AETC AIDS Education & Training Center Program Southeast

HIV Testing

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Continuing Education Disclosure

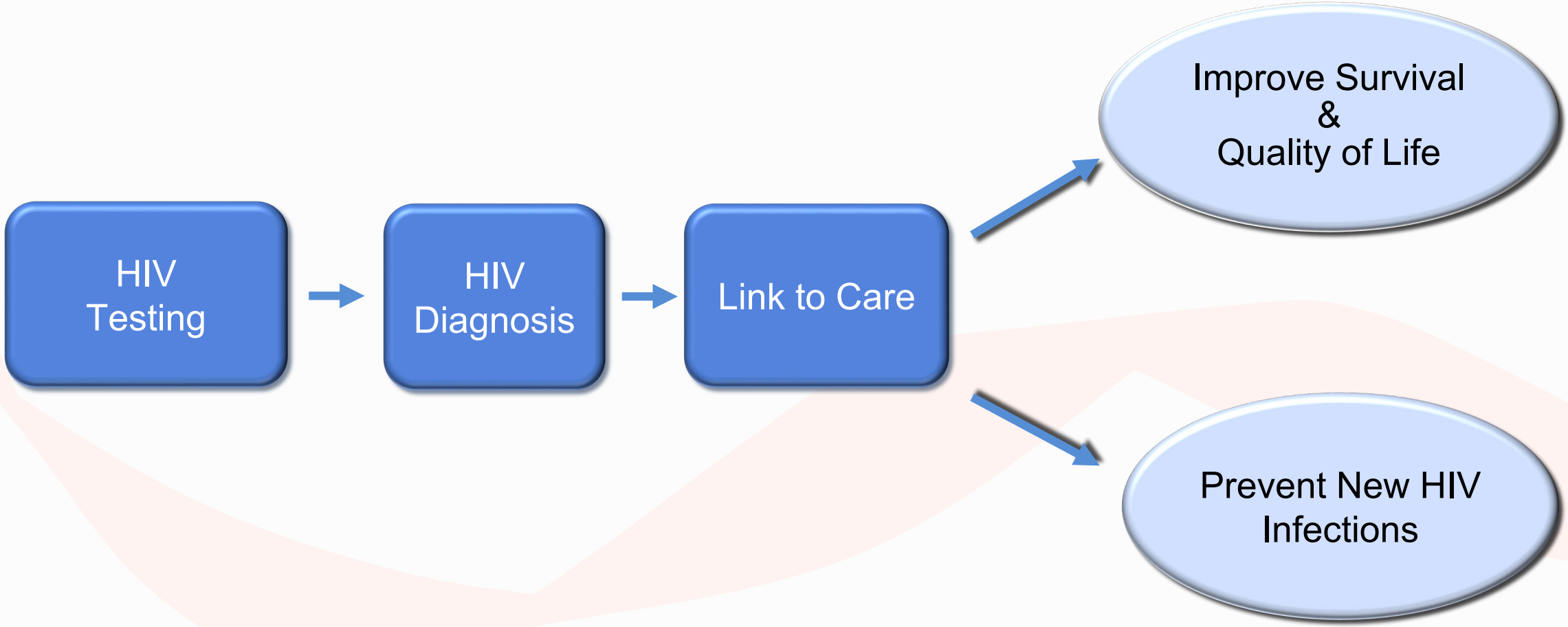
- No disclosures

Session Objectives

At the end of this session, participants will be able to

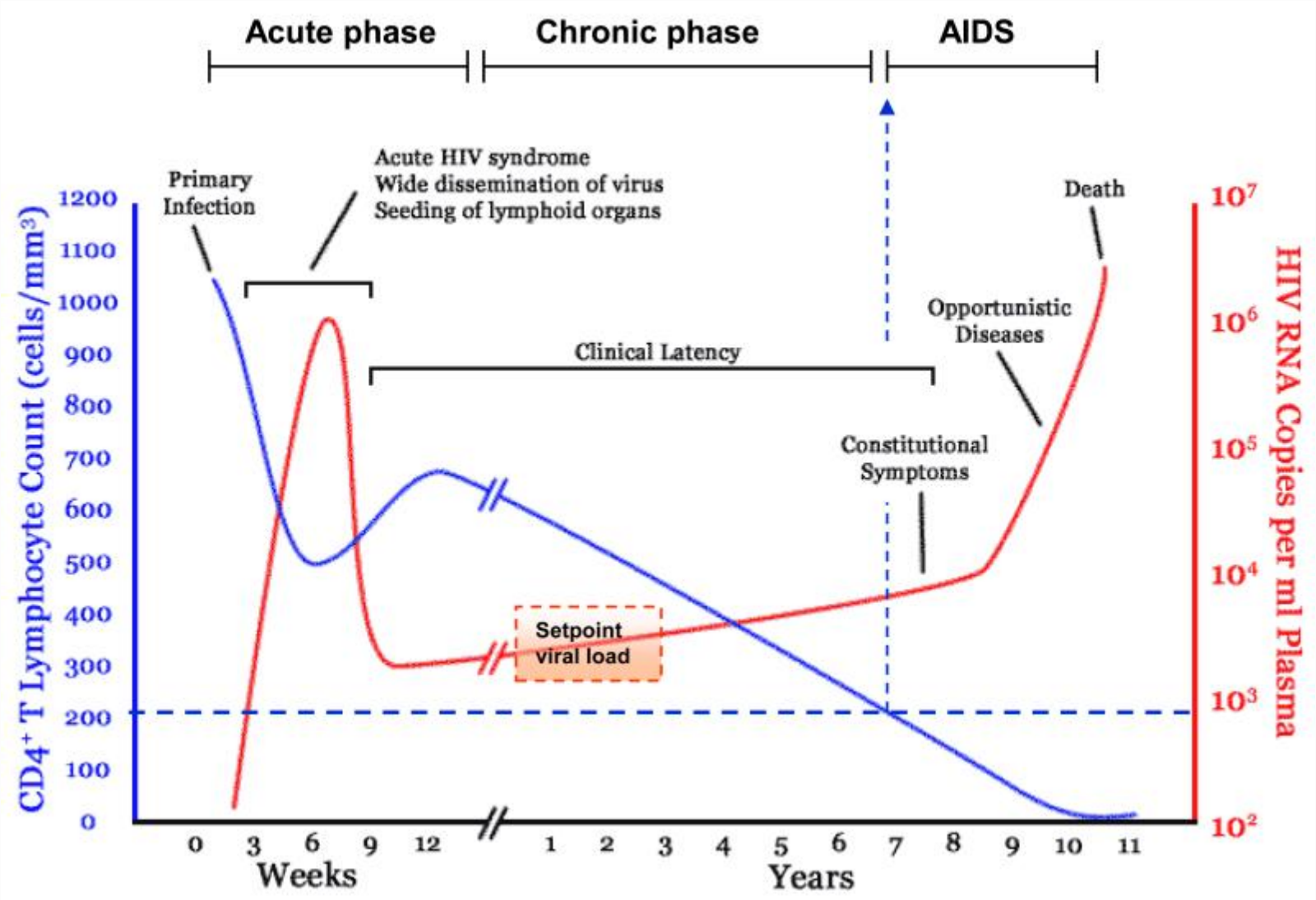
- Describe principles of routine testing for HIV infection
- Interpret HIV test results using the current 4th Generation Ag/Ab assay algorithm

Goals of Routine Testing for HIV



Spach, D. Routine HIV Screening in Health Care Settings. Background and Definitions. {PowerPoint}. AIDS Education and Training centers.National Resource Center; May 2010. Slide 6.

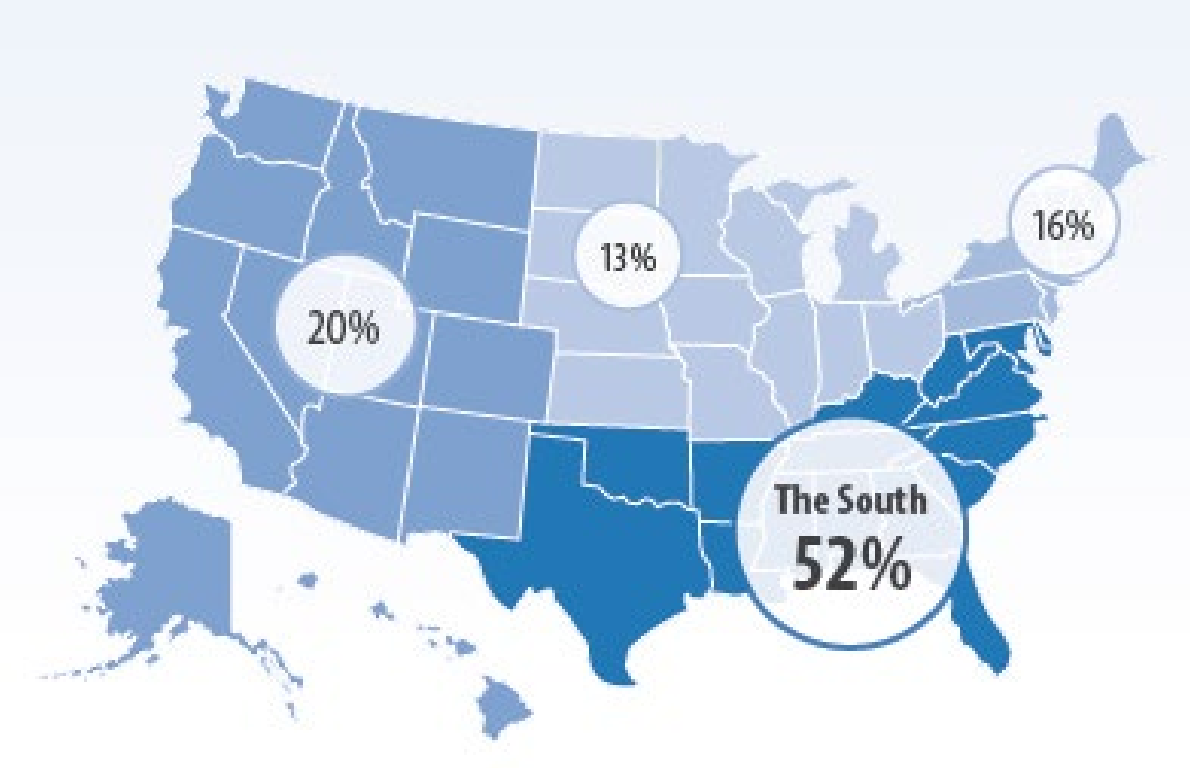
HIV Natural Progression



An P and Winkler C. Trends Genet. 2010 Mar; 26(3): 119–131.

HIV in the United States

Over 1.1 million people are living with HIV in the US

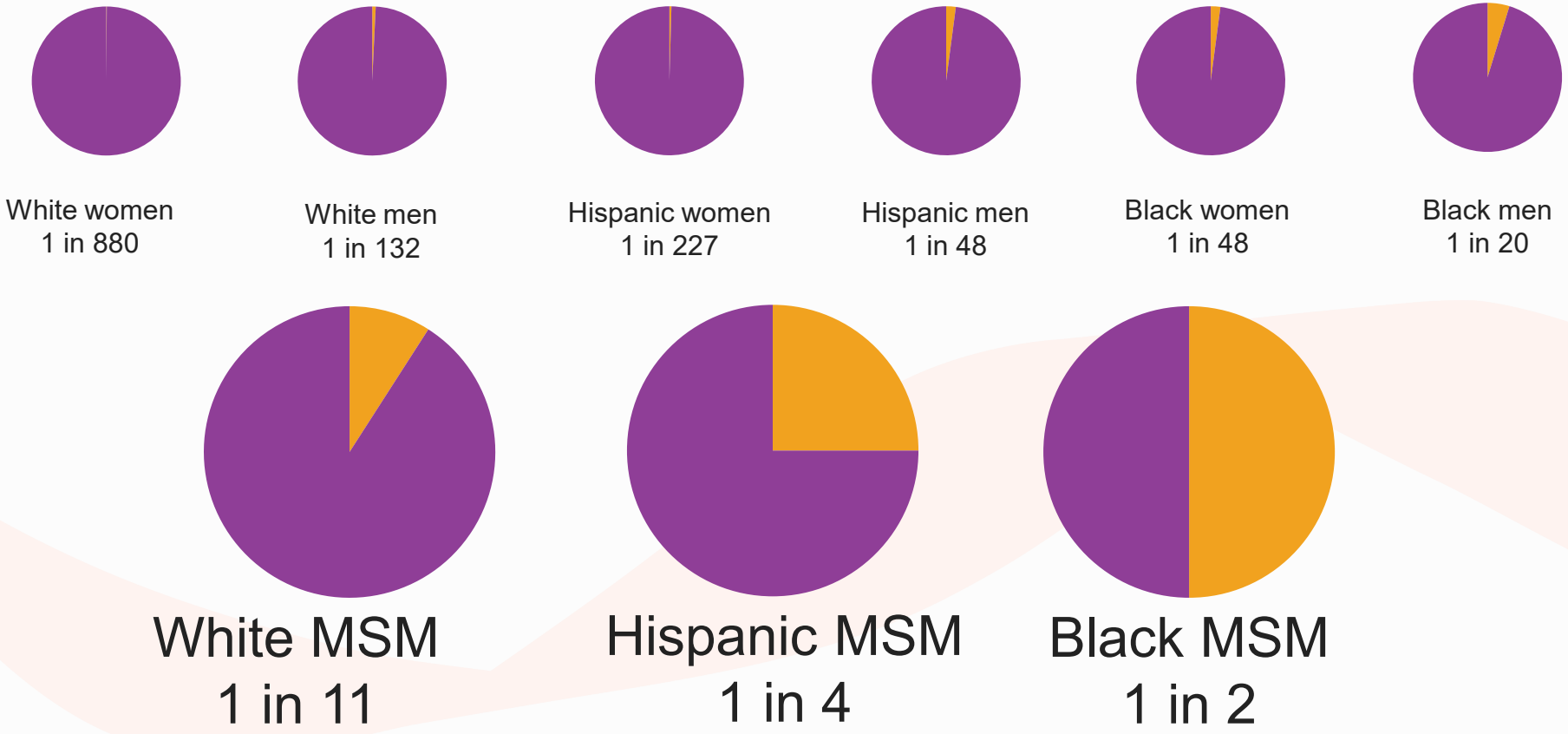


One in seven are unaware of their infection

https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-info-sheet-diagnoses-of-HIV-infection-2016.pdf

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

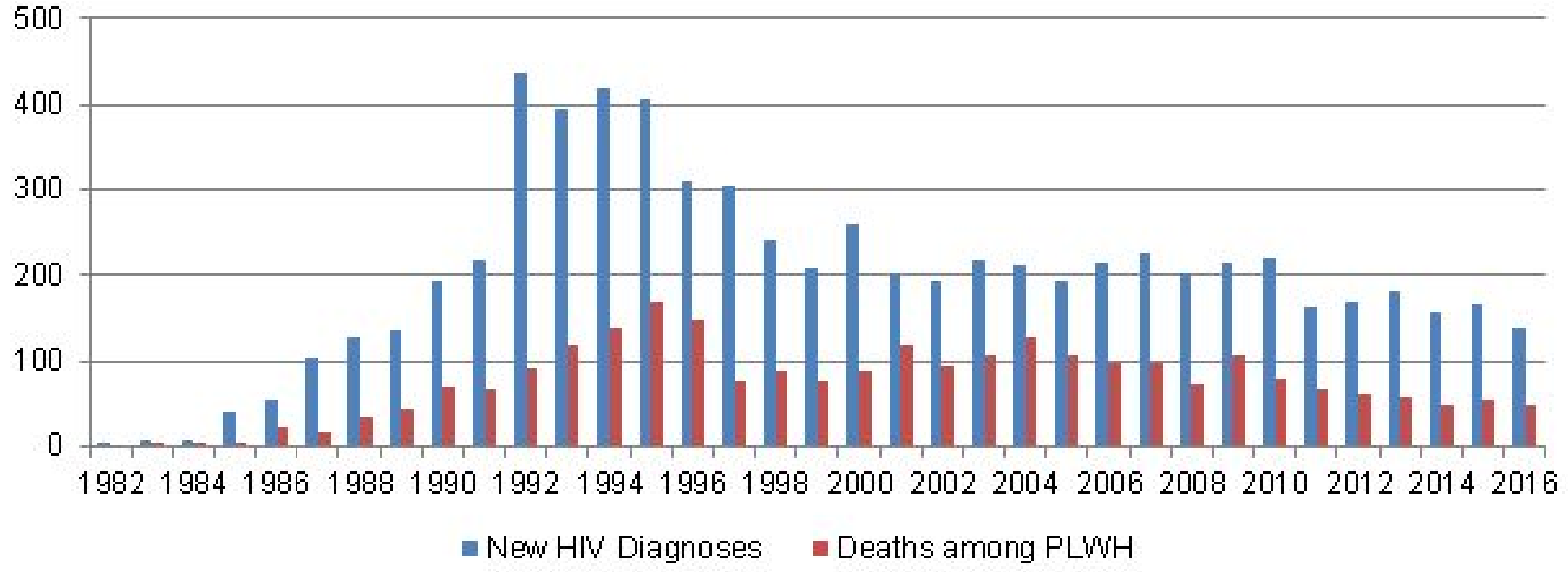
HIV Risk by Race/Ethnicity and MSM



CDC, 23 Feb 2016: http://www.cdc.gov/nchhstp/newsroom/2016/croi-press-release-risk.html

HIV in Nashville

Figure 1. Number of New HIV Diagnoses and Deaths among People Living with HIV (PLWH) – Nashville, 1982-2016



Source: Tennessee enhanced HIV/AIDS Reporting System (eHARS), accessed June 30, 2017.

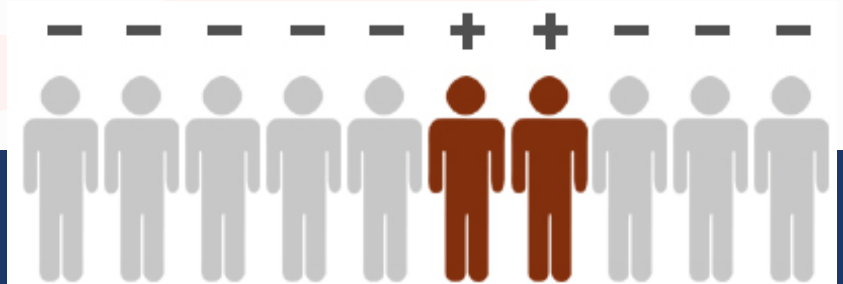
Who Should We Screen? CDC 2006

- Routinely screen all patients aged 13-64 for HIV infection after notifying them that testing will be performed unless declined
- Prevention counseling should not be required with HIV diagnostic testing or as part of HIV screening programs in health-care settings

CDC. MMWR 2006;55(RR14;1-17)

Screening Based on Risk

- Screen all patients
  - Starting treatment for tuberculosis
  - Seeking treatment for STDs during each visit for a new complaint
- Screen at least annually
  - Intravenous drug users and their sex partners
  - People who exchange sex for money or drugs
  - Sex partners of people with HIV infection
  - Men who have sex with men (MSM) or heterosexuals who have or who their sex partners have had more than one sex partner since their most recent HIV test



CDC. MMWR 2006;55(RR14;1-17)

Screening Based on Risk

- Screen all patients
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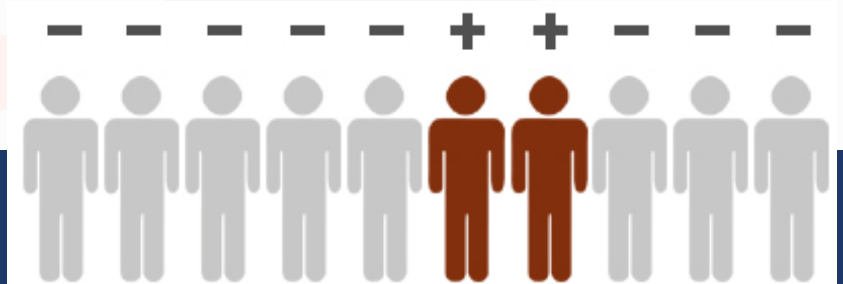
  - Se[illegible]ple with HIV infection
  - Men [illegible] have sex with men (MSM) or heterosexuals who have or who their sex partners have had more than one sex partner since their most recent HIV test

Also anyone you suspect may have HIV in a given encounter!



CDC. MMWR 2006;55(RR14;1-17)

HIV Screening in Pregnant Women

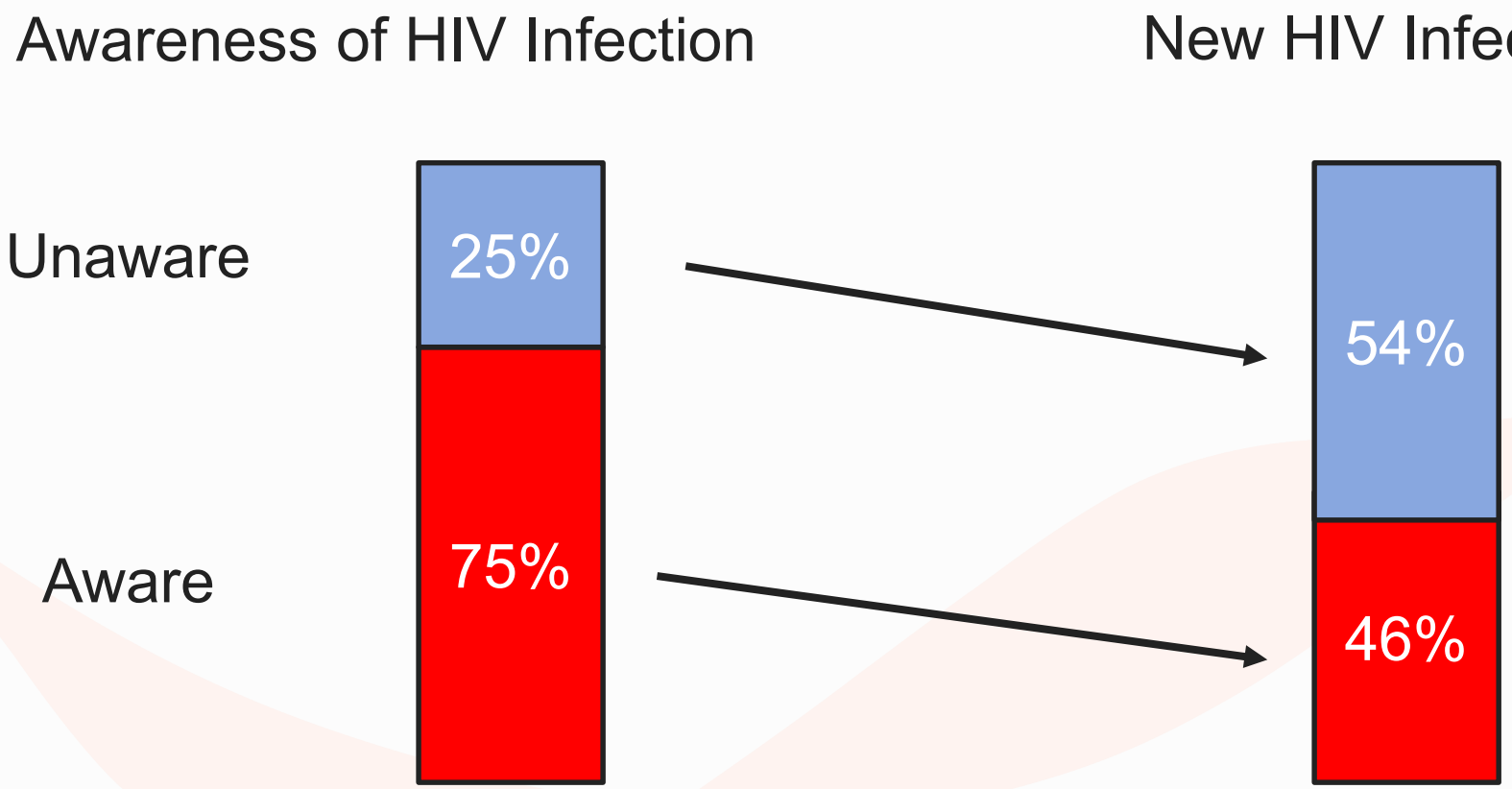
- Universal Opt-out screening
- Address reasons for declining test
  - Document declinations in the medical records
- Timing of HIV test
  - Early during pregnancy
  - Repeat in third trimester, ideally < 36 weeks gestation
  - Rapid testing at time of delivery if indicated

CDC. MMWR 2006;55(RR14);1-17.

Benefits of Knowing HIV Status

- HIV negative
  - Safer sex and needle practices
  - Assess if candidate for pre-exposure prophylaxis (PrEP)
- HIV Positive
  - Safer sex and needle practices
  - Antiretroviral use for individual patient health
  - Treatment as prevention, U=U
  - Prophylaxis to prevent opportunistic infections, if indicated

Disproportionate Transmission of HIV By People Unaware of HIV Infection Status



Adapted from Marks G, et al. AIDS 2006;20;1447-50.

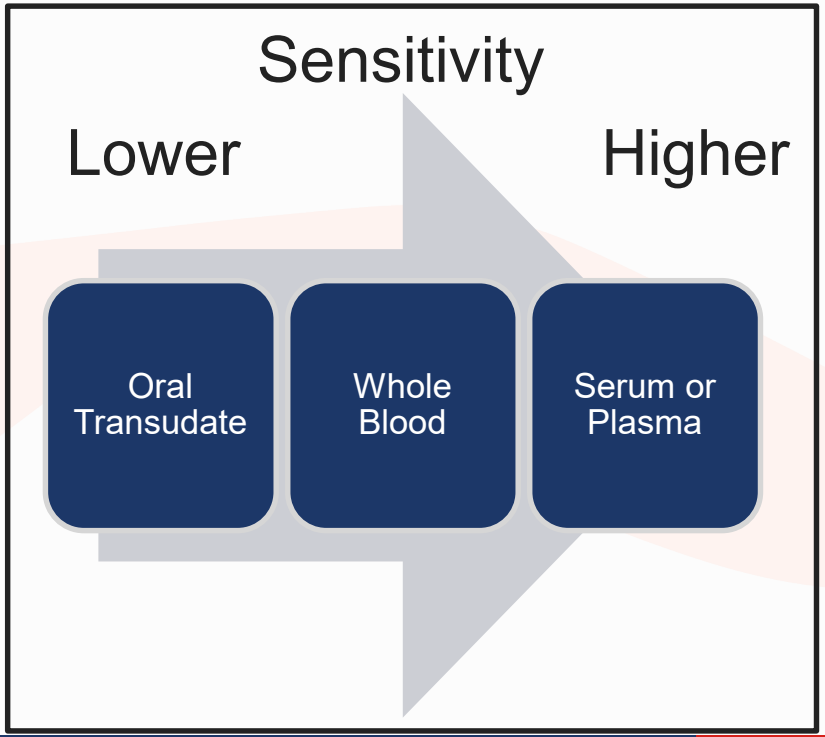

U=U
UNDETECTABLE = UNTRANSMITTABLE

U=U

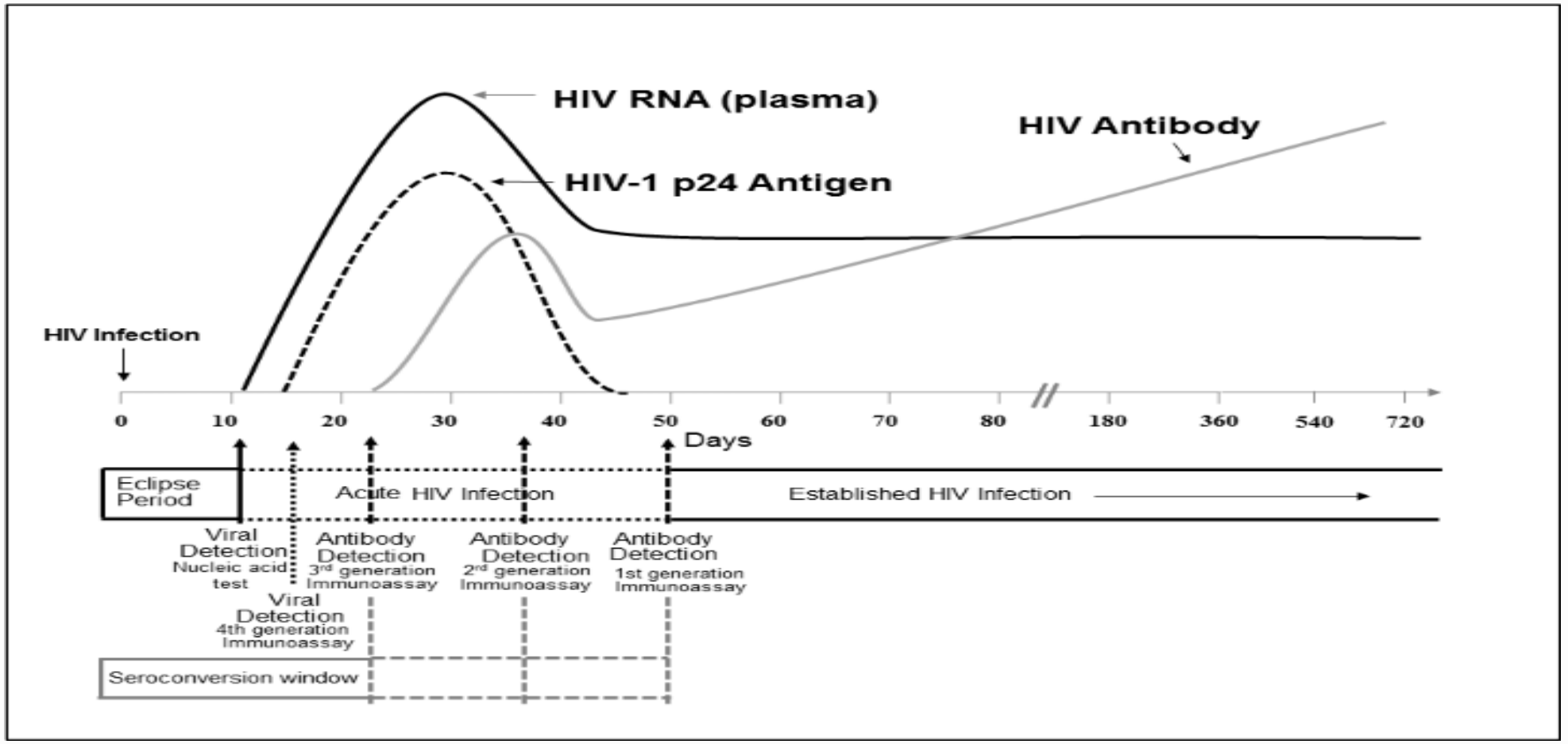
- Those who have an undetectable viral load have effectively no risk of transmitting the virus.
- This is a consensus of HIV experts worldwide, CDC, NIH, IDSA/HIVMA, common knowledge in the medical community.
- Combined data from 4 studies (HPTN 052, OPPOSITES ATTRACT, PARTNER and PARTNER2)
  - Among sero-discordant couples where the partner living with HIV had a durably undetectable viral load:
    - zero transmission among over a hundred thousand condomless sex acts
    - Results similar in both male-female and male-male partnerships

Options for HIV Testing

- **HIV Antigen/Antibody Test (4th generation testing)**
  - Can detect acute HIV infection
- HIV Antibody Test (3rd generation)
- Rapid HIV Test
  - Blood or saliva
  - Requires confirmation
- HIV viral load
  - Can detect acute HIV infection



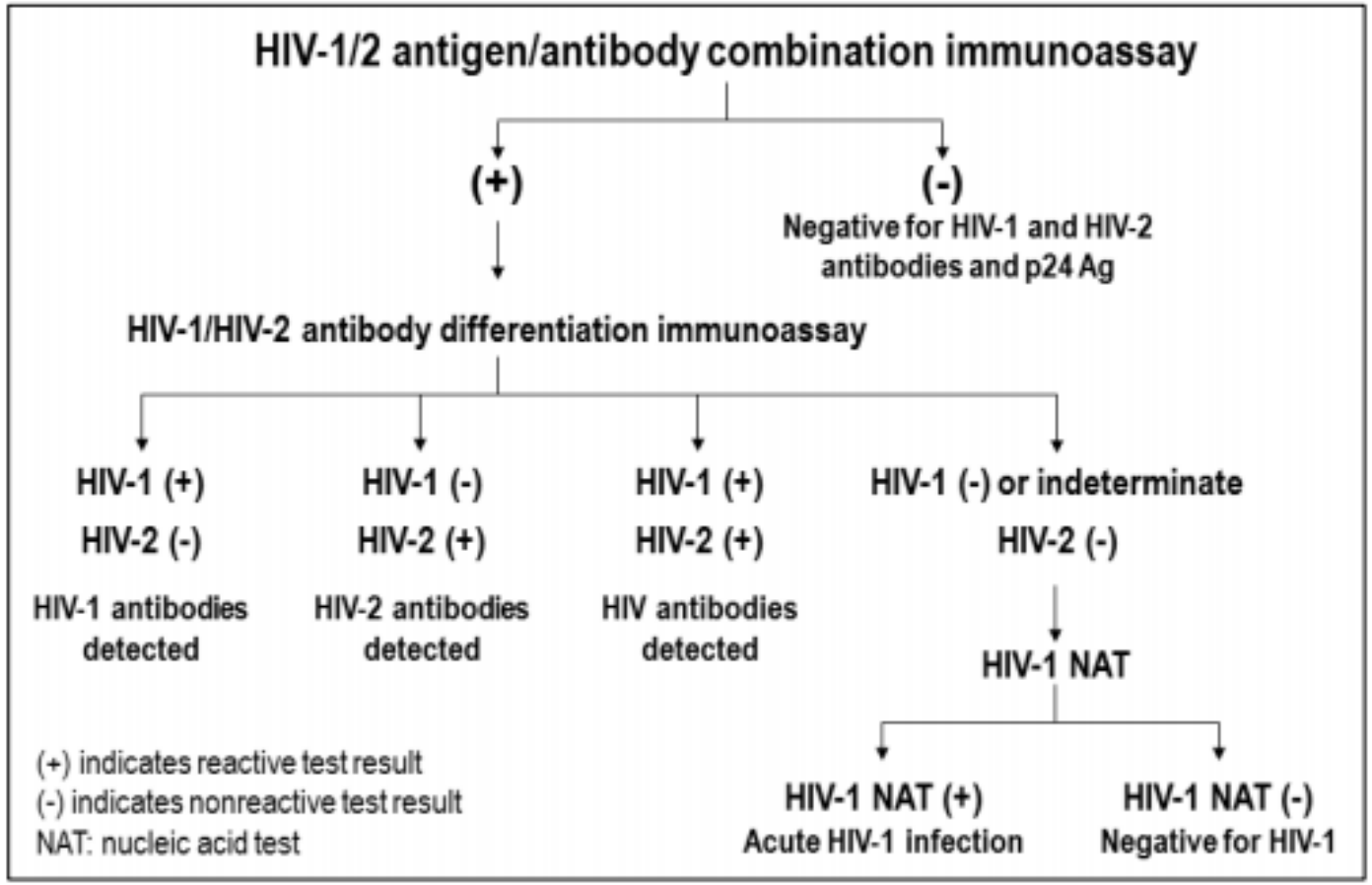
Sequence of Appearance of Lab Markers of HIV-1 Infection



Branson BM, et al. Laboratory Testing for the Diagnosis of HIV Infection: Updated Recommendations. CDC.gov. June 27, 2014. Available at http://stacks.cdc.gov/view/cdc/23446..

HIV Diagnosis

Box 1. Recommended Laboratory HIV Testing Algorithm for Serum or Plasma Specimens



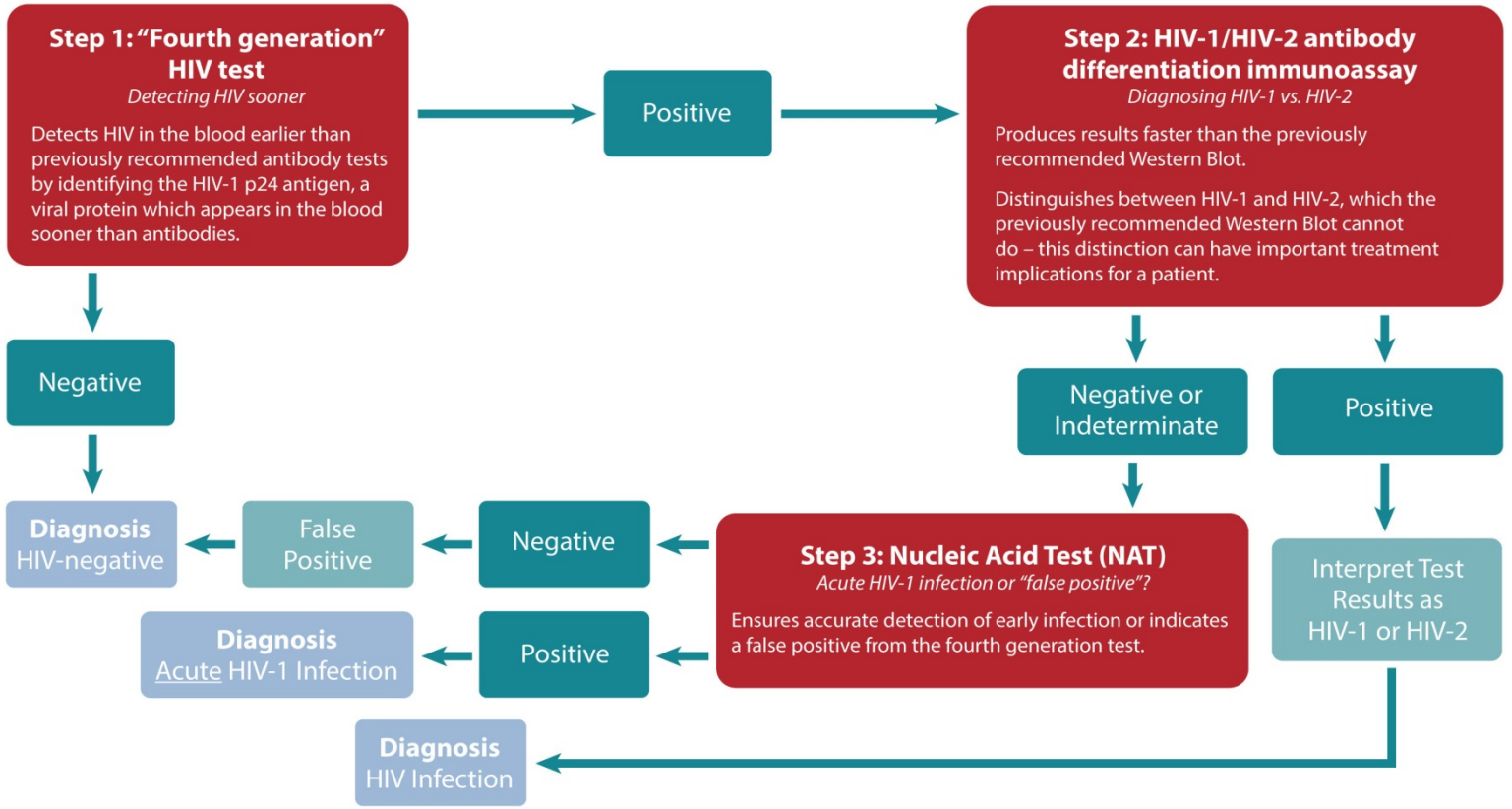
https://www.cdc.gov/hiv/pdf/HIVtestingAlgorithmRecommendation-Final.pdf

New CDC Recommendations for HIV Testing in Laboratories

A step-by-step account of the approach

CDC's new recommendations for HIV testing in laboratories capitalize on the latest available technologies to help diagnose HIV infections earlier – as much as 3-4 weeks sooner than the previous testing approach. Early diagnosis is critical since many new infections are transmitted by people in the earliest ("acute") stage of infection.

By putting the latest testing technology to work in laboratories across the United States, we can help address a critical gap in the nation's HIV prevention efforts.



This graphic is designed to illustrate key concepts of the new testing approach in laboratories. For more detail, please see the full guidelines here: http://www.cdc.gov/hiv/pdf/HIVtestingAlgorithmRecommendation-Final.pdf.

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

www.cdc.gov/nchhstp/newsroom

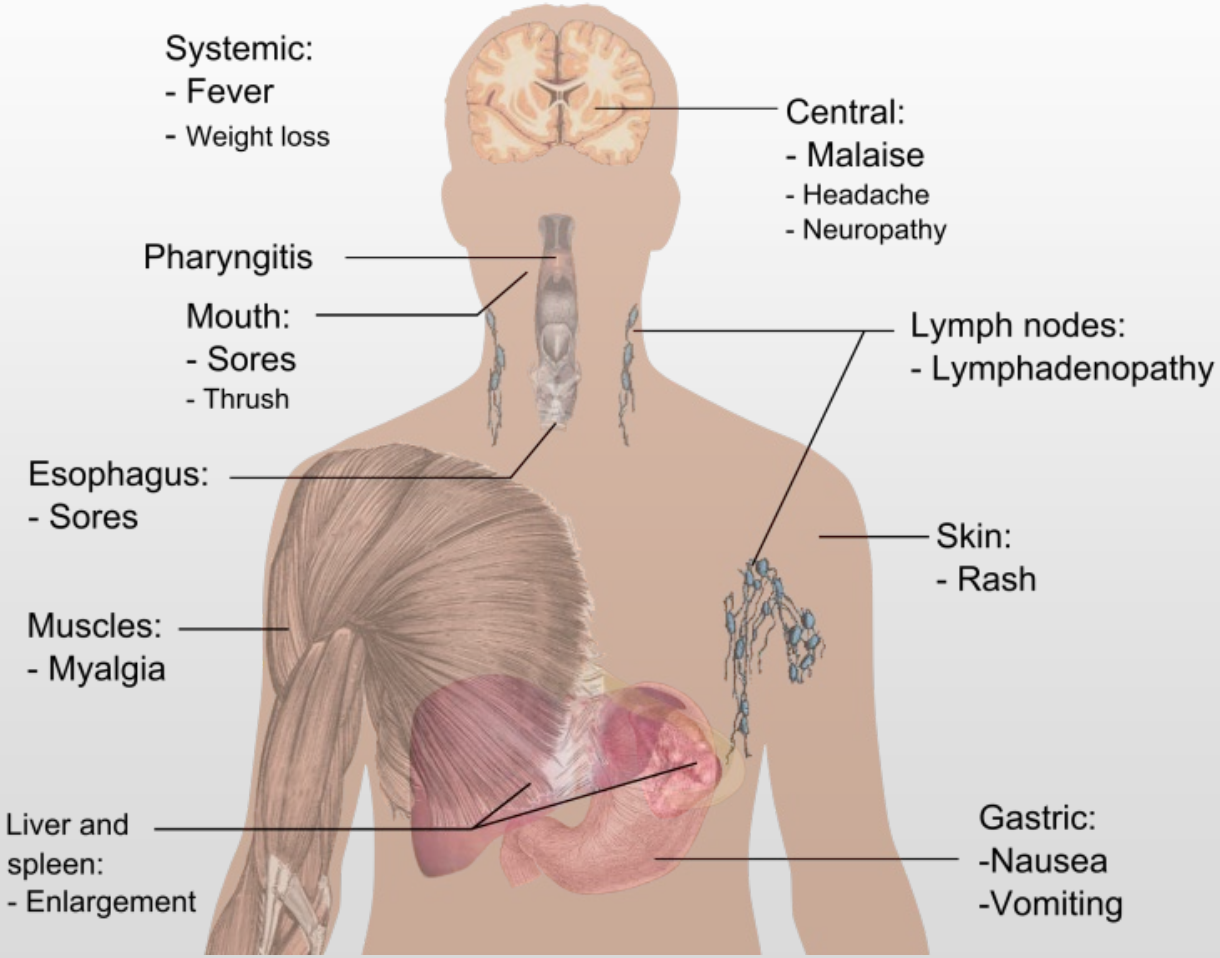
JUNE 2014

Acute HIV

- Consider any time you see a febrile patient with a mononucleosis-type presentation who may be at risk:
  - College student
  - Person who injects drugs
  - Person with multiple partners of unknown HIV status

- Clinical clues to acute HIV
  - Fever, malaise, pharyngitis, rash
  - Lymphadenopathy
  - Cytopenia
  - CD4 count can decline <200 cells/uL, OI can occur

Symptoms of Acute HIV



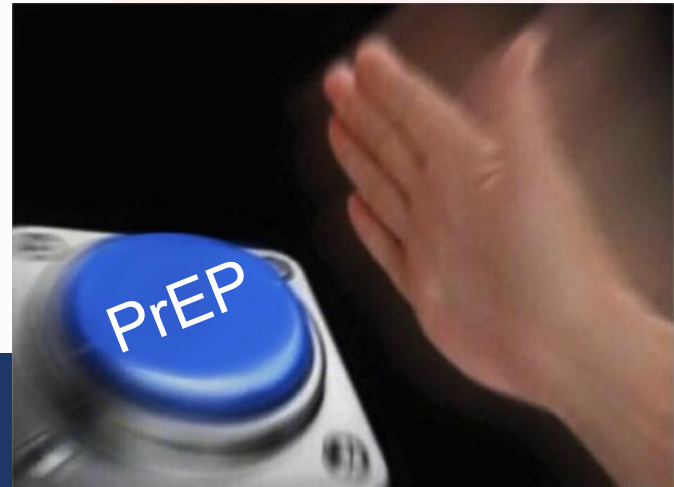
http://upload.wikimedia.org/wikipedia/commons/4/4a/Symptoms_of_acute_HIV_infection.png

What happens if the test is positive?

- Positive rapid tests require confirmation
  - Component of 4th generation testing algorithm
- Results should be communicated confidentially through personal contact
- Provide counseling
  - HIV is a manageable disease
  - Discuss HIV risk reduction
  - Discuss ways to handle the emotional consequences of a positive result
- Inform the patient that they might be contacted by health department staff

What if the test is negative?

- Reinforce safer sex and needle sharing practices
- Recommend additional testing if indicated
  - Concern for acute HIV?
  - Consider HIV Pre-exposure prophylaxis (PrEP)



Case 1

Phil is a 29-year-old man who is in a long-term relationship with Aaron. They recently returned from a Caribbean cruise where they both had multiple anonymous sex partners. They did not use condoms regularly.

- Phil practices oral and anal receptive sex and Aaron practices oral and anal insertive sex.
- Who is at higher risk for acquisition of HIV?

Estimated Per-Act Probability of Acquiring HIV from an Infected Source, by Exposure Act*

Type of Exposure	Risk per 10,000 Exposures
Parenteral	
Blood Transfusion	9,250
Needle-Sharing During Injection Drug Use	63
Percutaneous (Needle-Stick)	23
Sexual	
Receptive Anal Intercourse	138
Insertive Anal Intercourse	11
Receptive Penile-Vaginal Intercourse	8
Insertive Penile-Vaginal Intercourse	4
Receptive Oral Intercourse	Low
Insertive Oral Intercourse	Low
Other^	
Biting	Negligible
Spitting	Negligible
Throwing Body Fluids (Including Semen or Saliva)	Negligible
Sharing Sex Toys	Negligible

CDC.gov. HIV Risk Behaviors. December 2015. Available at https://www.cdc.gov/hiv/pdf/risk/estimates/cdc-hiv-risk-behaviors.pdf

Case 1

- Phil presented a week after his return home with diffuse papular, erythematous rash.
- Other symptoms included: fever, diarrhea, right upper quadrant abdominal discomfort and 7 pound weight loss
- Labs revealed new thrombocytopenia (plt 101, was 164 prior to trip), AST 85 (nl 0-37) and ALT 196 (nl 0-41)
- Syphilis and tri-compartment GC/chlamydia screens negative

Case 1

- HIV Testing
  - HIV Ag/Ab screen positive
  - HIV antibody differentiation assay negative
  - HIV RNA 4,024,146 copies/mL

Case 2

Alexandra is a 32-year-old woman who presents to labor and delivery with rupture of membranes at 37 weeks of gestation.

- No prenatal care
- What should be done about HIV testing?

Case 2 (continued)

- HIV Test results
  - HIV Ag/Ab screen positive
  - HIV antibody differentiation assay negative
  - HIV RNA negative

Case 2 (continued)

- False-positive HIV screen
  - Consider ALL possibilities
    - Very early infection?
    - HIV-2?
      - It's possible this could be a very early HIV-2 infection, in which case the antibody is not present, and HIV RNA PCR does not detect HIV-2
  - Gather more history
  - Repeat testing (or additional testing) will likely be indicated
  - Talk to the laboratory

Case 3

Chase is a 24-year-old man who presents to start PrEP. He knows he is at risk for acquiring HIV. He has sex with both men and women and doesn't consistently use condoms.

- STI screening was negative
- HIV testing
  - HIV Ag/Ab screen positive
  - HIV antibody differentiation assay: HIV-1 positive
  - What does this mean?

Summary

- HIV testing should be done on all patients aged 13-64 regardless of risk
- Some patients require more frequent screening based on risks or concomitant diagnoses
- Be aware of symptoms and signs that suggest acute HIV infection
  - Is the test you are using able to identify acute HIV?
  - Do you need to add on an HIV viral load or repeat testing later?