Oral Health and Disease in People Living with HIV Disease

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Learning Objectives

- Describe the latest trends in oral manifestations seen in association with medically complex patients.

- Be able to recognize and manage the most common oral manifestations seen in association with medically complex patients.

- Be familiar with Dental Treatment Considerations for HIV+ patients.

- Describe post exposure protocols after an incident in the dental setting.
Oral Manifestations of HIV Disease: The Basics

- Oral manifestations of HIV infection are a fundamental component of disease progression.
- There has been a significant decrease in the overall prevalence of oral lesions from 47 – 85% pre-cART to 32-46% post cART.
- Factors, which predispose expression of oral lesions, include:
  - CD4 counts less than 200 cells/mm³
  - Viral load greater than 3,000 copies/mL
  - xerostomia (dry mouth)
  - poor oral hygiene
  - smoking
Current smoking proved the major modifiable death risk factor among HIV-infected people enrolled in the Fat Redistribution and Metabolic Change in HIV Infection (FRAM) study.

Current smoking (but not past smoking) nearly tripled the death risk (hazard ratio [HR] 2.73, 95% CI 1.64 to 4.53, \( P = 0.0001 \)).

Studies from both the Americas and Europe report a decreased frequency of HIV-related oral manifestations of 10-50% following the introduction of ART.

Evidence suggests that cART plays an important role in controlling the occurrence of oral candidiasis.

The effect of cART on reducing the incidence of oral lesions, other than oral candidiasis, does not appear as significant.
Increased prevalence of oral warts in patients on cART has been reported from the USA and the UK.

HIV-related salivary gland disease may show a trend of rising prevalence in the USA and Europe.

A possible association between an increased risk of oral squamous cell carcinoma and HIV infection has been suggested by at least three epidemiological studies.
A retrospective study based on chart review was conducted among patients (n = 744) who were ≥19 years of age and initiated cART between 01/2000 and 06/06 at the University of Alabama at Birmingham (UAB) 1917 Clinic.

Patients' laboratory data and oral conditions were recorded for 2 years after enrollment into the study.

During 2 years of follow-up 35.6% (266/744) experienced at least one oral lesion.

- Oropharyngeal candidiasis (OPC) was the most frequent manifestation.
- Patients undergoing cART continue to be affected by HIV-related oral conditions, especially OPC.
- These results clearly indicate that oral lesions during HIV infection are still highly prevalent in spite of the improvements in medical care and the availability of cART.

For those with unknown HIV status, oral manifestations may suggest HIV infection, although they are not diagnostic.

For persons living with HIV disease not yet on therapy, the presence of certain oral manifestations may signal progression of disease.

Oral Manifestations of HIV/AIDS

- For persons living with HIV disease on antiretroviral therapy the presence of certain oral manifestations may signal a failure in therapy.

Case Study #1

- 42 year old African-American female presented to the Oral Health Center for routine restorative dental work 02/04/07. She was originally diagnosed in 1999 with a CD4 count of 13 cells/mm$^3$. Reports health is within normal limits, no new symptoms.

- Against her providers recommendations, she stopped taking her antiretroviral therapy in the latter part of November 2006.

- Her last CD4 count, taken early November 2006, was greater than 450 cells/mm$^3$. 
Case Study #1

- She returns to the Oral Health Center for her routine dental hygiene visit. Again, she reports no changes in her general health and well-being.

- An oral exam revealed the following:
Case Study #1

- A new CD4 count was taken in 04/15/07.
- A thorough review of her lab values revealed that her CD4 count is now 43 cells/mm³.
- Working with her primary care provider and nurse educator we were able to convince her to restart therapy.
Candidiasis

- There are three common presentations of candidiasis seen among people living with HIV/AIDS:
  - Angular cheilitis
  - Erythematous candidiasis
  - Pseudomembranous candidiasis
Candidiasis

- Three presentations of candidiasis are seen in association with HIV disease:
  - Angular cheilitis
  - Erythematous candidiasis
Candidiasis

- Three presentations of candidiasis are seen in association with HIV disease:
  - Angular cheilitis
  - Erythematous candidiasis
  - Pseudomembranous candidiasis
    - Mild to moderate disease presentation
Question #1
Treatment of candidiasis

- A. Treatment should continue until the symptoms of candidiasis are gone (3 to 7 days)
- B. Treatment of candidiasis should be for 10 days
- C. Treatment of candidiasis should last for 2 weeks.
- D. The answer depends on whether topical or systemic antifungal therapies are used.
Treatment of mild to moderate erythematous and pseudomembranous candidiasis

- Topical agents for mild to moderate oral candidiasis
  - Clotrimazole troches 10 mg: Dispense 70, dissolve one troche in mouth 5 times a day for 14 days
  - Nystatin oral suspension 500,000 units: Swish 5 mL in mouth as long as possible then swallow (optional), 4 times a day for 14 days
Candidiasis

- Three presentations of candidiasis are seen in association with HIV disease:
  - Angular cheilitis
  - Erythematous candidiasis
  - Pseudomembranous candidiasis
    - Mild to moderate disease presentation
    - Moderate to severe disease presentation
Available systemic medications used in the management of moderate to severe oral/esophageal candidiasis

- **Systemic agents**
  - **Fluconazole** 100mg: dispense 15 tablets, take 2 tablets on day 1 followed by 1 tablet a day for the remainder of the 14 day treatment period.
  - **Voriconazole** 200mg: dispense 14 tabs, take 1 tab BID for two weeks or at least 7 days following resolution of symptoms.

- Drug interactions – Contraindications: Rifampin, Rifabutin, Ritonavir and Efavirenz (all potent CYP450 inducers)
Oral Hairy Leukoplakia

OHARA Training Slide
Periodontal Diseases

- Necrotizing Ulcerative Gingivitis
- Necrotizing Ulcerative Periodontitis
Severe pain; 1 month duration; strong halitosis
Gingivitis and Periodontitis in Persons with HIV

• It is important to emphasize that not all patients with HIV necessarily have gingival or periodontal conditions associated with immunodeficiency.

• Conventional gingivitis and periodontal disease occur in this patient population.
Use of high-speed ultrasonic scalers

Which of the following statements is true?

#1 It is safe to use a high-speed ultrasonic scaler on a person with an AIDS diagnosis.

#2 It is NOT safe to use a high-speed ultrasonic scaler on a person with an AIDS diagnosis.
Q. What is the risk of transmission of bloodborne pathogens (e.g., HIV) through aerosols generated during the use of an ultrasonic scaler or high speed dental drill?

- Aerosols are invisible particles, less than 10 microns in diameter, generated by both human and environmental sources that have the capability to remain airborne for extended periods in the indoor environment.
- There is no clear evidence that powered dental and surgical instruments can generate aerosols containing infective bloodborne pathogens.
### Risk of Infection after Needlestick

<table>
<thead>
<tr>
<th>Source</th>
<th>Risk</th>
<th>Probability</th>
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<tbody>
<tr>
<td>HBV</td>
<td>6.0-30.0%</td>
<td>1/3</td>
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<tr>
<td>HCV</td>
<td>1.8%</td>
<td></td>
</tr>
<tr>
<td>HIV</td>
<td>0.3%</td>
<td>1/300</td>
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Risk of Occupational Transmission of HIV

- Following percutaneous exposure: approximately 0.3%
- Following mucous membrane exposure: approximately 0.09%
- Risk following nonintact skin exposure estimated to be <0.09%
- Risk following exposure to fluids or tissues other than HIV-infected blood estimated to be “considerably lower” than for blood exposure
Wound Care – Dos and Don’ts
DO
Wash Wound with Soap and Water
Don’t
Wash wound with bleach or other caustic agents
Don’t Squeeze or “milk wound
DO
Flush Mucous Membranes
Reporting Exposures

- Report exposures immediately!!
- Remember circumstances of exposure

PREVENTION IS PRIMARY!
Guideline Summary

Updated US Public Health Service Guidelines for the Management of Occupational Exposures to HIV and Recommendations for Postexposure Prophylaxis

Published August 2013
AETC NRC Slide Set
Guidelines Outline (2)

- Recommendations for the management of HCP potentially exposed to HIV
  - HIV PEP
    - Source patient testing
    - Timing and duration of PEP
    - Selection of PEP drugs
  - Follow-up of exposed HCP
    - Postexposure testing
    - Monitoring and management of PEP toxicity
NOT Considered Infectious for HIV Unless *Visibly Bloody*

- Feces
- Nasal Secretions
- Saliva
- Sputum
- Sweat
- Tears
- Urine
- Vomitus
Factors Associated with Increased Risk

- Visible contamination of device (such as needle) with patient’s blood
- Needle having been placed directly into vein or artery
- Hollow-bore (vs solid) needle
- Deep injury
- Source patient with terminal illness
- High viral load*

* Risk of transmission via occupational exposure to a source patient with undetectable viral load is thought to be very low but not impossible; PEP should be offered.
Selection of HIV PEP Regimens: Rationale for Current Recommendations

- Guidelines recommend use of ≥3 ARVs for treatment of HIV infection
- Optimal number of ARVs needed for HIV PEP is unknown
- Newer ARVs are better tolerated and have better toxicity profiles than agents previously used for PEP
- Thus, PEP regimens comprising 3 (or more) tolerable ARVs now recommended for all occupational exposures to HIV
Resistance to ARVs

- Resistance of the source virus to ARVs, particularly to 1 or more that may be included in a PEP regimen, may reduce PEP efficacy
  - Occupational transmission of drug-resistant HIV strains, despite PEP, has been reported

- If source patient is known or suspected to harbor drug-resistant HIV, consult with experts for PEP selection
  - Do not delay initiation of PEP; use ARVs to which the source virus is unlikely to be resistant
  - Resistance testing at time of exposure is not practical, given length of time required for results
  - If resistance test results become available during PEP, consider possible modification of PEP regimen if indicated
Source Patient HIV Testing

- If possible, determine the HIV status of exposure source patient to guide appropriate use of PEP
  - For sources whose HIV status is unknown, rapid HIV testing facilitates decisions about need to initiate or continue PEP
  - Investigation of whether a source patient might be in the window period before HIV seroconversion is not necessary, unless acute retroviral syndrome is suspected
  - 4th-generation HIV Ag/Ab tests allow identification of most HIV infections during the window period
Source Patient HIV Testing (2)

- PEP initiation should not be delayed while waiting for HIV test results
- If the source is found to be HIV negative, PEP should be discontinued, and no follow-up HIV testing for HCP is needed
Timing and Duration of PEP

- PEP is most effective when begun soon after the exposure, less effective as time increases (animal studies)
  - PEP should be started as soon as possible after the exposure, preferably within hours
  - Point at which no benefit may be gained is not defined; in animal studies less effective if started >72 hours after exposure

- Optimal duration unknown; 4 weeks appeared protective in occupational and animal studies
  - PEP should be taken for 4 weeks, if tolerated
PEP Regimens

- Preferred HIV PEP regimen:
  - Raltegravir (Isentress) 400 mg BID + TDF/FTC (Truvada) 1 QD
**PEP Regimens (2)**

- **Alternative regimens** *(combine 1 drug or drug pair from left column with 1 NRTI pair from right column):*

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<tr>
<th>Left Column</th>
<th>Right Column</th>
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<tbody>
<tr>
<td>Raltegravir</td>
<td>Tenofovir + emtricitabine</td>
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<tr>
<td>Darunavir</td>
<td>Tenofovir + lamivudine</td>
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<tr>
<td>Etravirine</td>
<td>Zidovudine + lamivudine</td>
</tr>
<tr>
<td>Rilpivirine</td>
<td>Zidovudine + emtricitabine</td>
</tr>
<tr>
<td>Atazanavir + ritonavir</td>
<td>Elvitegravir/cobicistat/tenofovir/emtricitabine (Stribild)</td>
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Resources for Consultation

- Local experts (eg, HIV or ID consultant, hospital epidemiologist)
- National HIV/AIDS Clinicians’ Postexposure Prophylaxis Hotline (PEPline)
  - 24-hour telephone consultation service: 888-448-4911
Situations in Which Expert Consultation Is Advised

- Delayed exposure report (ie, >72 hours)
  - Interval after which benefit from PEP undefined
- Unknown source (eg, needle in sharps disposal container or laundry)
  - Use of PEP to be decided on case-by-case basis
  - Consider severity of exposure and epidemiologic likelihood of HIV exposure
  - Do not test needles or other sharp instruments for HIV
- Known or suspected pregnancy in the exposed person
  - Provision of PEP should not be delayed while awaiting consultation
Follow-Up of Exposed HCP (2)

- Postexposure counseling
  - Exposed HCP should be advised to use precautions (eg, use latex barriers during sex; avoid blood or tissue donations, pregnancy, and, if possible, breast-feeding) to prevent secondary transmission, especially during the first 6-12 weeks postexposure
  - For PEP recipients, provide information on:
    - Need for adherence to PEP, importance of completing PEP regimen
    - Possible drug toxicities
    - Possible drug interactions
    - Symptoms to report to health care provider
Follow-Up of Exposed HCP

- Postexposure counseling (cont’d)
  - Psychological impact of occupational exposure to HIV may be substantial; psychological counseling should be an essential component of the management and care of exposed HCP
Follow-Up of Exposed HCP

Follow-up testing

- HIV testing at baseline, 6 weeks, 12 weeks, and 6 months after exposure
  - If 4th-generation p24 Ag/HIV Ab test is used: HIV testing at baseline, 6 weeks, 12 weeks, and 4 months after exposure
- HIV testing for any exposed HCP with symptoms compatible with acute retroviral syndrome, regardless of interval since exposure
- If HIV infection is identified, refer for HIV care
- Report case to state health department and to CDC COPHI coordinator (404-639-2050)
Other Occupational and Nonoccupational Exposures

- Managing exposure to hepatitis B and C (see previous guideline: CDC. *MMWR* 2001;50(RR-11); online at [http://www.cdc.gov/mmwr/PDF/rr/rr5011.pdf](http://www.cdc.gov/mmwr/PDF/rr/rr5011.pdf))

- Nonoccupational HIV exposure (see separate guideline: CDC. *MMWR* 2005;54(RR-9); online at [http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5409a1.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5409a1.htm))
Question #2 Case Study

- 28-year-old HIV-infected male is in need of comprehensive dental care including two dental extractions, periodontal scaling and root planing and multiple dental restorations.
Question #2 Case Study

- The patient does not have any other significant findings in his medical history with the exception of
  - *Pneumocystis* pneumonia two years ago.
  - Community acquired pneumonia two months ago.
  - Patient also presents with a moderate case of pseudomembranous candidiasis.
Question #2 Case Study

- CD4 count: 5 cells/mm$^3$
- VL: > 150,000 copies/mL
- Hg: 10.0 g/dl
- Platelet count: 75,000/mm$^3$
- Absolute Neutrophil Count (ANC): 1,000 cells/mm$^3$
Question #2 Case Study

You are interested in obtaining medical “clearance”. Which of the following statements are true?

A. Any HIV infected patient with a CD4 count less than 200 cells/mm³ should be pre-medicated prior invasive dental procedures to prevent a bacterial septicemia.

B. The candidiasis should be treated prior to initiating dental therapy to prevent a fungal septicemia.

C. The decision to grant clearance should be based on the individual’s ability to withstand invasive dental procedures and on pertinent lab values such as platelet count, INR, absolute neutrophil count (ANC) and glucose. CD4 count and HIV viral load do not have an impact on the provision of dental care.
Dental Treatment Considerations

- Evidence-based research has proven that providing dental care for the vast majority of people living with HIV/AIDS is no different than providing care for the general patient population.

331 patients (average CD4 count of 71 cells/mm$^3$) 1,800 invasive dental procedures (defined as the breaking of the mucosal membrane) were performed.

RESULTS: The number of post-procedural complications was only 17, representing an overall complication rate of 0.9%.

CONCLUSIONS: Incidence of post-procedural complications is no greater than in other populations.
Important lab values

- **CD4 count**
  - No need to premedicate prior to invasive dental care no matter how low.

- **HIV Viral Load**
  - No need to premedicate prior to invasive dental care no matter how low.

- **Platelet count**
  - Normal – male/female: 150,000 – 450,000 per microliter (mcl) of blood
  - Dental procedures can safely be performed with a platelet count of 60,000 mcl or greater

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Relating Disease Progression to Plasma HIV-1 RNA Level and CD4⁺ Cell Count

Adapted with permission from Coffin. AIDS. 1996;10(suppl 3):S75-S84.
Important lab values

- **INR for patients on warfarin**
  - No alteration of anticoagulation is necessary for INR that is in therapeutic range (INR 2-3), given that local hemostatic measures are used.²

- **Absolute Neutrophil Count¹**
  - An Absolute Neutrophil Count <500 cells/mcl requires premeditation prior to invasive dental procedures.
    - Follow the American Health Association/ADA guidelines

- **Glucose/ A1c**
  - A1c > 8% is poorly controlled; <7% is well controlled.

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Recommendations for patients on warfarin

- Current recommendations from the JADA based on review of published trial data are as the followings:
  - No alteration of anticoagulation is necessary for INR that is in therapeutic range (INR 2-3), given that local hemostatic measures are used.
  - Anticoagulation alteration is required if INR is >4.
  - INR >5 is contraindicated for surgical procedure.
Coumadin and Drug Interactions

- Coumadin can be safely used with Pen VK, clindamycin, Keflex and cefadroxil
- Coumadin with the following increases INR, and requires monitoring – Amoxicillin, Augmentin, tetracycline, fluconazole.
- Coumadin should not be used with metronidazole, erythromycin, erythromycin ethylsuccinate, clarithromycin
  - azithromycin <Zithromax> is the least likely macrolide to alter INR response to Coumadin.
Management of Bleeding For Patients on Hemostatic Agents

- **Warfarin:** For general dental procedures, no modification needed; single tooth extractions can be done with INR<3.0 with local hemostatics; for complex elective surgery, warfarin may need to be discontinued at least 24 hours in advance. A presurgical treatment INR should be obtained.

- **Low molecular weight heparins:** no need to discontinue for routine dental care; hold am dose only for surgical procedures.

- **Plavix and Aspirin:** no need to discontinue.

- **Dabigatran/rivaroxaban:** no need to discontinue for routine dental care; for complex elective surgery, drug may need to be discontinued at least 24 hours in advance.

- Primary closure and use of adjunctive local hemostatic measures is recommended for surgical procedures in bleeding prone patients when possible.
Oral Warts due to HPV

- Published reports show a markedly increased incidence of oral warts in the cART era * **
HPV and Cancer

- High-risk HPV infection accounts for approximately 5 percent of all cancers worldwide.

- Most high-risk HPV infections occur without any symptoms, go away within 1 to 2 years, and do not cause cancer. These transient infections may cause cytologic abnormalities that go away on their own.

- National Cancer Institute Fact Sheet: HPV and Cancer -
HPV and Cancer

HPV infections have been found to cause cancer of the posterior oropharynx, (soft palate, the base of the tongue, and the tonsils).

In the United States, more than half of the cancers diagnosed in the oropharynx are linked to HPV-16.

Squamous cell carcinoma

Clinical presentation

Signs: most common locations posterior lateral tongue floor of mouth ventral tongue soft palate highly variable appearance ulceration with raised, rolled margins red, velvety lesion with induration exophytic ulcerated mass mixed red/white lesion white plaque

Symptoms: sometimes painful
Squamous cell carcinoma

**Etiology/risk factors**
- etiology unknown
- tobacco
- alcohol
- nutritional deficiencies
- human papillomavirus

**Diagnosis**
- incisional biopsy

**Treatment**
- surgical excision
- radiation therapy
- Chemotherapy

**Pre- & Post- treatment**
- smoking cessation
- alcohol cessation
- aggressive oral health care
- close follow-up & periodic re-evaluation
Oral Ulcerative Diseases

- HSV
- Aphthous ulcers
- Neutropenic ulcers
- Idiopathic ulcers (ulcers not otherwise specified – NOS)
Recurrent intraoral herpes

OHARA Training Slide
Mild to moderate pain for 7 days – similar episodes several times per year - OHARA Training Slide
Ulcerated Lesions

Herpes zoster

Clinical presentation
Signs: trigeminal nerve, v2 & v3 unilateral clustered vesicles rupture & form small ulcers
Symptoms: severe pain/paresthesia

Etiology
varicella-zoster virus

Diagnosis
clinical presentation

Treatment
antivirals
pain medications
Aphthous Ulcer
History of recurrence of similar lesions
Minor Aphthous Ulcers
Major Aphthous Ulcer
Ulcer present 6 weeks – no previous history – Ulcer not otherwise specified (NOS) - OHARA Training Slide
Case # 3

- 11/11/11 – received call from a primary care provider to consult on the following case:
  - 49 year old Caucasian male – CD4 count 92 cells/mm³; HIV VL undetectable; WBC 2.7, Platelets 184,000
  - Present medications: tenofovir 300mg, DDI EC 250mg, atazanavir 300mg, norvir 100mg
  - Chief complaint – mouth pain – 10 on a 0 – 10 pain scale
Consult case
Case # 3

- Treated with acyclovir 400mg TID, prednisone 60mg taper, Gelclair (glycyrrhetinic acid/povidone, hyaluronate), percocet, ketoconazole cream 2%

- HSV culture taken; Bacterial culture taken
  - HSV – negative
  - Bacterial culture reveals Staph aureus
Case # 3

- Histoplasma antigen, CBC, platelets, differential and RPR ordered on 12/12/11.
- RPR + - some signs of cognitive decline
- Dx: Neurosyphilis
  - Successfully treated with IV PCN in hospital for 4 days, released on IM procaine PCN plus probenecid
Mountain Plains AIDS Education and Training Center and HIVdent present:

ORAL HEALTH CARE
for the HIV-Infected Patient

HIV PROVIDER REFERENCE SERIES
A PUBLICATION OF THE MOUNTAIN PLAINS AIDS EDUCATION AND TRAINING CENTER
Questions?

WWW.HIVDENT.ORG