandmother often feeds the children sugary snacks before she gets home. The children like cookies, candy, and other snacks that stick to the teeth, such as raisins and bananas. Even though the mother tries to restrict candy in her home, the children frequently receive candy from their father and grandmother as rewards for good behavior.

Past Medical and Family History: The family is healthy and the children are up-to-date in immunizations with no chronic health issues. The family history is significant for type II diabetes mellitus in the maternal and paternal grandparents

and one maternal aunt. Neither parent receives regular dental care, nor has been to the dentist in the past 5 years.

Social History: The family does not have dental insurance and cannot afford to pay for routine dental visits. All the children drink soda daily and the younger children drink a lot of juice each day. They participate in the free school breakfast and lunch program and their choices favor high-calorie starches. The children drink one glass of milk each day in the morning before leaving home. The children brush their teeth once a day without adult supervision. The family prefers to drink nonfluoridated bottled water over tap water.

Today's Examination Findings

The initial assessment reveals that all the children have a BMI between the 85th and 90th percentile.

The oral examination of each individual child reveals the following:

- Bella, the 2-year-old, has all 20 primary teeth erupted; they are free of white spots and there is no evidence of decay.



Figure 6. White spots on tooth surface

- Four-year-old Jacob's examination reveals white spots on the central incisors (enamel demineralization) and decayed areas on the lower molars.

Diagnosis

Early childhood caries (ECC).

- Nine-year-old Jasper has decayed areas on four permanent teeth and inflammation of the gums. The front upper permanent tooth is chipped from a fall while skateboarding. **Diagnosis:** Cavities, gingivitis, and a chipped front tooth from a fall.
- Thirteen-year-old Maria has an overbite, misaligned teeth, and evidence of active tooth decay on the permanent molars. **Diagnosis:** Malocclusion of teeth with overbite and multiple dental cavities.

Family Concerns

The mother is concerned about the family's ability to pay for dental services. The mother also states that her husband makes all decisions concerning family health care.

Dental Home: No dental home has been established.

Family Oral Health Assessment and Recommendations

The youngest child is considered at risk for caries development since her eating patterns, oral health care behaviors, and family history place her in the at-risk category for developing dental caries in the primary teeth, even though she has no evidence of caries at this time. Thus, you must remember to consider not only the presenting clinical evidence (no dental caries) but the confounding family variables that place this child at risk for future dental caries.

Implementing preventive strategies at this visit for the youngest child should be a high priority. All of the children are at high risk for dental caries based on poor oral hygiene habits on a daily basis, their dietary habits, their lack of prior dental visits, and the lack of a dental home and dental insurance. In addition, the parent's lack of knowledge of the importance of oral health care also put the family at high risk.

Management and Treatment

Today's Plan

- Address the mother's concern regarding ability to pay. Have the office dental champion assist the family with finding affordable or free dental coverage options. If no dental champion is available, offer the family your assistance.
- Have the appointed dental champion assist the Cullen family with scheduling an appointment for a primary dentist as a well as a referral to an orthodontist for 13-year-old Maria.
- Provide the Cullen family with a Dental Referral Form to bring to the dentist and back to you after the first visit or have the dentist fax/send the form back to you.
- Offer patient education about oral hygiene. The following patient education materials were provided:
 - First Steps to a Healthy Smile_-
<http://patiented.aap.org/content.aspx?aid=6139>
 - A Guide to Children's Dental Health_-
<http://patiented.aap.org/content.aspx?aid=5293>

- Provide the following oral health anticipatory guidance for the Cullen family regarding their oral health care, including:
 - Choose snacks with less sugar and those that don't stick to the teeth.
 - Drink more fluoridated water and less sugary beverages.
 - Minimize frequent between-meal snacks, especially ones high in sugar.
 - Promote use of fluoridated toothpastes.
 - Promote regular toothbrushing.
 - Promote regular dental visits and establishment of a dental home.
- Discuss the importance of supervised home oral health hygiene to ensure each child brushes his or her teeth at least two times each day and uses proper brushing technique. For example:
 - Bella and Jacob should brush their teeth in circular motion using a soft toothbrush and a smear of toothpaste. Care should be taken to brush each tooth surface and complete the oral care by gently brushing the tongue.
 - Jasper and Maria should use a soft or medium toothbrush that fits their hand or an electric toothbrush. The gum lines should be gently brushed to avoid bleeding and trauma. Both of these children should need minimal supervision, but corrections should be made if they do not brush for a period of 2 minutes and do not clean each tooth surface.
- Older children should floss their teeth at least once each day. High-risk children, as in this case, with gingivitis and misaligned teeth, should floss their teeth twice each day.
- Discuss the importance of routine dental visits and the urgent need for treatment of the multiple dental cavities diagnosed at the child's oral health examination.

Today's Treatment: Apply fluoride varnish in the office for Bella and Jacob.

Case Summary

This case study presents a child with no oral health issues—Bella— but who is at high risk due to the family lack of financial resources for oral health insurance, lack of knowledge on home oral hygiene practices, lack of access to affordable dental care, lack of understanding of the value of a dental home for the family's oral health care needs, and the nutritional needs of children that support healthy growth and healthy teeth.

Your role in addressing the child with subtle high-risk oral health factors early on and providing anticipatory guidance to the family could help prevent tooth decay and lead to better oral health.

Epilogue

This case study is an ideal example of how your office staff can be involved in all aspects of providing anticipatory guidance for this high-risk family. The previsit questionnaire could be given to the mother by the office staff member who greets the patients and parents as they sign in for their office visit.

The previsit questionnaire can be reviewed by a team member such as the office dental champion, who can then prepare for the specific anticipatory guidance needed for this family. Both adolescents and their parent should receive individual anticipatory guidance. Providing the anticipatory guidance on oral health prior to the physical examination is one way to efficiently promote health and wellness for families via educational instruction and interventions.

During the oral cavity examination, you can check whether the mother and children understood the teaching provided by your office staff by asking them questions, then make immediate correction if necessary, or offer encouragement and praise to the children and mother if they understood the guidance.

Office team members who participate in providing anticipatory guidance improve efficiency of office day-to-day operations and overall health care outcomes. Documentation of the anticipatory guidance should be completed by each oral health team member, preferably on an EMR checklist that records dates and instruction given to parents and children.

Assessment

Answer the questions below to assess your knowledge of this case. See answers to this assessment in Appendix L.

1. Based on the presenting case, which of these is **most** important to emphasize in your anticipatory guidance?
 - A. Immediate dental care referral for all children, including 2-year-old Bella
 - B. Application of fluoride varnish for 4-year-old Jacob but not for 2-year-old Bella because she has no evidence of decay
 - C. Techniques for brushing teeth at home for each child
 - D. Immediate referral of the 13-year-old Maria for dental care
2. While parental supervision of brushing teeth is important for all children, which child or children absolutely needs the mother to supervise teeth brushing twice a day? *Select all that apply.*
 - A. 13-year-old Maria
 - B. 9-year-old Jasper

- C. 4-year-old Jacob
 - D. 2-year old Bella
3. Your office oral health champion is responsible for providing anticipatory guidance on oral health care to the family prior to their discharge from the office visit. Which of these is the **highest priority** in the planned program of oral health anticipatory guidance?
- A. Providing age-appropriate oral health brochures for each child
 - B. Referring the mother to dental care and assisting with access to dental care
 - C. Discussing proper oral health home hygiene
 - D. Discussing the importance of fluoride supplements
4. Which of these dietary changes should be a part of your routine oral health anticipatory guidance for this family? *Select all that apply.*
- A. Reduce the intake of sugary foods and soft drinks.
 - B. Avoid foods that stick to the teeth such as sticky candy, raisins, and bananas.
 - C. Talk with the children about selection of healthy foods at the school breakfast and lunch program.
 - D. Encourage many between-meal treats throughout the day so that the children don't get hungry.
5. Two-year-old Bella is cavity-free. Which of these should be part of your management plan? *Select all that apply.*
- A. Refer to a dental home when she is between 3 to 5 years old since she is cavity-free and her parents do not have dental insurance.
 - B. Apply fluoride varnish at this visit and plan another application in 3 to 6 months if she has not established a dental home.
 - C. Recommend a reduction in sugary foods and soft drinks.
 - D. Instruct the mother to avoid sharing drinks from the same cup as hers but let her know it is acceptable for the younger children to share cups.
 - E. Ask the mother to brush Bella's teeth at least once a day and let Bella brush her own teeth once each day.

Case 2. Fluoride Varnish During a Routine Well Visit

Introduction

Fluoride varnish is a safe and effective treatment that can be easily provided in the medical office. It is well tolerated by infants and young children, has minimal risk for ingestion, and has a prolonged therapeutic effect. Fluoride promotes enamel remineralization, reduces enamel demineralization, inhibits bacterial metabolism and acid production, and has antimicrobial effects, especially at a lower pH.

A few simple questions can identify high-risk children who qualify for treatment. As of June 2012, there are 44 states that provide payment for the application of fluoride varnish in the medical office. View the PEW Center on the States map on physician payment for fluoride varnish found at <http://www.pewstates.org/research/analysis/reimbursing-physicians-for-fluoride-varnish-85899377335>.

Case Objectives

After completing this case study, you should be able to:

- Integrate oral health questions into a preventive care visit.
- Perform an oral health risk assessment.
- Identify appropriate candidates for fluoride varnish.
- List management steps once a child is determined to be high- or low-risk for dental caries.
- Know when a child should be referred for establishment of a dental home.
- Understand how to perform fluoride varnish.

Before You Begin

You should be familiar with how to diagnose early decay, or demineralization, of the tooth enamel, and with the AAPD guidelines for the use of fluoride varnish.

- Smiles for Life Fluoride Varnish module - <http://fluoridevarnish.talariainc.com/>
- PACT Oral Health Screening (ppt) - <http://www2.aap.org/ORALHEALTH/pact/ppt/Oral-Health-Screening.ppt>
- AAPD Guidelines on Fluoride Therapy - http://www.aapd.org/media/policies_guidelines/g_fluoridetherapy.pdf
- Videos on examination and application technique of fluoride varnish are available from Bright Smiles from Birth <http://illinoisaaap.org/projects/bright->

smiles/ and from the Smiles for Life curriculum
<http://www.smilesforlifeoralhealth.org/> (Course #6 in the curriculum).

You will also need to be able to perform a caries risk assessment. An oral health risk assessment should be conducted on every child at a routine visit by 6 months of age. All risk assessment tools basically consist of identifying and documenting risk factors for early childhood caries, protective factors, and the physical examination findings. Documenting caries risk in a child can be easily incorporated into your practice, especially with use of a formal AAP Bright Future Oral Health Risk Assessment Tool and Guidance
<http://www2.aap.org/oralhealth/docs/RiskAssessmentTool.pdf>.

Patient Profile

Saul is an 18-month-old male child who presents to the office for a routine health assessment. The oral health previsit questionnaire (See Appendix B) was completed by the mother prior to coming into your office. The family lives in a community with a fluoridated municipal water system, from which he drinks. Family history reveals his older siblings have both had recent cavities. Saul has not yet been seen by a dentist. On examination, you see the following.



Figure 7. Front teeth with a white line

History and Physical Examination

Present Medical History: Presents for routine 18-month well child visit. Parents do not have active concerns.

Past Medical and Family History

- Third child (sister Mary age 6, brother Joe age 8)
- Immunizations: Up-to-date
- Birth history: Term, vaginal delivery to mother with diet-controlled gestational diabetes
- Family history: Mother with gestational diabetes and a personal history of caries, paternal grandfather with hypertension, diabetes type 2, and renal

insufficiency. Older siblings have no health issues except for a prior history of caries.

Social History

Mother works in housekeeping at a local hotel, father works in construction. Paternal grandparents live with the family.

Today's Examination Findings

Saul is alert and interactive. His oral pharynx was examined during knee-to-knee examination with mother. Top incisors have white spots or lines along the gum line that do not wipe off with gauze.

Otherwise, the examination is unremarkable.

Oral Health Care

- Brushing and flossing: Saul brushes his teeth once per day at night with nonfluoridated toothpaste. Saul's parents do not supervise his brushing and do not floss his teeth.
- Eating habit: Saul takes a bottle of milk to bed at night. Saul is snacking and eating foods that stick to his teeth most days of the week. The parents report that Saul drinks 4 ounces of juice each day.
- Supplement: He takes no medications or supplements.

Family Concerns

It is noted that the mother has some concerns about fluoride varnish application as well as insurance coverage.

Dental Home

No dental home is established.

See How do I help children find a dental home on the AAP Children's Oral Health Web site <http://www2.aap.org/oralhealth/PracticeTools.html> for more information.

Diagnosis

Based on the physical examination finding of white spot lesions along the gum line, the diagnosis is early childhood caries. This child is at high risk for cavities based on the presence of:

- Incipient (white spot) caries
- Nighttime bottle drinking
- Frequent snacking on sweet, sticky foods
- Presence of caries in mother and older siblings
- No dental home

Protective factors include some tooth brushing and drinking water that contains fluoride. These protective factors should be continued, but do not outweigh the above risk factors. See Saul's completed oral health risk assessment (see Appendix M).

Management and Treatment

Today's Plan

- Provide oral health anticipatory guidance and education for Saul's family.
- Provide age and culturally appropriate oral health educational materials (ie, different languages) and discuss the practice of food sharing.
- Address the mother's concern on fluoride varnish application and insurance coverage, and assist with referral to a dentist.
- Provide Saul's family with a Dental Referral Form to bring to the dentist and back to you after first visit or have the dentist fax or send back the form.
- Schedule a follow-up visit to ensure Saul sees a dentist.

Today's Treatment

- Apply fluoride varnish in the office.

Offer patient education about oral hygiene:

- Recommend the parents brush Saul's teeth twice daily with a smear of fluoride-containing toothpaste.
- Encourage elimination of the bottle and nighttime drinking. Recommend only plain water after the teeth are brushed at night.

Discuss with Saul's family about healthy eating and drinking:

- No propping the bottle or putting the baby to sleep with anything other than plain water.
- Encourage elimination of the bottle by 12 months of age.
- Minimize sticky foods (gummy bears, raisins) and brush the teeth after feeding.
- Limit number of sugar attacks per day:
- Discourage the use of sippy cups containing liquids other than water.
- Combine juice and milk with meals; offer only plain water between meals.
- Limit juice drinking to 4 ounces per day.

Educate Saul's family about delaying colonization:

- Counsel that dental caries is caused by a bacterial infection transmitted from families to child vertically, usually from the mother.
- Limit behaviors that contribute to the vertical transmission of cariogenic bacteria, which include kissing on the mouth, adult cleaning of the pacifier

- with their mouth, tasting food before giving it to the baby, sharing utensils, and any other activity that involves the sharing of saliva.
- Saul's family should be encouraged to seek dental care for themselves to limit transmission of the bacteria to their child, especially if they have active tooth decay.

Address fluoride varnish and insurance coverage concern:

- Support your discussion with Saul's parent by quoting fluoride safety data. Studies show that urine fluoride levels are the same or lower following varnish application compared to routine brushing with fluoridated toothpaste.¹
- Inform families that dental insurance is incorporated in government plans (example: Medicaid/CHIP) and help them in obtaining coverage.
- Explain to Saul's parents the importance of Saul's preventive oral health care (can't be healthy without a healthy mouth) and the impact of early childhood caries such as lost school days and expensive dental restorations.

Fluoride varnish application:

- Prepare the room by laying out fluoride varnish supplies (gloves, brush, gauze, varnish).
- Explain to family about the knee-to-knee examination procedure.
- Discuss the risks and benefits of varnish and review after-care instructions.
- Apply varnish to all tooth surfaces using the knee-to-knee position.



Establishment of a dental home:

- Refer to a local dentist that sees patient younger than 3 years of age. A list of dentists can be provided as a handout.
- Family preference: May have the dental champion call the dentist to schedule for appointment to help establish a dental home.

1. Association of State and Territorial Dental Directors Fluoride Committee. Fluoride varnish: an evidence-based approach. Research Brief. September 2007. <http://www.astdd.org/docs/Sept2007FINALFIVarnishpaper.pdf> Accessed April 9, 2012.

Team Approach

Saul's case illustrates that there are multiple important steps in the oral health process. However, rarely does a single person in the office have time to personally perform all the steps delineated. The chart below is created to help you consider who may be able to perform these roles to minimize impact on office flow. The system generally works best when all team members have clearly defined roles and assignments.

Table 2. Team approach chart.

	Clinician (MD, DO, NP, PA)	Clinical Staff (RN, LNP, MA)	Administrative Staff	Dental Champion (training dependent– see content)
Perform risk assessment.	X			X
Perform diagnosis of ECC.	X			X
Hand out a Previsit Questionnaire for the family to complete.	X	X	X	X
Obtain oral health medical and social history.	X	X	X	X
Provide oral hygiene and healthy eating and drinking anticipatory guidance.	X	X		X
Educate about delaying colonization.	X	X		X
Provide family with education resources.	X	X	X	X
Prepare fluoride varnish supplies.	X	X	X	X
Apply fluoride varnish.	X	X	X	X
Address insurance coverage concerns.	X	X	X	X
Assist in establishment of a dental home.	X	X	X	X

Case Summary

At the next routine preventive care visit, the family has eliminated bottle and nighttime drinking and taken the child to the dentist for continued evaluation and management.

Next steps:

Perform an oral health risk assessment at every routine visit.
Offer oral health anticipatory guidance regarding oral hygiene, healthy eating, and importance of regular dental care.

Have ongoing communication with the dentist as a specialty care provider.

Epilogue

After establishing a dental home, initiating improved oral health care around diet and feeding, instituting twice-a-day brushing with fluoridated toothpaste, flossing where two teeth are touching, and applying fluoride varnish, Saul is now a healthy 3-year-old with no caries.

Assessment

Answer the questions below to assess your knowledge of this case. See answers to this assessment in Appendix L.

Which of the following findings should automatically classify a child as high-risk for dental caries?

- A. Maternal active decay
- B. Presence of white spot lesions on examination
- C. Living in a nonfluoridated community
- D. Teeth brushed only once daily

Fluoride varnish is indicated in children who:

- A. Are at high risk for dental caries and cannot access a dental home
- B. Are at low risk for dental caries but do not see a dentist
- C. See a dentist regularly but have active decay (brown spots) on examination
- D. Have white spots on examination and no dental home

Select the statement that is true.

- A. Fluoride varnish requires specialized training in dental school for application.
- B. Fluoride varnish is expensive and unavailable to most patients.
- C. Fluoride varnish cannot be applied in a medical office.
- D. Fluoride varnish is inexpensive, reimbursed by Medicaid in more than 40 states, and with training is readily available for medical providers.

Select all that apply. Tooth brushing recommendations at 18 months of age should include:

- A. It is not appropriate to brush the teeth until the child can sit still.
- B. Use fluoridated toothpaste if the child is at high risk for caries.
- C. Use as much toothpaste as the child wishes to use.
- D. Use a smear of toothpaste.

Case 3. Injury Treatment—A 14-Year-Old Boy with Avulsed Tooth

Introduction

Dental and facial trauma is a relatively common occurrence among children and adolescents. Dental trauma that causes a permanent tooth to be knocked out (avulsed) occurs in 1% to 11% of all traumatic injuries.¹ Risk for dental trauma generally begins as a child learns to walk and continues into adolescence as they participate in sports and other physical activities. Twenty-two percent of children suffer trauma to their permanent teeth by age 14. The majority of these injuries involve the maxillary central incisors. Boys are twice as likely to experience dental trauma compared to girls. Frequently, traumatic dental injuries occur after normal work hours and families present to the emergency department for treatment. In a study of emergency department visits for dental treatment, 60% of visits were for treatment related to trauma.²

¹Trope M. Clinical management of the avulsed tooth: present strategies and future directions. *Dent Traumatol.* 2002;18(1):1-11.

² Zeng Y, Sheller B, Milgrom P. Epidemiology of dental emergency visits to an urban children's hospital. *Pediatr Dent.* 1994;16(6):419-423.

Case Objectives

After completing this case study, you should be able to do the following:

- Differentiate between a primary and permanent tooth.
- Reimplant and stabilize an avulsed permanent tooth.
- Know the best storage/transport media for an avulsed tooth if reimplantation is not immediately possible.
- Make a timely referral to a dentist for management of the avulsed tooth.
- Provide patient education to the parent on the emergent and subsequent oral health care of their child.

You should be familiar with the following guideline, which helps direct clinical actions in pediatric care regarding the diagnosis and management of an avulsed permanent tooth:

- AAPD Guideline on Management of Acute Dental Trauma –
- http://www.aapd.org/media/Policies_Guidelines/G_Trauma.pdf

Additionally, feel free to consult these resources at any time during this case study.

- Age-appropriate injury prevention counseling - http://eqipp.courses.aap.org/File%20Library/Courses/Oral%20Health/Tools/Age_appropriate_injury_prevention.pdf
- Review the ADA dental emergency procedures at <http://eqipp.courses.aap.org/File%20Library/Courses/Oral%20Health/Tools/DentalEmergencyProcedures.pdf>
- Review the HealthyChildren.org tooth injury information at <http://www.healthychildren.org/English/tips-tools/Symptom-Checker/Pages/Tooth-Injury.aspx>

Patient Profile



The father of a 14-year-old healthy adolescent with no major medical problems arrives at your office to report that his son, Scott, fell off his bike and knocked out one of his front teeth. Scott's father reports that the accident occurred 30 minutes ago while Scott was on his way home from study camp. He also reports that Scott's face and arm are bleeding because he was not wearing a safety helmet and arm or knee pads.

History and Physical Examination

Chief Complaint: "My son fell over his bike handlebars with loss of his upper front tooth 30 minutes ago."

Present Medical History

Scott is a normally developed, healthy adolescent with no current illness, taking no medications, and has no allergies.

Past Medical and Family History

Scott is up to date with all immunizations including tetanus and has had no serious illnesses in the past.

Social History

Scott lives with his mother and father and a younger brother. Both parents work at the local university. He is in the eighth grade, does well in school and plays the trombone in the marching band.

History of Traumatic Injury

The injury occurred 30 minutes ago. Scott says that he was riding his bike on the way home. His book bag started to shift forward and when he tried to reposition it, the front wheel of the bike hit some gravel and he flew over the handlebars. No one witnessed the accident and he did not lose consciousness. His tooth was knocked out when he hit the ground. He was able to find the avulsed tooth and carried it home in his hand where his father immediately put it in a cup of cold milk. Because he had some other abrasions as well, the father decided to come to your office first.



Figure 8. Mouth with a front tooth missing. The socket for missing tooth has blood

Today's Examination Findings

There is an abrasion on his right cheek, a laceration on his upper lip, and the upper right central incisor is missing. The gingival tissue around the tooth socket is lacerated and there is bleeding from the socket. The remainder of the head and neck exam was unremarkable. Neurological examination was grossly normal.

Family Concerns

The father wants to know if the tooth can be put back in the socket and what the prognosis will be afterwards. Would it be better to leave it out and just get an implant later?

Diagnosis

The diagnosis is avulsion of the permanent right maxillary incisor (tooth #8) and laceration of the lip and cheek. This tooth must be reimplanted immediately to increase the likelihood of a long-term positive prognosis. It is important to maintain the vitality of the periodontal ligament cells on the surface of the root. The best way to do this is to reimplant the tooth as soon as possible and preferably within 20 minutes. When reimplantation is not possible, the tooth should be kept moist in a tissue culture medium such as Balanced Salt Solution (BSS). This is the solution provided in various "tooth saver" kits. If the tooth has dirt on it, hold the tooth by the crown (not the root) and gently rinse the debris off using BSS, milk, or water. The primary goal is to keep the tooth cold and wet. Do not rub or scrape the tooth root.

Management and Treatment

The next most immediate steps are to:

1. Place the tooth in BSS.
 - It is recommended that all medical offices and emergency departments keep containers of BSS on hand for dental emergencies. Other alternatives include cold low-fat milk, cold sports drink, or cold contact lens saline. Cold sports drinks and cold contact lens saline should only be used for less than one hour.
2. Obtain a complete history of the trauma including: what, when, where, other injuries sustained, loss of consciousness, etc.
3. Perform a physical examination including extraoral and intraoral examination to identify any other injuries.
4. Perform a neurological examination.
5. Reimplant tooth in the socket and stabilize by having patient bite down on a piece of gauze.
 - When possible, it is recommended to infiltrate the tissue with 2% lidocaine with 1:100,000 epinephrine. The lidocaine should be injected in the labial fold where the base of the lip meets the gum tissue. Generally, $\frac{1}{2}$ carpule (16 mg) of lidocaine is adequate to achieve frank anesthesia. The maximum dose of 2% lidocaine is 4.4 mg/kg.
 - Be careful not to touch the root of the tooth. Using gloves, hold onto the crown portion of the tooth and push the root into the socket slowly and firmly until it is the same length as the adjacent tooth.
 - After placement in the socket, it is necessary to place a flexible splint to hold the tooth in place. This is usually done in a dental office where the dentist would use a light orthodontic wire or fishing line to connect the avulsed tooth to the adjacent teeth. To stabilize the tooth until the patient can get to the dentist's office, the patient can bite on a 2x2 gauze square-folded to create a cushion.



Figure 9. Front teeth with a splint.

The avulsed tooth has been reimplanted and a fishing line is bonded to the teeth as a splint.

6. Refer to the patient's dental home ASAP so that the tooth can be splinted; splints should be maintained for 2 weeks.
 - If the patient doesn't have a dental home or if it is not immediately available, a temporary splint should be fabricated until a dental referral can be made.
 - An avulsed permanent tooth should have root canal treatment within 1 week of being reimplanted.
7. It is a good practice to check that the child is up-to-date on tetanus or give a booster.

How to Make a Temporary Splint:

1. Apply periodontal paste consisting of a base and a catalyst that, when mixed together, form a moderately sticky clay-like dressing that becomes firm after application. The splint performs best if applied to the facial and oral surfaces of the teeth; however, it is usually sufficient to apply it only to the facial surface of the affected teeth. This periodontal dressing is most easily applied when the physician's gloves are moistened with water or lubricating jelly and the gingiva and enamel are completely dry. It is important to apply the dressing into the grooves between the teeth as well as to the adjacent teeth, and the patient should be reminded to eat a soft diet until seen for follow-up in 24 hours.
2. Self-cure composite is another splinting option in the emergency department. Self-cure composite requires neither etching nor light curing and is easy to use. It is applied only to the enamel of the involved tooth, not the gingiva, and to the adjacent nonmobile teeth. Both periodontal paste and self-cure composites are easy to remove during formal restoration by the dentist.
3. A silk 2-0 dental suture can be placed from the palatal soft tissue to the vestibular soft tissue, incorporating the involved tooth. The stitches are crisscrossed over the tooth and a locking horizontal mattress suture is employed to keep the tooth in place.
4. Parents can be instructed to purchase a boil and bite athletic mouthguard and to have the child wear this until he or she sees the dentist (hopefully the next day).

Post-Operative Recommendations

- A prescription for systemic antibiotics is recommended to prevent bacterial invasion from the necrotic pulp tissue and to minimize the risk for inflammatory root resorption.

- Over 12 years of age, prescribe doxycycline 4.4 mg/kg/day q 12 h on day one, then 2.2 to 4.4 mg/kg/day for 7 days.
- Below 12 years of age, prescribe Pen VK 500 mg QID for 7 days.
- Soft diet for 1 to 2 weeks
- Chlorhexidine 0.12%—rinse two times daily for 1 week
- Regular oral hygiene with a soft brush two times daily

Case Summary

At the next routine preventive care visit, the family reports that Scott had root canal treatment for the avulsed tooth and the splint has been removed. He is having regular follow-up with his dentist and has no concerns.

At Scott's next routine visit, have him fill out the previsit questionnaire (see Appendix B) and discuss issues such as smoking, piercing, playing sports, and eating or drinking high-sugar-content food. You may also discuss with him on how to avoid injury and the importance of wearing protective gear including a mouth guard and bike helmet.

Tell him that traumatized teeth have the best chance of survival if they are managed immediately. Should this happen in the future, tell him to place the tooth in a tissue culture medium such as BSS. When this solution is not available, the next best liquid is cold, low-fat milk. Other acceptable liquids for very short-term storage are cold sports drink or cold contact lens saline.

Epilogue

This case demonstrated the management of a traumatic dental injury of a 14-year-old boy who avulsed a permanent maxillary incisor during a fall from a bicycle. Unless there are other medical concerns related to the trauma, the most urgent treatment issue is the reimplantation of the avulsed tooth into the socket or the placement of the tooth in an acceptable transport medium such as BSS.

Prognosis of the tooth is significantly compromised if it is allowed to dry out. This results in loss of the cells on the root surface needed to re-establish the periodontal ligament.

Traumatic injuries rarely follow the guidelines, so frequently decisions must be made on a case-by-case basis. In some cases, if the extraoral dry time has been greater than 60 minutes, it may not be advisable to reimplant the tooth. Options for the child in this situation include a removable partial denture until they are done growing and then a fixed bridge or dental implant.

Assessment

Answer the questions below to assess your knowledge of this case. See answers to this assessment in Appendix L.

1. In an ideal situation, when there are no medical complications, what is the first thing that you should do when a permanent tooth is avulsed?
 - A. Rule out child abuse.
 - B. Reimplant the avulsed tooth.
 - C. Place the tooth in water.
 - D. Send the child to the emergency room.

2. Instructions to the parent who is not comfortable reimplanting the avulsed tooth should be to:
 - A. Put the tooth in a cup of water.
 - B. Wrap the tooth in sterile gauze and go directly to the dental office.
 - C. Put the tooth in an acceptable transport medium and go to the physician or dental office.
 - D. Wipe the tooth off with gauze and go to the emergency room.

3. True or False: Antibiotics are not indicated after a permanent tooth is reimplanted because there is no infection.
 - True
 - False

4. Postoperative instructions for a patient following reimplantation of an avulsed permanent tooth includes:
 - A. Keep teeth clean by brushing with a soft toothbrush and toothpaste at least two times daily.
 - B. Rinse with Chlorhexidine 0.12% rinse two times daily for 1 week.
 - C. Avoid brushing for 1 week to allow gum tissues to heal.
 - D. Eat soft foods for 1 to 2 weeks.

Oral Health in Primary Care Performance Measures are available in Appendix N, and Oral health in Primary Care Evaluation Questions are available in Appendix O.

REFERENCE DOCUMENTS AND LINKS

Appendix A – Example of Oral Health Office Protocol

http://www.aap2.org/oralhealth/docs/AppendixA_OHprotocol.pdf

Appendix B – PreVisit Questionnaire http://www2.aap.org/oralhealth/docs/AppendixB_PreVisit.pdf

Appendix C – Dental Referral Resource Template

http://www2.aap.org/oralhealth/docs/AppendixC_ReferralTemplate.doc

Appendix D – Electronic Medical Record Oral Health Template

<http://www2.aap.org/oralhealth/docs/EMRTemplate.pdf>

Appendix E – Explanation of the Strength Based Approach

http://www2.aap.org/oralhealth/docs/AppendixE_Strength.pdf

Appendix F – Motivational Interviewing http://www2.aap.org/oralhealth/docs/AppendixF_MI.pdf

Appendix G – Oral Health Practice Survey

http://www2.aap.org/oralhealth/docs/AppendixG_PracticeSurvey.pdf

Appendix H – Recommended Oral Health Anticipatory Guidance

http://www2.aap.org/oralhealth/docs/AppendixH_Guidance.pdf

Appendix I – Sample Email to Parents About Age 1 Dental Visit

http://www2.aap.org/oralhealth/docs/AppendixI_Email.doc

Appendix J – Dental Emergency Procedures

http://www2.aap.org/oralhealth/docs/AppendixJ_DentalEmergencies.pdf

Appendix K – Preventive Oral Health Interventions for Pediatricians, AAP Policy Statement

http://www2.aap.org/oralhealth/docs/AppendixK_PolicyStatement.pdf

Appendix L – Answers to Oral Health Case Studies

http://www2.aap.org/oralhealth/docs/AppendixL_CaseStudyAnswers.pdf

Appendix M – Oral Health Risk Assessment Tool for Saul

http://www2.aap.org/oralhealth/docs/AppendixM_OHRAToolSaul.pdf

Appendix N – Oral Health in Primary Care Performance Measures

<http://www2.aap.org/oralhealth/docs/OralHealthInPrimaryCarePerformanceMeasures.pdf>

Appendix O – Oral Health in Primary Care Evaluation Questions

<http://www2.aap.org/oralhealth/docs/OralHealthInPrimaryCareEvaluation.pdf>

This publication lists non-federal resources in order to provide additional information to consumers. The views and content in these resources have not been formally approved by the U.S. Department of Health and Human Services (HHS) or the Health Resources and Services Administration (HRSA). Listing these resources is not an endorsement by HHS or HRSA.