



HIV Care & Oral Health – An Update

Kishore Shetty, DDS, MS, MPA
MATEC Regional Oral Health Director
Chicago, Illinois

September 20th 2022



Disclaimer

This program is supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) as part of an award totaling \$3,994,961.00 with 0 percentage financed with nongovernmental sources. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by HRSA, HHS or the U.S. Government.

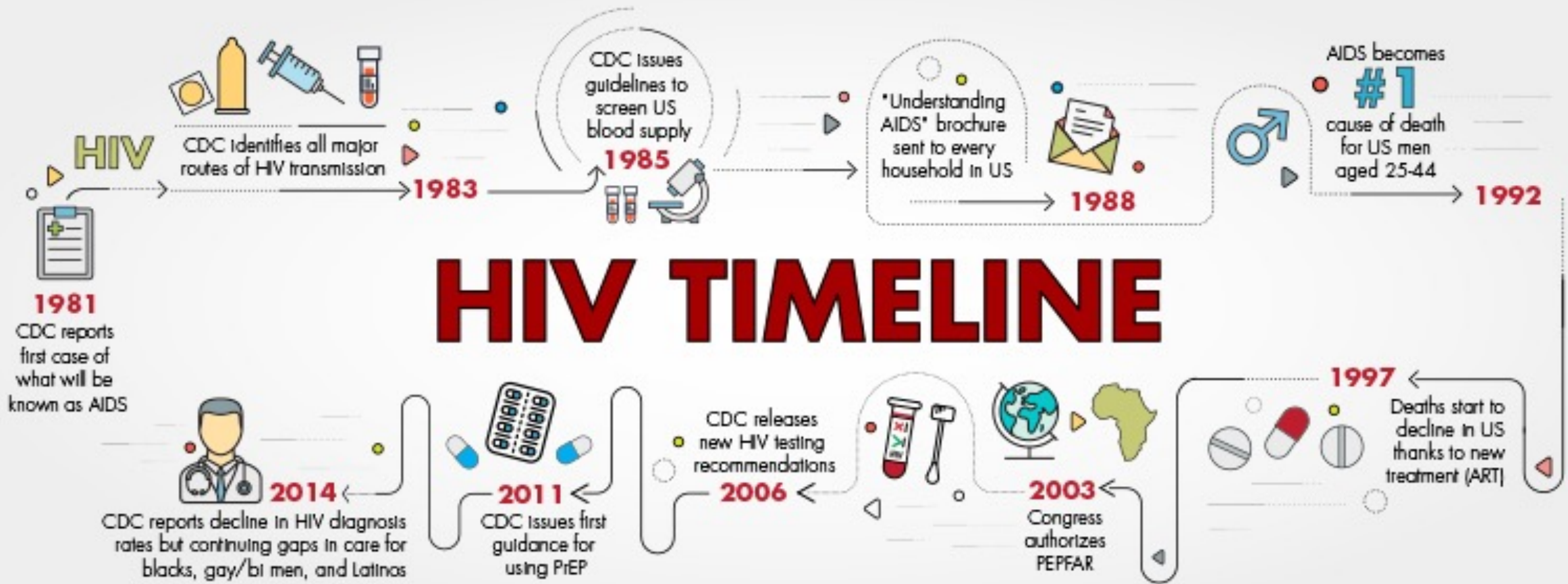
Financial Disclosure

- No personal disclosures or conflicts of interests
- No financial or personal endorsement on any product discussed

Learning Objectives

- Describe common signs and manifestations intra-orally seen in patients
- Discuss dental management of patients with HIV
- Discuss cultural sensitivity training for general primary and dentistry care providers

PAST & PRESENT.....



And we are still fighting...

HIV Has Cost America Too Much for Too Long

700,000+

American lives lost to HIV since 1981

\$28 billion

Annual direct health expenditures by U.S. government for HIV prevention and care

Without intervention and despite substantial progress another

400,000

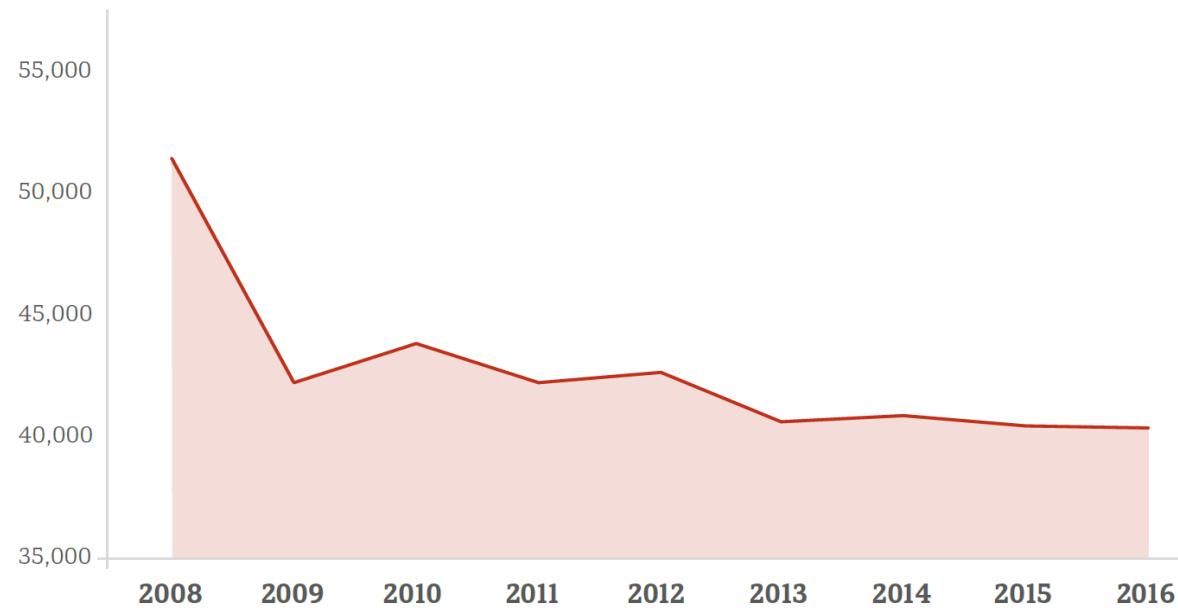
Americans will get HIV over 10 years despite the available tools to prevent infection

New HIV Diagnoses Have Declined Substantially, But Progress is Stalled

1980s
Peak incidence near 130,000
AIDS cases annually

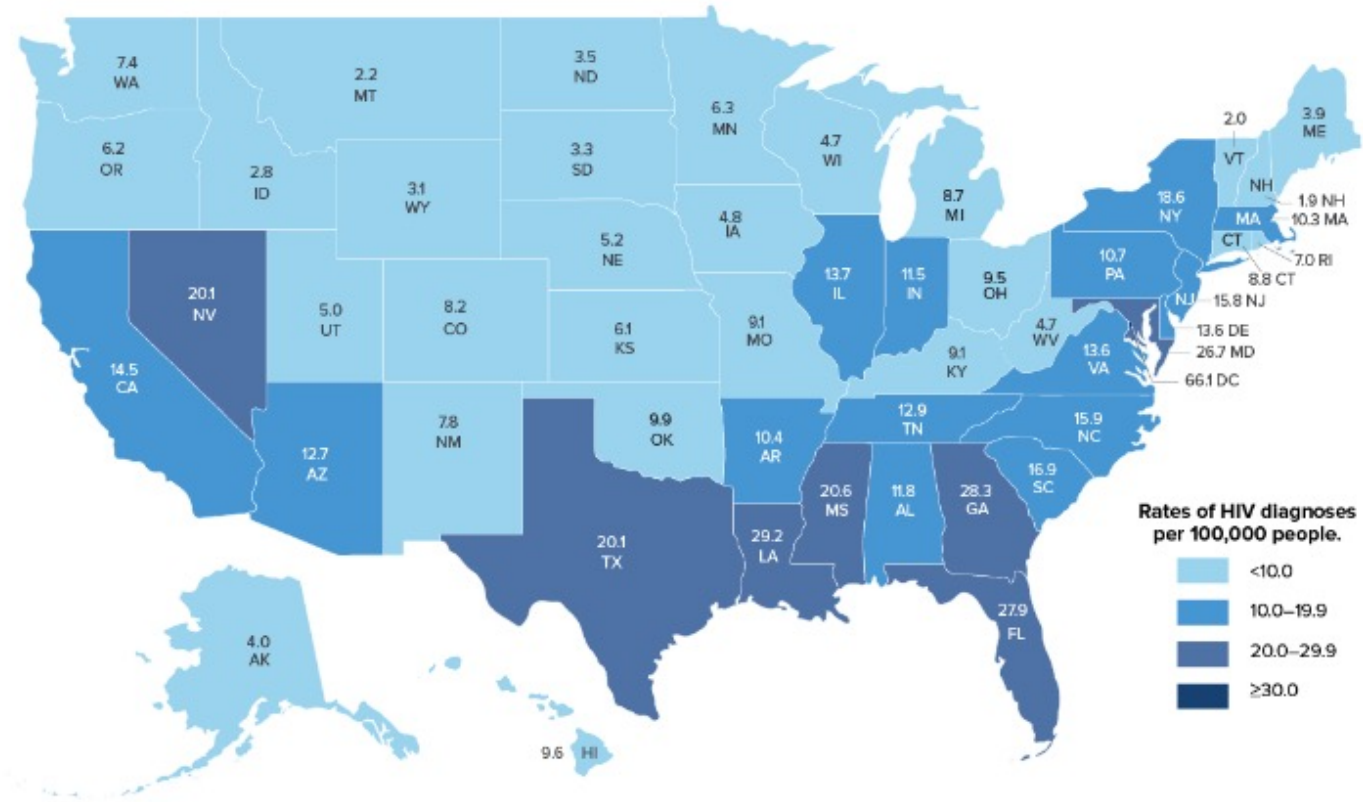
1985 - 2012
Interventions have driven
new diagnoses down to
<50,000 annually

2013- Present
New diagnoses have
stabilized after a
period of decline



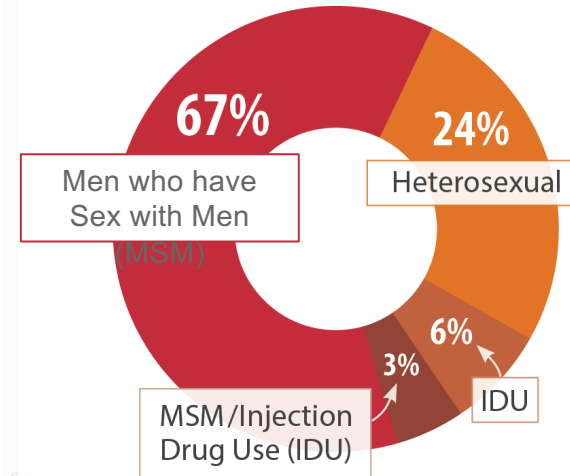
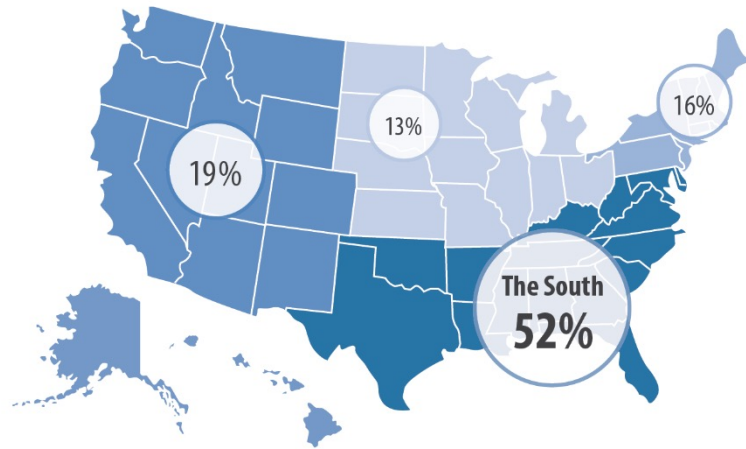
HIV Nationally

Rates of HIV Diagnoses Among Adults and Adolescents in the US in 2015, by State



HIV Disproportionally Affects Certain Groups

Percentage of HIV Diagnoses in 2017



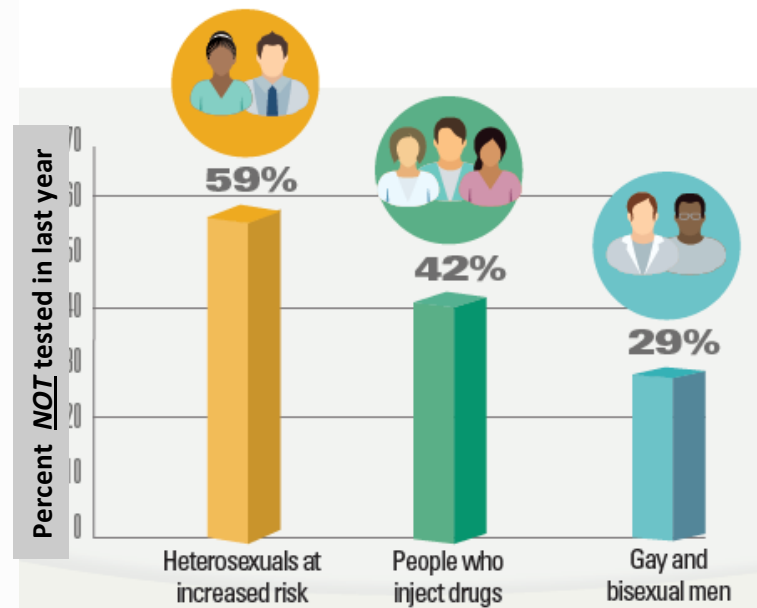
African Americans account for 44% of HIV diagnoses, but comprise only 13% of U.S. population

From 2012-2016, HIV diagnoses among **24-35 years old Hispanic/Latino MSM** increased 22%

From 2012-2016, HIV diagnoses among **American Indians/ Alaska Natives** increased 34%

Early Diagnosis Essential But Many People at Risk for HIV Not Tested Annually

7 in 10 people at high risk who weren't tested for HIV in the past year saw a healthcare provider during that time.
More than **75%** of them weren't offered a test.



In 2015, **nearly 40,000** people in the US received an HIV diagnosis
.....
1 in 2 had been living with HIV 3 years or more
.....
1 in 4 had been living with HIV 7 years or more
.....
1 in 5 already had the most advanced stage of HIV (AIDS)

Ending
the
HIV
Epidemic

www.hiv.gov

How Does HIV Affect the Mouth?

- The mouth may be the first part of the body to be affected after HIV infection
- Infection can cause trouble chewing or swallowing, which may prevent a barrier to taking HIV medications or eating properly
- HIV-related oral conditions occur in a large proportion of patients, and are frequently misdiagnosed or not treated adequately
- Common mouth issues in people with HIV:
 - Dry mouth (Xerostomia)
 - Thrush (Candidiasis)
 - Gum disease (Acute Ulcerative Gingivitis/Periodontitis)
 - Canker sores (Aphthous Ulcers)
 - Warts (Human Papillomavirus)

Xerostomia

- The prevalence of xerostomia (the subjective complaint of dry mouth) and salivary gland hypofunction (objective evidence of reduced saliva secretion) has been reported to be in the range of 2% to 10% in HIV positive patients
- Use of Crystal methamphetamine is associated with increased risk of HIV acquisition
- Rapid Dental Decay known as meth mouth
 - Xerostomia
 - Bruxism
 - Poor Diet
 - Sugar cravings
 - Corrosive constituents: lithium, sulfuric acid, lye

CHIEF COMPLAINT- Dry Mouth

YES

NO

DRY MOUTH QUESTIONNAIRE

1. Does the amount of saliva in your mouth seem to be too little, too much, or you don't notice it?
2. Do you have difficulties swallowing?
3. Does your mouth feel dry when eating a meal?
4. Do you sip liquids to aid in swallowing food?

CLINICAL EVALUATION
Does patient manifest any of the following?

Major Salivary Glands

- Enlarged
- Tender
- No saliva upon salivation

Lips

- Dry
- Chapped
- Fissured
- Erythematous

Mucosa/Tongue

- Dry
- Erythematous
- Lobulated
- Fissured

Dentition

- Extensive restorations
- Rampant caries
- Cervical or root surface caries

Treatment for Salivary Hypofunction

- ◆ Oral balance gel and spray
- ◆ Tom's of Maine TP for dry mouth (apricot, xylitol)
- ◆ Orajel Dry Mouth TP, gel, spray
- ◆ SalivaSure (xylitol), Scandinavian Formula
- ◆ Trident gum – Recaldent (CPP-ACP), xylitol
- ◆ Cevimeline (Evoxac) 30 mg
- ◆ Green tea polyphenols
- ◆ Evening Primrose Oil



Cevimeline HCL

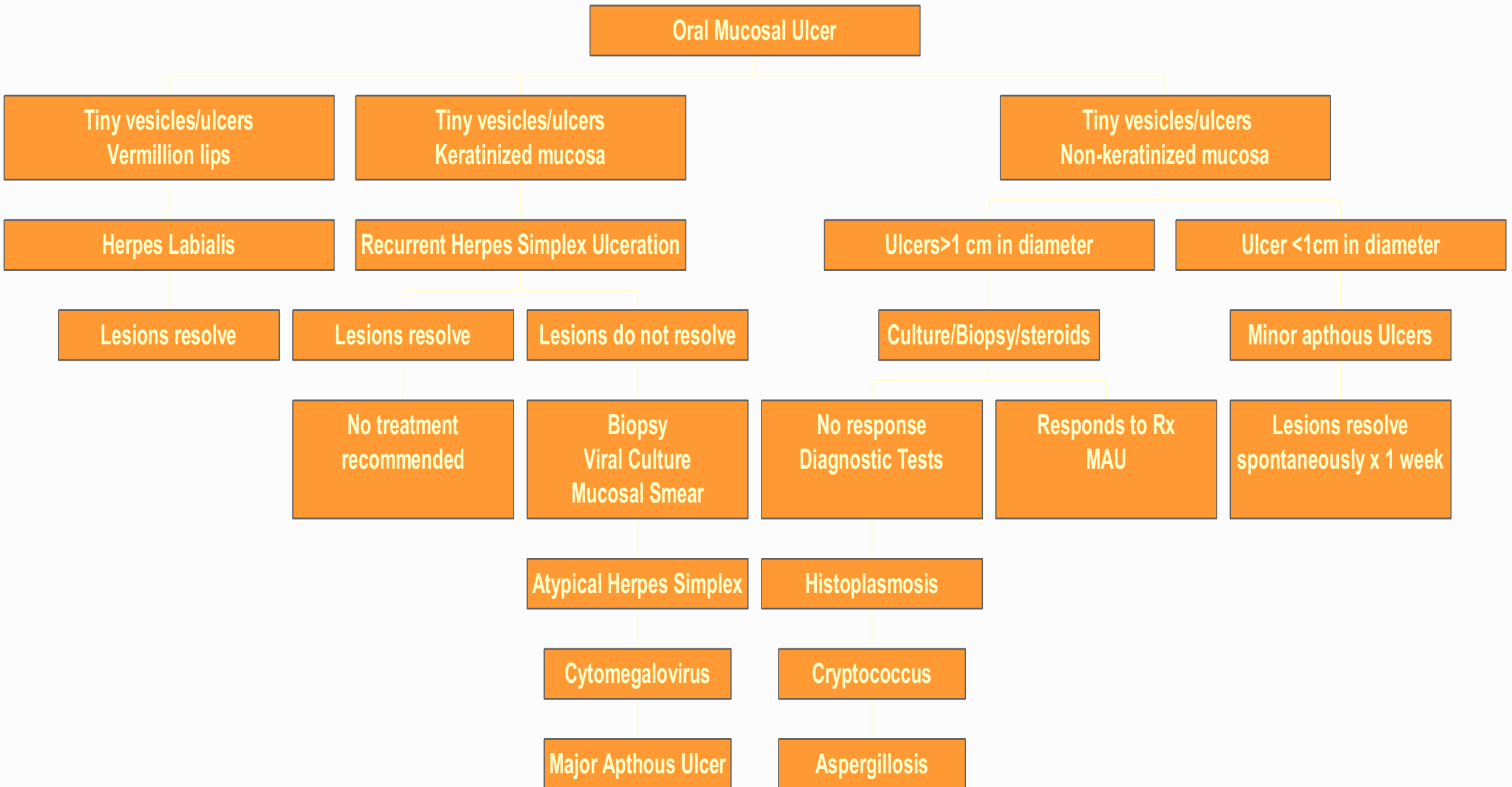
- Cevimeline HCL is a cholinergic agonist which binds to muscarinic receptors.
- Muscarinic agonists in sufficient dosage can increase secretion of exocrine glands, such as salivary and sweat glands and increase tone of the smooth muscle in the gastrointestinal and urinary tracts.
- Approved by FDA to increase salivary secretions in patients with Sjogren's Syndrome (30 mg tid).
- It has been suggested that cevimeline may have clinical implications in the management of xerostomia secondary to irradiation, HCV Infection and drug therapy (Scully 04).

Topical Antifungals for OPC

AGENTS	FORM	STRENGTH	USE
Nystatin	Tablets	100,000 unit	Dissolve 1 tab TID
Nystatin	Pastille	200,000 unit	Dissolve 1-2 QID
Nystatin	Suspension	100,000 unit	5mL S&S QID
Clotrimazole	Oral troche	10mg	Dissolve 1 tab 5/day
Amphotericin B	Suspension	1mg/mL	1mL S&S QID
Amphotericin B	Lozenge	100mg	QID
Amphotericin B	Tablet	10mg	QID

Systemic Antifungals for OPC

AGENTS	FORM	STRENGTH	USE
Ketoconazole	Tablet	200 mg	1-2 tablets QD-BID
Fluconazole	Tablet	100 mg	1 tablet QD
Fluconazole	Solution	10mg/mL	10 mL QD
Itraconazole	Capsule	100 mg	200 mg QD
Itraconazole	Solution	10mg/mL	10-20 MI QD-BID



Aphthous Ulcers

	Minor RAS	Major RAS	Herpetiform
Location	BM, FOM Tongue,	LM, Palate Tongue	All oral mucosa
Number	1-10	1-5	5-100
Size, cm	<1.0	>1.0	<0.3
Pain	Mild	Severe	Mild
Duration, d	7-14	15-60	7-14
Scarring	Rare	Common	None
Comments		HIV	

Immunopathogenesis

- Predominantly cell-mediated immune responses involving T cells and Tumor Necrosis Factor (TNF) α production
- TNF α induces inflammation by its effect
 1. Endothelial cell adhesion (pre-ulcerative)
 2. Neutrophil chemotaxis (ulcerative)

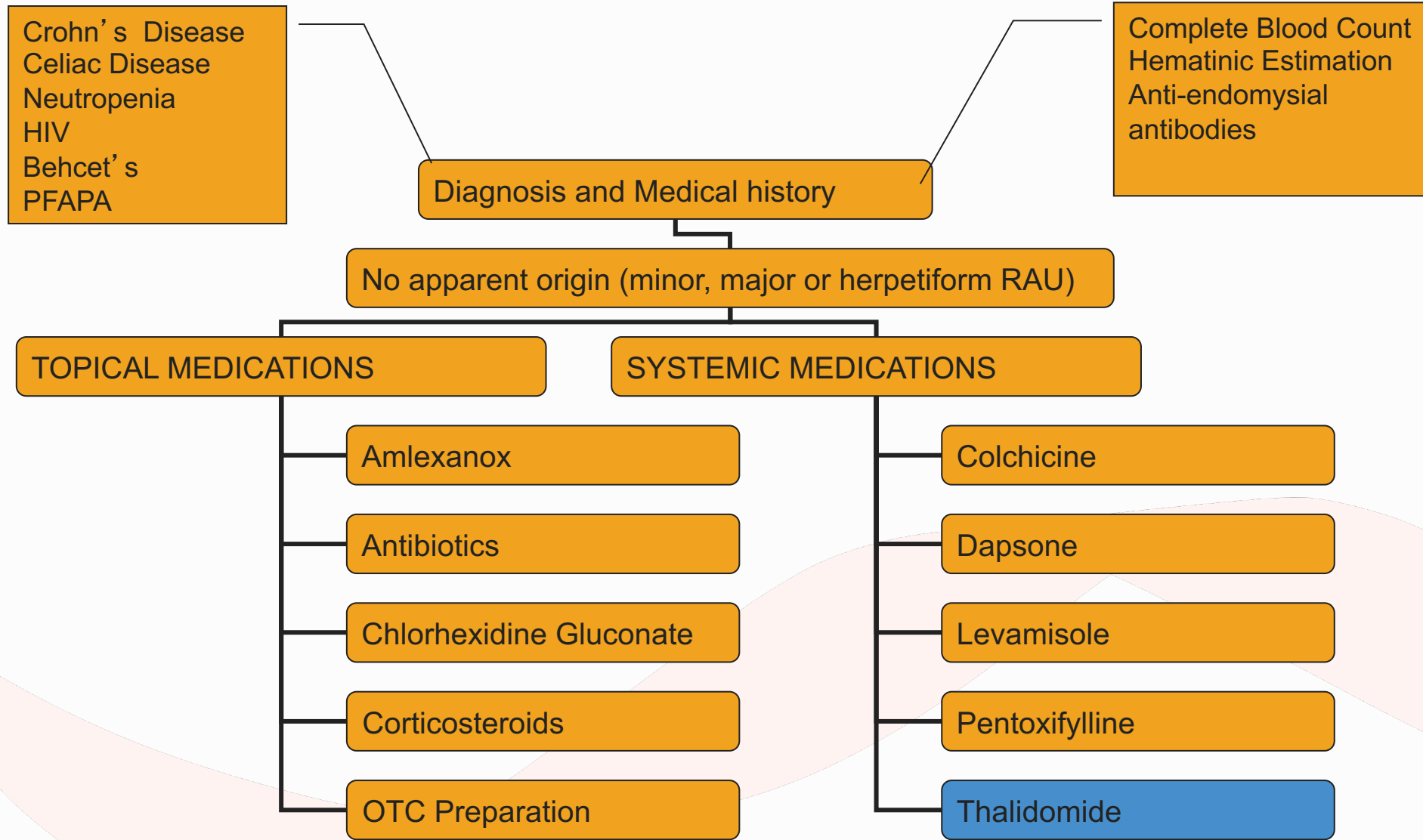
Goals of therapy

Primary

1. Decrease symptoms (pain relief)
2. Reduction of ulcer duration
3. Restoration of normal oral function

Secondary

1. Reduction in the frequency
2. Reduction in severity of recurrences
3. Maintenance of remission



Thalidomide

- Thalidomide was synthesized in Germany in 1954 as a non-barbiturate hypnotic agent.
- Indicated for calming the symptoms of morning sickness and nausea in pregnancy
- 1961 – birth defects associated (vestigial flipper-like limbs). Subsequently withdrawn in US
- In LATE 1990s several trials in US/Israel; thalidomide has proven to be effective at doses of 100 to 200 mg per day to treat aphthous ulcers in HIV patients
- May require 2-3 months of treatment before a response is observed
- The drug of choice for recurrent major RAU in HIV positive patients

Thalidomide

- The mechanism of action of thalidomide is not fully understood and it may be related to immune modulation, cytokine inhibition and/or antiangiogenesis
- Thalidomide inhibits TNF-ALPHA production by accelerating the degradation of messenger RNA encoding the protein

Side - Effects

- Development of neuropathy may be related to a cumulative dose greater than 50 g and requires electrophysiologic monitoring
- Less severe adverse effects, including sedation, headache, weight gain, nausea, constipation, and rash, are reversible when the drug is discontinued

HIV Associated Lipodystrophy Syndrome

Changes in fat distribution (“lipodystrophy” or “fat redistribution syndrome”) associated with HIV infection

- Increases in breast size, abdominal girth,, appearance of dorsocervical fat pads (buffalo hump), **multiple lipomas**, peripheral lipoatrophy of face, limbs
- Metabolic parameters predictive of increased CVD
- Symptoms stigmatize patients, cause ART discontinuation

HPV and HIV (HAART Era)

- Increased incidence of clinically-diagnosed oral warts since introduction of Highly Active Antiretroviral Therapy (HAART)
 - *Greenspan et al, (2001)*
 - *Leigh et al, (2002)*
 - *King et al, (2002)*
- Immunosuppression and immune reconstitution (as a result of HAART) are possible causes for this increased incidence.



WHAT LABORATORY VALUES DO I NEED BEFORE I START DENTAL TREATMENT?

Complete Blood Count with Differential

- White cell count
- Red cell count
- Hemoglobin
- Platelets

Red Blood Cells (RBC)

- Anemia is common in HIV/AIDS patients
 - Decrease due to antiretroviral treatment
 - Decrease due to direct action of HIV on blood marrow
- Normal $4.5 - 5.5 \times 10^6$ cells/mm³

Neutrophils (Granular Leukocytes)

- Decrease means an increased risk of infection
- Neutropenia (normal 2,500-7000)
 - Below 1,000 cells/mm³ - may require antibiotics
 - Below 500 cells/mm³ - requires antibiotic
 - Prophylaxis
- Painful oral ulcerations should receive granulocyte stimulating factor prior to steroid therapy

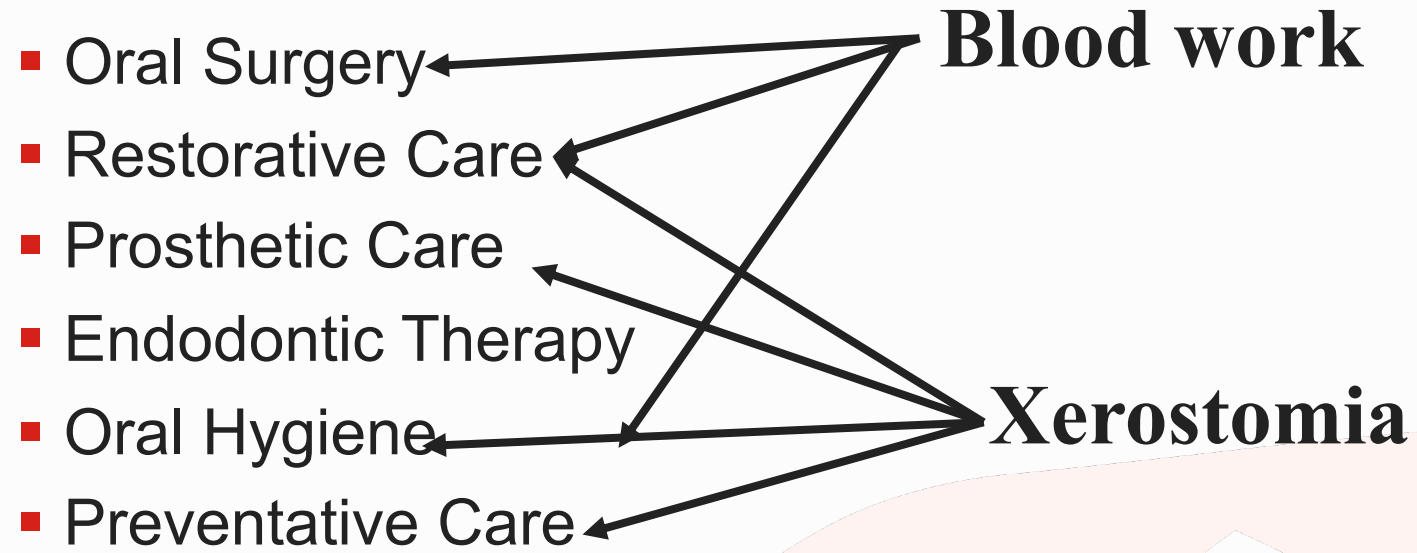
Hemoglobin

- Normal varies from men to women
 - Men 14 - 18g/dl
 - Women 12 - 16g/dl
- No contraindication for general dental procedures, including single extractions, for patients with normal bleeding time and coagulation values, and HB levels above 7.0g/dl
- Avoid respiratory depressing drugs with hemoglobin levels below 10g/dl

Platelets

- Normal 150,000 - 400,000 cells/mm³
 - Decrease in quantity or quality will affect bleeding time
 - Below 60,000 - inadvisable to perform oral surgery
 - Below 20,000 - spontaneous bleeding
- HIV-associated immune thrombocytopenia (ITP)

Treatment Planning



Antibiotic Prophylaxis Before Dental Surgery

- There is no scientific evidence for any antibiotic prophylaxis prior to dental surgery in HIV patients (because of their HIV status)
- Indications for antibiotic prophylaxis are the same for HIV-positive patients as for any other patient.
- American Heart Association only recommends **antibiotics before dental** procedures for patients, those who have:
 - A prosthetic heart valve or who have had a heart valve repaired with prosthetic material
 - A history of endocarditis
 - A heart transplant with abnormal heart valve function

(Mosca, 2006)

The Use of Dental Implants in HIV Positive Patient

Background

- The association between human immunodeficiency virus (HIV) infection and the success of osseointegrated dental implants is unknown.
- The perception remains that HIV-positive patients would have a worse surgical outcome than HIV-negative patients because of suppressed immune status and poor viral control.

Summary

- The placement of dental implants in HIV-positive patients has been a successful treatment option.
- The absolute CD4 lymphocyte count is not a predictor of success/failure.
- The viral load of patients should also be periodically monitored throughout the process of osseointegration.

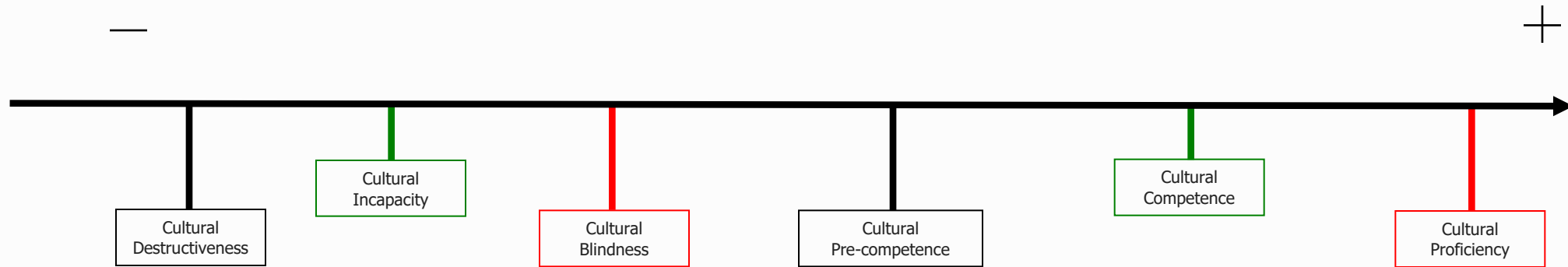
Shetty KV, Achong RM. Dental implants in the HIV-positive patient. General Dent. 2005 Nov-Dec;53(6):434-7

Achong RE, Shetty KV, Block MB. Success of Dental Implants in the immuno-compromised patient (Journal of Oral & Maxillofacial Surgery April 2007)

Cross-Cultural Education of the Healthcare Workforce

- Cross-cultural education is a key intervention strategy in reducing health disparities
 - Research studies have demonstrated its effectiveness on patient satisfaction, medication adherence, and health outcomes.
- Three Primary Approaches
 - Address attitudes: cultural sensitivity, awareness, approach
 - Increase knowledge: multicultural/categorical approach
 - Develop skills: cross-cultural approach

LEVELS OF CULTURAL COMPETENCE



- **Cultural Destructiveness** – This is the negative end of the cultural continuum. It refers to blatant attempts to destroy the culture of a given group. There is also an assumption that one group is superior to another.
- **Cultural Incapacity** – An individual or organization lacks the capacity to be responsive to different groups, but this is not intentional. Ignorance and unfounded fear is often the underpinnings of this problem.
- **Cultural Blindness** – This is an ignorance of cultural differences, and these individuals are often perceived as “unbiased” presuming that “culture makes no difference” in relation to the way groups act or react.
- **Cultural Pre-Competence** – This implies movement towards cultural sensitivity. Individuals actively pursue knowledge about differences & attempt to integrate this information into the delivery of services.
- **Cultural Proficiency** – This is the positive end of the cultural continuum. Individuals in this category hold culture in very high esteem and they are regarded as specialists in developing culturally sensitive practices.

HIV TESTING

Undiagnosed Cases

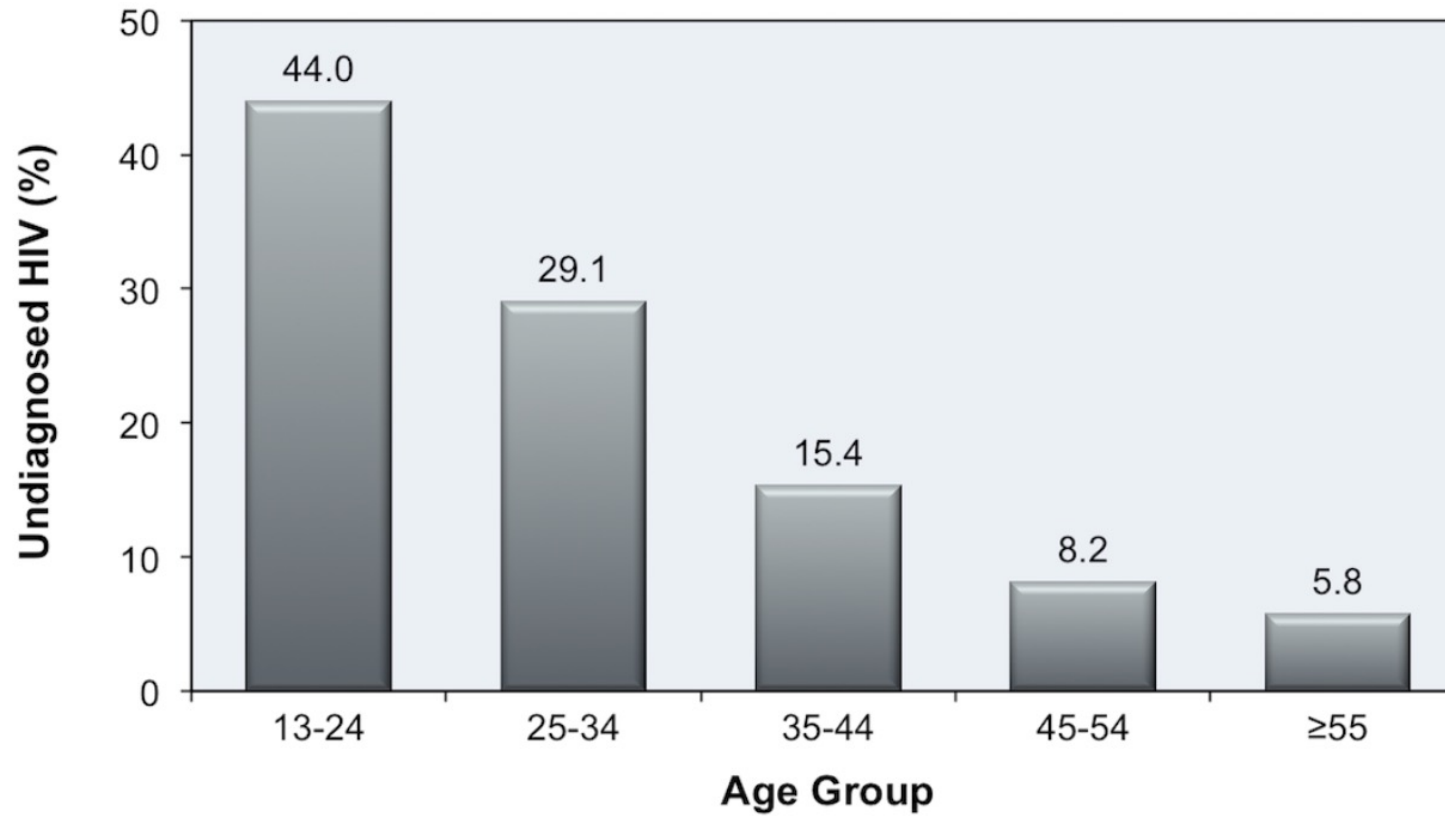


Figure 16 - Proportion of Persons with Undiagnosed HIV Infection in United States in 2016, by Age Group

Source: Centers for Disease Control and Prevention. Estimated HIV Incidence and Prevalence in the United States, 2010–2016. HIV Surveillance Supplemental Report. 2019;24(No. 1):1-89. Published February 2019.

Testing Patients for HIV

- Sure Check
 - Rapid HIV 1/2
 - Antibody detection
 - Sensitivity : 99.7%
 - Specificity : 99.9%
- Alere
 - Rapid HIV 1/2
 - Antibody and antigen detection
 - Sensitivity: 95%
 - Specificity: 100%



Sure Check



Alere

HIV Testing in Dental Settings

- The dental setting is a promising setting in which to offer the HIV rapid test
 - Individuals are likely to have more frequent visits to a dentist than to other health care providers
 - Practicing dentists may be the only provider to see an asymptomatic person with HIV in any given year
- Many dentists already offer other screening tests and refer patients for definitive diagnoses after screening
 - If offered routinely to all patients, HIV screening could become a component of a standard dental examination

HIV PREVENTION

Prevention

Before exposure



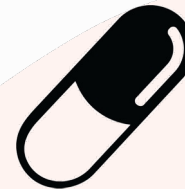
- PrEP (pre-exposure prophylaxis)
- TasP (treatment as prevention)
- Sterile injection equipment
- Treatment during pregnancy

During exposure



- Condom use
- Low-risk sexual behaviors/techniques

After exposure



- PEP (post-exposure prophylaxis)

Pre-Exposure Prophylaxis (PrEP) is Potent

- Estimated 1.1 million Americans eligible
 - But only about 10% who could benefit are using it
- Two single tablet combinations available
 - Tenofovir disoproxil fumarate with emtricitabine (TDF/FTC)
 - > 90% effective for preventing sexual transmission
 - Approved for all populations
 - Tenofovir alafenamide with emtricitabine (TAF/FTC)
 - Approved for MSM
 - Not approved for cisgender women or people who use injection drugs

PrEP/PEP

PREP

- Pre-exposure prophylaxis
- Given to prevent HIV infection **prior to** exposure
- 2-drug regimen taken daily as long as patient is at “substantial risk”
- Adherence is essential for efficacy

PEP

- Post-exposure prophylaxis
- Given to prevent HIV infection **after** exposure
- Start ASAP, within 72 hours of exposure
- 3-drug regimen taken daily for 28 days

PrEP in Dental Settings

- **Dental health professionals** should be aware of PrEP in order to:
 - Facilitate medical history interviewing and build trust
 - Be more knowledgeable about HIV risk and more involved in **reinforcing the HIV prevention self-efficacy** of their patients
 - Reinforce the importance of a **thorough oral soft tissue examination for signs of any oral lesions** that might be associated with early HIV infection in PrEP recipients



Image source: [iStockPhoto](#)

HIV Treatment Prevents New Infections

HIV TREATMENT as PREVENTION

A HIGHLY EFFECTIVE STRATEGY TO PREVENT THE SEXUAL TRANSMISSION OF HIV

People living with HIV who take **HIV medication daily as prescribed**

and get and keep an **undetectable viral load**

have **effectively no risk of sexually transmitting HIV** to their HIV-negative partners

JANUARY 2019 LEARN MORE AT HIV.GOV/TASP

JAMA January 10, 2019

VIEWPOINT

HIV Viral Load and Transmissibility
of HIV Infection
Undetectable Equals Untransmittable

Robert Eisinger, Carl Dieffenbach, Anthony Fauci

The U=U concept bridges the best of biomedical science with current concepts in behavioral and social science by removing the sense of fear and guilt that a person may be harming someone else, as well as the feeling of self-imposed and external stigma that many people with HIV experience.

— RW Eisinger, CW Dieffenbach and AS Fauci

NIH National Institute of Allergy and Infectious Diseases

Credit: NIAID

HIV as a Chronic Disease

- HIV can be effectively managed with ART
- Recommended to start treatment immediately after diagnosis
- Appropriate treatment can:
 - Improve quality of life
 - Reduce HIV-related morbidity and mortality
 - Restore and/or preserve immunologic function
 - Maximally and durably suppress HIV viral load
 - Prevent HIV transmission (U=U)



Image source: [iStockPhoto](#)

Dental-Specific Resources

- [MedlinePlus: HIV/AIDS and Oral Health](#)

The NIH National Library of Medicine's collection of links to government, professional and non-profit/voluntary organizations with information on HIV/AIDS and oral health.

- [HIVDent](#)

- [Dental Program](#)

Program of the Ryan White CARE Act administered by the Health Resources and Services Administration (HRSA.)

- [Organization for Safety and Asepsis Procedures](#)

A non-profit educational foundation promoting safety and the control of infectious diseases in dental healthcare settings worldwide.

- [American Dental Association](#)

The ADA is the professional association of dentists committed to the public's oral health, ethics, science and professional advancement.

MATEC Resources

- Clinical Consultation Center
<http://nccc.ucsf.edu/>
 - HIV Management
 - Perinatal HIV
 - HIV PrEP
 - HIV PEP line
 - HCV Management
 - Substance Use Management
- AETC National HIV Curriculum
<https://aidsetc.org/nhc>
- AETC National HIV-HCV Curriculum
<https://aidsetc.org/hivhcv>
- Hepatitis C Online
<https://www.hepatitisc.uw.edu>
- AETC National Coordinating Resource Center
<https://aidsetc.org/>
- Additional Trainings
<https://matec.info>

References

- Alnasser, L., Santella, A., & Ahluwalia, K. P. (2015, August 5). HIV Pre-Exposure Prophylaxis Brief for Oral Health Professionals. New York State Dental Association. Retrieved from [https://cdn.ymaws.com/www.osap.org/resource/resmgr/annual_conf_2018/handouts/bednarsh_prep_for_pk_\(1\).pdf](https://cdn.ymaws.com/www.osap.org/resource/resmgr/annual_conf_2018/handouts/bednarsh_prep_for_pk_(1).pdf)
- Centers for Disease Control and Prevention (CDC). (2018, Jun). Monitoring selected national HIV prevention and care objectives by using HIV surveillance data—United States and 6 dependent areas, 2016. HIV Surveillance Supplemental Report 2018. Retrieved from <http://www.cdc.gov/hiv/library/reports/hiv-surveillance.html>
- Centers for Disease Control and Prevention. (2016). Diagnoses of HIV infection in the United States and dependent areas, 2015. HIV Surveillance Report 27. Retrieved from <https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-report-2015-vol-27.pdf>
- Dailey, A. F., Hoots, B. E., Hall, H. I., Song, R., Hayes, D., Fulton Jr, P., ... & Valleroy, L. A. (2017). Vital Signs: Human Immunodeficiency Virus Testing and Diagnosis Delays—United States. *MMWR. Morbidity and Mortality Weekly Report*, 66(47), 1300.
- Danel D, et al. (2015). TEMPRANO ANRS 12136 Study Group. A Trial of Early ART and INH preventive therapy in Africa. *New England Journal of Medicine* 373 (9): 808-822.
- Department of Health and Human Services (DHHS). (2013, February 12). Guidelines for the use of antiretroviral agents in HIV-infected adults and adolescents.
- Dombrowski, J. (2018). Undetectable=Untransmittable [PowerPoint slides]. Retrieved from <http://www.hivecho.org/content/presentations#PID=285>
- Eisinger, R. W., Dieffenbach, C. W., & Fauci, A. S. (2019). HIV viral load and transmissibility of HIV infection: undetectable equals untransmittable. *JAMA*, 321(5), 451-452.
- Grinsztejn B, et al. (2014) Effects of early versus delayed initiation of ART on clinical outcomes of HIV-1 infection: results from the phase 3 HPTN 052 randomized controlled trial. *Lancet Infectious Disease* 14(4): 281-290.
- Health Resources and Services Administration (HRSA). (2020, February). *Animated End the HIV Epidemic Callout 4* [gif]. HRSA.gov. Retrieved from <https://www.hrsa.gov/ending-hiv-epidemic>
- Hess, K. L., Johnson, S. D., Hu, X., Li, J., Wu, B., Yu, C., ... & Morgan, M. S. (2018). Diagnoses of HIV infection in the United States and dependent areas, 2017. HIV Surveillance Report 29. Retrieved from <https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-report-2017-vol-29.pdf>

References 2

- HIV Info. (2020, September 24). HIV Treatment: The Basics. Retrieved from <https://hivinfo.nih.gov/understanding-hiv/fact-sheets/hiv-treatment-basics>
- HIV InSite. (2011, August 3). What kinds of HIV screening tests are available in the United States? Retrieved from <http://hivinsite.ucsf.edu/insite?page=basics-01-01>
- HIV Prevention England. (n.d.). It Starts With Me Campaign. Retrieved from <https://www.hivpreventionengland.org.uk/it-starts-with-me/>
- Insight Start Study Group. (2015). Initiation of antiretroviral therapy in early asymptomatic HIV infection. *New England Journal of Medicine*, 373(9), 795-807.
- It Starts With Me. (2018). *People on effective HIV Treatment cannot pass it on* [jpg]. [Itstartswithme.org.uk](https://www.startswithme.org.uk). Retrieved from <https://www.startswithme.org.uk/2018/04/06/people-on-effective-hiv-treatment-cannot-pass-it-on/>
- Li, Z., Purcell, D. W., Sansom, S. L., Hayes, D., & Hall, H. I. (2019). Vital signs: HIV transmission along the continuum of care—United States, 2016. *Morbidity and Mortality Weekly Report*, 68(11), 267.
- Lohse, N., Hansen, A. B. E., Pedersen, G., Kronborg, G., Gerstoft, J., Sørensen, H. T., ... & Obel, N. (2007). Survival of persons with and without HIV infection in Denmark, 1995–2005. *Annals of Internal Medicine*, 146(2), 87-95.
- Lundgren JD, et al. (2015). INSIGHT START Study Group. Initiation of ART in Early Asymptomatic HIV Infection. *NEJM* 373(9):795-807.
- Lyles, C. M., McCree, D. H., Ellington, R. D., Thorne, S., Johnson, A. S., Prejean, J., ... & Stein, M. (2019). National HIV Prevention progress report, 2019: includes national and state level data for 2010 through 2017 where available.
- May, M., Gompels, M., Delpech, V., Porter, K., Post, F., Johnson, M., ... & Sabin, C. (2011). Impact of late diagnosis and treatment on life expectancy in people with HIV-1: UK Collaborative HIV Cohort (UK CHIC) Study. *British Medical Journal*, 343.
- McCray, E. (2017, November 28). *Integrating HIV Prevention and Surveillance: Challenges and Opportunities* [PowerPoint slides]. Office of AIDS Prevention/Surveillance Research and Evaluation Conference. Retrieved from <http://paetc.org/wp-content/uploads/2017/12/PLENARY-1A-McCray-California-Office-of-AIDS-Prevention-Surveillance-Joint-Conf-FINAL.pdf>

References 3

- Missouri Department of Health and Senior Services (MODHSS). (2015). 2014 Epidemiologic Profiles of HIV, STD, and Hepatitis in Missouri. Retrieved from <https://health.mo.gov/data/hivstdaids/pdf/MOHIVSTD2014.pdf>
- National Institutes of Health (NIH). (2019, September). Engaging Dental Health Professionals to “End the HIV Epidemic. Retrieved from <https://www.nidcr.nih.gov/grants-funding/funding-priorities/future-research-initiatives/engaging-dental-health-professionals-end-hiv-epidemic>
- Office of Infectious Disease and HIV/AIDS Policy. (2020). What Is Ending the HIV Epidemic: A Plan for America? Retrieved from <https://www.hiv.gov/federal-response/ending-the-hiv-epidemic/overview>
- Pilcher, C. D., Ospina-Norvell, C., Dasgupta, A., Jones, D., Hartogensis, W., Torres, S., ... & Hatano, H. (2017). The effect of same-day observed initiation of antiretroviral therapy on HIV viral load and treatment outcomes in a US public health setting. *Journal of Acquired Immune Deficiency Syndromes (1999)*, 74(1), 44.
- Project Response. (2015). *U=U Timeline* [jpg Image]. Projectresponse.org. Retrieved from <https://projectresponse.org/uu-what-does-it-mean/>
- Reznik, D. (2005) Perspective: Oral Manifestations of HIV Disease. *Top HIV Med*, 13(5), 143-148. Retrieved from <https://www.unmc.edu/intmed/divisions/id/hiv/docs/oral-manifestations-hiv.pdf>
- Samji, H., Cescon, A., Hogg, R. S., Modur, S. P., Althoff, K. N., Buchacz, K., ... & Gange, S. J. (2013). Closing the gap: increases in life expectancy among treated HIV-positive individuals in the United States and Canada. *PloS One*, 8(12), e81355.
- Siegel, K., Abel, S. N., Pereyra, M., Liguori, T., Pollack, H. A., & Metsch, L. R. (2012). Rapid HIV testing in dental practices. *American journal of public health*, 102(4), 625-632.
- Stafylis, C., & Klausner, J. D. (2017). Evaluation of two 4th generation point-of-care assays for the detection of human immunodeficiency virus infection. *PLoS One*, 12(8), e0183944.
- Zolopa, A. R., Andersen, J., Komarow, L., Sanne, I., Sanchez, A., Hogg, E., ... & ACTG A5164 study team. (2009). Early antiretroviral therapy reduces AIDS progression/death in individuals with acute opportunistic infections: a multicenter randomized strategy trial. *PloS one*, 4(5), e5575.

ACKNOWLEDGEMENTS

(for slide and resource sharing of content)

- *SAMHSA*
 - *CDC*
 - *Blair Thedinger*
 - *NAETC*
 - *American Dental Association*
 - *California Dental Association*
 - *Henry Schein Dental*
 - *Dentaquest*
 - *Organization for Safety, Asepsis and Prevention*
 - *Internet Dental Literature and webinars*
- (accessed August 1 – 12, 2022)

Questions

