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■ Review of Oral Health and HIV

■ Mark S. Schweizer, DDS MPH, Dental Director

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- **Dr. Mark S. Schweizer is the Dental Director of the South Florida-South AIDS Training and Education Center. He is also Director of Development and Special Projects at Nova Southeastern College of Dental Medicine. Dr. Schweizer is a graduate of the University of Maryland College of Dentistry and Nova Southeastern University Master of Public Health program. He serves as Clinical Director of the Ryan White HIV Dental Program for Nova Southeastern College of Dental Medicine and Project Director of the Part F Dental Program with Broward Community and Family Health Center in Pompano Beach, Florida. Dr. Schweizer is also a member of the Broward County Florida HIV Health Planning Council. He has more than 20 years of private practice experience and has lectured locally, nationally, and internationally on how dental providers can serve the needs of special populations and underserved communities.**



Disclosures

- **The activity planners and speakers do not have any financial relationships with commercial entities to disclose.**
- **The speakers will not discuss any off-label use or investigational product during the program.**
- **This slide set has been peer-reviewed to ensure that there are no conflicts of interest represented in the presentation**



Session Objectives

- **Identify the current demographics of HIV/AIDS and infections rates**
- **Explain the role the dental healthcare professional has in the continuum of HIV care**
- **Interpret lab results CD4, viral loads, and their relationship to oral manifestations of HIV**
- **Identify and demonstrate the steps of an intra-oral/extra-oral examination**
- **Evaluate/diagnose and treat common oral HIV/AIDS manifestations**



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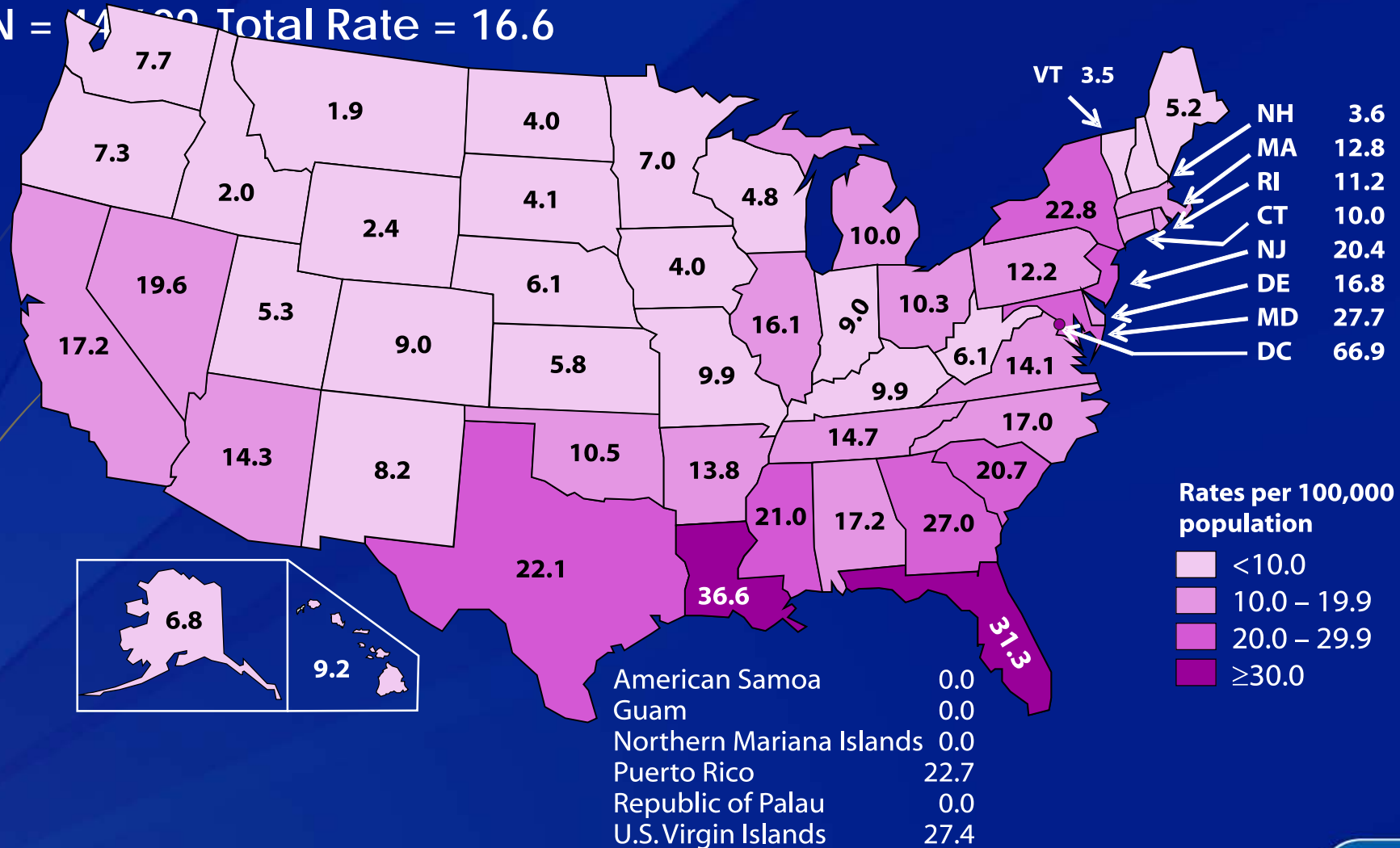
HIV in the United States

- **About 50,000 new HIV infections are reported in the U.S. each year.¹**
- **More than 1.1 million people in the U.S. are living with HIV infection, and almost 1 in 6 (15.8%) are unaware of their infection.¹**
- **Since the beginning of the AIDS epidemic in the U.S., approximately 636,000 deaths have been reported.¹**
- **MSM, particularly young, black, MSM are most severely affected.**
- **Greatest increase in infections 24-39 years old**

Centers for Disease Control and Prevention (CDC), HIV in the United States: At a Glance, December 2013.
Link: <http://www.cdc.gov/hiv/statistics/basics/ata glance.htm>

Rates of Diagnoses of HIV Infection among Adults and Adolescents, 2014—United States and 6 Dependent Areas

N = 14,129 Total Rate = 16.6



Note. Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. All displayed data have been statistically adjusted to account for reporting delays, but not for incomplete reporting.

The Epidemic in Florida

Population in 2015: 19.8 million →
(3rd in the nation)

Newly diagnosed HIV infections in 2014: 4,613**
(2nd in the nation in 2014)

Newly diagnosed AIDS cases in 2014: 2,370**
(1st in the nation in 2014)

Cumulative pediatric AIDS cases diagnosed through 2014: 1,548**
(2nd in the nation in 2014)

Persons diagnosed and living*
with HIV disease through 2014: 110,000→**
(3rd in the nation in 2013)

HIV prevalence estimate through 2014: 126,100
(accounts for 12.8% national estimated unaware of their status)

HIV Incidence Estimates in 2013: 4,120
(There was a 18% decrease from 2007-2013)

HIV-related deaths in 2014: 878
(Down 6% from 2013)

56% White
16% Black
24% Hispanic
4% Other*

30% White
47% Black
21% Hispanic
2% Other*

- Other = Asian/Pacific Islanders; American Indians/Alaskan Natives; multi-racial.
- ** Data by year of diagnosis for 2014, data as of 06/30/2015
- *** Living (prevalence) data as of 06/30/2015
- <http://www.floridahealth.gov/diseases-and-conditions/aids/surveillance/epi-slide-sets.html>



Oral Health and HIV

- **32-46 percent of PLWHA will have at least one major HIV-related oral health problem.**
- **58-68 percent PLWHA do not receive regular health care.**
- **Barriers PLWHA face in receiving oral health care include lack of insurance, limited incomes, lack of providers, stigma, and limited awareness.**
- **Poor oral health can impede food intake and nutrition, leading to poor absorption of HIV medications and leaving PLWHA susceptible to progression of their disease.⁴**
- **HIV medications have side effects such as dry mouth, which predisposes PLWHA to dental decay, periodontal disease, and fungal infections.**



Oral Health and HIV

- **Bacterial infections (i.e., dental decay and periodontal disease) that begin in the mouth can escalate to systemic infections and harm the heart and other organs if not treated, particularly in PLWHA with severely compromised immune systems.**
- **A history of chronic periodontal disease can disrupt diabetic control and lead to a significant increase in the risk of delivering preterm low-birthweight babies.**
- **Poor oral health can adversely affect quality of life and limit career opportunities and social contact as result of facial appearance and odor.**



Oral Health and HIV

Health People 2020

- **Increase awareness of the importance of oral health to overall health and well-being.**
- **Increase acceptance and adoption of effective preventive interventions.**
- **Reduce disparities in access to effective preventive and dental treatment services.**

<http://www.healthypeople.gov/2020/topics-objectives/topic/oral-health?topicid=3>
Accessed March 28.2016



Oral Health and HIV

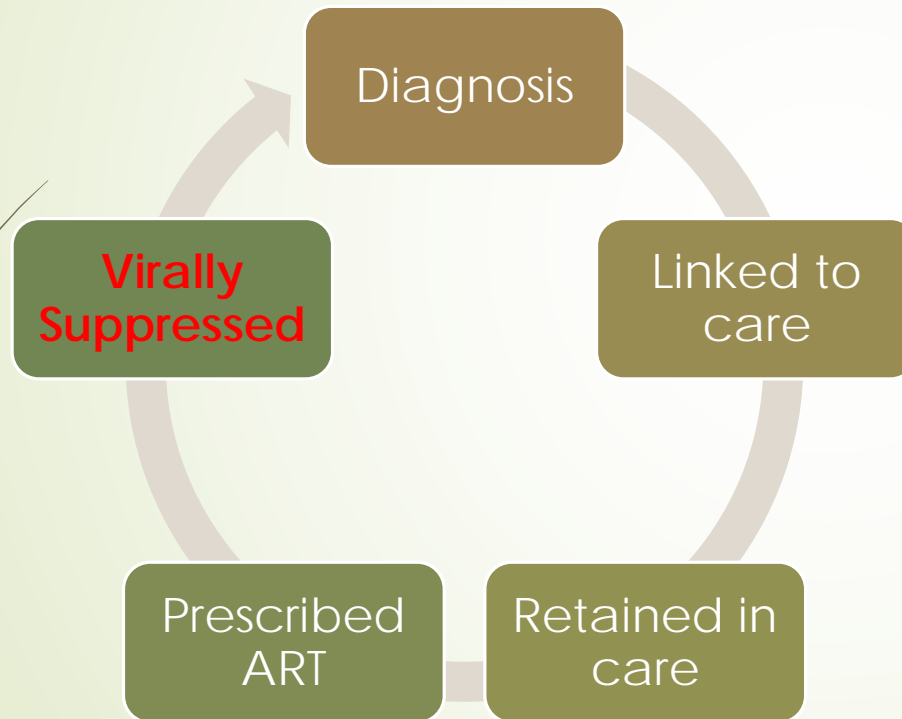
HAB's Oral Health Performance Measures

- **Dental and medical history**
- **Dental treatment plan Oral health education**
- **Periodontal screening or examination**
- **Phase I treatment plan completion
(prevention, maintenance, elimination of oral health disease)**

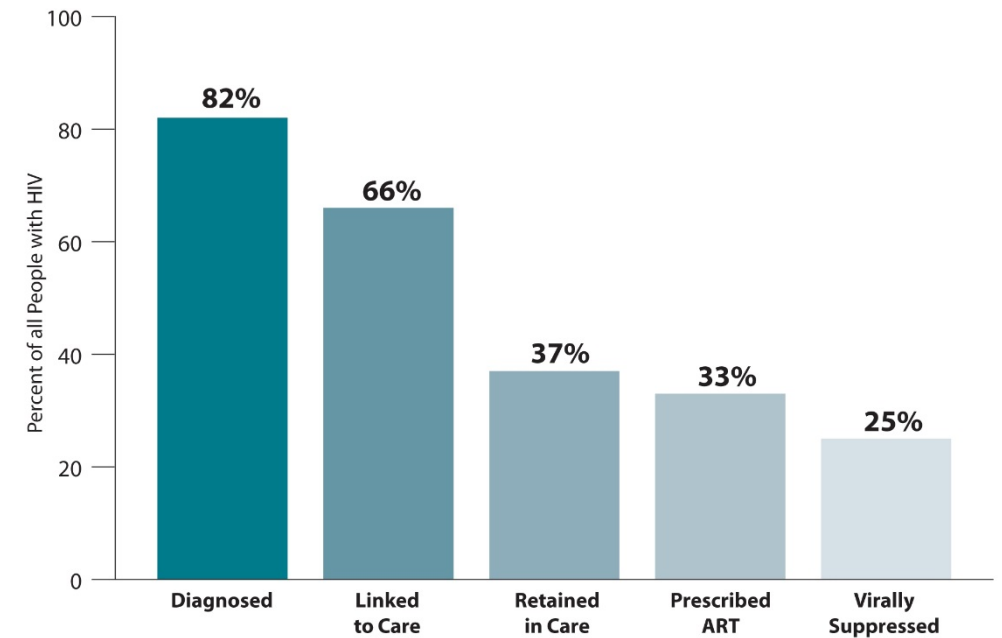
<http://hab.hrsa.gov/deliverhivaidscore/habperformmeasures.html>

Accessed March 28, 2016

Oral health professionals can work with clients to engage them in regular HIV primary medical care and address issues such as nutrition.



OVERALL: Of the 1.1 million Americans living with HIV, only 25 percent are virally suppressed.



<http://www.cdc.gov/nchhstp/newsroom/2012/Continuum-of-Care-Graphics.html>
Accessed March 28, 2016

LAB TESTS FOR HIV STATUS	NORMAL RANGE ¹	TREATMENT CONSIDERATION	MEDICAL SIGNIFICANCE	DENTAL SIGNIFICANCE	CRITICAL VALUES REQUIRING MEDICAL CONSULTATION
HIV VIRAL LOAD # of HIV RNA copies per ml of blood	Can be <20copies/mL on commercially available tests Uncontrolled HIV up to 750,000	If > 20 copies/mL Should be under copies/mL If. over 6 months on HAART	Indicates rate of HIV progression and HAART response	Predictor of oral manifestation including Candidiasis Xerostomia, Recurrent Caries, cancer, etc.	If > 20 copies per mL after 6 months of ARV therapy
CD4 HELPER T CELL COUNT T-lymphocytes/mm ³ (absolute T-cell count) ²	500-1500 HAART recommended for all HIV infected patients regardless of CD4 cell count	<200 = AIDS Defining	Indicates immune status & determines therapy irrespective of total Lymphocyte	In general, HIV disease is progressing if the CD4 count is going down.	IF < 200 after 6 months of ARV therapy
CD4 % OF ALL LYMPHOCYTES ³	32 to 64%	HIV neg. people > 40% < 14% = severe immune suppression & AIDS Defining	% of all functioning lymphocytes that are CD4 cells (T)	Limits treatment and indicates susceptibility	< 14% = severe immune suppression
ANC (Absolute Neutrophil Count) NEUTROPHIL % X WBC COUNT	1500 to 8000	< 500 requires premedication ⁴	Neutropenia and susceptibility to infection	< 500 requires premedication ⁴	Only requires consultation if neutropenia is long term or patient not under regular medical care
PLATELETS/mm³	150,000 to 400,000	<20,000 → Spontaneous Bleeding 20,000-60,000 → PO Bruising/Bleeding	Hemorrhage Petechiae GI Bleeding	Oral Surgery Risk & possible post-op bleeding complications	< 25,000 /mm ³ can request platelet infusion
WBC	4000 -10,500/mm ³	< 2,500/mm ³ → Increased susceptibility to infection – see ANC	Susceptibility to infection	Susceptibility to infection	< 2,500/mm ³

Current HIV Treatment Drug Recommendations

Current U.S. HIV treatment guidelines recommend antiretroviral treatment (ART) for all persons with HIV, regardless of CD4 cell count, to improve their health, prolong their lives, and reduce their risk of transmitting HIV to others.

There are six drug classes include more than 27 HIV medicines that are approved to treat HIV infection. Some HIV medicines are available in combination (in other words, two or more different HIV medicines are combined in one pill.)

- **An antiretroviral regimen for a treatment-naïve patient generally consists of two nucleoside reverse transcriptase inhibitors in combination with a third active antiretroviral drug from one of three drug classes: an integrase strand transfer inhibitor, a non-nucleoside reverse transcriptase inhibitor, or a protease inhibitor with a pharmacokinetic enhancer.**

PrEP (Pre-exposure prophylaxis)

The goal of PrEP is to prevent HIV infection from taking hold if you are exposed to the virus. This is done by taking a pill that contains 2 HIV medications every day.

Consider PrEP if you don't know whether your partner has HIV infection but you know that your partner is at risk (for example, your partner inject drugs or is having sex with other people in addition to you) or if you have recently been told by a health care provider that you had a sexually transmitted infection. If your partner has HIV infection, PrEP may be an option to help protect you from getting HIV infection while you try to get pregnant, during pregnancy, or while breastfeeding.

PrEP clinical trials have happened or are happening in Africa, Asia, South America, and North America

- **Several studies demonstrate that the use of PrEP can reduced risk of HIV infection for up to 96% in MSM.**
- **The US CDC released US Public Health Service (PHS) guidelines for the use of Truvada as PrEP in May 2014.**

Intra-oral/Extra-oral Exam



(c) 2006, Kathryn Ragalis



<https://www.youtube.com/watch?v=yY9-7pOTROM>



Oral Manifestations of HIV

Significant of Oral Manifestations

- **First sign of clinical disease**
- **Signify disease progression**
- **Signify possible ART failure**
- **Effects on medication adherence and nutrition**



Oral Manifestations of HIV

In the Era of ART

Decreasing:

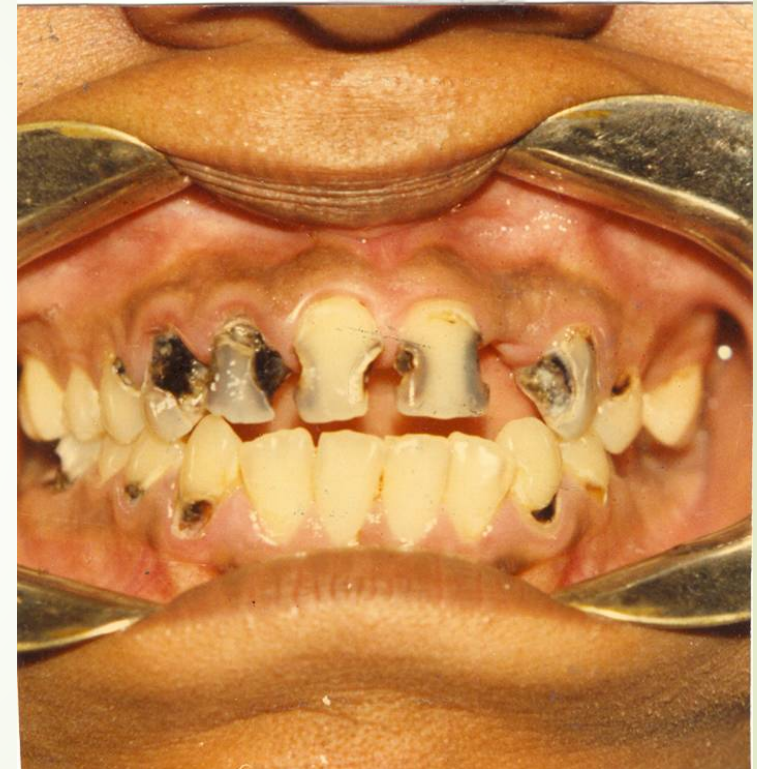
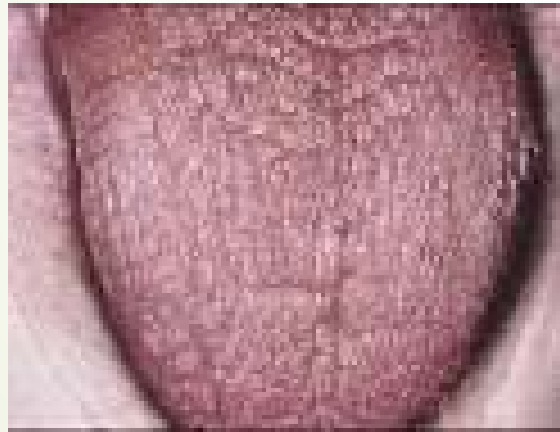
- Candidiasis
- Necrotizing Gingivitis
- Kaposi's Sarcoma
- Oral Hairy Leukoplakia

Increasing:

- Dental Decay/Periodontal Disease
- Oral HPV
- First sign of clinical disease
- Signify disease progression
- Signify possible ART failure
- Effects on medication adherence and nutrition

Oral Manifestations of HIV

Xerostomia



<http://www.bing.com/images/search?q=Xerostomia&FORM=RESTAB#view=detail&id=7B938527F5E190D07351EA1BE83A0652CDC23BB1&selectedIndex=>

Xerostomia Due to Systemic Disease: A Review of 20 Conditions and Mechanisms
[H Mortazavi](#), [M Baharvand](#)¹, [Movahhedian M Mohammadi](#), and [A Khodadoustan](#)
Ann Med Health Sci Res. 2014 Jul-Aug; 4(4): 503–510.
doi: [10.4103/2141-9248.139284](https://doi.org/10.4103/2141-9248.139284)

Treatment for Xerostomia

Salivary stimulants such as sugarless gum or sugarless candies may provide relief. Candies that are acidic should be avoided as frequent use may lead to loss of tooth enamel

Biotene, Eclipse, Extra, Orbit

Salivary substitutes

**Biotene Oral Balance, Biotene Moisturizing Mouth Spray
Salivart (Xenex), Oralube(Xenex), Xerolube Colgate), Plax (Pfizer)**

Pharmacologic Stimulants

Pilocarpine HCl ,Cevimeline HCl (Caution with Beta Blockers)

An increase in caries can occur, so fluoride rinses (that can be bought over the counter) or prescription fluorides should be used daily, and visits to the dentist should occur two to three times per year.

OTC products (.05% NaF) ACT, Fluoroguard

Prescriptions products

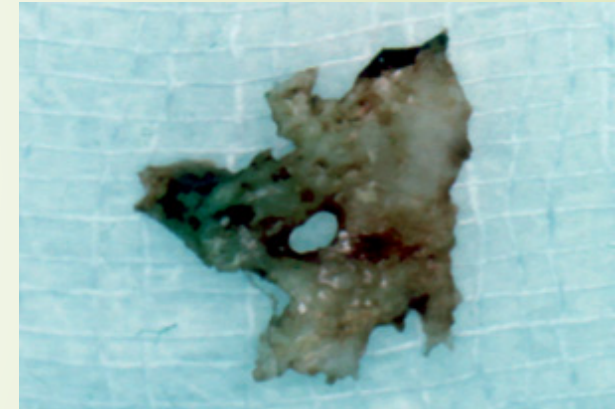
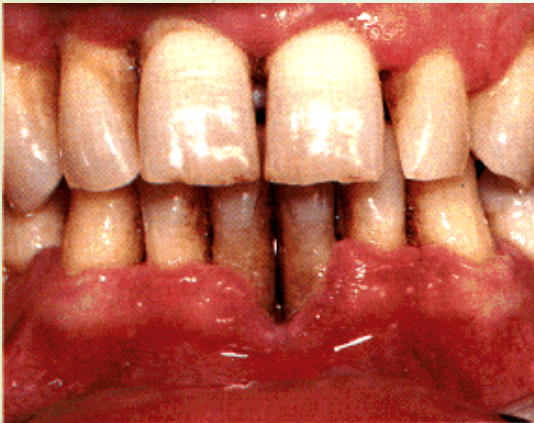
Prevident 5000 plus toothpaste/gel/rinse, Oral B Neutra Foam, Fluoride Varnish

Home Care Instructions

Brush, Floss, Tongue Scraper

Oral Manifestations of HIV

Periodontal Disease



- Amoxicillin 250mg 3 x/day with Metronidazole 250mg 3X/day x 5-7days
- Antimicrobial rinses (0.12% Chlorhexidine) 15cc 2xday x 14days
- Concurrent Antifungal maybe necessary
- Referral for immediate dental care

Oral Manifestations of HIV

Periodontal Disease in the Era of ART

There were no significant differences regarding the periodontal parameters between the groups except in the clinical marker for inflammation, the papilla bleeding score, which was twice as high ($P < 0.0001$) in the antiretroviral untreated group (0.58 ± 0.40 versus 1.02 ± 0.59). The participants of this investigation generally showed a prevalence of periodontitis comparable to that in healthy subjects.

Shift of prevalence towards periodontal diseases. Lack of oral hygiene determined by plaque formation and reduced CD4-counts with pronounced periodontal inflammation can be seen as risk factors for periodontal disease. Overall high prevalence of manifestations underlines the importance of oral examination for the general practitioner and visits by oral specialists should become a routine procedure in HIV-patients care.

Periodontal status of HIV-infected patients undergoing antiretroviral therapy compared to HIV-therapy naive patients: a case control study Eur J Med Res. 2012; 17(1): 2.

Published online 2012 Jan 30. doi: [10.1186/2047-783X-17-2](https://doi.org/10.1186/2047-783X-17-2) Accessed April 7, 2016

Prevalence of oral lesions and periodontal diseases in HIV-infected patients on antiretroviral therapy.

[Kroidl A¹](#), [Schaeben A](#), [Oette M](#), [Wettstein M](#), [Herfordt A](#), [Häussinger D](#), [Eur J Med Res](#). 2005 Oct 18;10(10):448-53. Accessed December 12, 2015.

Oral Manifestations of HIV

Periodontal Disease



Linear gingival erythema (LGE)

LGE is limited to the soft tissue of the periodontium, appearing as a red line 2–3 mm in width adjacent to the free gingival margin. Unlike conventional periodontal disease, though, LGE is not significantly associated with increased levels of dental plaque.

LGE is the most reported periodontal disease in HIV patients

The prevalence of LGE remains unclear and there is no known treatment.

<http://escholarship.org/uc/item/1f04d17z>

Oral Manifestations of HIV

Fungal Lesions/Candidiasis



dentistryandmedicine.blogspot.com/2013/03/hiv-aids-and-oral-complications-of-hiv.html

Epidemiology of oral candidiasis in HIV-infected patients: Colonization, infection, treatment, and emergence of fluconazole resistance
[Jon A. Sangeorzan](#), [Suzanne F. Bradley](#), [Xiaogang He](#) [October 1994](#), American Journal of Medicine, Volume 97, Issue 4, Pages 339–346



Oral Manifestations of HIV

Fungal Lesions/Candidiasis

A presumptive diagnosis of oropharyngeal candidiasis is based on typical clinical appearance or on a favorable response to an empiric trial of antifungal medication

A definitive diagnosis of oropharyngeal candidiasis requires obtaining a direct smear and performing a potassium hydroxide (KOH) wet mount or Gram's stain and seeing characteristic yeasts

Fungal cultures are reserved for patients who do not respond to first-line therapy or for cases of suspected antifungal resistance



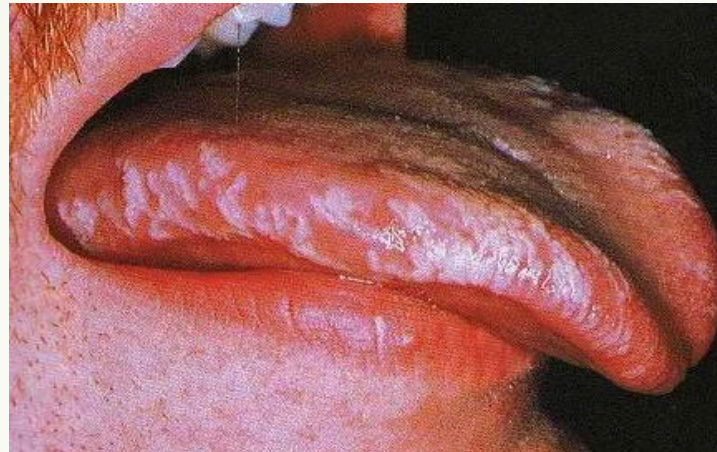
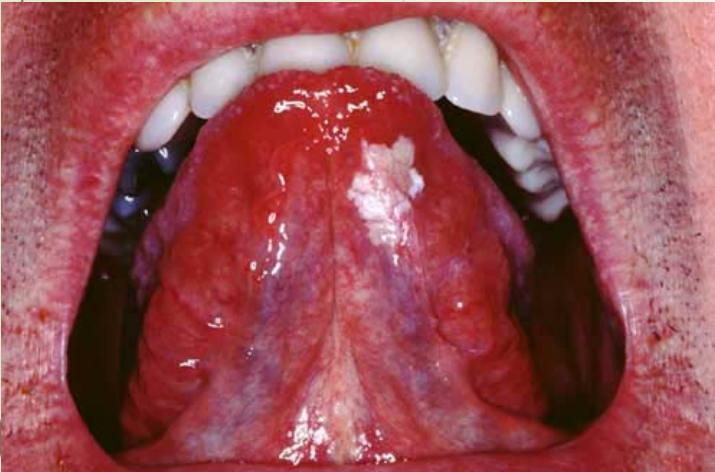
Oral Manifestations of HIV

Fungal Lesions/Candidiasis

- **Topical therapy reduces the risk of systemic drug exposure and adverse events, and is also considered acceptable first-line therapy for mild-moderate oral disease.**
- **Topical therapies include Miconazole buccal tablets, Clotrimazole troches, or Nystatin suspension or pastilles.**
- **Oral Fluconazole is the drug of choice for treating oropharyngeal candidiasis based on its efficacy, convenience, and tolerance**
- **Prophylactic treatment is usually accomplished with Fluconazole.**

Oral Manifestations of HIV

Oral Hairy Leukoplakia



Treatment

Usual resolution with ARV

Valacyclovir

Podophyllin resin combined with acyclovir cream

Oral Hairy Leukoplakia is a manifestation of later HIV disease and an important sign of immunosuppression

20% of persons with asymptomatic HIV infection more common as the CD4+ T-cell count falls.

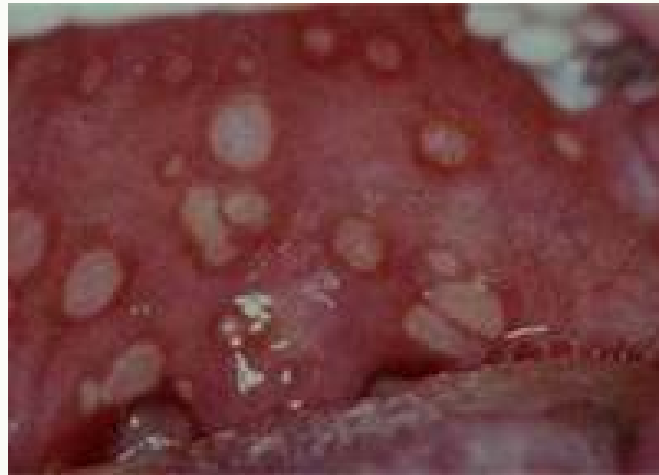
47% of a group developed CDC-defined AIDS within 2 years and 67% within four years

<http://diseasespictures.com/oral-hairy-leukoplakia>

Walling DM 2003 (PMID 12964120) Moura MD 2010 (PMID 20813564)

Oral Manifestations of HIV

Herpes simplex (HSV) causes both primary and secondary or recurrent disease in the oral cavity



Diagnosis

- Lab Testing is recommended HSV DNA PCR or viral culture and antigen detection

<http://gr.dentistbd.com/primary-herpetic-gingivostomatitis-ppt.html>.
<http://medicalpicturesinfo.com/herpes-simplex>

Oral Manifestations of HIV

Herpes simplex (HSV)

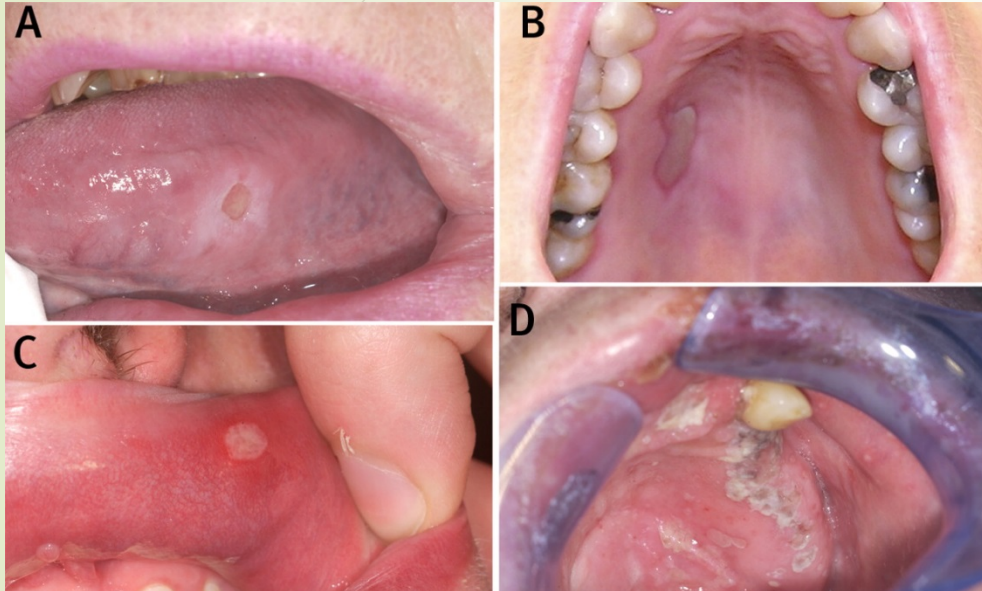
Treatment

- **Oral Valacyclovir, Famciclovir, or Acyclovir for 5 to 10 days. Intravenous Acyclovir may be required for severe mucocutaneous disease**
- **Patients may opt for episodic treatment or for daily suppressive therapy if they experience frequent or severe outbreaks.**
- **Long term suppressive therapy reduces the number of recurrences of mucocutaneous HSV disease in HIV-infected patients. Acyclovir 400 mg twice daily, Famciclovir 500 mg twice daily, and Valacyclovir 500 mg twice daily are recommended options for chronic suppressive therapy in HIV-infected patients.**

Guidelines for the prevention and treatment of opportunistic infections in HIV-infected adults and adolescents: recommendations from the Centers for Disease Control and Prevention, the National Institutes of Health, and the HIV Medicine Association of the Infectious Diseases Society of America. Available at http://aidsinfo.nih.gov/contentfiles/lvguidelines/adult_oi.pdf

Oral Manifestations of HIV

Aphthous Ulcers



Diagnosis

Diagnosis of aphthous stomatitis is based on clinical presentation
Exclusion of other possible causes, including HSV, syphilis, neoplasm, or drug reaction

Treatment

Topical anesthetics
Topical corticosteroid, ideally combined in a dental paste preparation

Antiretroviral therapy is a critical component in treating aphthous stomatitis

Vitamin B12

Topical tetracycline's may reduce the severity of ulceration

Aphthous ulcers (also called aphthous stomatitis) affect up to 15% of HIV-infected patients

Patients with HIV typically have oral ulcers that are more extensive, more frequent in occurrence, and slower to heal.

Cause unknown

Greenspan D 2001 (PMID 11356441)

Oral Manifestations of HIV

Idiopathic Thrombocytopenia Purpura



May be an initial indication of HIV

Treatments may consist of IVIG with HAART
Anti-D, Prednisone

Although thrombocytopenia may occur at any time during the course of HIV infection, the incidence generally correlates with the degree of immunosuppression and is more prevalent in individuals with clinical AIDS

healthmad.com/conditions-and-diseases/causes-and-symptoms-of-idiopathic-thrombocytopenic-purpura-itp

R. A. Kaslow, J. P. Phair, H. B. Friedman et al., "Infection with human immunodeficiency virus: clinical manifestations and their relationship to immune deficiency. A report from the multicenter Acquired Immune Deficiency Syndrome cohort study," *Annals of Internal Medicine*, vol. 107, no. 4, pp. 474-480, 1987.

Oral Manifestations of HIV



Oral warts are caused by human papillomavirus (HPV) and may appear anywhere within the oral cavity or on the lips. They occur more frequently and more extensively in people with HIV infection than in those with normal immune function, especially in patients with advancing immune suppression (CD4 counts of $<200-300$ cells/ μL). Oral warts may be refractory to therapy. The frequency of oral warts may increase, at least temporarily, in patients treated with antiretroviral therapy.

<http://saude-joni.blogspot.com/2012/02/hpv-oral.ht>



Oral Manifestations of HIV

Review recent CD4 counts. In patients with oral warts, the CD4 count usually is <300 cells/ μ L.

Treatment is difficult, as these lesions tend to recur.

Treatment options include cryosurgery and surgical or laser excision. Care must be taken when using laser excision, as HPV can survive in an aerosol.

- Extra oral lesions (lip or corner of mouth) may be treated with topical agents such as Podophyllin resin
- Systemic treatment may include Cimetidine or Interferon alpha

• Greenspan D, Canchola AJ, MacPhail LA, et al. *Effect of highly active antiretroviral therapy on frequency of oral warts.* Lancet. 2001 May 5;357(9266):1411-2.

Oral Manifestations of HIV

Kaposi's Sarcoma (KS)

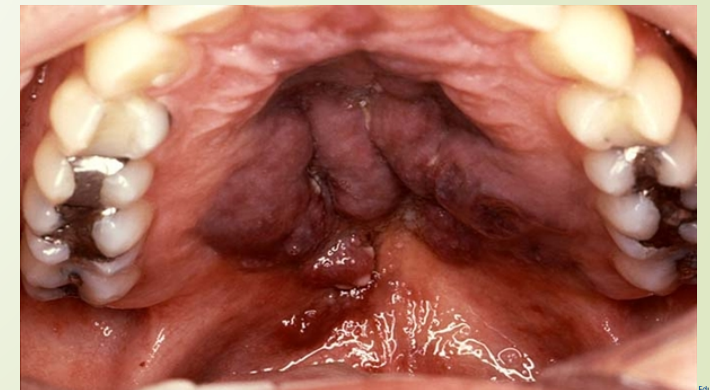
Lesions of the oral cavity occur in about one third of patients with AIDS-associated KS. Hard palate lesions are most common. These flat, red or purple plaques, either focal or diffuse, may be completely asymptomatic and easily overlooked. In other patients, however, larger nodular lesions involving the hard or soft palate, or both, may become ulcerated, and may bleed. Other oral sites of KS involvement include the gingiva, tongue, uvula, tonsils, pharynx, and trachea. These lesions may interfere with eating and speaking, cause tooth loss, or compromise the airways.

In many cases, HAART is the best way to treat active Kaposi's sarcoma. It may even clear up the skin lesions. These are other types of treatment you may need.

<http://saude-joni.blogspot.com/2012/02/hpv-oral.html>

wikipedia.org/wiki/File:KaposiSarcomaFromCDC03-18-06.JPG

Khammissa RA, Pantanowitz L, Feller L (2012) Oral HIV-Associated Kaposi Sarcoma: A Clinical Study from the Ga-Rankuwa Area, South Africa. AIDS Res Treat 2012, 873171.





Dental Recommendations for Treating HIV/AIDS Patients

The magnitude of the viral load is not an indicator to withhold dental treatment for the patient. High viral loads may be present in a patient with early asymptomatic disease, while low viral loads can be seen in very advanced patients on suppressive antiviral therapy. Knowledge of these markers can tell the dentist the general health of the patient and the risk of progression

The dentist can play an important part in reminding patients of the need for regular follow up and monitoring of these markers. It is recommended that the CD4 and viral load determinants be done every three-six months.

Antibiotic Prophylaxis

**There are no data supporting the need for routine antibiotic coverage to prevent bacteremia or septicemia arising from dental procedures
Prophylactic antibiotics should not be prescribed routinely for the dental visit when the HIV infection is well controlled**

Antibiotic Prophylaxis is Indicated:

**If a patient with a neutrophil count below 500 cells/mm³ requires procedures likely to cause bleeding and bacteremia and is not already taking antibiotics for prophylaxis against opportunistic infections
Consult Pt's physician regarding the need for antibiotic prophylaxis for dental procedures**



Treatment Considerations

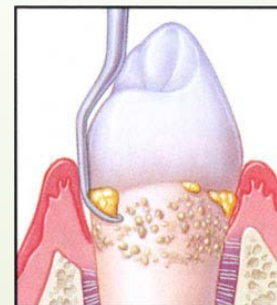
Bleeding tendencies may determine whether or not to recommend full mouth scaling and root planing or multiple extractions in one visit

In severe cases, patients may be treated more safely in a hospital environment where blood transfusions are available

Deep block injections should be avoided in patients with a recent history or laboratory results indicating bleeding tendencies

The ability to withstand treatment for an extended amount of time & the ability to return for sequential visits should be ascertained

A pre-treatment antibacterial mouth rinse may be indicated



Treatment Considerations

A three to four month recall schedule should be instituted to monitor any oral changes. For severely immunosuppressed Pts (i.e. CD-4 count of <100), a two to three-month interval should be considered.

Patients exhibiting oral lesions should be assessed in a timely manner

When reduced salivary function is present, the patient should be closely monitored for caries, periodontitis, soft tissue lesions and salivary gland disease.

Fluoride supplements in the form of a rinse and/or toothpaste should be encouraged for those with increased caries and dry mouth.

A proactive attitude and an emphasis on prevention should encouraged.

Schedule appointments at appropriate times and length based on patient needs.



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- Here are some important points to remember about HIV and oral health:
- Functional and proper oral health is necessary to receive adequate nutrition.
- Poor oral health leads to serious oral infections and links to diabetes, stroke, and cardiac diseases is well established.
- Oral health issues can often be the first sign of HIV and is a predictor of HIV progression and probability.
- Oral infections and poor dental health can stress a weakened immune system.
- HIV/AIDS Bureau Performance Measures for Oral Health include the following:
- Yearly dental and medical history-Yearly dental treatment plan- Oral Health Education
- Periodontal screening or examination (A complete examination is recommended and required by most state statutes)
- Phase I treatment plan completion (Includes the elimination or control of all active oral disease)
- Stress importance of brushing teeth after meals- twice daily and floss daily

What can the health professional do to meet these standards?

- **Include oral questions in your patient appointments**
 - **Do you have any oral sore, pain, swelling, bleeding, or difficulty eating**
 - **When was your last dental visit**
- **Assist patients in referrals for regular dental care**
- **Follow up and encourage patients to keep scheduled dental appointments**
- **Include other provider in the continuum of care to assist patients.**

Thank you

We are available for clinical consultations and trainings

Contact Lissette Lahozl
lx616@med.Miami.edu

Dr. Mark Schweizer
schweize@nova.edu

