

ORAL HEALTH CARE

I. THE PRIMARY CARE CLINICIAN'S ROLE IN ORAL HEALTH CARE

RECOMMENDATIONS:

The primary care clinician should perform an initial dental screening at approximately 12 months of age in HIV-infected children. Preventive information and anticipatory guidance regarding bottle-feeding, eruption sequence, and infant oral hygiene should be given to parents at this time. By 24 months of age, children should be referred to an oral health care provider.

The primary care clinician should inform the oral health care provider of important changes in the patient's status and supply current information that may influence dental treatment, including staging of the patient's disease, medications, nutritional status, and laboratory tests (e.g., recent CD4/CD8 counts, viral load, and platelet count).

The primary care clinician and the oral health care provider should discuss preventive and restorative dental treatment plans, work collaboratively to resolve questions of contraindications to dental procedures, and coordinate medical appointments with dental appointments.

Oral function can be impaired by infections of the teeth, mucosa, and gingival and periodontal tissues. Children with untreated or poorly controlled HIV may suffer from poor nutrition because of an inability to chew properly as a result of a decayed and painful dentition or untreated soft-tissue problems, such as oral ulcers and gingival and periodontal diseases. Referral for oral health care is an essential role of the primary care clinician. For more guidelines on oral health, the reader should refer to *Oral Health Care for People With HIV Infection: HIV Clinical Guidelines for the Primary Care Practitioner*.¹

II. THE IMPORTANCE OF PREVENTION

RECOMMENDATIONS:

The primary care team should follow the American Association of Pediatric Dentistry (AAPD) guidelines for anticipatory guidance.²

The primary care clinician should instruct patients and caregivers on how to maintain oral hygiene.

Preventive measures provided by the child's caregiver and the medical-dental team are especially critical for HIV-infected children (see Table 1). Dental sealants, optimal systemic and topical fluoride, and fluoride varnish supplementation are keys to preventive strategy.

Key Point:

The clinician should stress the role of the caregiver in maintaining oral hygiene for young children. Residue of food and medicine on the oral tissues (mucosa, gingiva) and on the teeth should be removed by the caregivers of young children and independently by older children through rinsing with water or mechanical cleansing.

Parental and family oral hygiene habits are emulated by growing children.² The patient's oral hygiene and the condition of the soft tissues usually reflect the degree of the caregiver's and the patient's ability to adhere to the specified home care regimen. The main focus for children with poor oral hygiene is to help the family and child adopt new habits of regular tooth brushing and flossing. By creating a new positive orientation toward oral health, clinicians can encourage caregivers and patients to strive to maintain regular dental visits.

TABLE 1
ORAL HEALTH PREVENTIVE STRATEGIES FOR HIV-INFECTED PEDIATRIC PATIENTS
<ul style="list-style-type: none"> • Supervision of all bottle use for feeding or pacification • Management of cariogenic medications • Dental sealants • Optimal systemic and topical fluoride • Fluoride varnish supplementation • Management of nutrition • Low frequency and chronicity of fermentable carbohydrate intake (e.g., juices, milk, dietary supplements) • Removal of food and medicine residue via rinsing with water or mechanical cleansing • Appropriate orthodontics

III. CONSIDERATIONS FOR TREATMENT PLANNING

RECOMMENDATIONS:

Dental treatment modifications for children and adolescents should be based on the patient's medical condition and treatment rather than HIV status.

The clinician should consider the following factors when devising the best treatment strategies for each patient:

- **Age of the child/adolescent (the frequency of cleanings, sealant application, and specific dental hygiene routines will vary with age)**
- **Medical condition (progression of HIV may affect risk of procedure or may increase infections, specific medications may be cariogenic or may affect risk of anesthesia)**
- **Oral health history (history of dental problems may warrant more aggressive measures)**

HIV-infected adolescents should be evaluated for and should receive appropriate orthodontic care.

HIV infection does not necessitate changes in the dental treatment plan for a child or adolescent. However, effects of HIV infection on the pediatric patient and the patient's family may alter the clinician's approach to treatment. Updating medical and psychosocial summaries is an important part of the referral process and should be completed at all recall visits.

Many ARV medications can cause nausea and vomiting. Frequent episodes of vomiting can affect the oral cavity by increasing acid levels in the saliva and soft tissues. As a result, the oral flora may change due to the overgrowth of bacteria that are not susceptible to acid. This overgrowth can lead to oral conditions such as candidiasis and an increased rate of dental caries. Therefore, it is critical that the oral hygiene and health of children and adolescents receiving ARV medications be attended to daily.

HIV infection alone is not a contraindication to orthodontic care; each case should be assessed according to the risks and benefits for the individual patient.

Key Point:

Dental therapy based on effective home care and management of nutrition and medication can give a sense of accomplishment and empowerment to caregivers who feel ineffective in combating the child's illness.

IV. ORAL LESIONS AND PERIODONTAL DISEASE IN THE HIV-INFECTED PEDIATRIC PATIENT

RECOMMENDATION:

Oral and primary healthcare providers should work together to provide diagnoses, observation, and management of any lesions that disrupt the integrity of the oral mucosa in children.

Several studies have described oral lesions in the HIV-infected pediatric population. In 1994, the Centers for Disease Control and Prevention (CDC) revised the classification system for HIV infection in children <13 years of age to include oral lesions as markers of severity of HIV infection.³

Although it is common for children to present with palpable lymph nodes of the cervical and submandibular chain, the clinician should interpret these findings in the context of the patient's total profile. HIV-infected children whose disease is well controlled by ARV therapy will commonly show no signs of oral lesions. Untreated or undiagnosed children will be more likely to develop lesions.

Key Point:

Because nutrition often plays a role in the prevention of oral lesions, maintaining and increasing caloric intake is important.

HIV-associated oral lesions cause pain and discomfort, compromise function, interfere with oral hygiene, and may negatively influence the patient's general health. Potential causes of lesions include *Candida*, herpes simplex, coxsackievirus, aphthous ulcers, and ARV drugs. Fluocinonide ointment 0.05%; hydrocortisone acetate oral paste; or a mouthwash containing equal parts of Maalox or Mylanta, liquid diphenhydramine, and 1% viscous lidocaine can be used to provide pain relief. However, lidocaine should not be used in children who are not old enough to properly swish and expectorate.

A. Oral Candidiasis

RECOMMENDATION:

Primary care clinicians should clearly instruct patients and caregivers on the following oral hygiene measures, which will help control oral *Candida* and delay the progression of oral candidiasis. These preventive measures should begin at birth and should be performed by the caregiver of younger children and independently by older children:

- **Rinsing or mechanical cleansing of food and medicine residue on the oral tissues (mucosa, gingiva) and on the teeth**
- **Nutrition and medication management**
- **Cleansing the entire mucosal and gingival tissue area**

Oral candidiasis presents clinically with varying prevalence depending on the level of immune suppression of the patient population.^{4,7} Thus far, it remains the most common HIV-related oral lesion. The most common presentation of oral candidiasis is pseudomembranous (“white plaque”). In one study, a prevalence of up to 72% was noted in cases of pediatric HIV infection. It is believed that manifestation of oral candidiasis can be a marker for progression of disease in infected children.

Erythematous candidiasis and angular cheilitis are other manifestations of oral *Candida* that are also commonly observed in HIV-infected children (see Appendix A for photographic examples). A number of factors may influence the risk for candidiasis in children. Feeding behaviors and nutritional requirements that increase the frequency of fermentable carbohydrates intake support the growth of candidiasis. Examples include formula, juices, milk, and dietary supplements, especially when delivered with bottles.

Key Point:

Elimination of the feeding bottle by weaning to a cup as early as possible may reduce candidiasis risk and frequency.

In infants and small children, candidal lesions can be treated by swabbing with nystatin. Other antifungal medications may also be required (see Table 2 for topical and systemic medications).

TABLE 2	
TOPICAL AND SYSTEMIC ANTIFUNGAL MEDICATIONS FOR PEDIATRIC POPULATIONS WITH ORAL CANDIDIASIS*	
Agent	Dosage
<u>Topical</u>	
Oral nystatin suspension	2 to 5 mL, 4 to 6 times/day
Clotrimazole troches	10-mg tablet, 3 to 5 times/day
<u>Systemic</u>	
Fluconazole	3 to 5 mg/kg once daily
Itraconazole	100 mg/day orally for children >3 years of age
Ketoconazole	5 to 10 mg/kg/day

* 5 to 7 days of therapy is often sufficient to clear oral candidiasis.

Evidence is growing that shows prolonged and chronic use of antifungal medications has limitations, such as resistant strains, toxicity, and deleterious effects on immature organ systems. Furthermore, both the sucrose in some antifungal preparations and the juice or milk that may be added to ensure adherence will increase the risk of caries.

Key Point:

Prolonged and chronic use of antifungal medications may lead to increased resistance.

B. Angular Cheilitis

RECOMMENDATIONS:

The clinician should assess the diet, oral habits, and/or HIV status of a child with angular cheilitis.

The primary care team should collaborate regarding nutritional support and vitamin supplementation for HIV-infected children with angular cheilitis.

Angular cheilitis is commonly observed in HIV-infected children. It is diagnosed on the basis of its clinical appearance. It appears as erythema or fissures at the commissures of the lips and frequently accompanies intra-oral candidiasis. In patients with deeply pigmented skin, depigmentation may occur at the site of angular cheilitis. Cytologic smears are often negative for fungal hyphae, because angular cheilitis may represent poor diet and poor feeding in addition to fungal infection. Observation of the response of the lesions to antifungal therapy is important in confirming the role of *Candida* in the etiology of this lesion. See Appendix A for a photographic example of angular cheilitis.

C. Parotid Swelling

Parotid swelling is an oral clinical lesion that can vary in prevalence from 10% to 30% depending on the immune suppression of the individual child or adolescent.^{4,5} In some studies, rates as low as 1% have been noted in children receiving ARV therapy with no evidence of immune suppression.⁸ In patients with severe immune suppression, the manifestation of parotid swelling is more likely. Although the parotid glands are most commonly affected, unilaterally and bilaterally, other salivary glands may become affected as well (e.g., submandibular).

Parotid swelling is usually asymptomatic and bilateral and spontaneously resolves and recurs. The reason for the swelling is not well understood, and medication side effects have been offered as a possible explanation. Histologically, the affected gland is infiltrated with CD8 cells whose function is unknown. Occasionally, acute, painful parotid enlargement may occur. This can be associated with viral infections of the upper respiratory tract and is usually of no clinical consequence. However, when accompanied by other signs of bacterial illness, such as fever, the child should be immediately evaluated for bacterial parotitis. In contrast to candidiasis, parotid swelling does not seem to be a marker of poor outcome (see Appendix A for photographic example).

D. Caries and Gingivitis

RECOMMENDATION:

Primary care clinicians should refer patients with extensive caries or chronic demineralization for comprehensive restorative care as soon as possible.

The dental literature suggests that HIV-infected children are at greater risk for dental caries and gingivitis than children without HIV infection. The increased risk is due, in part, to baby-bottle tooth decay, progressive immunodeficiency, effects of medications on salivary flow and oral flora, developmental delay, and/or failure to thrive. Extrinsic factors such as diet, inadequate oral hygiene, socioeconomic status, lack of caregiver knowledge, and frequent use of the bottle while going to sleep may be additional risk factors. HIV infection, changes in saliva, and xerostomia contribute to the severity of plaque-related diseases. Dental eruption can be delayed in children with HIV infection.⁹

E. Xerostomia

RECOMMENDATION:

Clinicians should recommend sugarless gum and frequent consumption of water or highly diluted fruit juices to alleviate xerostomia.

Diminished salivary secretion, known as xerostomia, has been observed in pediatric patients and can cause dental caries. The frequency is unknown, and the etiology is not clear. Xerostomia is difficult to assess; symptoms include dry stools, low urine volume, high fluid consumption, eating of “watery, loose” foods, and complaints of dry mouth. The administration of gamma globulin and didanosine (ddI) has been suggested as a possible cause for xerostomia in some children.

F. Aphthous Ulcers

RECOMMENDATION:

Clinicians should manage aphthous ulcers with topical corticosteroids and anesthetics.

Aphthous ulcers in HIV-infected children (estimated prevalence, <10%) can present serious problems, such as pain and impaired ability to eat. Diagnosis is based on characteristic clinical appearance of deep, painful, round-to-oval, yellow-white ulcers surrounded by a halo of erythema. In addition to prolonged course, size and location may be atypical. Although the etiology is unknown in most cases, ARV therapy with zalcitabine (ddC), CMV infection, and vitamin deficiencies have been suggested as etiologic factors. See Appendix A for a photographic example of an aphthous ulcer.

Most aphthous ulcers in children with HIV resolve spontaneously. After infectious etiologies have been excluded, a short course of oral prednisone may provide symptomatic relief and hasten recovery.

Thalidomide has been shown to be effective for the treatment of persistent, deep aphthous ulcers in HIV-infected patients; however, serious teratogenic effects associated with thalidomide have been documented in pregnant women.¹⁰ In female adolescents capable of bearing children, thalidomide should only be used when 1) all other options have been exhausted, 2) the patient is known not to be pregnant, and 3) the patient is known to be using effective methods of birth control. Thalidomide is only available through a special access program. A pediatric HIV Specialist should be contacted before enrolling a patient in such a program.

G. Herpetic Stomatitis

RECOMMENDATION:

In addition to systemic therapy, clinicians should use supportive therapies, such as topical anesthetics, in children with herpetic stomatitis to encourage hydration and the intake of food.

Herpetic stomatitis is a common viral infection in the pediatric population, regardless of HIV status. This lesion, however, can be especially severe in HIV-infected children. The course of an infection may be longer than normally observed (10-14 days); the lesions may be more aggressive and may recur more frequently. See Appendix A for a photographic example of herpes simplex.

Diagnosis of typical recurrent herpes simplex ulceration can be made by recognizing the typical clinical appearance. Herpes labialis appears as a crop of vesicles that coalesce and form an irregular ulcer on the vermilion of the lips or peri-oral skin. Intra-oral recurrent herpes simplex infection presents as a localized crop of vesicles that characteristically form only on keratinized mucosa. If necessary, the diagnosis can be confirmed by viral culture or DFA.

Herpetic stomatitis in immune competent hosts is self-limited and usually does not require treatment. However, in HIV-infected children, it may require treatment with oral or intravenous acyclovir depending on the severity of the lesions and the immune deficiency of the child. Adolescents may be treated with valacyclovir which has better bioavailability than oral acyclovir.

H. Hairy Leukoplakia

Hairy leukoplakia has been reported in HIV-infected children, but it is rare.¹¹ It most commonly presents as a white, ragged, corrugated, or irregular lesion involving the lateral and dorsolateral tongue. Lesions may be unilateral or bilateral. Hairy leukoplakia is caused by infection of the lesional epithelial cells with Epstein-Barr virus (EBV). It may or may not resolve, and its prognostic significance is unknown. See Appendix A for a photographic example of hairy leukoplakia.

I. Kaposi's Sarcoma

Kaposi's sarcoma and other neoplasms are rarely found in HIV-infected children.

J. Linear Gingival Erythema

Linear gingival erythema (LGE), most commonly associated with the upper and lower anterior dentition, has been observed in pediatric patients. Based on clinical experience, it has been determined that approximately 10% of children with HIV have this condition. These lesions usually do not cause clinical problems or interfere with nutrition. LGE is limited to the soft-tissue periodontium and characteristically appears as an erythematous linear band. There also may be punctate erythema, which extends onto the alveolar mucosa. In most cases of LGE, bleeding is seen after gentle probing. See Appendix A for a photographic example of linear gingival erythema.

K. Periodontitis

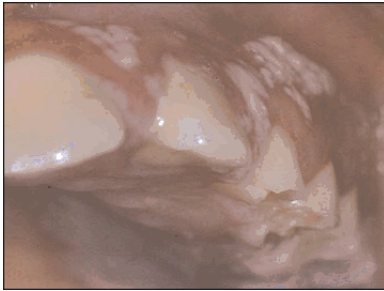
Necrotizing ulcerative periodontitis (NUP) and other destructive diseases of the periodontium, such as atypical necrotizing ulcerative gingivitis (ANUG), are rarely described in studies of children in the United States. There may be a higher risk of these diseases in adolescents with HIV infection.

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APPENDIX A

ORAL LESIONS ASSOCIATED WITH HIV INFECTION



Pseudomembranous candidiasis



Angular cheilitis



Bilateral parotid swelling



Apthous ulcer



Herpes simplex



Hairy leukoplakia



Linear gingival erythema (LGE)

