AIDS and HIV infection:

Introduction:

In 1983, a retrovirus (later named the human immunodeficiency virus [HIV]) was isolated from a patient with AIDS. Since that first report, more than 70 million persons have been infected with HIV, and more than 30 million have died of AIDS.

The total number of deaths has exceeded those caused by the Black Death of 14th-century Europe and the influenza pandemic of 1918 and 1919.

TABLE 18.3 Features of HIV Infection and Disease Progression

Status	Signs/Symptoms	Laboratory Findings	Comments
Recent infection	No signs or symptoms	HIV nucleic acid: positive p24 antigen; positive DNA PCR assay; ELISA and Western blot may or may not be positive	Patient is unaware of his or her HIV infection. Can transmit the infection by blood or sexual activity
Stage 1: acute seroconversion syndrome	Symptoms occur within about 1–3 wk after infection in ≈70% of infected patients: fever, weakness, diarrhea, nausea, vomiting, myalgia, headache, weight loss, pharyngitis, skin rashes (roseola-like or urticarial), lymphadenopathy; symptoms clear in about 1–2 wk	HIV antibody–negative at start of syndrome Seroconversion occurs near end of the syndrome CD4+ and CD8+ lymphocytes reduced in numbers, but >500 cells/μL After acute symptoms, they tend to return toward normal levels. ELISA and Western blot are positive.	The severity of the acute syndrome varies among infected persons. The period for seroconversion of 30% of patients without acute symptoms varies and can be 1–6 mo or longer.
Stage 2: latent period (asymptomatic stage)	Median time from initial infection to onset of clinical symptoms: 8–10 years ≈50%–70% of patients develop PGL	ELISA and Western blot are positive. A slow but usually steady increase in viral load Usually, a steady decline in CD4+ cell count; CD4+/CD8+ ratio begins to approach 1	Viral replication is ongoing and progressive. A steady decline in CD4+ cell counts occurs, except in the fewer than 1% who are nonprogressors (also have low viral load).
Stage 2: early symptomatic stage	Without treatment, lasts for 1–3 yr; any of the following: PGL, fungal infections, vaginal yeast and trichomonal infections, oral hairy leukoplakia, herpes zoster, herpes simplex, HIV retinopathy Constitutional symptoms: fever, night sweats, fatigue, diarrhea, weight loss, weakness	ELISA and Western blot are positive. HIV antigen, RNA, and DNA tests are positive. Signs and symptoms increase as CD4+ cell count declines and approaches 200/μL; often between 200 and 300/μL Viral load continues to increase Platelet count may decrease in about 10% of patients.	The spectrum of disease changes as CD4+ cell count declines.
Stage 3: AIDS	Opportunistic infection(s): *Pneumocystis jiroveci* pneumonia, cryptococcosis, tuberculosis, toxoplasmosis, histoplasmosis, others Malignancies: Kaposi sarcoma, Burkitt lymphoma, non-Hodgkin lymphoma, primary CNS lymphoma, invasive cervical cancer, carcinoma of rectum, slim (wasting) disease	High viral load; CD4+ cell count <200/μL CD4+ cell count <50/μL at high risk for lymphoma and death Platelet count may be low. Neutrophil count may be low. ELISA and Western blot are positive. HIV antigen, RNA, and DNA tests are positive.	Death usually occurs because of wasting, opportunistic infection, or malignancies. The use of combination antiretroviral agents has slowed the death rate, but long-term outlook must depend on vaccines for prevention and treatment because the virus promotes resistance to these agents.

AIDS, Acquired immunodeficiency syndrome; *CNS,* central nervous system; *ELISA,* enzyme-linked immunosorbent assay; *HIV,* human immunodeficiency virus; *PCR,* polymerase chain reaction; *PGL,* persistent generalized lymphadenopathy.

- **Oral Complications and Manifestations:**

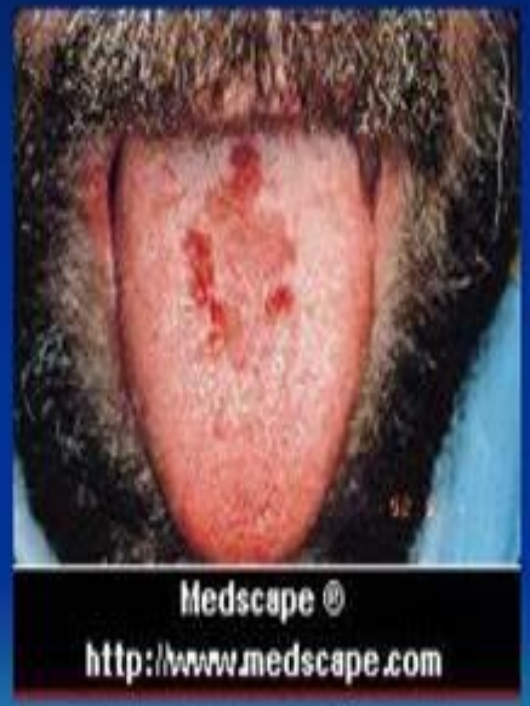
- Oral lesions can be one of the early signs of HIV infection and risk for progression to AIDS and occur commonly (30%–80%) in infected patients. For this reason, the clinician should be cognizant of the oral manifestations of HIV infection and AIDS.

- The overall prevalence of oral manifestations has changed significantly since the advent of HAART (≈10%).The more serious oral conditions have diminished.

- **Common oral manifestations include**
- 1- candidiasis (erythematous or pseudomembranous) of the oral mucosa.
- 2- bluish purple or red lesion(s) that on biopsy are identified as Kaposi sarcoma .
- 3- hairy leukoplakia of the lateral borders of the tongue
- 4- Other oral conditions that occur in association with HIV infection are HSV, CMV, Epstein-Barr virus (EBV), herpes zoster, deep tissue infections (e.g., cryptococcus, histoplasmosis), recurrent aphthous ulcerations, linear gingival erythema, necrotizing ulcerative periodontitis, necrotizing stomatitis, tuberculosis, syphilis, oral warts (human papillomavirus, condyloma acuminatum, facial palsy, trigeminal neuropathy, salivary gland enlargement, xerostomia, and melanotic pigmentation.

Erythematous Candidiasis

- Smooth, red atrophic patches that can occur on the hard palate, buccal mucosa, or the tongue (1,2)
- Tends to be symptomatic with complaints of oral burning while eating salty or spicy foods or drinking acidic beverages (2)





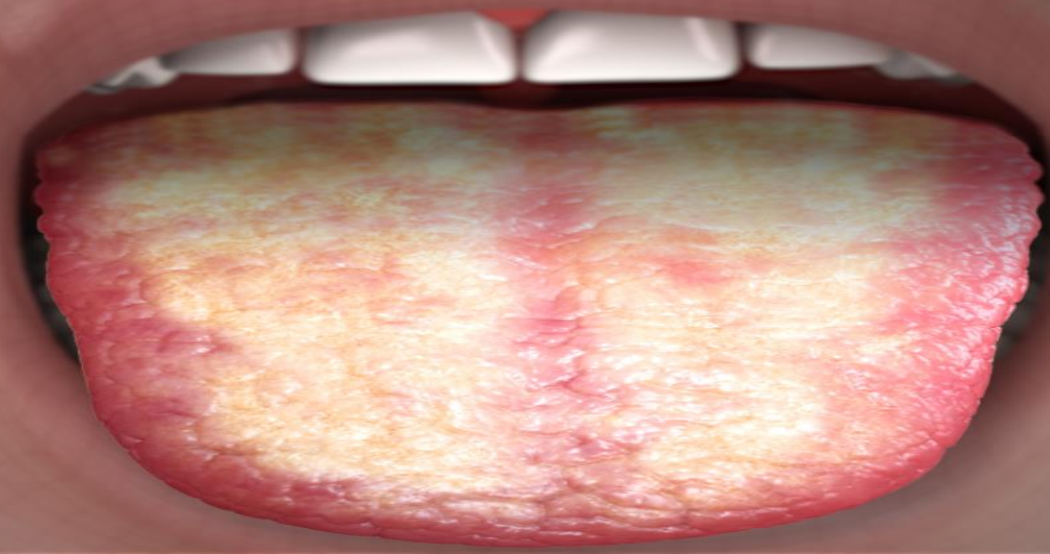






Candidiasis

A fungal infection caused by candida.



- Worldwide, candidiasis is the most common oral manifestation of HIV infection.
- Oral candidiasis diagnosed in HIV-infected patients with persistent generalized lymphadenopathy may be of predictive value for the subsequent development of AIDS.
- The appearance of pseudomembranous candidiasis in HIV-infected persons has been shown to be a strong indicator for progression of infection to AIDS. The erythematous form of candidiasis also indicates progression toward AIDS.

- **Kaposi sarcoma** is a malignant tumor of endothelial cells caused by human herpesvirus type 8 (HHV-8). MSM who are HIV-infected are more commonly affected. In these patients, Kaposi sarcoma most often is disseminated throughout the body and runs a fulminant clinical course.

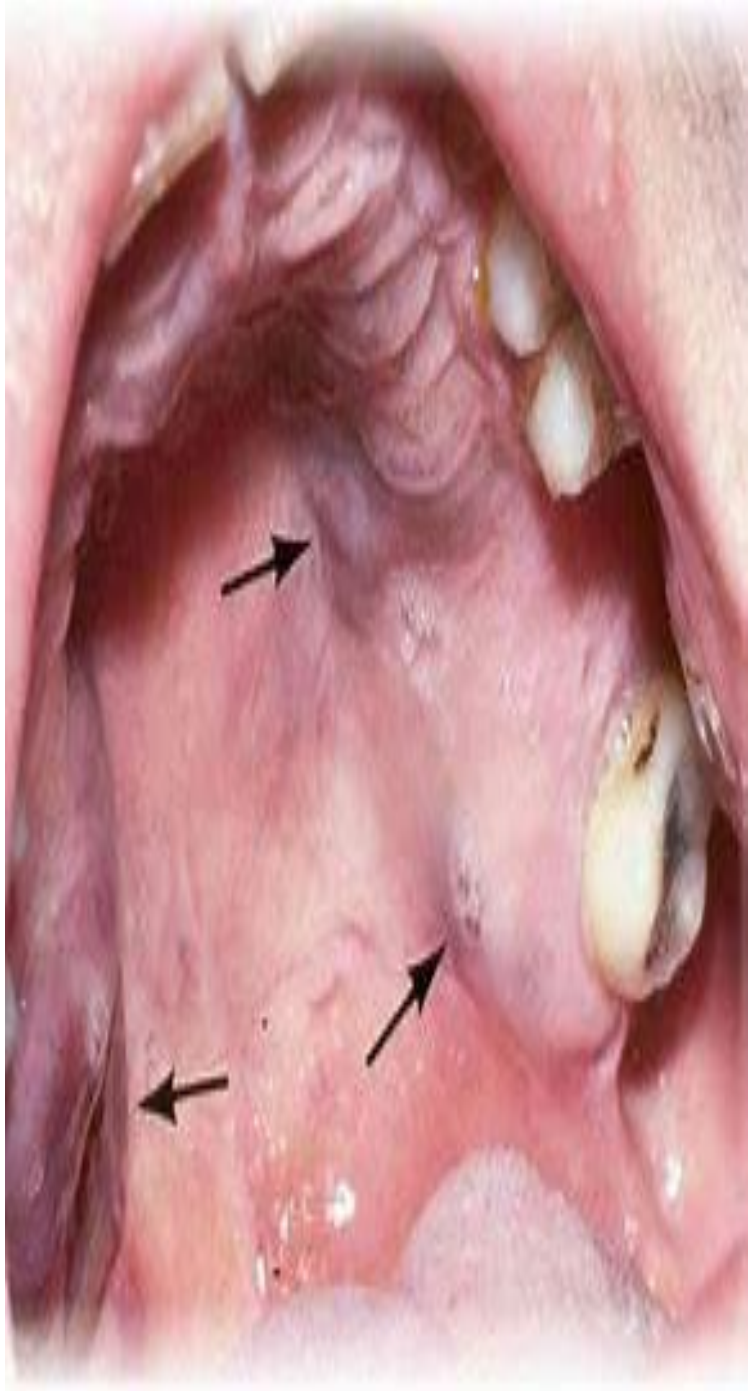












- **Hairy leukoplakia** is an asymptomatic, corrugated white lesion of the lateral borders of the tongue caused by reactivation and replication of EBV.
- This lesion can appear in any patient who is immunosuppressed, regardless of HIV status. The diagnosis can be made on cell scrapings or from a biopsy. Treatment is with antiviral agents.

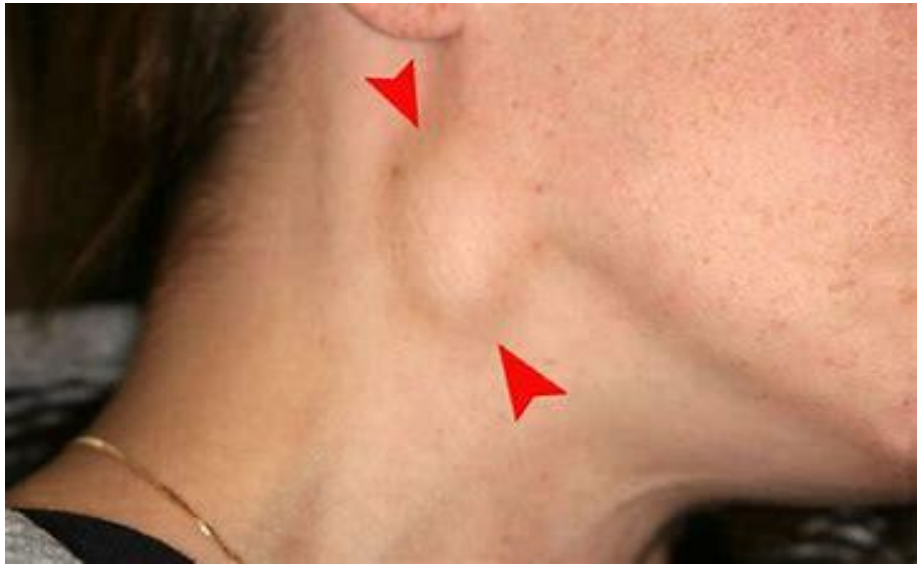


(a)

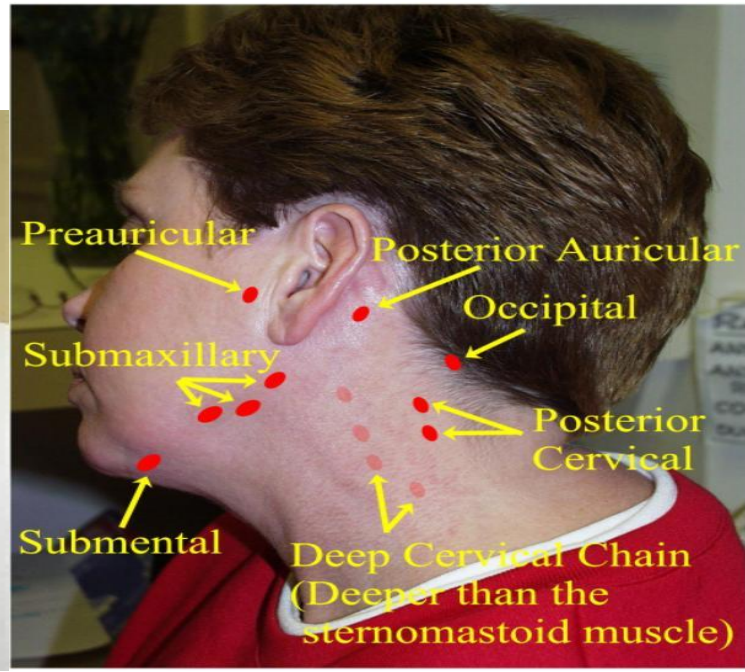


(b)

- **Lymphadenopathy** at cervical and submandibular locations often is an early finding in patients infected with HIV.
- This condition is persistent and may be found in the absence of any current infection or medications known to cause lymph node enlargement. The nodes tend to be larger than 1 cm in diameter, and multiple sites of enlargement may be found.







- **DENTAL MANAGEMENT**

- **1- History and clinical examination:**

- Detailed history, head and neck examination, intraoral soft tissue examination, and complete periodontal and dental examinations should be performed on all new patients.

- History and clinical findings may indicate that the patient has HIV infection or AIDS. Of note, however, is that patients who know they are seropositive and those at high risk for these conditions may not answer questions honestly on account of the stigma or concern for privacy

- Patients who, on the basis of history or clinical findings, are found to be at high risk for AIDS or related conditions should be referred for HIV testing and medical evaluation (Patients with high-risk factors should be strongly encouraged to seek diagnostic testing)

- Patients at high risk for AIDS and those in whom AIDS or HIV has been diagnosed should be treated in a manner identical to that for any other patient—that is, with standard precautions.

- **2- General Guidelines**
- **Several guidelines have emerged regarding the rights of dentists and patients with AIDS, including the following:**
- • Dental treatment may not be withheld if the patient refuses to undergo testing for HIV exposure. The dentist may then assume that the patient is a potential carrier of HIV and should treat the person using standard precautions, just as for any other patient.
- • A patient with AIDS who needs emergency dental treatment may not be refused care simply because the dentist does not want to treat patients with AIDS.
- • No medical or scientific reason exists to justify why patients with AIDS who seek routine dental care may be declined treatment by the dentist, regardless of the practitioner's personal reason. However, if the dentist and the patient agree, the dentist may refer the patient to another provider who is more willing or better suited (in keeping with the patient's oral health status) to provide treatment.

- A patient who has been under the care of a dentist and then develops AIDS or a related condition must be treated by that dentist or receive a referral that is satisfactory for and agreed to by the patient.

- • The CDC and the American Dental Association recommend that infected dentists inform their patients of their HIV serostatus and should receive consent or refrain from performing invasive procedures

- 3- Treatment Planning Considerations
- **A major consideration in dental treatment of the patient with HIV infection/AIDS involves**
- 1- determining the current CD4+ lymphocyte count and level of immunosuppression of the patient. Another point of emphasis in dental treatment planning is the level of viral load, which may be related to susceptibility to opportunistic infections and rate of progression of AIDS.

- 2- The dentist should be knowledgeable about the presence and status of opportunistic infections and the medications that the patient may be taking for therapy or prophylaxis for such conditions.

- Patients who have been exposed to the AIDS virus and are HIV seropositive but asymptomatic may receive all indicated dental treatment. Generally, this is true for patients with a CD4+ cell count of more than 350/μL.

- Patients who are symptomatic for the early stages of AIDS (i.e., CD4+ cell count ≤ 200/μL) have increased risk of opportunistic infections and may need prophylactic antibiotics.

- Patients with AIDS can receive almost any dental care needed and desired after the possibility of significant immunosuppression, neutropenia, or thrombocytopenia has been ruled out.

- Any oral lesions found should be diagnosed and then managed by appropriate local and systemic treatment or referred for diagnosis and treatment

- Patients may be medicated with drugs that are prophylactic for Pneumocystis pneumonia, candidiasis, herpes simplex virus (HSV) or CMV infection, or other opportunistic disease, and these medications must be carefully considered in dental treatment planning.

- For example, acetaminophen should be used with caution in patients treated with zidovudine (Retrovir) because studies have suggested that granulocytopenia and anemia, associated with zidovudine, may be intensified; also, aspirin should not be given to patients with thrombocytopenia

- Medical consultation is necessary for symptomatic HIV-infected patients before surgical procedures are performed. The patient's current platelet count and WBC count should be available. Patients with abnormal test results may require special management.

- Any source of oral or dental infection should be eliminated in HIV-infected patients, who often require more frequent recall appointments for maintenance of periodontal health. Daily use of chlorhexidine mouth rinse may be helpful.

- In patients with periodontal disease whose general health status is not clear, periodontal scaling for several teeth can be provided to allow assessment of tissue response and bleeding. If no problems are noted, the rest of the mouth can be treated

- Root canal therapy has good success in patients with HIV infection, and no modifications are required. Infection can be treated through local and systemic measures.

- **Occupational Exposure to HIV**
- The risk of HIV transmission from infected patients to health care workers is very low, reportedly about 3 of every 1000 cases (0.3%) in which a needlestick or other sharp instrument transmitted blood from a patient to a health care worker.In comparison, the risk of infection from a needlestick is 3% for hepatitis C and is 30% for hepatitis B.