AETC AIDS Education & Training Center Program Southeast

HIV and Oral Health 101

Mark Schweizer, DDS MPH, Associate Professor
Director of Special Projects
Director of Infection Prevention Programs
Nova Southeastern University College of Dental Medicine
Dental Director South Florida Southeast AIDS Education and Training Center

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

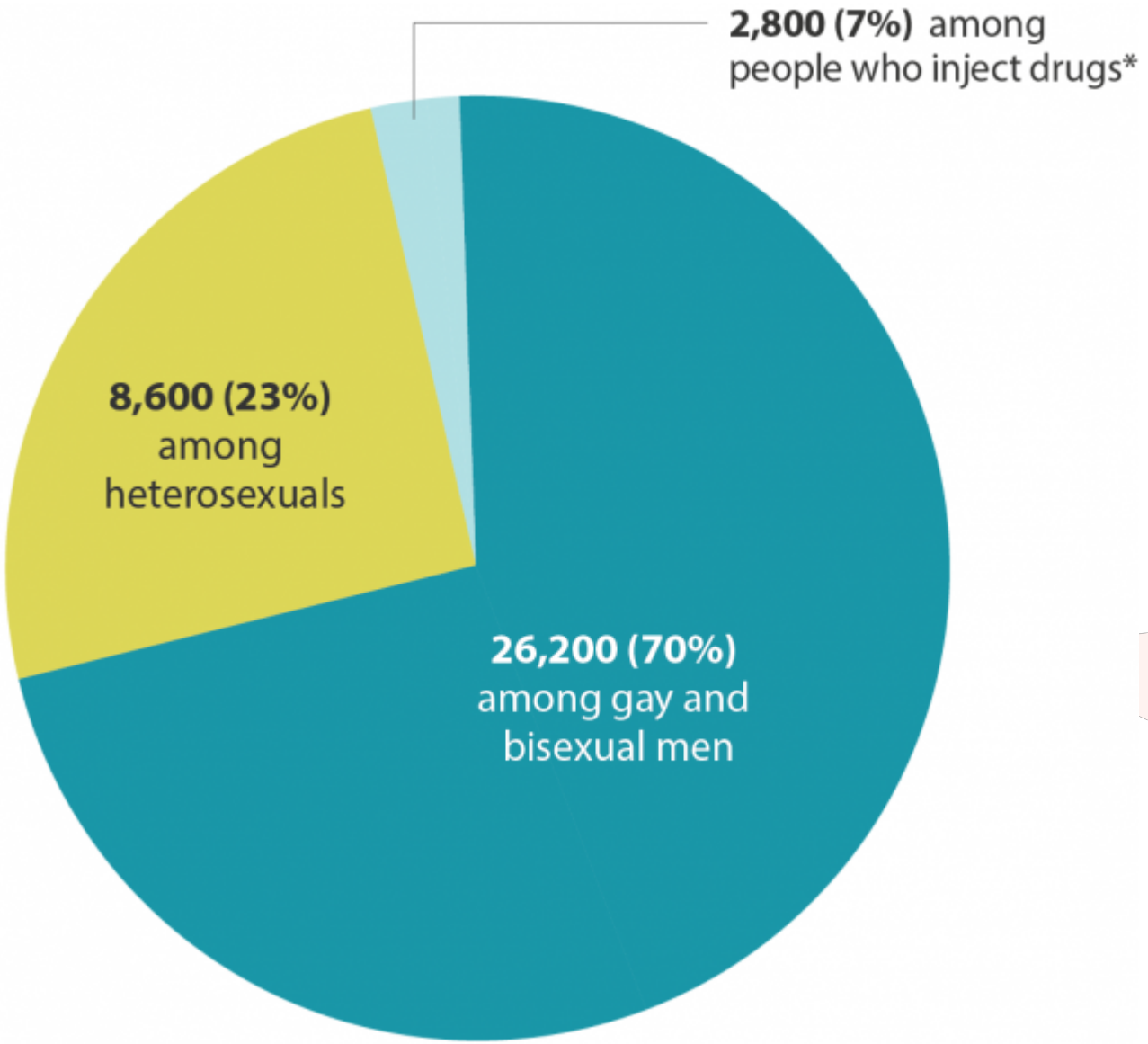
Objectives

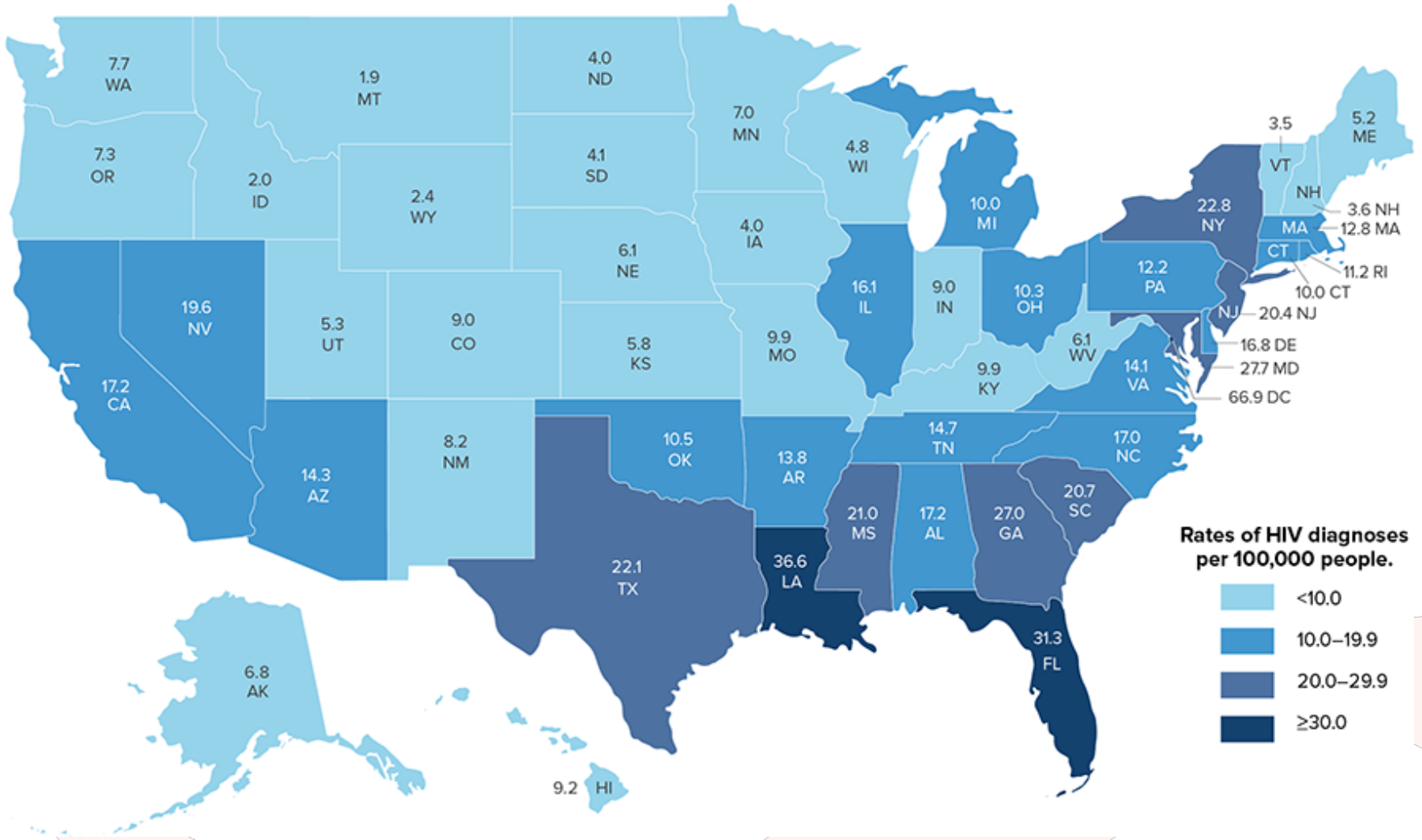
- Identify the current demographics of HIV/AIDS and infections rates
- Understand the disease course of HIV/AIDS
- Understand Oral Manifestations of HIV, their significance and Treatment
- Explain the HIV Continuum of Care and the Role of the Dental Professional

HIV in the United States

- In 2017, an estimated 38,379 people were diagnosed with HIV infection in the United States.
- More than 1.2 million people in the US are living with HIV, and 1 in 7 of them don't know it.
- Over the last decade, the annual number of new HIV diagnoses declined 19%.
- Gay and bisexual men accounted for an estimated 83% (29,418) of HIV diagnoses among males and 67% of all diagnoses.
- Black/African American gay and bisexual men accounted for the largest number of estimated HIV diagnoses (11,201), followed by white gay and bisexual men (9,008).

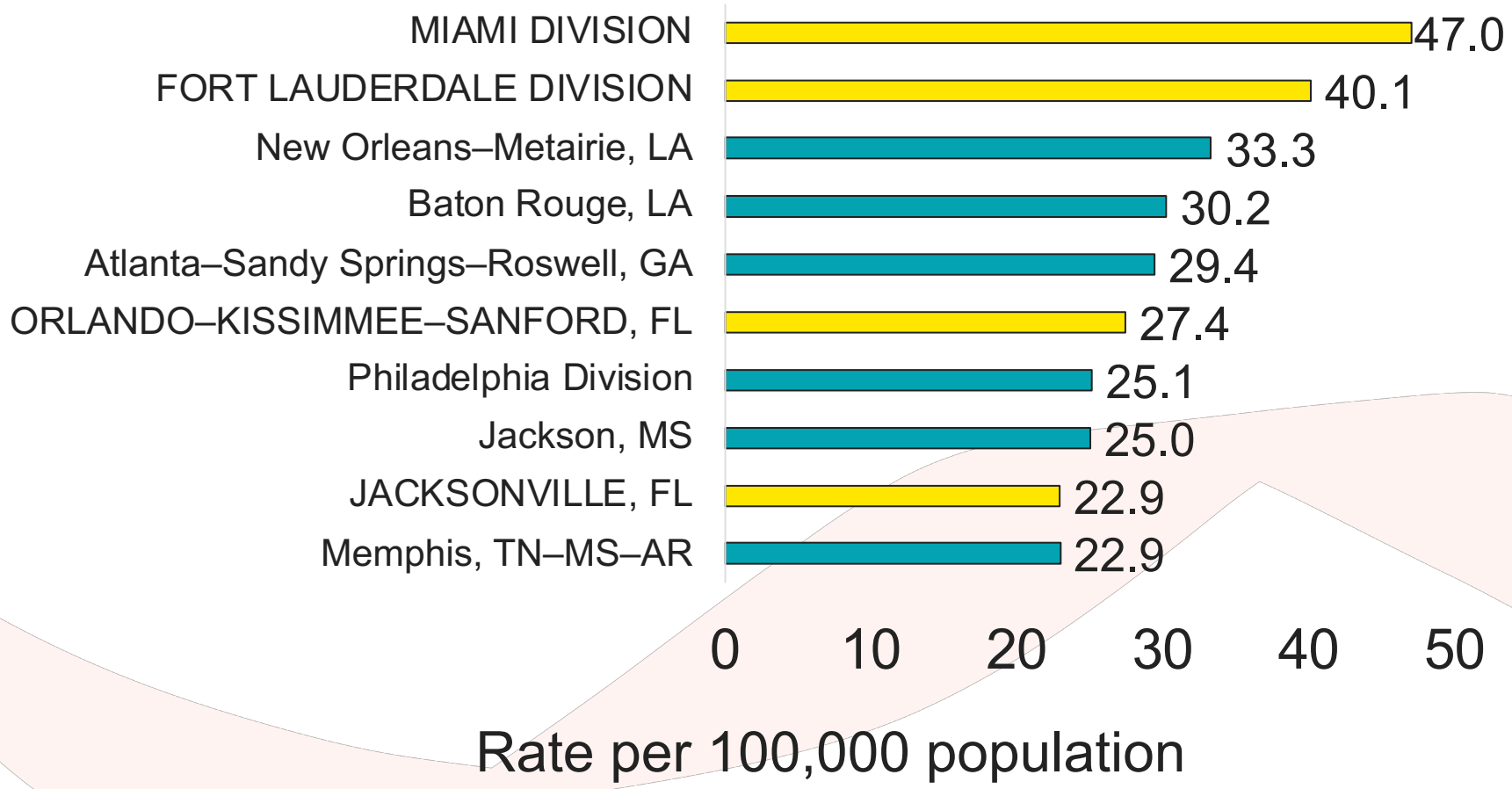
http://www.cdc.gov/hiv/statistics/overview/ataglance.html


2,800 (7%) among people who inject drugs*
8,600 (23%) among heterosexuals
26,200 (70%) among gay and bisexual men



The South made up 52% (19,968) of the new HIV diagnoses in the US, followed by the West (7,270; 19%), the Northeast (6,011; 16%), and the Midwest (5,032; 13%). US dependent areas made up 458 (1%) of new HIV diagnoses. The South's larger and more geographically dispersed population of people living with HIV creates unique challenges for prevention and treatment.

Rankings of HIV Case Rates by MSA Diagnosed in United States



[1] Source: US data: HIV Surveillance Report, 2016 (most recent available) Vol. 28, Table 28 (HIV data for metropolitan statistical area (MSA) of residence) http://www.cdc.gov/hiv/topics/surveillance/resources/reports/index.htm

Modes of Transmission/Health Care Workers

The average risk of HIV infection after a needle stick or cut exposure to HIV-infected blood is **0.3%** (i.e., three-tenths of one percent, or about 1 in 300). Stated another way, 99.7% of needle stick/cut exposures do not lead to infection.

The risk after exposure of the eye, nose, or mouth to HIV-infected blood is estimated to be, on average, **0.1%** (1 in 1,000).

The risk after exposure of non-intact skin to HIV-infected blood is estimated to be **less than 0.1%.** A small amount of blood on intact skin probably poses no risk at all. There have been no documented cases of HIV transmission due to an exposure involving a small amount of blood on intact skin (a few drops of blood on skin for a short period of time).

There is only a single documented risk of occupational exposure since 1999 and no reported dental exposure since 1998.

Post-exposure Prophylaxis

- Non-occupational N-PEP
- Occupational Exposure O-PEP

PEP should be considered if you've had a recent possible exposure to HIV.

- Occupational transmission of HIV to health care workers is extremely rare, and the proper use of safety devices and barriers can help minimize the risk of exposure while caring for patients with HIV.

- A health care worker who has a possible exposure should see a doctor or visit an emergency room immediately.

- PEP must be started within 72 hours after a recent possible exposure to HIV. The sooner, the better; every hour counts.

PEPline (1-888-448-4911), which offers around-the-clock advice on managing occupational exposures to HIV, as well as hepatitis B and C. Exposed health care workers may also call the PEPline, but they should seek local medical attention first.

HIV Transmissions in the Dental Office

Universal Precautions

Mask
Gloves
Eye Protection with Face Shield or side protectors
Disposable Gowns
Needle Protectors
Bur Protectors

No open toe shoes
Bare legs







Clinical Course

- The complications of HIV-related infections affect virtually every organ
- The CD4 lymphocyte count provides very important prognostic information
- Many individuals with HIV infection remain asymptomatic for years, even without anti-retroviral therapy.
- The mean time between the exposure and the development of AIDS is approximately 10 years.
- Physical examination may be entirely normal.
- Abnormal finding range from non-specific to highly specific for HIV infection

Diagnosis/Lab Findings

Nonspecific findings with HIV infection may include anemia, leukopenia, thrombocytopenia, elevation of ESR and hypocholesterolemia

Laboratories to provide prognostic information and guide therapy

- Absolute CD4 lymphocyte count → most widely used predictor of HIV progression.

- HIV viral load test: measure the amount of actively replicating HIV virus, correlates with disease progression and response to medications.

- ANC (Absolute Neutrophil Count): measure the level of immunosuppression, correlates with the risk of opportunistic infections.

LAB TESTS FOR HIV STATUS	NORMAL RANGE [1]	TREATMENT CONSIDERATION	MEDICAL SIGNIFICANCE	DENTAL SIGNIFICANCE	CRITICAL VALUES RECCOMENDED 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 ART	Indicates rate of HIV progression and ART response	Predictor of oral manifestation including Candidiasis Xerostomia, Recurrent Caries, cancer, etc.	If > 20 copies per mL after 6 months of ART
CD4 HELPER T CELL COUNT **T-lymphocytes/mm³ (absolute T-cell count)** [2]	500-1500 ART 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 ART
ANC **(Absolute Neutrophil Count) NEUTROPHIL % X WBC COUNT**	1500 to 8000	< 500 requires premedication	Susceptibility to infection	Susceptibility to infection	< 2,500/mm³

Premedication for Neutropenia in HIV Patients

Antibiotic prophylaxis in neutropenic patients reduces mortality, febrile episodes, and bacterial infections

Antibiotic coverage, prior to procedures likely to cause bleeding and bacteremia, is recommended for the immunocompromised HIV-infected patient when the neutrophil count drops below 500 cells/mm3 (neutropenia). Patients at this advanced stage of disease may already be taking antibiotics to prevent opportunistic infection, therefore, additional medications may not always be required. However, when antibiotic coverage is indicated, regimens similar to those for the prevention of bacterial endocarditis are considered effective.

http://www.uptodate.com/contents/hematologic-manifestations-of-hiv-infection-neutropenia

Resources for checking interactions

- http://www.hiv-druginteractions.org/
  - HIV iChart app available
- DHHS Adult HIV Guidelines, Tables 17-20 [www.aidsinfo.nih.gov]
  - https://aidsinfo.nih.gov/guidelines/html/1/adult-and-adolescent-arv-guidelines/367/overview

Oral Health and HIV

- 90% of PLWHA have at least on chronic oral condition
- 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.

http://hab.hrsa.gov/abouthab/files/oral_health_fact_sheet.pdf

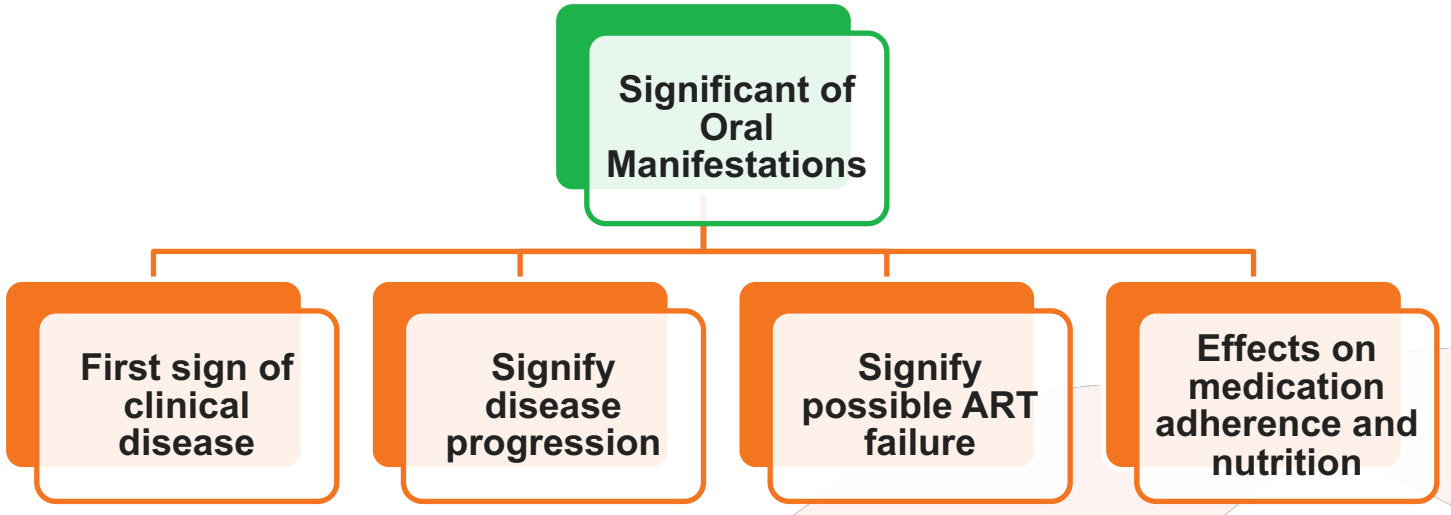
Oral Health and HIV

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/deliverhivaidscare/habperformmeasures.html

Oral Manifestations of HIV



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

XEROSTOMIA

There are multiple causes of xerostomia:

- Anticholinergic effects of many medications
- Alcohol and drug abuse
- Damaging head and neck radiation
- Comorbidities from HIV/AIDS such as cardiac disease, diabetes, and mental health disorders which occurs in PLWHA. As a result, many of the medications especially the antidepressants, anxiolytics, diuretics, and antihistamines being taken for these comorbidities

There are still differing studies of the xerostomic effects of antiretroviral medications used to treat HIV.

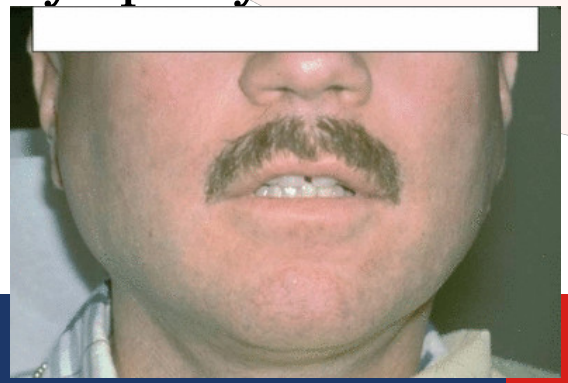
Xerostomia is the subjective complaint of oral dryness. This must be distinguished from salivary gland dysfunction which is an objective disease characterized by reduced salivary flow. Studies have shown that 40% or more of PLWHA experience major xerostomia during their disease. Studies of PLWHA with xerostomia show a frequently negative effect on their quality of life.

Symptoms of xerostomia include cracked peeled atrophic lips, glossitis, and pale dry buccal mucosa. Xerostomia can lead to dysphagia, oral pain of unknown origin, dental caries, oral infections, periodontal disease, angular cheilitis associated with candidiasis and can affect the health-related quality of life. These features of xerostomia can lead to the inability of the patient to take necessary medications, and can influence intake of proper nutrients, leading to malnutrition and a decline in overall health.

More significant in the era of ART is the increase in prevalence of salivary gland disease. Salivary gland disease can arise in 4% to 10% of adults and children with HIV.

HIV salivary gland disease (HIV-SGD) is a distinct disorder characterized by persistent major salivary gland swelling and xerostomia. Most commonly affected is one or both parotid glands sometimes which will occur without xerostomia. In some cases, salivary gland enlargement may be the first clinical manifestation of HIV infection, but more often a sign of late HIV infection.

The exact pathophysiology of HIV-SD, origins include lymphoepithelial lesions, cysts, intraglandular lymph nodes, and an inflammatory infiltrate similar to what is often observed in Sjogren's, syndrome however with distinct histopathologic and serological differences. In the infiltrate, there are persistent circulating CD8+lymphocytosis and diffuse visceral CD8+ lymphocytic infiltration.



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

Prescription products

Prevident 5000 plus toothpaste/gel/rinse, Fluoride Varnish

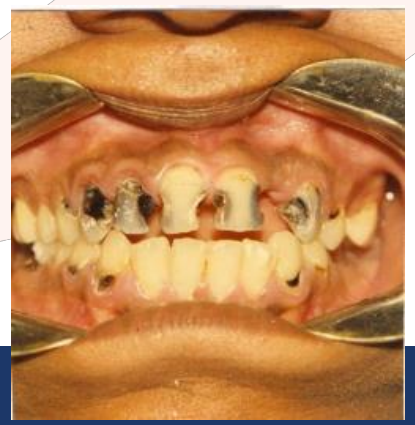
Home Care Instructions

Brush, Floss, Tongue Scraper

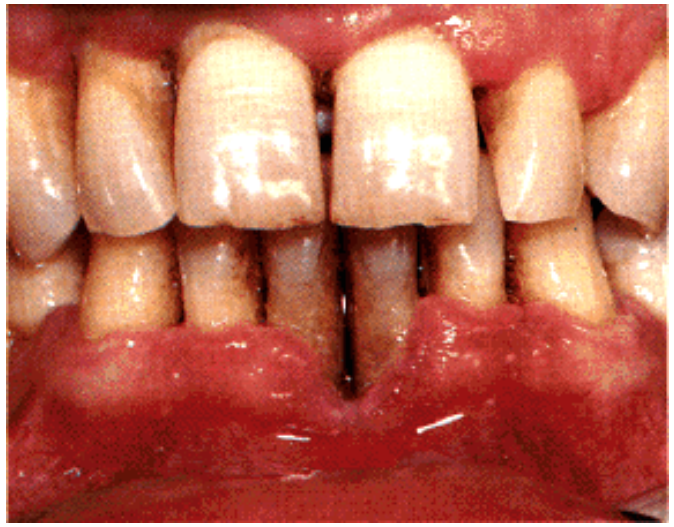
Dental Decay

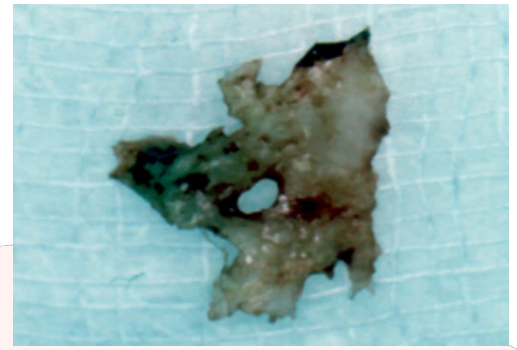
Factors that Increase Dental Decay

- Xerostomia is moderate to severe in 30-40% living with HIV/AIDS
- Xerostomia is cause by many medications use to treat HIV and comorbidities related to both HIV and aging
- In addition the HIV virus effects the salivary glands can lead to salivary gland deformities and damages that also decrease salivary flow.
- Diet
- Substance Abuse
- Increased Life Expectancy

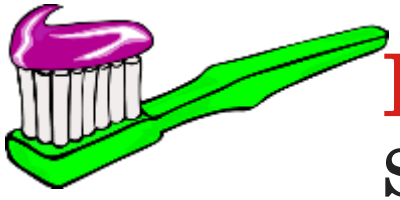


Periodontal Disease





Links between Periodontal Disease an other disease states/Diabetes/Heart Disease/Strokes



Periodontal Disease in the Era of ART

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. There is an increase in periodontal inflammation markers in patients with HIV.

Increased Prevalence of periodontal diseases in HIV-infected patients on antiretroviral therapy.

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.

Kroidl A[1], 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.

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
- Stress oral home care for clients and routine dental care

Oral Manifestations of HIV

Human Papilloma Virus

- About 7% of Americans have oral HPV. That's far fewer than the number who have the genital version, which is the most common sexually transmitted disease in the U.S.
- Every day in the US, about 12,000 people ages 15 to 24 are infected with HPV. Approximately 26 million Americans on any given day have an oral HPV infection. Of those approximately 2600 are HPV16 the strain that can lead to oral cancer.
- The vast majority of individuals will clear the virus naturally through their own immune response, and never know that they were exposed or had it.

http://oralcancerfoundation.org/hpv/hpv-oral-cancer-facts.php

Human Papilloma Virus

More than 40 types of HPV can infect people, but only a few cause cancer. One of the types that causes most cervical cancers, called HPV16, is also linked with most HPV-related head and neck cancers.

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://oralcancerfoundation.org/hpv/hpv-oral-cancer-facts.php

Human Papilloma Virus

- Possible spread through Oral Sex and French Kissing

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

HPV vaccine is recommended for routine vaccination at age 11to 12 years

Recommends vaccination for females aged 13 through 26 and males aged 13 through 21 years not vaccinated previously

Vaccination is also recommended through age 26 years for men who have sex with men and for immunocompromised persons (included those with HIV infection) if not vaccinated.

NEW RECCOMENDATION: The vaccine that prevents the human papillomavirus, HPV, has been approved by the Food and Drug Administration for men and women 27 to 45 years old.

www.cdc.gov/mmwr/preview/mmwrhtml/mm6411a3.htm

Oropharyngeal Candidiasis (OPC)

The most common HIV related oral lesion is Candidiasis, predominantly due to infection by Candida albicans.

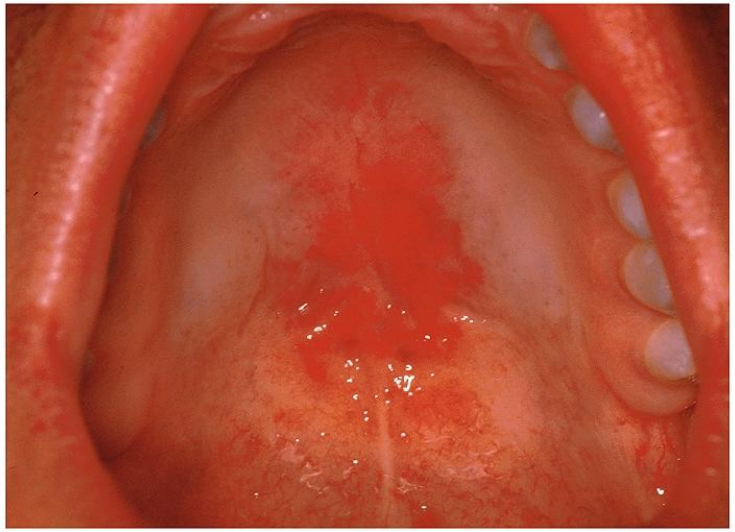
Non albicans species such as C. glabrata, C. tropicalis, C. krusei and C. kefyr have been reported in 1% to 20% of HIV infected patients.

It is often the initial manifestation of symptomatic infection with HIV, and may simply imply concurrent esophageal candidiasis, which is an AIDS indicator lesion, or also be a predictor of the likelihood of other opportunistic infections.

Baccaglini L, Atkinson JC, Patton LL, Glick M, Ficarra G, Perterson DE. Management of oral lesions in HIV positive patients. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2007;103(suppl1):s50.e1

Oropharyngeal Candidiasis (OPC)

Pseudomembranous candidiasis: Acknowledged as the most common variant, it presents as creamy, white, curd like plaques on the oral mucosa or tongue which can be wiped away, leaving a red erythematous surface. Patients may complain of soreness or burning in the mouth



Erythematous candidiasis

Hypertrophic Candidiasis

Angular Cheilitis

Oropharyngeal Candidiasis (OPC) Treatment

Early treatment of oral candidiasis is warranted not only because of the discomfort caused by the lesions, but also because the foci may act as reservoirs of organisms for local spread of disease.

It takes longer to eradicate candidiasis in HIV infected population, and relapse rates are high.

High fungal counts and smoking appear to increase the tendency for poor response.

Use of topical agents for treatment of OPC is recommended as initial therapy, more so owing to concerns of drug interactions between systemic antifungals and antiretroviral therapy.

Oral manifestations of HIV infection and their management. I. More common lesions. Oral Surg Oral Med Oral Pathol 1991;71:158

Oropharyngeal Candidiasis (OPC) Treatment

Topical antifungal agents include nystatin, clotrimazole, amphotericin B which can be delivered as oral suspensions, troches or tablets. Systemic therapy with ketoconazole, fluconazole, or Itraconazole is indicated in recurrent cases.

Recommend 200mg once daily oral dose of Nizoral (ketoconazole) for resolution of oral signs and symptoms. Although fluconazole is an effective mucosal antifungal drug, candidal recurrence and resistance to fluconazole appear to be an emerging problem.

Silverman S, Gallo JW, McKnight ML, Mayer P, deSanz S, Tan MM. Clinical Characteristics and management responses in 85 HIV infected patients with oral candidiasis. Oral Surg Oral Med Oral Pathol Oral RadiolEndod 1996;82:402

Oral Hairy Leukoplakia

Hairy leukoplakia (also known as oral hairy leukoplakia, or HIV-associated hairy leukoplakia), is a white patch on the side of the tongue with a corrugated or hairy appearance. It is caused by Epstein-Barr virus (EBV) and occurs usually in persons who are immunocompromised especially those with HIV/AIDS). This white lesion cannot be scraped off. The lesion itself is benign and does not require any treatment, although its appearance may have diagnostic and prognostic implications for the underlying condition. They often have a shaggy, corrugated or "hairy" appearance. CD4+ cell counts and viremia measured by high HIV RNA level in plasma. These lesions have been shown to predict progression to AIDS even independent of CD4+ count.

Self-limiting and generally requires no treatment.

May often be an initial sign of HIV infection

Oral manifestations of HIV infection and their management. I. More common lesions. Oral Surg Oral Med Oral Pathol 1991;71:158

http://diseasespictures.com/oral-hairy-leukoplakia
Walling DM 2003 (PMID 12964120) Moura MD 2010 (PMID 20813564

In patients living with HIV/AIDS good oral health care is especially important because:

1.Oral manifestations are common in people with HIV infection. More than 90% of HIV infected patients are seen to have at least one HIV related oral manifestation.

2. Oral lesions may be an early indicator of decline in immune function and may warrant further investigations

3. Control of focal infection within the oral cavity may retard adverse consequences such as progression to systemic diseases.

4. Poorly functioning dentition can adversely affect quality of life, and exacerbate weight loss in HIV infected patients, who may already be malnourished.

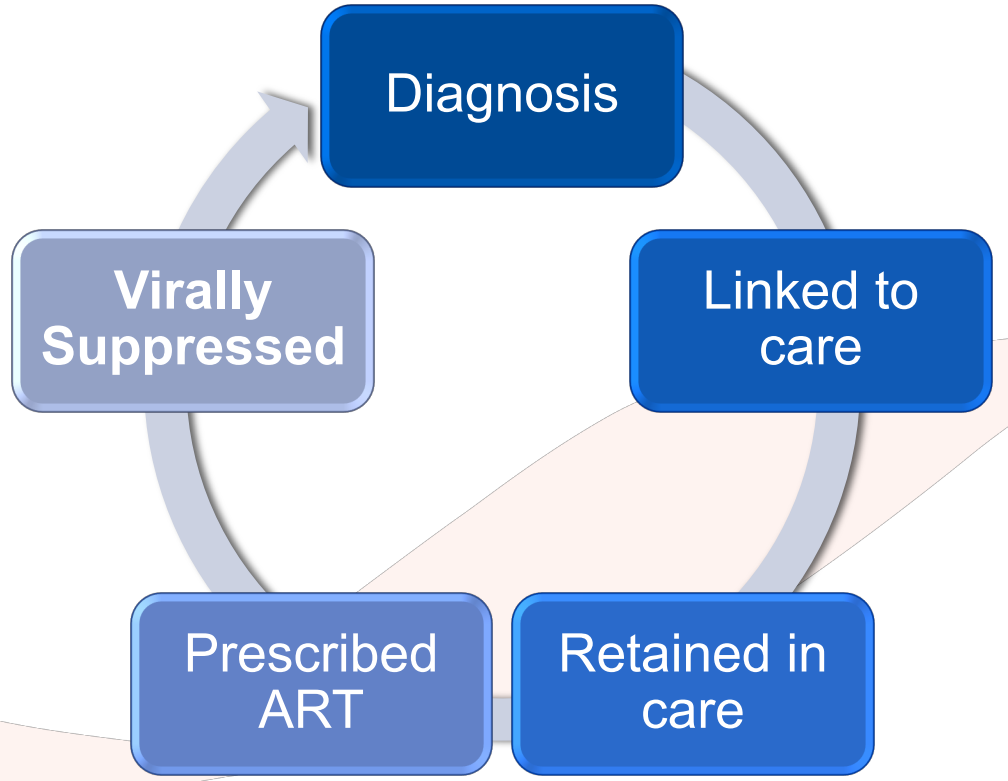
Combination ART has been documented to play a critical role in the prevention of oral manifestations of HIV because of its role in the reconstitution of the immune system.

The escalating number of patients infected with HIV and the resulting cases of AIDS has produced an increased observation of oral manifestations associated with this syndrome.

Thus, in addition to comprehensive general health care, oral health care is integral in the management of patients with HIV infection.

The need is comprehensive quality dental care in a multidisciplinary setting with medical and social support providers as poor oral health care in these patients can complicate the management of systemic conditions, lead to nutritional deficiencies, affect antiretroviral treatment compliance and adversely affect quality of life.

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

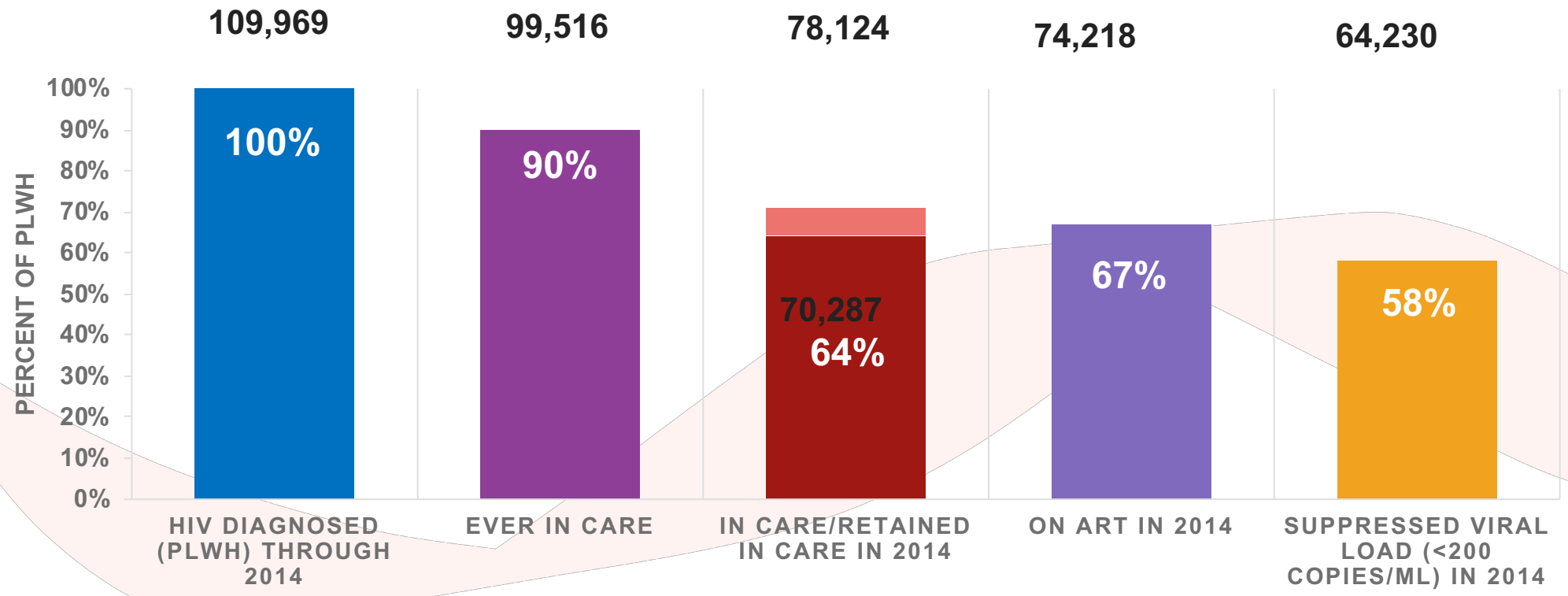


http://www.cdc.gov/nchhstp/newsroom/2012/Continuum-of-Care-Graphics.html

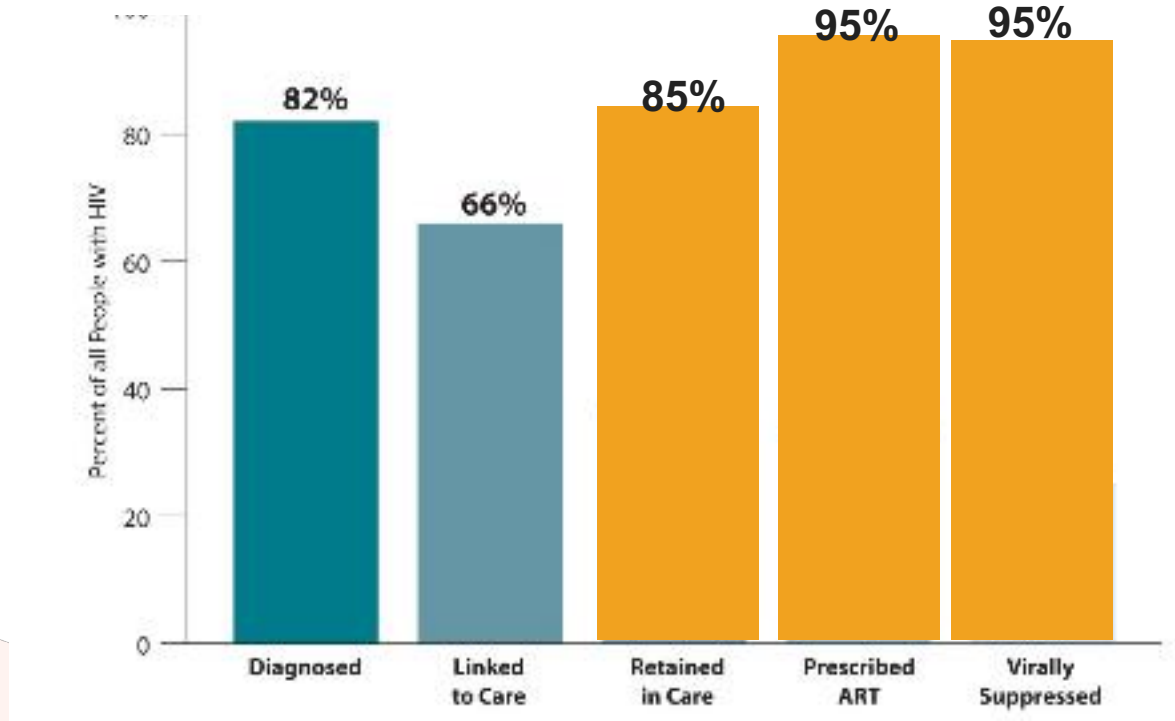
Accessed March 28, 2016

Number and Percentage of Persons Diagnosed and Living with HIV (PLWH) Engaged in Selected Stages of the Continuum of HIV Care Florida

http://www.floridahealth.gov/diseases-and-conditions/aids/surveillance/epi-slide-sets.html



Number and Percentage of Persons Diagnosed and Living with HIV (PLWH) Engaged in Selected Stages of the Continuum of HIV Care Florida Oral Health Care



Risk Factors for Oral Health Lesions

Moderate and severe degrees of immunodeficiency and detectable viral loads were risk factors for the onset of oral lesions, irrespective of the use of ART.

A mild immunologic impairment (CD4+ 350 to 500 cells/mm^3) was sufficient to increase the risk of developing Hairy Leukoplakia nearly 11-fold and shows that immunologic deficiency could be considered to be an independently associated risk factor for the onset of these lesions.

A detectable VL (> 50 copies/mm^3) was a risk factor for Oral Candidiasis compared with undetectable circulating HIV-RNA. When this association is investigated together with CD4+ counts and use of ART in detectable VL did not augment the susceptibility of developing this fungal infection

Risk factors of HIV-related oral lesions in adults
MNMR Petruzzi, K Cherubini, FG Salum… - Revista de Saúde …, 2013 - SciELO Public Health

Risk Factors for Oral Health Lesions

The components of cigarette smoke may induce chronic inflammation on the oral mucosae, cause damage to the innate immunity mechanisms against pathogens and inhibit cell growth by apoptosis mechanisms. These effects of smoking reduce the production of salivary enzymes and immunoglobulins and affect the production of lymphocytes, resulting in an imbalance of the oral microflora. These modifications probably encourage EBV infectivity, promoting the occurrence of Oral Hairy Leukoplakia.

Smoking and alcohol consumption contributed to a high susceptibility to the development of these affections in the evaluated subjects.

Risk factors of HIV-related oral lesions in adults
MNMR Petruzzi, K Cherubini, FG Salum… - Revista de Saúde …, 2013 - SciELO Public Health

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/mm^3 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

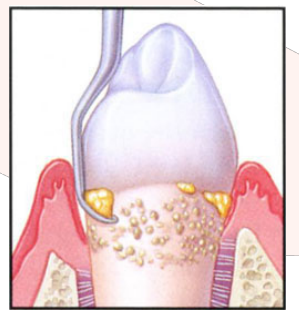
Bleeding tendencies may determine whether or not to recommend full mouth scaling and root planing or multiple extractions in one visit

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.

Thank you

- We are available for clinical consultations and trainings

- Dr. Mark Schweizer
- schweize@nova.edu

Southeast AIDS Education & Training Center