HIV IN OKLAHOMA … MAKING A DIFFERENCE

Madhuri Lad, DO, FACOI, AAHIVS
Assistant Program and Medical Director
OSU Internal Medicine Specialty Services HIV Program
Clinical Assistant Professor

OBJECTIVES

- Rashes
- Demographics
- Definitions
- Diagnosis and testing
- Treatment and complications
- Role of primary care
- Vaccinations

Syphilis Staging Flowchart

Symptoms or Signs?

YES

1° (Ulcer) — PRIMARY

2° (Rash, etc) — SECONDARY

NO — LATENT

ANY IN PAST YEAR?
Negative syphilis serology
Known contact to an early case of syphilis
Good history of typical signs/symptoms

YES — EARLY LATENT

NO — UNKNOWN or LATE LATENT

TREATMENT

- **Primary/Secondary/Early Latent**: 2.4 million units benzathine PCN G IM x 1
- **Late Latent/Tertiary**: 2.4 million units benzathine PCN G IM weekly x 3
- **Neurosyphilis**: *IV PCN G 18-24 million units daily x 10-14 days (AII)

  *Procaine PCN 2.4 million units IM daily + probenecid 500 mg QID x 10-14 days (BII)

  *Desensitize if PCN-allergic

KAPOSI'S SARCOMA

- Human herpesvirus-8 (HHV-8)
- More likely when CD4<200
- Nontender, reddish-purple macular or nodular lesions
- Oral lesions (33%), lymphatic involvement, visceral involvement (50%), usually pulmonary and GI
- Dx: skin biopsy
- Tx: ART, chemotherapy

Seborrheic dermatitis

- 2- 5 % of the population
- Chronic, superficial, inflammatory disease of the skin
- Predilection for the scalp, eyebrows, eyelids, nasolabial creases, lips, ears, sternal area, axillae, submammary folds, umbilicus, groin, and gluteal crease
- Characterized by scanty, loose, dry, moist, or greasy scales, and by crusted pink or yellowish patches of various shapes and sizes

TYPES OF HSV

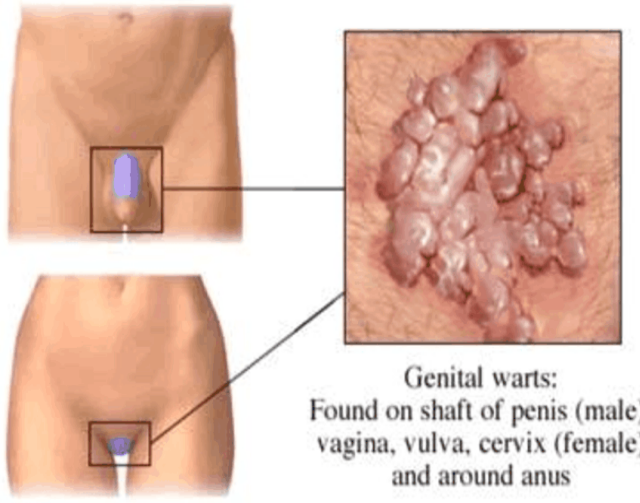
Herpes simplex virus – 1:

- Spread through saliva.
- Lesions above the waist, in oral, facial and ocular areas including pharynx, and skin.

Herpes simplex virus – 2:

- Transmitted through sexual contact.
- Involves genitalia and skin below the waist.

Human Papilloma Virus and Warts



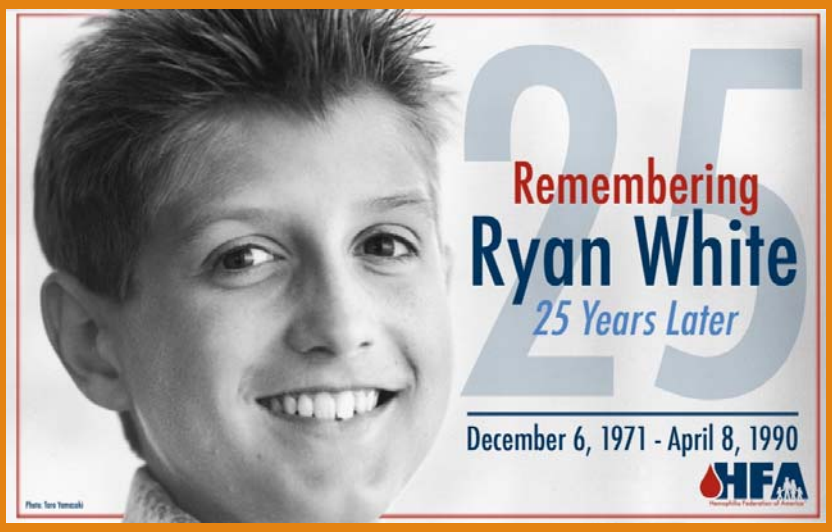
Genital warts:
Found on shaft of penis (male), vagina, vulva, cervix (female) and around anus

Herpes Zoster

- Also known as Shingles
- An acute viral infection of the nerve cells and surrounding skin.
- Characterized by a rash of blisters, can be very painful but is not life-threatening.
- Caused by the varicella zoster virus that also causes chickenpox.

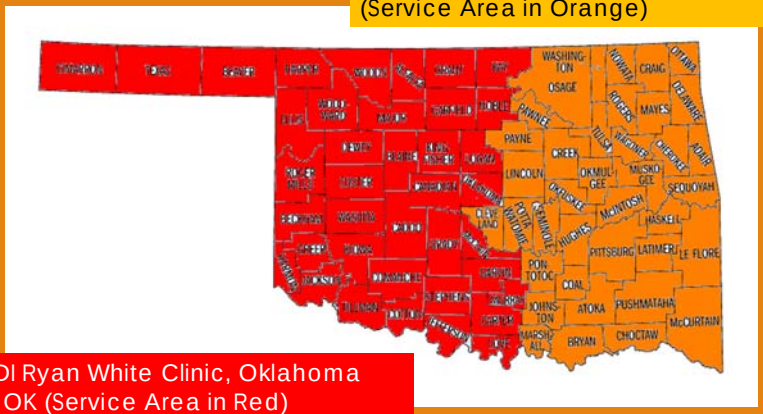
Disseminated Herpes Zoster

49



OKLAHOMA SERVICE AREAS

OSU-CHS Ryan White Clinic, Tulsa, OK (Service Area in Orange)



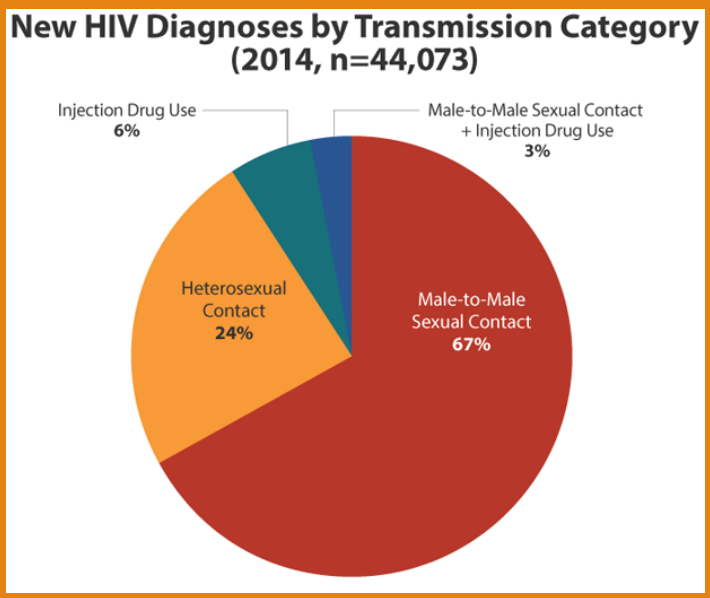
OU IDI Ryan White Clinic, Oklahoma City, OK (Service Area in Red)

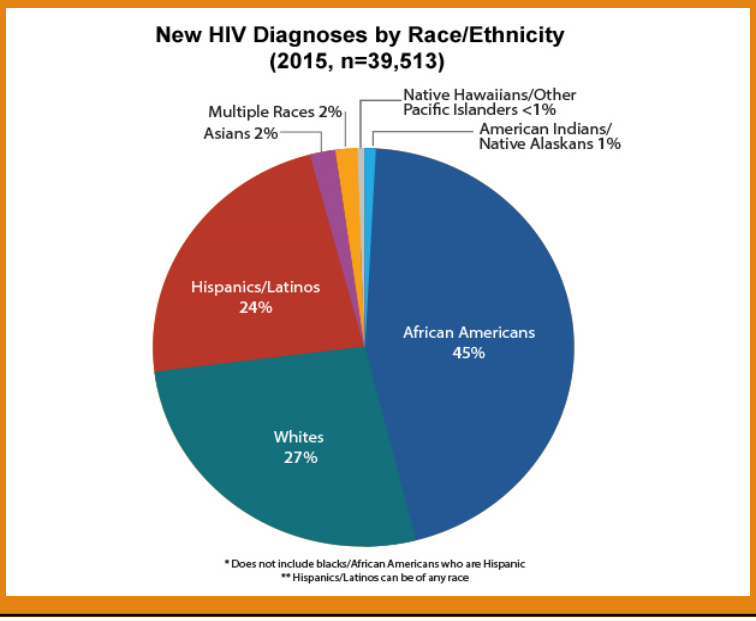
OKLAHOMA DEMOGRAPHICS

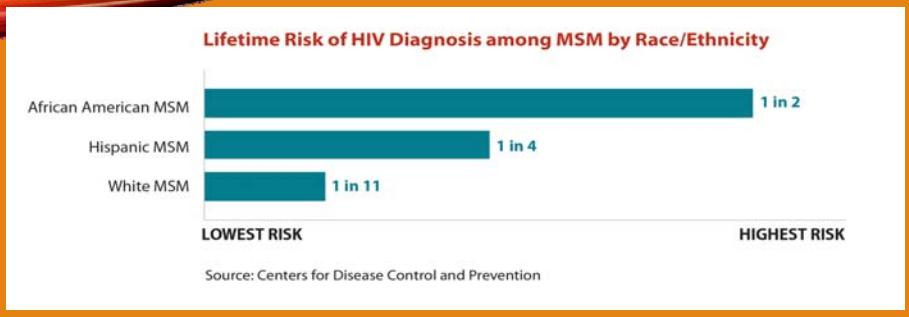
- In 2014: 5,605 people with HIV
- 82% male (63% MSM), 17% female
- 23% black, 9% Hispanic, 56% white
- Newly diagnosed in 2015: 319
- # of deaths: 139
- 85% of male transmission due to MSM

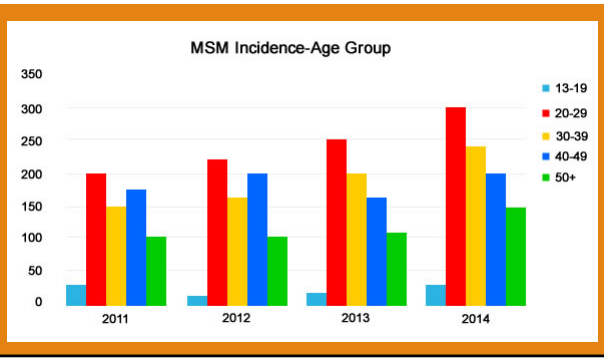
MSM

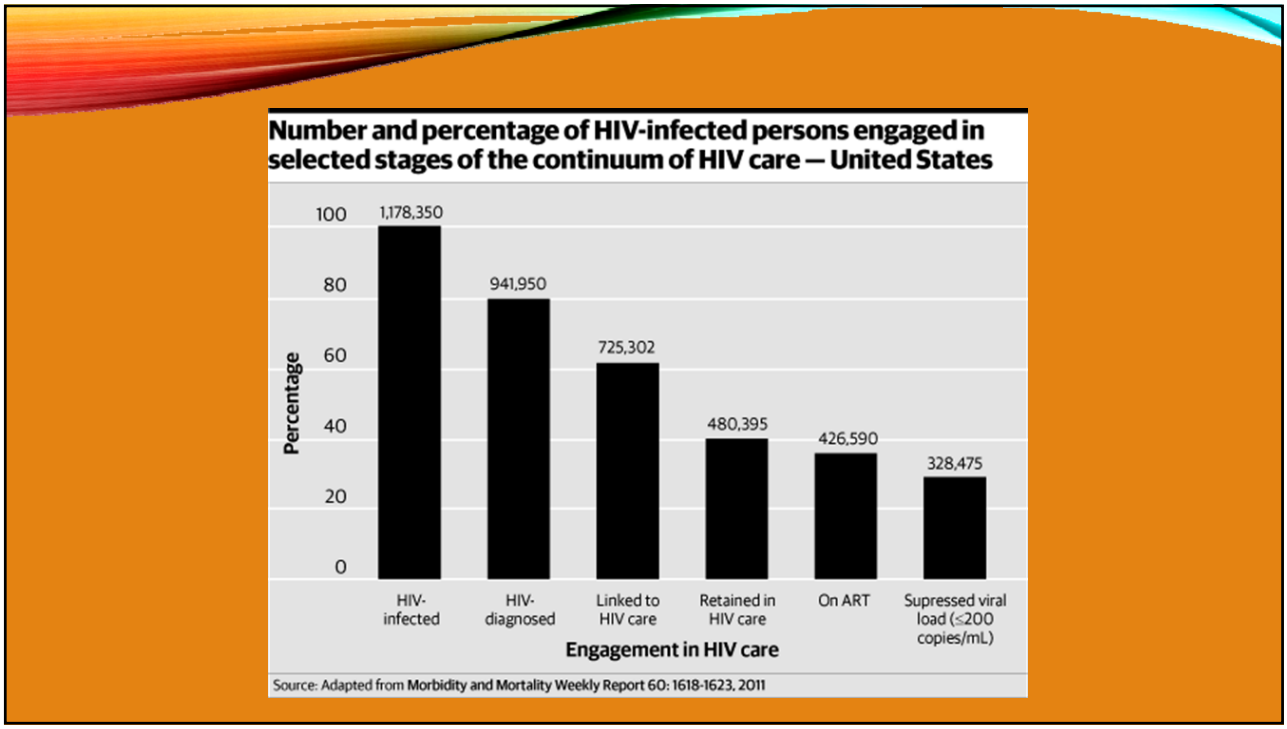
- 4% of males in US
- 2/3 (67%) of all new HIV infections
- 52% of HIV-infected individuals in US
- Disproportionally affecting African American MSM and Latino MSM
- Annual anal paps due to increased risk of STIs, HPV, and anal cancers
- Annual hepatitis panel due to increased risk for HCV

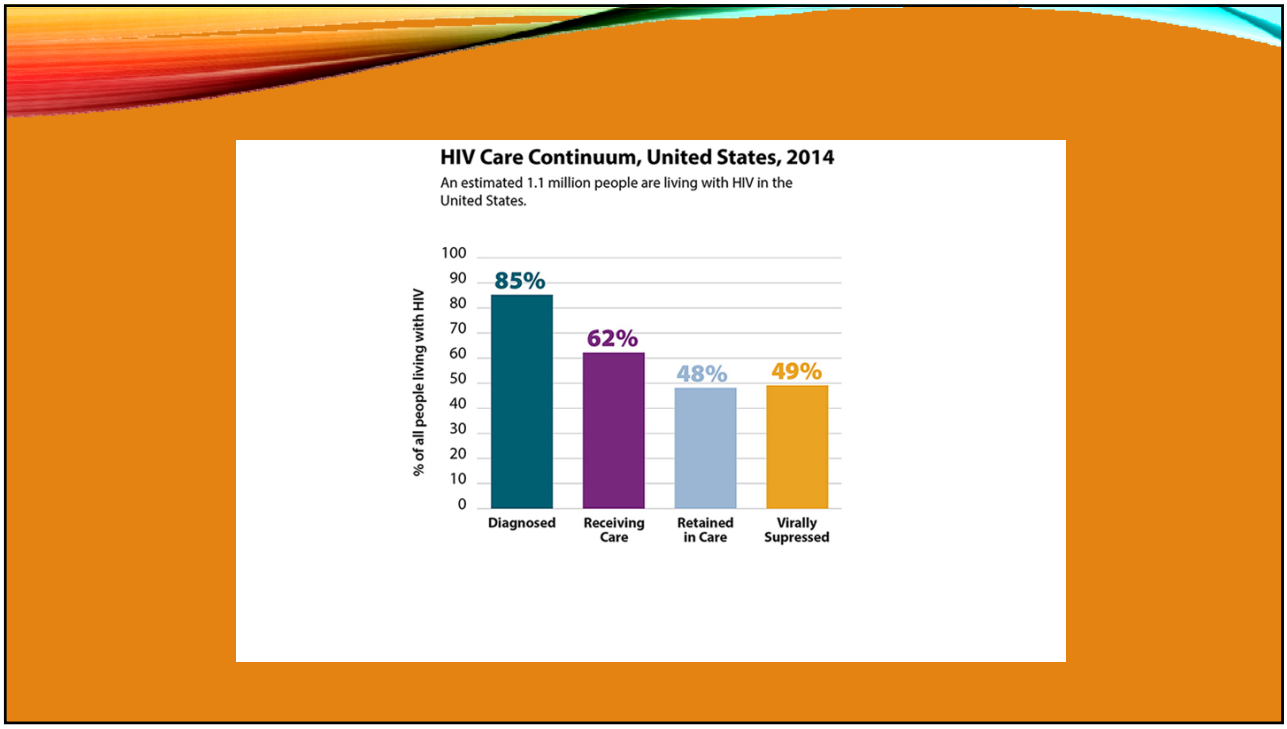


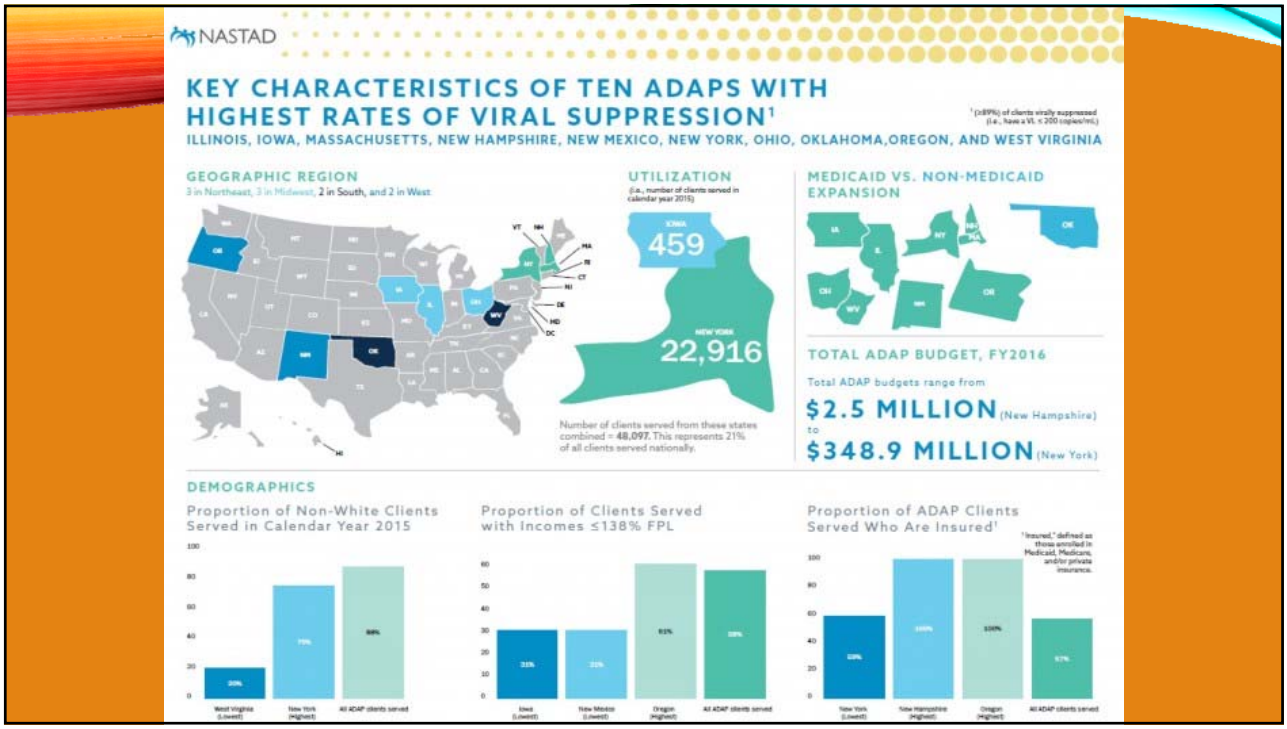

New HIV Diagnoses by Race/Ethnicity
(2015, n=39,513)
Native Hawaiians/Other Pacific Islanders <1%
Multiple Races 2%
Asians 2%
American Indians/ Native Alaskans 1%
Hispanics/Latinos 24%
African Americans 45%
Whites 27%
* Does not include blacks/African Americans who are Hispanic
** Hispanics/Latinos can be of any race


Lifetime Risk of HIV Diagnosis among MSM by Race/Ethnicity
African American MSM
Hispanic MSM
White MSM
1 in 2
1 in 4
1 in 11
LOWEST RISK
HIGHEST RISK
Source: Centers for Disease Control and Prevention


MSM Incidence-Age Group
350
300
250
200
150
100
50
0
2011
2012
2013
2014
13-19
20-29
30-39
40-49
50+


Number and percentage of HIV-infected persons engaged in selected stages of the continuum of HIV care — United States
100
80
60
40
20
0
Percentage
1,178,350
941,950
725,302
480,395
426,590
328,475
HIV-infected
HIV-diagnosed
Linked to HIV care
Retained in HIV care
On ART
Supressed viral load (≤200 copies/mL)
Engagement in HIV care
Source: Adapted from Morbidity and Mortality Weekly Report 60: 1618-1623, 2011

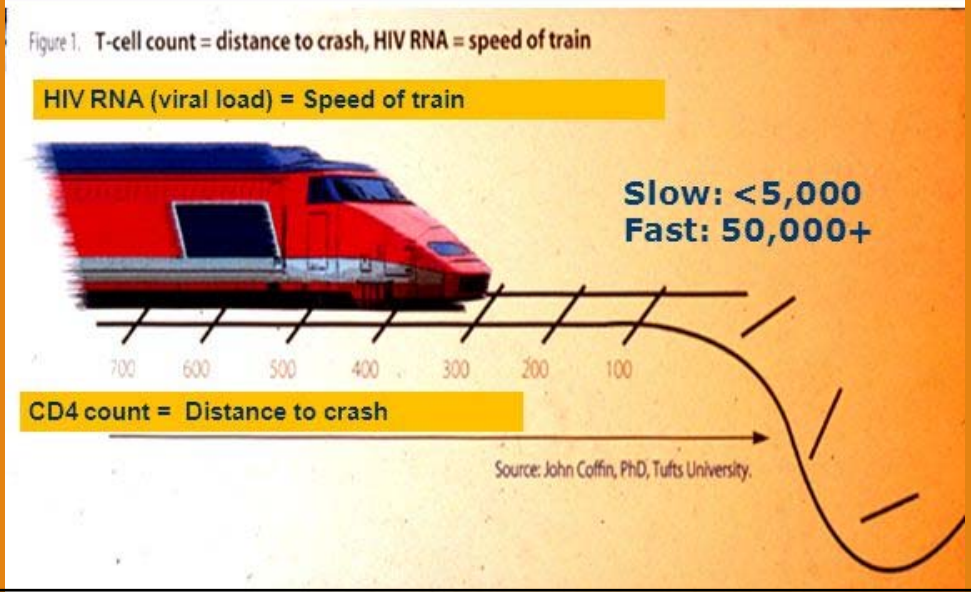

HIV Care Continuum, United States, 2014
An estimated 1.1 million people are living with HIV in the United States.
% of all people living with HIV
100
90
80
70
60
50
40
30
20
10
0
85%
62%
48%
49%
Diagnosed
Receiving Care
Retained in Care
Virally Supressed

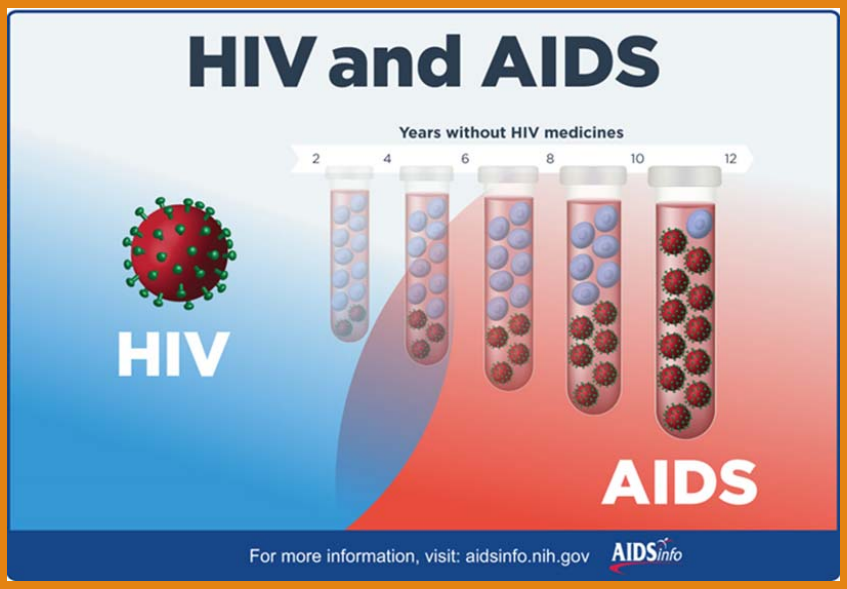


DEFINITIONS

- HIV: Human immunodeficiency virus
- AIDS: Acquired immunodeficiency syndrome
- CD4 = immune cells
- Viral load = virus
- OI: Opportunistic infection
- ART: Antiretroviral therapy

Relationship between CD4 count and viral load





Disease	Infectious organism
Pneumonia	*Pneumocystis carinii*
Pneumonia	*Pneumocystis jiroveci*
Kaposi's sarcoma	Kaposi's sarcoma virus (KSV)
Tuberculosis	*Mycobacterium avium*
Tuberculosis	*Mycobacterium tuberculosis*
Cryptococcal meningitis	*Cryptococcus neoformans*
Toxoplasmic encephalitis	*Toxoplasma gondii*
Progressive multifocal leukoencephalopathy	J C Virus (JCV)
Cytomegalovirus encephalitis	Cytomegalovirus (CMV)

HOW IS HIV SPREAD?

- Blood
- Semen
- Pre-seminal fluid
- Vaginal fluids
- Rectal fluids
- Breast milk

HIV TESTING

- CDC recommends:

a. Test ages 13-64 at least once
b. Test annually if high risk
c. Test all pregnant women
d. Test when other STI's present

HIV TESTING

- Antibody tests (3-12 weeks)
- Combination tests or Antibody/antigen tests (2-6 weeks)
- Nucleic acid tests (7-28 days)
- Rapid antibody tests

Ryan White Clinics

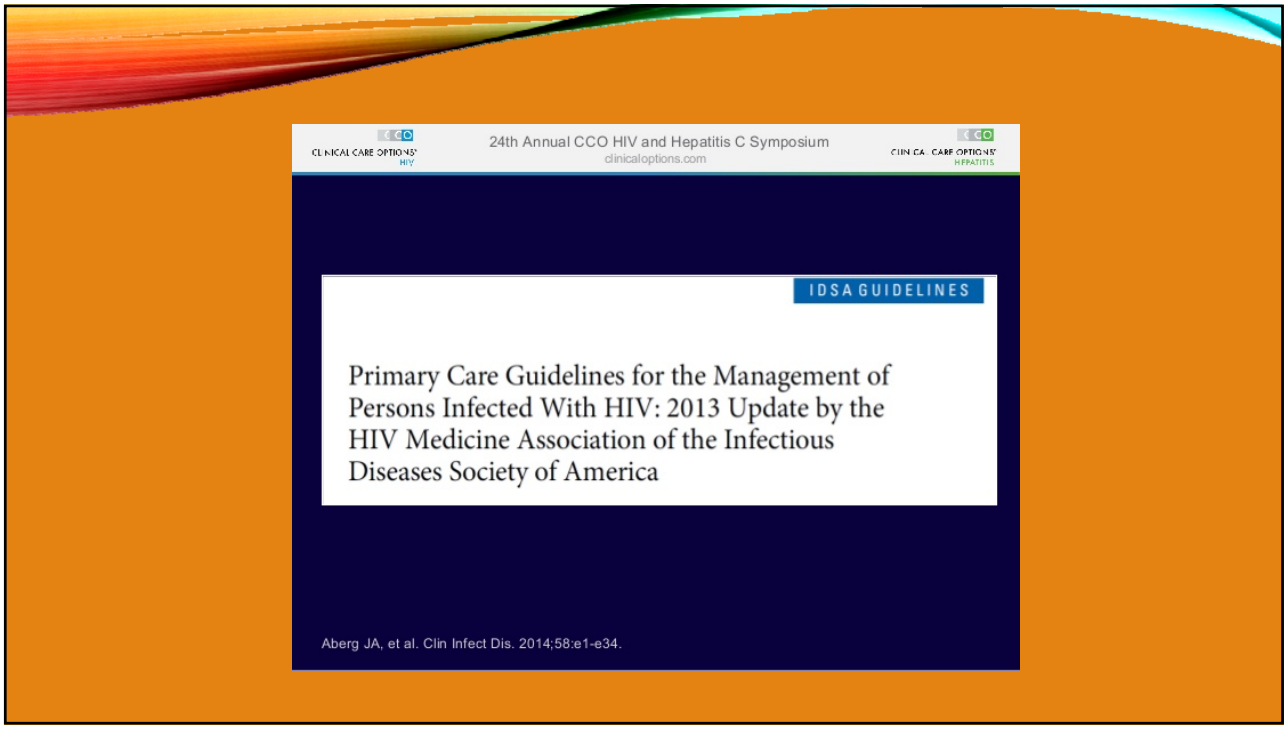
Guiding Right, Inc.

HISTORY

- Date of diagnosis/infection
- Previous ART regimens
- Previous CD4, VL, resistance, tolerance, response
- OI's or malignancies
- Previous STI's, abnormal pap
- Sexual history
- Any other risk factors

ANTIRETROVIRAL THERAPY (ART)

- Reduces HIV transmission
- Mortality declined (normal life expectancy), less OIs
- More than 50% deaths related to other diseases
- Reduce HIV-immune activation and co-morbidities
  a. HIVAN
  b. Malignancy (Kaposi's sarcoma, lymphoma)
  c. HAND
  d. Hepatitis B & C liver disease
  e. Tuberculosis



LABORATORY

- **STRONG RECOMMENDATIONS**
- Lipid panel: prior to and within 1-3 months of starting ART
- HgbA1c: prior to and within 1-3 months of starting ART
- RPR: at initiation of care and periodically thereafter. If positive, refer for treatment to health department.
- Quantiferon or other IGRA or TST: at initiation of care and repeat once CD4 > 200. If positive, then baseline CXR and refer to health department
- Hepatitis panel: at initiation of care. Vaccinate or check immunity for HAV and HBV. If positive, check HBV or HCV RNA (viral load)

COMPLICATIONS OF ART

- Hematologic: CBC q 3-6 months
- Renal/Hepatic: CMP q 3-6 months, UA
- Dyslipidemia: lipid panel q 6-12 months
- Diabetes: HgbA1c q 6-12 months
- HTN: BP check annually
- Osteoporosis: DEXA in postmenopausal women and men over age 50, vitamin D levels

OSTEOPOROSIS

- **STRONG RECOMMENDATION**
- Baseline DEXA screening for osteoporosis in all postmenopausal women and in men over age 50
- Most NRTI's (nucleoside reverse transcriptase inhibitors) can decrease bone mineral density
- Tenofovir: TAF(alafenamide) preferred to TDF(disoproxil fumarate)

	Every 3-6 months	Every 12 months
CD4	X	
Viral load	X	
CBC	X	
CMP	X	
Lipid panel		X
HgbA1c		X
RPR		X
Quantiferon		X
Hepatitis panel		X
Urine GC/CL		X
Vitamin D level		X

COMPLICATIONS OF ART

- Cervical cancer: pap smear annually
- Anal cancer: anal paps annually in MSM
- STIs: RPR, GC/CL, trich annually
- Hepatitis: hepatitis panel annually
- TB: Quantiferon annually
- Neuropsychiatric disorders: screening annually
- Lipodystrophy

HIV assoc. Lipodystrophy

51

CERVICAL PAP SMEARS

- **STRONG RECOMMENDATION**
- Screen q 6 months during the first year of diagnosis and then annually
- If 3 consecutive negative pap smears, then may change screening to q 3 years
- Include cytology, gonorrhea/chlamydia/trichomonas testing, and HPV (human papilloma virus)
- If abnormal cytology or high-risk HPV, refer to OBGYN for colposcopy

ANAL PAPS

- **WEAK RECOMMENDATION**
- MSM, women with history of anal receptive intercourse and/or abnormal cervical pap, or presence of genital warts should be screened for anal HPV
- Interval of screenings not defined
- Often performed annually
- If abnormal cytology or high-risk HPV, refer to colorectal surgery for anoscopy

SEXUALLY TRANSMITTED INFECTIONS

- **STRONG RECOMMENDATION**
- Screen for gonorrhea and chlamydia at initial presentation and annually if at risk for infection
- All women < age 25 should be screened for chlamydia
- All women should be screened for trichomoniasis
- If positive, re-test in 3 months due to high reinfection rates
- Screening can be obtained with urine, cervix, and anal specimens

MAMMOGRAPHY

- **STRONG RECOMMENDATION**
- Annually in women > age 50 years
- In women age 40-49 years, assess risks for breast cancer and discuss risks and benefits

COLORECTAL CANCER SCREENING

- Follow USPSTF guidelines
- Screen after age 50 with FOBT, sigmoidoscopy, or colonoscopy until age 75

CONTRACEPTION AND PRECONCEPTION CARE

- **STRONG RECOMMENDATION**
- All HIV-infected women of childbearing age should be asked about their plans and desires regarding pregnancy about upon initiation of care and routinely thereafter
- Contraception
- Partner HIV status
- Disclosure of status to partners
- Importance of viral load suppression and closer monitoring during pregnancy, no breastfeeding

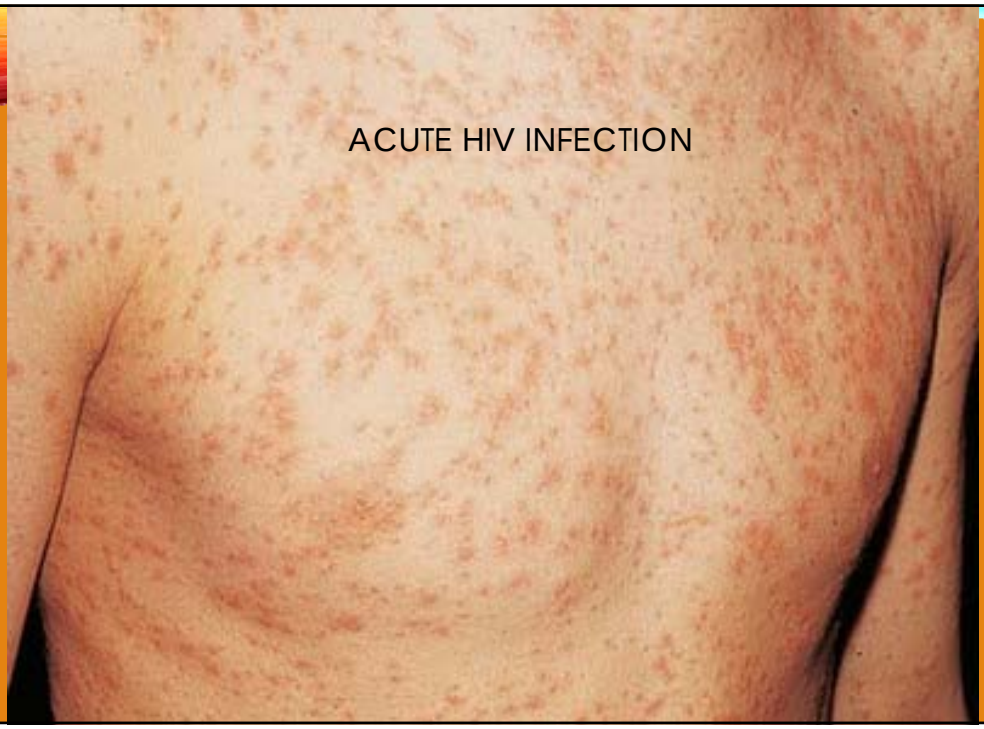
URGENCY OF ART

- CD4 < 200
- HIV-related conditions
- OIs
- Pregnancy
- Chronic HBV
- Acute HIV infection

ACUTE HIV INFECTION

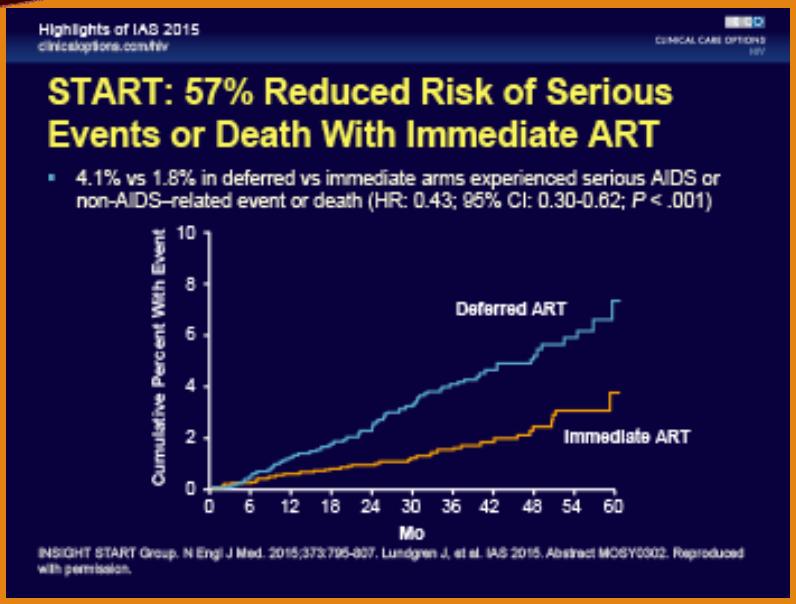
- 1-2 months
- Flu-like symptoms
  a. Fever
  b. Headache
  c. Rash
  d. Lymphadenopathy
  e. Diarrhea

ACUTE HIV INFECTION



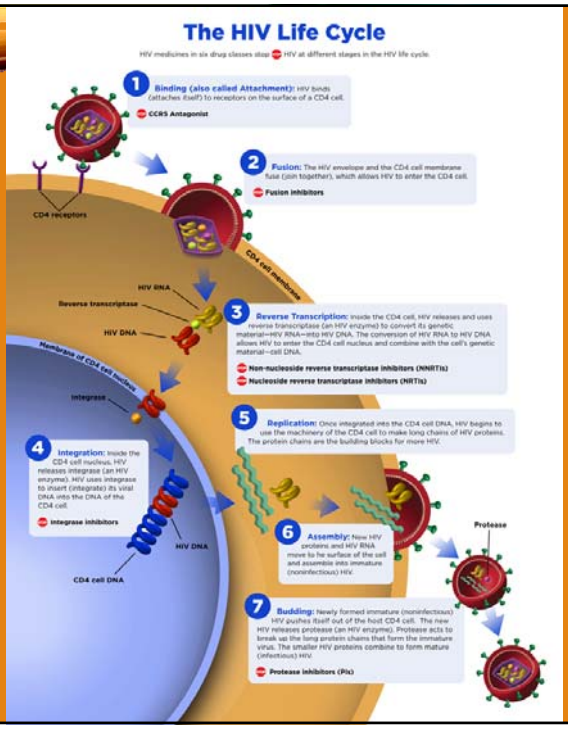
WHEN TO INITIATE ART

- CD4 < 350
- CD4 350-500
- CD4 > 500
- Long-term nonprogressors
- Elite controllers (<0.5%)



ANTIRETROVIRAL THERAPY

- Non-nucleoside reverse transcriptase inhibitors (NNRTIs)
- Nucleoside reverse transcriptase inhibitors (NRTIs) "nuc backbone"
- Protease inhibitors (PIs)
- Fusion inhibitors
- CCR5 antagonists
- Integrase strand transfer inhibitors (INSTIs)



ANTIRETROVIRAL THERAPY

- 2 NRTIs
  a. Truvada/Descovy (tenofovir/emtricitabine)
  b. Epzicom (abacavir/lamivudine)
- Add NNRTI, PI, or INSTIs
  a. PI: Prezista/Norvir (darunavir/ritonavir) or Prezcobix (darunavir/cobicistat)
  b. INSTIs: Triumeq (dolutegravir), Stribild/Genvoya (elvitegravir), Isentress (raltegravir), Biktarvy (bictegravir)

RESPONSE TO ART

- Virologic suppression (<20)
- Virologic failure (>200)
- Low-level viremia (<200)
- Virologic blip (isolated detection)
- Virologic rebound

DRUG RESISTANCE

- Transmitted drug resistance (treatment-naïve)
  a. Baseline Genosure
- Poor medication compliance
- Cross resistance

GenoSure MG Report

LabCorp
Laboratory Corporation of America

GenoSure® MG
HIV DRUG RESISTANCE ASSAY

biosciences
monogram
A LabCorp Company

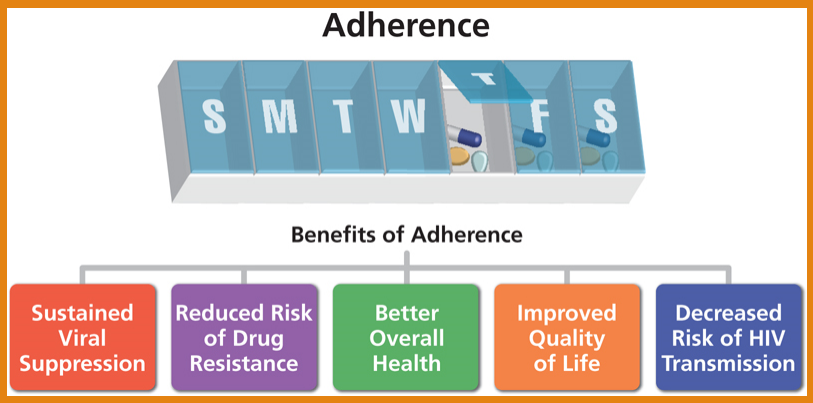
Valerie McWhorter, MD, Medical Director - 345 Oyster Point Blvd
South San Francisco, CA 94080 - Tel: (800) 777-0177

Patient Name	DOB	Patient ID/Medical Record #	Gender	Monogram Accession #
				11-102658
Date Collected	Date Received	Date Reported	Mode	Report Status
Referring Physician			Reference Lab ID/Order #	
Comments			HIV-1 Subtype: B	

	Drug		GenoSure®MG	Assessment*		Comments
	Generic Name	Brand Name	Drug Resistance Associated Mutations Detected	Drug		
NRTI	Abacavir	Ziagen	None	ABC	Sensitive	
	Didanosine	Videx	None	ddi	Sensitive	
	Emtricitabine	Emtriva	None	FTC	Sensitive	
	Lamivudine	Epivir	None	3TC	Sensitive	
	Stavudine	Zerit	None	d4T	Sensitive	
	Tenofovir	Viread	None	TFV	Sensitive	
	Zidovudine	Retrovir	None	ZDV	Sensitive	
NNRTI	Delavirdine	Rescriptor	K103K/R, V179V/D	DLV	Resistant	
	Efavirenz	Sustiva	K103K/R, V179V/D	EFV	Resistant	
	Etravirine	Intelence	V179V/D	ETR	Sensitive	
	Nevirapine	Viramune	K103K/R, V179V/D	NVP	Resistant	
	Rilpivirine	Rilpivirine	None	RPV	Sensitive	
PI	Atazanavir	Reyataz	L10I, E35D, I62V, A71V	ATV	Sensitive	
		Reyataz / r*	L10I, E35D, I62V, A71V	ATV/r	Sensitive	
	Darunavir	Prezista / r*	L10I	DRV/r	Sensitive	
	Fosamprenavir	Lexiva / r*	L10I, E35D	AMP/r	Sensitive	
	Indinavir	Crixivan / r*	L10I, A71V	IDV/r	Sensitive	
	Lopinavir	Kaletra*	L10I, A71V	LPV/r	Sensitive	
	Nelfinavir	Viracept	L10I, E35D, A71V	NFV	Sensitive	
	Ritonavir	Norvir	L10I, E35D, A71V	RTV	Sensitive	
	Saquinavir	Invirase / r*	L10I, E35D, I62V, A71V	SQV/r	Sensitive	
	Tipranavir	Aptivus / r*	E35D, L63S/T, A71V	TPV/r	Resistance Possible	

SAMPLE

Monogram's GenoSure MG report combines LabCorp's genotyping capabilities (for faster turnaround), and Monogram's proprietary algorithm…



BARRIERS TO ADHERENCE

- Mental health
- Substance abuse
- Social issues
- Nutrition
- Cost
- Complex regimens
- Adverse drug effects
- Nondisclosure of HIV status

VACCINATIONS

- No live vaccines when CD4 < 200
  a. Varicella
  b. Zoster
  c. MMR

- Vaccines recommended
  a. Prevnar
  b. Pneumovax
  c. Influenza
  d. Hep A & B
  e. Meningococcal
  f. HPV age < 26
  g. Tdap

Immunization Schedule for Human Immunodeficiency Virus (HIV)-Infected Adults

VACCINE ▼ INDICATION ▶	HIV infection CD4+ T lymphocyte count < 200 cells/μL	HIV infection CD4+ T lymphocyte count ≥ 200 cells/μL
Influenza *	1 dose IIV † annually	
Tetanus, diphtheria, pertussis (Td/Tdap) *	Substitute 1-time dose of Tdap for Td booster; then boost with Td every 10 yrs	
Varicella *	Contraindicated	2 doses
Human papillomavirus (HPV) Female *	3 doses through age 26 yrs	
Human papillomavirus (HPV) Male *	3 doses through age 26 yrs	
Zoster	Contraindicated	
Measles, mumps, rubella (MMR) *	Contraindicated	1 or 2 doses
Pneumococcal polysaccharide (PPSV23)	1 dose followed by a booster at 5 years	
Pneumococcal 13-valent conjugate (PCV13) *	1 dose	
Meningococcal *	1 or more doses	
Hepatitis A *	2 doses	
Hepatitis B *	3 doses	

*Covered by the Vaccine Injury Compensation Program
† IIV - Inactivated Influenza Vaccine. LAIV (live attenuated influenza vaccine) is not recommended for HIV-infected persons.

For all persons in this category who meet the age requirements and who lack documentation of vaccination or have no evidence of previous infection; zoster vaccine recommended regardless of prior episode of zoster

Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indications)

No recommendation

Adapted from the Advisory Committee on Immunization Practices (ACIP) 2013 Adult Immunization Schedule. A summary of the adult immunization schedule vaccines and their primary indications, adverse events and contraindications can be found at: www.cdc.gov/vaccines/schedules/downloads/adult/mmwr-adult-schedule.pdf. For more detailed information on immunization of persons with HIV infection against influenza, pneumococcal disease, hepatitis B, human papillomavirus, varicella, and hepatitis A, see disease-specific sections in the text and in Table 1. For additional information on these and other vaccines (tetanus, diphtheria, pertussis, measles, mumps, rubella, and meningococcal disease), refer to recommendations of the ACIP at: www.cdc.gov/vaccines/pubs/acip-list.htm.

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

REFERENCES

- www.aidsinfo.nih.gov
- www.cdc.gov
- www.uptodate.com
- http://aidsvu.org
- Aberg, JA, et al. *Primary Care Guidelines for the Management of Persons Infected with HIV: 2013 Update by the HIV Medicine Association of the Infectious Diseases Society of America (IDSA).* Clinical Infectious Disease. 2014;58:e1-e34.