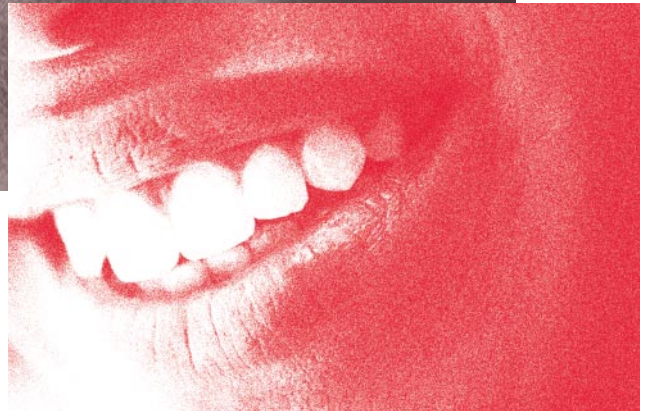




Oral Health and HIV

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ost oral health problems can be found in people who are either HIV positive or negative. Yet there are some important differences. A few conditions are seen almost exclusively in people with HIV, while some that are found in both populations are more problematic for people with HIV, especially those with advanced disease. A diminished immune system can alter the course of oral disease and require more aggressive treatment to prevent minor troubles from escalating into major health problems.

Over 30 different oral manifestations of HIV disease have been reported since the beginning of the AIDS epidemic. This article will address several of the most common of these oral health issues. As with any health condition faced by HIV positive people, early identification and treatment should be emphasized. In many cases, referral to a dentist should be made as soon as possible.

Oral Health and People with HIV

The teeth are fully formed by the teenage years, and are not affected directly by HIV or anti-HIV medications. Reduced bone mineral density seen in people with HIV does not affect tooth enamel (the hard surface of exposed teeth), and it is unknown what affect, if any, it may have on the underlying bone that supports the teeth.

No treatment of any oral health problem should be avoided simply because a person is HIV positive. Reports early in the AIDS epidemic suggested that procedures such as root canals should not be performed in people with HIV. There were also suggestions that dental treatment should be postponed for anyone with a CD4 cell count below 200 cells/mm³. Though these reports were inaccurate, their impact continues to be felt; some textbooks with recent publication dates still contain these misstatements. Dentists who follow these erroneous recommendations do so in violation of the Americans with Disabilities Act, and in violation of accepted community standards.

All procedures and devices—including periodontal surgery, endodontics (root canals), orthodontics (braces and retainers), implants, bleaching, and bridges—can be safely and effectively provided regardless of immune status. Decisions about such procedures should be made by the HIV positive individual in consultation with his or her dentist. As always, one should weigh the cost and time of the service against the expected benefits.

Common Oral Conditions

While dentists recommend that all people seek routine care to prevent oral health problems from developing, this is particularly important for those living with HIV. One rationale for this preventive measure is that individuals with a compromised immune system need to avoid bacterial infections. The two major oral health conditions, dental

caries and periodontal disease, are both caused by bacteria and may be exacerbated by other factors.

Caries and Dry Mouth

Dental decay, or caries, is a common problem in the general population, and having a few carious lesions (cavities) is not unusual. These are typically prevented by the use of fluoride and good oral hygiene, including regular brushing and flossing of the teeth and gums.

Some medications used by people with HIV—and even HIV itself—may cause decreased salivary flow, or dry mouth, which is known to contribute to rampant caries. These lesions frequently develop at the cervical region of the tooth, where the crown meets the root. The tooth surface in this area consists of a bony substance called cementum, not enamel, and is more likely to decay at a faster rate. This can lead to infection of the soft tissue inside the tooth (the pulp) and the formation of an abscess (collection of pus).

It is important to receive care at an early stage of this disease in order to avoid abscesses. Treatment includes the use of techniques such as “scoop and fill,” in which the bulk of the decayed material is scooped out—usually without anesthesia, using hand instruments—and replaced with a temporary filling that contains fluoride to inhibit further decay. The filling material of choice is glass ionomer. This treatment requires a dentist, who can restore each tooth in a traditional manner after the scoop and fill process. Infections of the pulp of the tooth should be treated with an antibiotic, preferably penicillin.

Anti-HIV drugs such as indinavir (Crixivan) and ddI (didanosine, Videx) may cause dry mouth. Other medications associated with the condition include interferon alpha (used to treat chronic hepatitis B and C) as well as some antidepressants, antihypertensives, antihistamines, antipsychotics, and diuretics. This does not mean that any person taking one or more of these drugs will have dry

mouth followed by rampant caries, although people taking these medications should be aware that this could occur. (Dry mouth may also predispose individuals to oral candidiasis; see below.)

Fortunately, symptoms of dry mouth can be treated using simple measures. Artificial saliva products can be effective in people who have active tooth decay resulting in part from drug-related dry mouth. The frequency with which these products must be used may be unrealistic, however; it may be preferable to use sugar-free citrus candies such as lemon drops, which also stimulate saliva production.

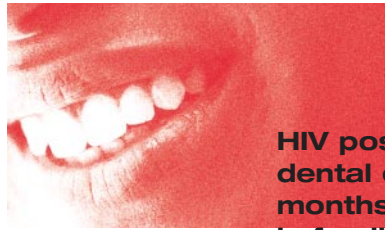
It should be noted that small cavities can quickly become large cavities and abscesses, so early intervention and treatment is advisable.

Periodontal Disease

Periodontal disease is a chronic inflammatory process involving specific bacteria and affecting the tissue and bone supporting the teeth. While periodontal disease can occur in anyone regardless of HIV status, one particularly severe form (necrotizing ulcerative periodontitis) and a related condition (linear gingival erythema) appear to be unique to those with compromised immune systems.

The gingival (gum) condition originally known as HIV-gingivitis, and now called linear gingival erythema (LGE), consists of a red band-like lesion along the gumline. LGE may be painful and bleed, and may progress to periodontal disease (see NUP, below). LGE is sometimes mistaken for ordinary gingivitis (inflammation of the gums), which usually is not painful and does not lead to periodontal disease. People diagnosed with LGE should be given an antimicrobial mouth rinse such as chlorhexidine (Peridex) until a visit to a dentist or periodontist (a specialist in gum disease and related conditions) can be arranged. In severe cases, a systemic antibiotic may be used, though only for one week at most.

Necrotizing ulcerative periodontitis (NUP), which previously was called



HIV positive people should receive dental examinations every six months, preferably by a provider who is familiar with conditions associated with decreased immune function.

HIV-periodontitis, is a condition associated with rapid soft tissue and bone loss, including exposure of the bone; rapid deterioration of tooth attachment; and the premature loss of teeth. Bleeding and severe pain may be present. Palliative treatment (i.e., to mitigate symptoms) includes antimicrobial mouth rinses, systemic antibiotic medication, and pain medication when necessary.

Periodontal disease may go unnoticed until the tissues supporting the teeth are so damaged as to cause the loss of a tooth. Treatments include local debridement (excision of dead tissue) as well as surgical procedures and/or antibiotic medication.

Periodontal conditions should be treated without regard to HIV status. Treatment success may not be dependant upon whether or not a person is HIV positive, although some clinicians report that response to conventional therapy may be poorer in those with HIV. Preventing the premature loss of teeth due to periodontal disease is important for everyone. Like dental caries, periodontal disease is best treated at an early stage, again supporting the recommendation for routine dental examinations every six months. Notably, some research has shown smoking to be a risk factor in the development of periodontal disease.

Human Papillomavirus

Human papillomavirus (HPV), the virus associated with genital and other warts, is one of the most common sexually transmitted infections. HPV-associated lesions frequently occur in the oral cavity, including the lip and sides of the tongue. They are usually raised, dull white and fleshy, smooth or rough, and may have a

cauliflower-like appearance. HPV lesions tend to be more serious and more difficult to treat in HIV positive people. A few reports also suggest that these oral lesions may be more prevalent, or the number of lesions greater, in people with HIV.

HPV lesions can be removed by surgery or other methods, such as electrocautery (burning with an electric current). The lesions usually recur, so removal should be limited to lesions that either are large enough to interfere with function, or are aesthetically displeasing.

Prevention of HPV lesions includes safe oral sexual practices. Because HPV can be transmitted through receptive oral intercourse, unprotected oral sex should be avoided if one partner has HPV. Infection with HPV, including HPV type 16 (HPV-16), leads to an increased risk of cervical and anal cancer. HPV-16 has also been associated with oral cancers (e.g., of the mouth and throat), particularly in combination with tobacco or alcohol use. (For more information on HPV, see "Anal Neoplasia," *BETA*, Winter 2001.)

Conditions Found More Often in People with HIV

The following conditions are more prevalent and can have serious consequences in HIV positive individuals, particularly those with CD4 cell counts of 500 cells/mm³ or below. In general, the risk increases as the CD4 cell count falls.

Oral Candidiasis

Oral candidiasis (broadly known as thrush) is a relatively frequent problem for people who are HIV positive. This condition is usually associated

with the *Candida albicans* fungus, and may take several different forms. Because *Candida* infection is a sign of immune dysfunction, it should be reported immediately to a medical provider.

Pseudomembranous candidiasis is by far the most common form of oral candidiasis. This condition is characterized by small, generally white patches in any part in the mouth. These patches can be easily wiped off and may be mistaken for materia alba (food particles). Sometimes there is bleeding or an erythematous (reddish) area under the white patch, and the lesion may be associated with a burning sensation or pain. People with candidiasis often notice changes in taste perception, which may make food undesirable. Oral cultures can be taken for diagnosis; however, if an HIV positive individual has had a previous *Candida* infection, it is prudent to start treatment without waiting for a culture.

There are several other less common varieties of candidiasis. One form is called angular cheilitis when it occurs at the corners of the mouth. This condition is easily mistaken for chapped lips. Topical antifungal treatment should be started without waiting for an appointment with a dentist or physician since angular cheilitis, like other forms of oral thrush, often recurs.

Erythematous candidiasis usually appears on the tongue or hard palate (the bony portion of the roof of the mouth). Lesions have a red appearance and cannot be wiped off. Atrophic candidiasis usually appears on the tongue. Both of these conditions can cause changes in taste perception and/or pain and a burning sensation.

All forms of candidiasis should be treated promptly. Treatment includes antifungal medications such as topical clotrimazole (Lotrimin) or systemic fluconazole (Diflucan). Resistant oral thrush may indicate a concurrent infection in the air sinuses alongside the nose, which may require further treatment.

Again, candidiasis is more likely to occur in individuals who have low CD4 cell counts. Dry mouth is another contributing factor. Individuals with a history of candidiasis should have antifungal medication available in the likely event that the infection recurs, particularly if immune suppression does not improve.

Aphthous Stomatitis

Aphthous stomatitis (canker sores) is a common condition regardless of HIV status. In HIV positive individuals the ulcers, or sores, may be slow to heal, and aphthous ulcers minor are more likely to become aphthous ulcers major. The difference between the two relates to ulcer size (major ulcers are over 1 cm, or 0.4 inches, in diameter) and the severity of the condition. The cause of these noncontagious lesions is not known.

Aphthous ulcers are generally shallow, crater-like lesions with a raised, red border surrounding a gray, central pseudomembrane. In HIV positive individuals these lesions may be found on keratinized (hardened) tissue such as the hard palate.

Aphthous ulcers are left to heal on their own in people with competent immune systems. However, untreated lesions may become painful, quite large, and prone to secondary infection in those with immune dysfunction. People with wasting syndrome or general debilitation may have great difficulty as these lesions may cause severe pain and decrease their ability to consume food comfortably. Accordingly, people with HIV require care for any aphthous lesions, regardless of size, to prevent them from expanding and causing potentially serious problems.

Treatment consists of a steroid medication, most frequently a topical ointment such as triamcinolone (Kenalog) or fluocinonide (Lidex) mixed with Orabase ointment. A dexamethasone liquid rinse may also be used. Some cases may require a systemic steroid such as prednisone, although the risks of systemic steroid use should be considered. Thalidomide has recently been approved in the

U.S. for the treatment of aphthous ulcers, but is not commonly used because of its sedative effect.

Recurrent aphthous lesions may be mistaken for herpes simplex (see below), especially if they occur on keratinized tissue. A reliable medical history is a good method for determining the condition, since individuals with either lesion typically will have had previous episodes and often do not have both diseases.

Herpes Simplex

Oral herpes simplex is a viral condition associated with herpes simplex virus type 1 (HSV-1). It is characterized by the eruption of serum-filled vesicles, or blisters (sometimes referred to as “cold sores” or “fever blisters”) on the face, lips, or mouth. (Herpes simplex virus type 2 [HSV-2] causes similar blisters in the genital or anal region.) These lesions often start with prodromal (early) symptoms of malaise, fever, and a general feeling of illness, which can be masked in people who are already ill. There also may be itching or tingling sensations. Vesicles usually form within 24 hours and rupture shortly thereafter, forming a scab. Herpes outbreaks typically resolve without treatment within two weeks in individuals with competent immune systems.

immune systems. This normally involves using a systemic antiviral medication such as acyclovir (Zovirax), famciclovir (Famvir), or valacyclovir (Valtrex). In some cases, a systemic drug also may be used to suppress the recurrence of herpes lesions. Topical medications usually do not work as well as systemic medications for this condition.

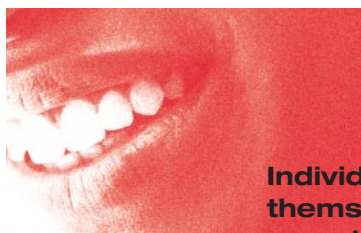
Conditions Found Primarily in People with HIV

The following conditions are seen most often in people with advanced HIV disease. As with other conditions, the risk increases as CD4 cell counts decrease.

Oral Hairy Leukoplakia

Hairy leukoplakia appears as white patches, nearly always on the lateral border (outside edges) of the tongue. These lesions usually have an irregular surface and may have hair-like projections. While this condition may resemble thrush, hairy leukoplakia lesions cannot be wiped off, unlike the lesions of thrush.

Hairy leukoplakia is thought to be caused by the Epstein-Barr virus (also associated with infectious mononucleosis). Since this condition is rarely seen unless the CD4 cell count is low,



Individuals with HIV can protect themselves not only with routine examinations, but also by brushing and flossing regularly.

As with aphthous ulcers, herpes simplex lesions may be larger, more painful, and more prone to secondary infection in HIV positive individuals. Again, these lesions can exacerbate problems in people with wasting syndrome by causing pain and decreasing their ability to eat comfortably.

Palliative treatment should be provided to those with compromised

it is less common in areas where combination anti-HIV therapy is readily available.

Hairy leukoplakia is a benign condition that resolves on its own. Inasmuch as it causes no symptoms, including discomfort or changes in taste perception, there is no need for treatment. For aesthetic purposes it may be treated off-label with agents

Oral HIV Treatments

CONDITION	PROBLEM	TREATMENT
Caries (cavities)		Techniques such as “scoop and fill” and temporary filling; tooth restoration
	Dry mouth (xerostomia)	Sugar-free citrus candies; artificial saliva products
	Abscess/infection of the tooth pulp	Antibiotic, preferably penicillin
Periodontal disease	Linear gingival erythema (LGE)	Antimicrobial mouth rinse such as chlorhexidine (Peridex); in severe cases, a systemic antibiotic
	Necrotizing ulcerative periodontitis (NUP)	<i>Palliative therapy:</i> antimicrobial mouth rinse, systemic antibiotic medication, pain medication <i>Treatment:</i> debridement (professional cleaning), surgical procedures, antibiotic medication
Human papillomavirus (HPV) lesions		Surgery; electrocautery; others
Oral candidiasis (thrush)	Pseudomembranous candidiasis, angular cheilitis, erythematous candidiasis, atrophic candidiasis	Topical clotrimazole (Lotrimin); systemic fluconazole (Diflucan)
Aphthous stomatitis (canker sores)		Triamcinolone (Kenalog) ointment or fluocinonide (Lidex) mixed with Orabase; dexamethasone rinse; systemic prednisone; thalidomide
Oral herpes simplex		Systemic acyclovir (Zovirax), famciclovir (Famvir), or valacyclovir (Valtrex)
Oral hairy leukoplakia		None—will resolve on its own
Opportunistic tumors	Kaposi’s sarcoma (KS)	Systemic doxorubicin (Doxil) or paclitaxel (Taxol); vinblastine (Velban); localized chemotherapy; surgery; radiation therapy
	Non-Hodgkin’s lymphoma (NHL)	Radiation and/or chemotherapy

such as tretinoin (Retin-A) or podophyllin.

Opportunistic Tumors

Several opportunistic tumors (cancers or neoplasms) are associated with HIV infection. Kaposi's sarcoma (KS) and non-Hodgkin's lymphoma (NHL) occur most frequently and may manifest in the oral cavity. Both of these conditions are seen when immune suppression is severe and an individual has an AIDS diagnosis (a CD4 cell count below 200 cells/mm³).

KS is the most common neoplasm in people with HIV. It is a malignancy of the endothelial lining of blood vessels and is associated with a herpesvirus known as HHV-8. KS appears clinically as flat or raised, usually reddish or purplish lesions that do not blanch (whiten) with pressure. Lesions often enlarge rapidly and may become exophytic (grow outward).

Palliative treatment for oral KS is rarely required unless the lesion enlarges and interferes with chewing or talking. In such cases, interventions include systemic doxorubicin (Doxil) or paclitaxel (Taxol), localized chemotherapy, and surgery; injections of vinblastine (Velban) appear effective in some studies. Large, multiple lesions may be treated with radiation therapy. People with KS who start antiretroviral therapy for the first time may see their lesions resolve without further treatment.

NHL in the oral cavity is most often a soft, tumor-like mass that may enlarge rapidly. Biopsy is required for diagnosis, and treatment consists of radiation and/or chemotherapy. Until treatment can be implemented, palliative care is usually not required. (For more NHL information, see "Non-Hodgkin's Lymphoma," *BETA*, Summer 2003.)

Conclusion

HIV positive people should be encouraged to receive dental examinations every six months, preferably by a provider who is familiar with conditions associated with decreased immune function. Some conditions,

such as thrush, may be mistaken for *materia alba*, which is the result of poor oral hygiene. Other conditions that might be allowed to run their course without medication in individuals with competent immune systems—such as aphthous ulcers—should be treated in people with HIV. Again, most oral problems, such as dental caries and periodontal disease, are the result of bacterial infections.

Individuals with HIV can protect themselves not only with routine examinations, but also by brushing and flossing regularly, as well as by not smoking and limiting alcohol intake. Smoking and alcohol use are strongly associated with oral cancers, which are relatively common and have a poor prognosis compared with other types of cancer. As always, lifestyle changes may reduce the need to fight off or treat preventable diseases.

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