



SCHOOL OF MEDICINE

UNIVERSITY *of* CALIFORNIA ▪ IRVINE



P A C I F I C
AIDS
Education and
Training Center

Pacific AIDS Education
and Training Center

Registration:

[https://paetc.caspio.com/dp/050e700090280c9da9194a3daf9c?ER ID=20015148](https://paetc.caspio.com/dp/050e700090280c9da9194a3daf9c?ER_ID=20015148)

Evaluation:

[https://paetc.caspio.com/dp/050e70005ad90ed0a1d64108afe0?ER ID=20015148
&Ev_Type=1](https://paetc.caspio.com/dp/050e70005ad90ed0a1d64108afe0?ER_ID=20015148&Ev_Type=1)

UCI HIV Update

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Objectives

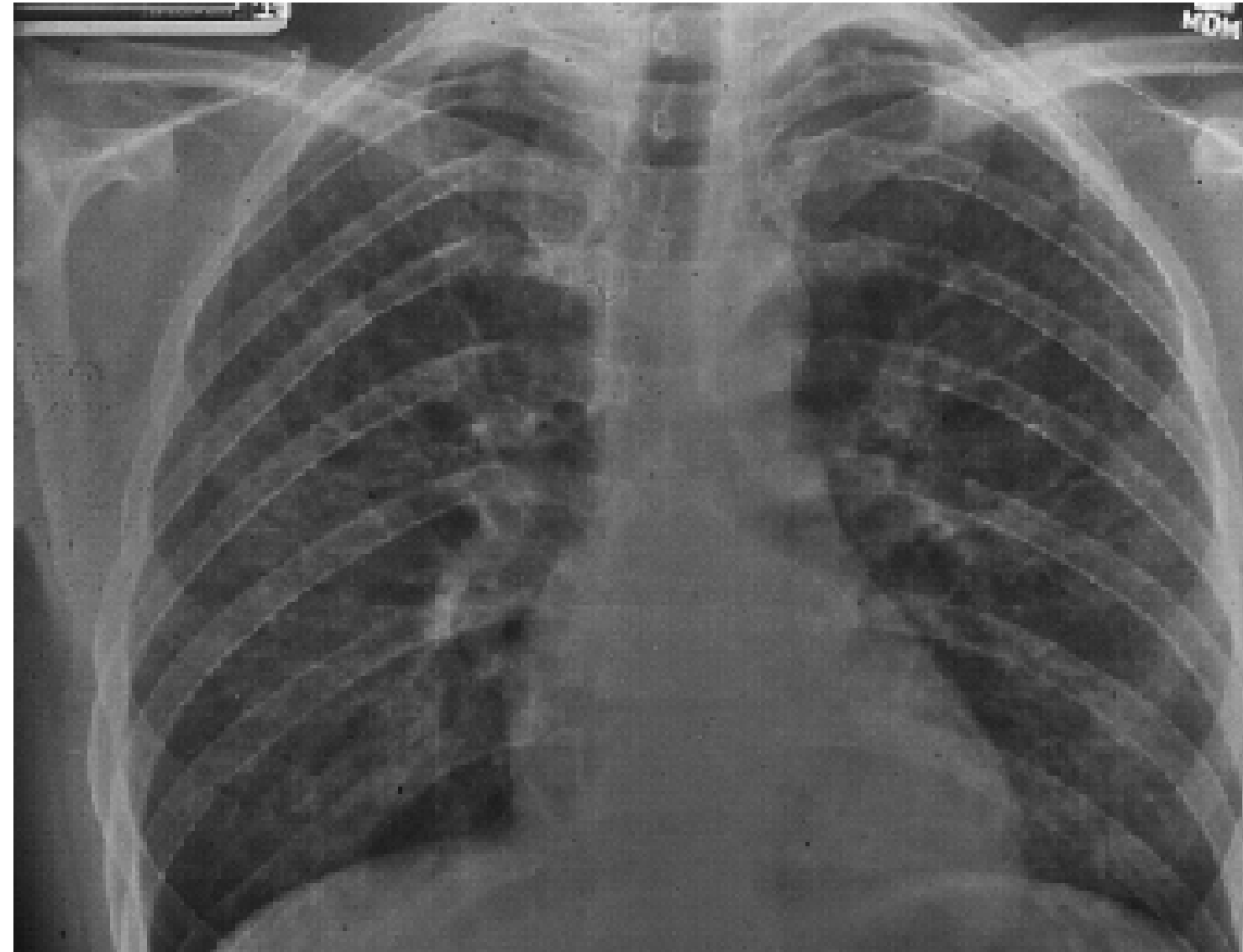
- To understand natural history of HIV in context of patient care
- To be aware of methods of HIV prevention
- To recognize HIV seroconversion

Have Faith

- Big topic
- We come from a variety of disciplines
- Acknowledgements
 - Organizers, audience, predecessors, privilege
- Conflicts: no commercial
- Questions are welcome
 - Chatbox

Case 1

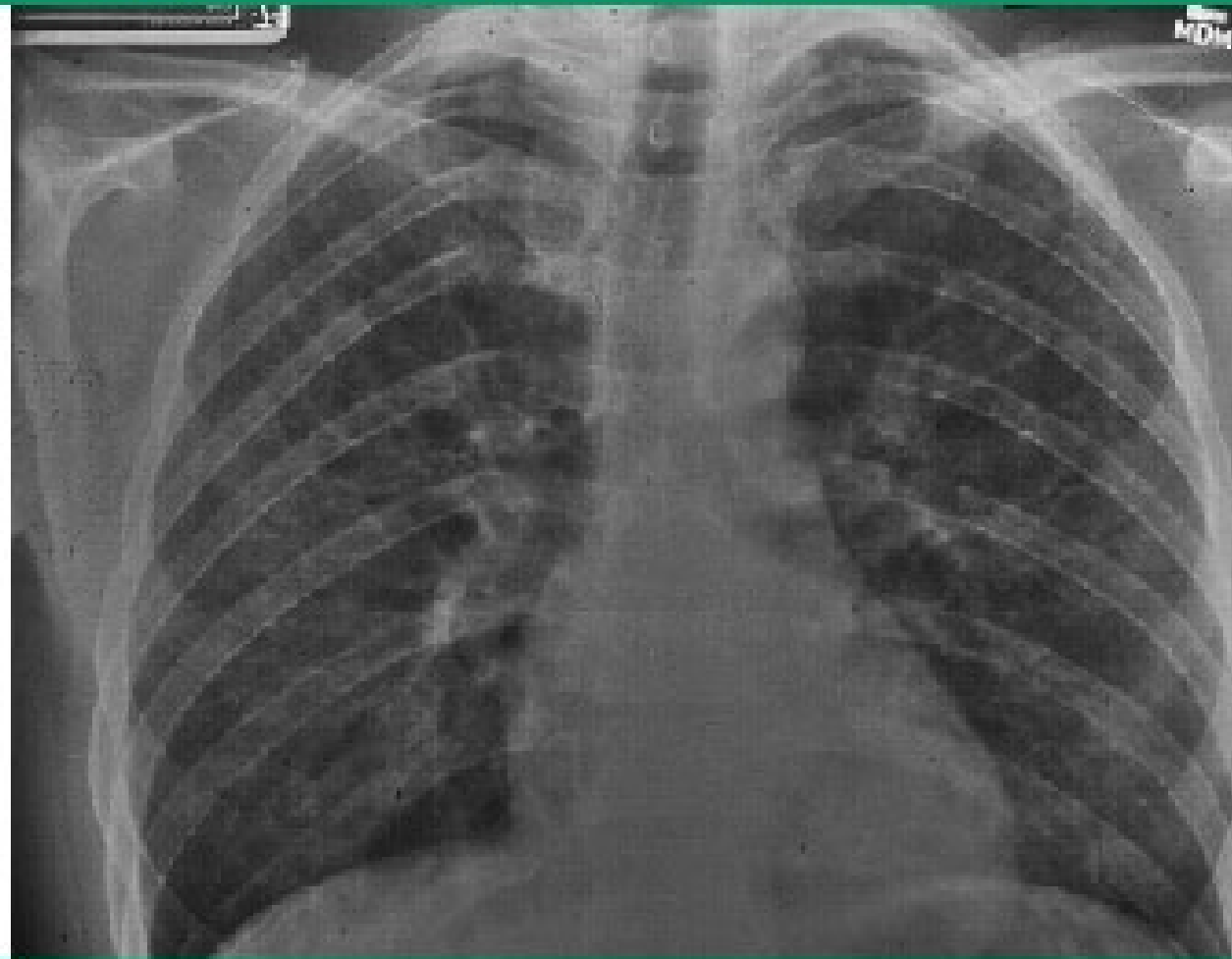
A 52YOM with HIV arrives in ED with shortness of breath which has developed over the past week. He had been off his antiretrovirals for two years, but a few weeks ago resumed tenofovir/emtricitabine/bictegravir.



What Information Would Be Most Useful?

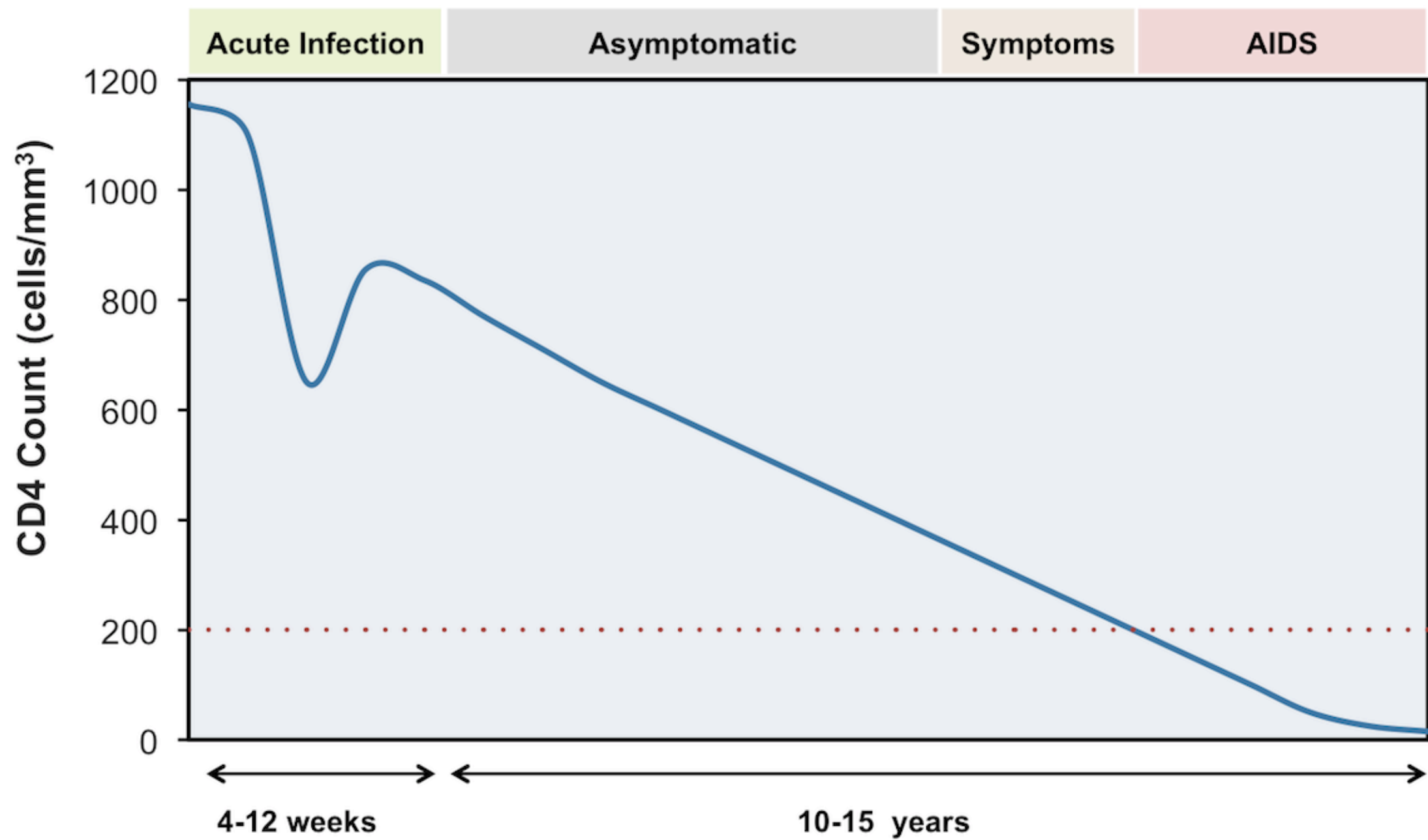
- A. Travel history
- B. Family history of TB
- C. Smoking history
- D. CD4 cell count

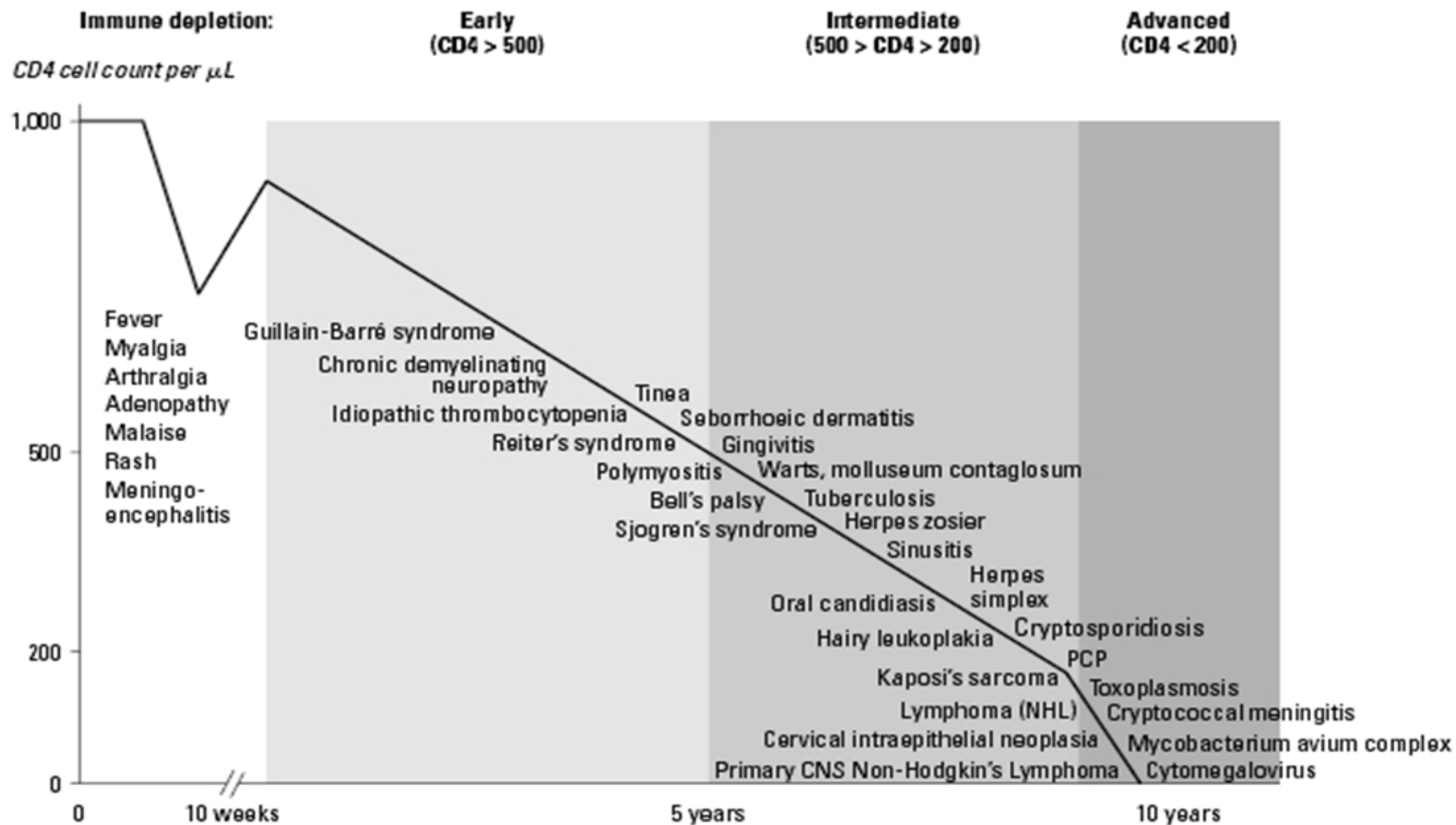
Pneumocystis jiroveci pneumonia in patient with AIDS



Chest radiograph shows diffuse ground glass opacification without air bronchograms and without obliteration of the pulmonary vessels.

Courtesy of Paul Stark, MD.





HIV	Low CD4	Other
Herpes Zoster/Shingles	Pneumocystis jiroveci pneumonia (PJP)	Hepatitis B
Herpes Simplex/HSV		
Idiopathic thrombocytopenia/ITP	Cryptococcal meningitis	Hepatitis C
Pneumonia	Toxoplasmosis	Sexually Transmitted Infections
Tuberculosis/TB		
Bells Palsy	Central Nervous System (CNS) Lymphoma	Smoking
Neuropathy		
Dementia		
Thrush	Kaposi Sarcoma (KS)	Depression
Gingivitis		
Sinusitis		
Oral Hairy Leukoplakia		
Coccidiomycosis	Mycobacterium Avium Complex (MAC)	Gender concerns
Histoplasmosis	disseminated	
Reactive Arthritis	Cytomegalovirus retinitis/colitis/esophagitis	
Psoriasis	Cryptosporidia (severe)	
Seborrhea		
Human Papilloma Virus/Warts		
Cervical Cancer		
Diarrhea		
Salmonella		
Weight loss		
Lymphoma (Hodgkin's and non)		

200 is the Magic

- CDC AIDS definition
- Start TMP/SMX (Bactrim) as PCP prophylaxis



Component	Ref Range & Units	1 mo ago (3/25/22)
Tot WBC Count	4,000 - 10,500 /MCL	4,000
Lymphocytes,%	14 - 44 %	34
Total Lymphocytes	900 - 3,300 /MCL	1,360
CD3+CD4+,%	24 - 64 %	13 ▼
CD3+CD4+	477 - 1,634 /MCL	177 ▼
CD3+CD8+,%	12 - 45 %	58 ▲
CD3+CD8+	168 - 1,315 /MCL	789
CD4:CD8	0.8 - 5.0 RATIO	0.22 ▼
CD3,%	58 - 89 %	72
CD3,Tot	700 - 2,377 /MCL	979

HIV Regimens Always Comprise Multiple Drugs to Increase Strength and Decrease Resistance

Symtuza



Darunavir-Cobicistat-Tenofovir alafenamide-Emtricitabine

800 mg



PI

150 mg



Booster

10 mg



NRTI

200 mg



NRTI

BICTEGRAVIR
(50 mg)

EMTRICITABINE
(200 mg)

TENOFOVIR
ALAFENAMIDE
(25 mg)



**People living with HIV can have the sex
lives and families they desire.**

**An undetectable viral load means you
cannot pass HIV to your partners.**

#UequalsU

#HIVLoveWins



a hub of positive reproductive & sexual health

www.hiveonline.org



Watch Out For... Drug Interactions!

- More with cobicistat and ritonavir, but common with all
- Watch out for fluticasone, statins, antacids, calcium/iron/magnesium and metformin

New Warnings (1 unfiltered, 1 filtered)

☐ Show filtered (1)



Drug-Drug: fluticasone and Symtuza

Plasma concentrations and pharmacologic effects of inhaled Inhaled Steroids may be increased by Protease Inhibitors and Cobicistat. Severe adrenal suppression and iatrogenic Cushing's syndrome may occur.

[Details](#)

Override reason



fluticasone (FLOVENT HFA) 44 MCG/ACT inhaler

Patient reported medication. **New.** Long-term.

Remove

SYMTUZA 800-150-200-10 MG tablet
 Prescription. Active.

Discontinue

Watch Out for... Immune Reconstitution Syndrome (IRIS)

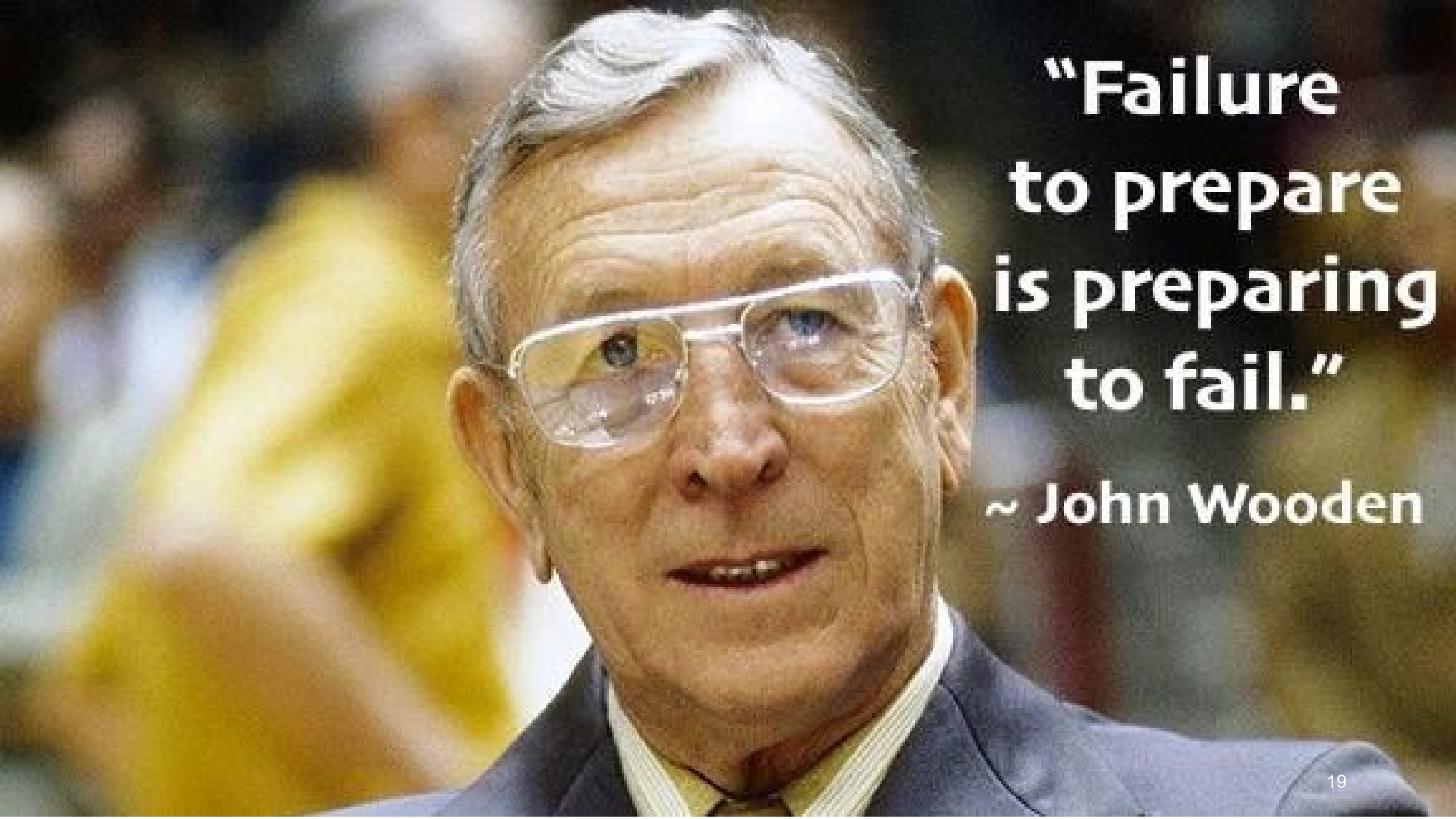


Case 2

A 26YOM is admitted to internal medicine with a rash and vision change. RPR is 1:128. HIV serology is negative. Patient will receive two weeks intravenous penicillin for neurosyphilis. He states his last sexual contact was eight weeks ago.

What Is the Most Important Discharge Instruction?

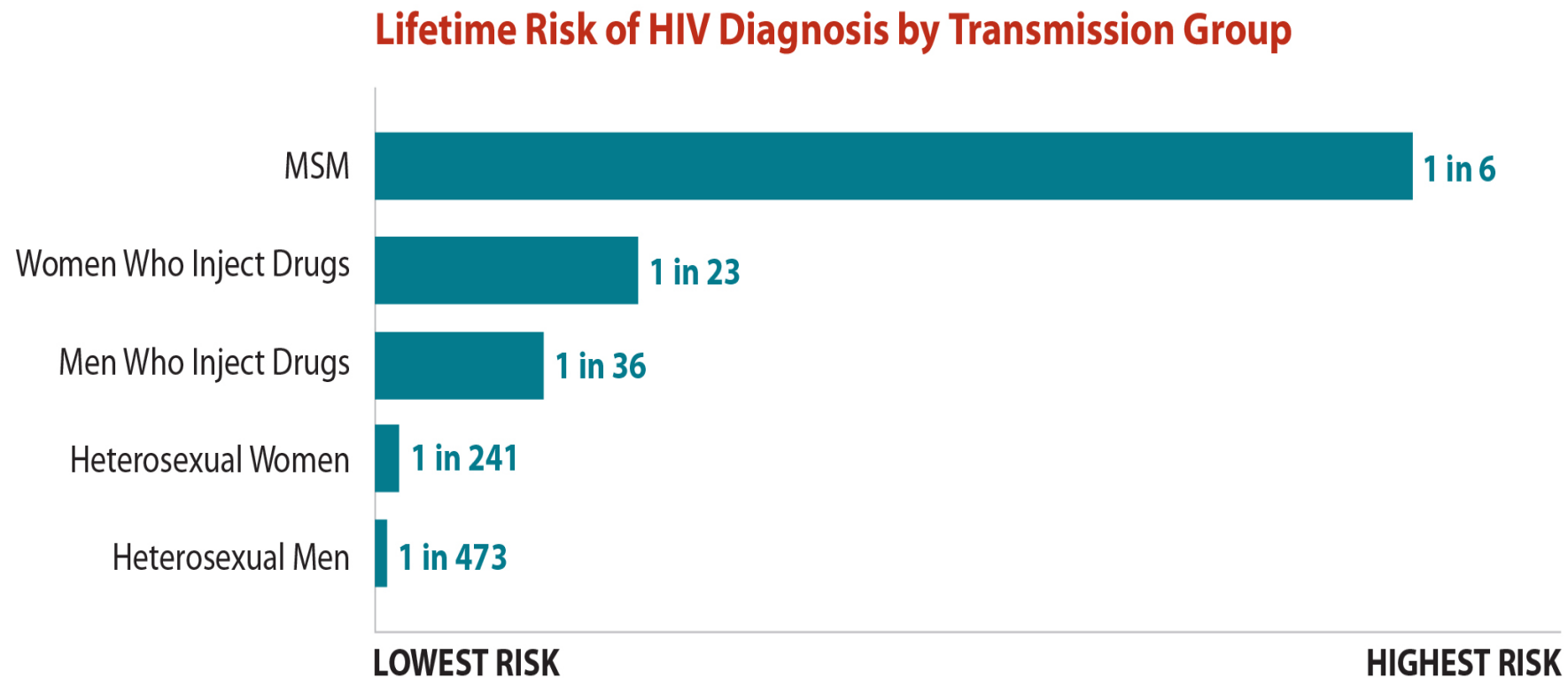
- A. Prescription for condoms
- B. Prescription for Truvada (tenofovir/emtricitabine)
- C. Follow up for STI screening every three months
- D. Ophthalmology clinic appointment

A close-up portrait of John Wooden, an older man with grey hair and glasses, wearing a dark suit and a light-colored shirt. He is looking slightly to the right with a thoughtful expression. The background is blurred, showing other people in a crowd.

**“Failure
to prepare
is preparing
to fail.”**

~ John Wooden

Population at Risk for HIV Infection



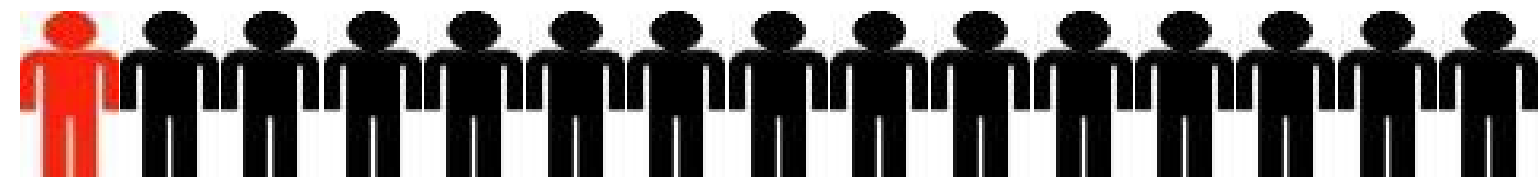
Source: Centers for Disease Control and Prevention

¹MSM: Men Who Have Sex with Men

Hess K, et al. *Ann Epidemiol.* 2017;27:238-243.

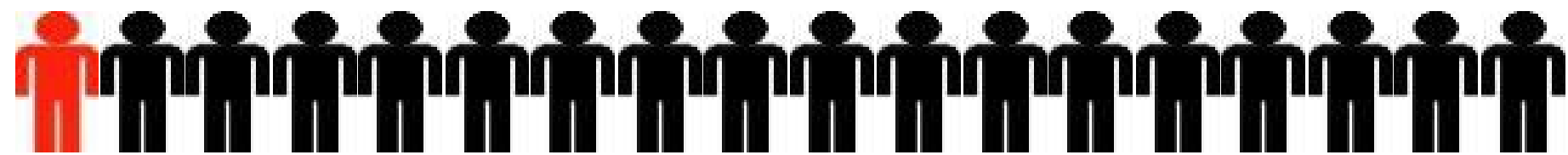
STDs Predict Future HIV Risk Among MSM

Rectal GC
or CT



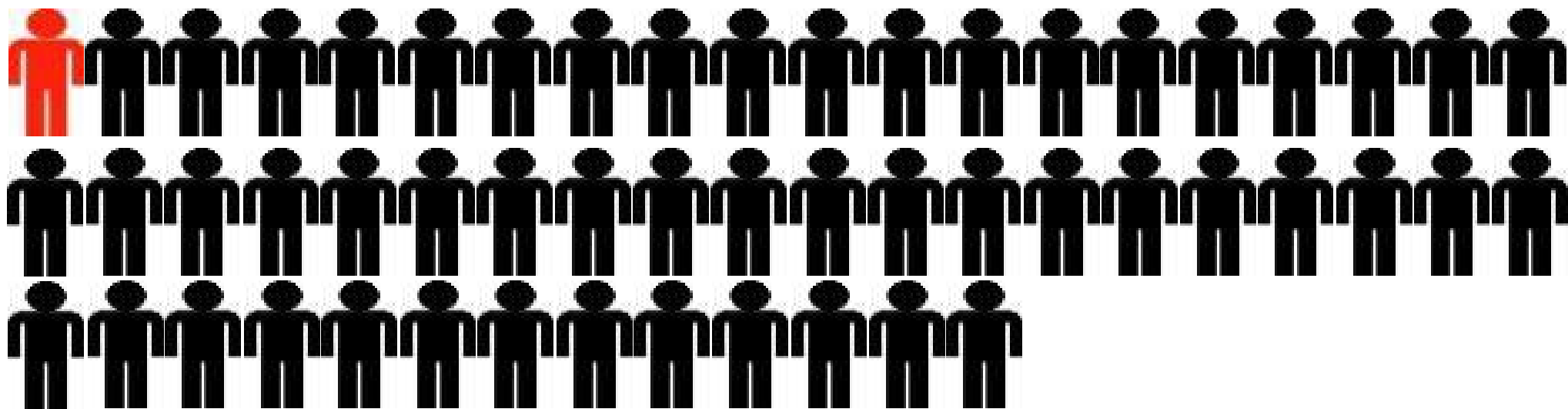
1 in 15 MSM were diagnosed with HIV within 1 year.*

Primary or
Secondary
Syphilis



1 in 18 MSM were diagnosed with HIV within 1 year.**

No rectal STD
or syphilis
infection



1 in 53 MSM were diagnosed with HIV within 1 year.*

*STD Clinic Patients, New York City. Pathela, CID 2013:57;
**Matched STD/HIV Surveillance Data, New York City. Pathela, CID 2015:61

The 5 Ps of Taking a Sexual History

- Partners
 - Men, women, both?
 - How many over past three months?
- Practices
 - Oral, anal, vaginal?
 - Top, bottom, both?
- Prior STI
- Prevention
 - Condoms, Prep, vaccination
- Pregnancy

Chancres!

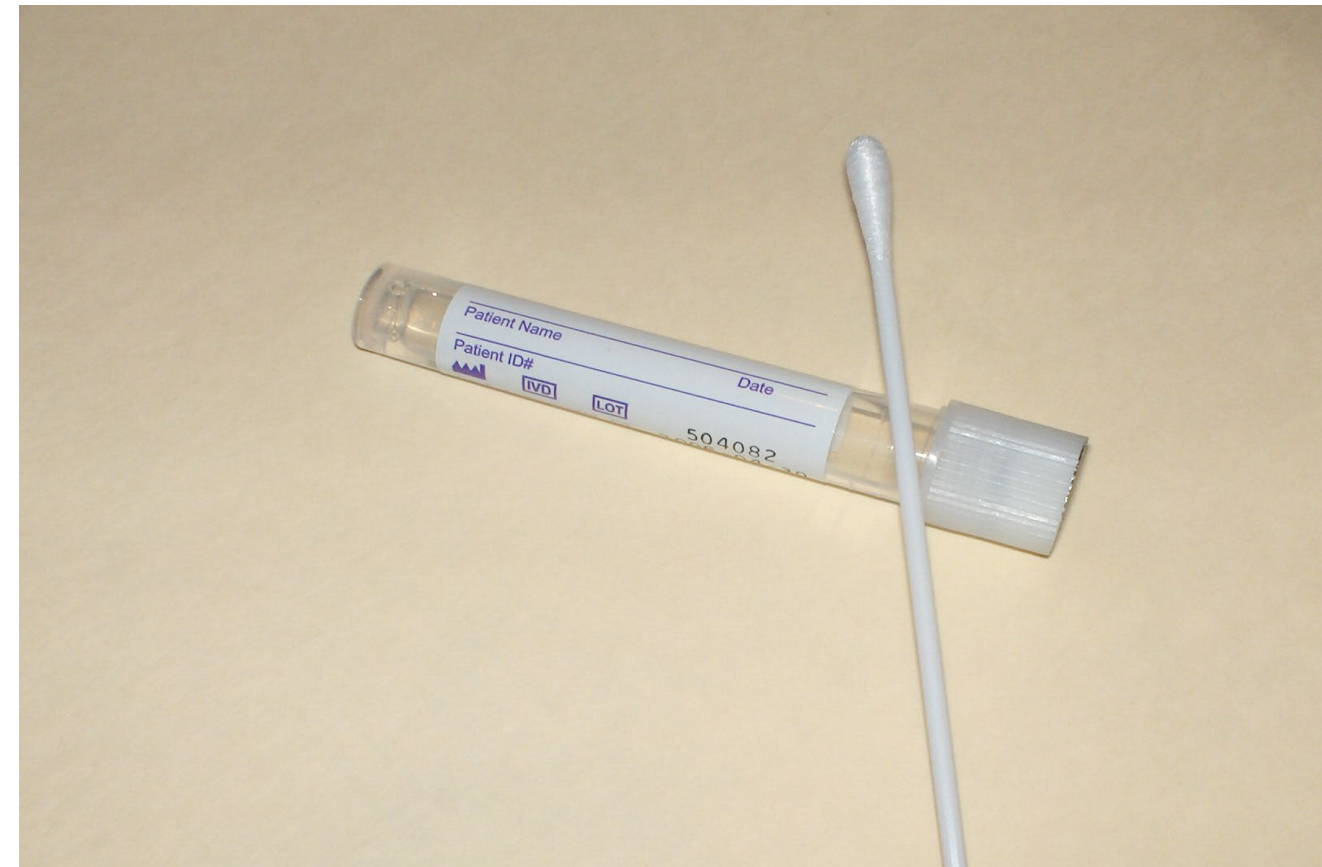




Signs of Secondary Syphilis

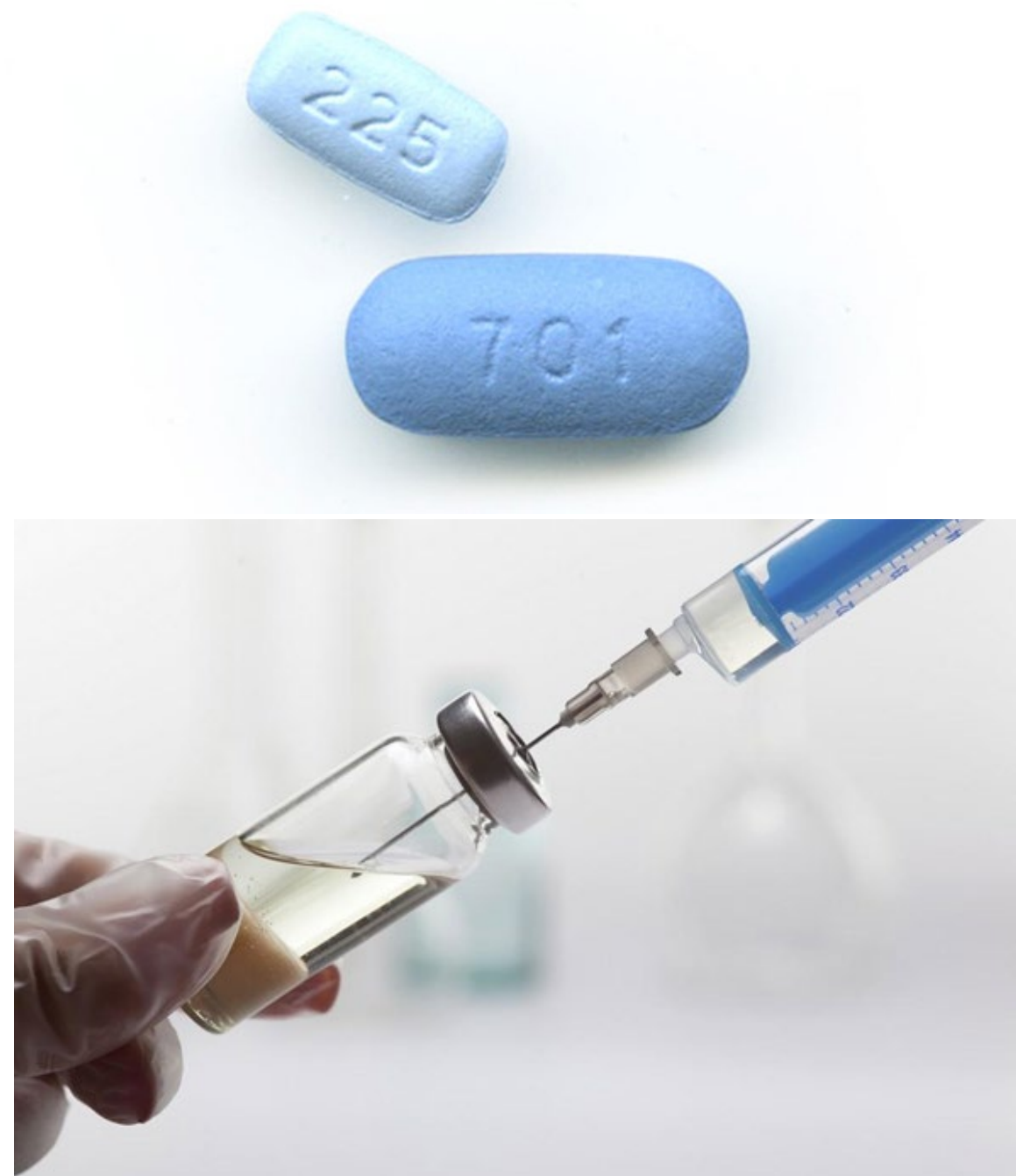


STD testing in MSM: Chlamydia and gonorrhea NAAT Testing at three sites and RPR



PreExposure Prophylaxis (PrEP)

- PrEP is medication to prevent HIV infection
- PrEP is indicated for individuals at high risk of HIV infection regardless of sex or risk factor
- Once daily, oral tenofovir disoproxil fumarate-emtricitabine (TDF/FTC) was FDA-approved in 2012 for PrEP
 - Emtricitabine is 2',3'-dideoxy-5-fluoro-3'-thiacytidine (FTC)
 - Truvada brand name, now generic available
- TAF/FTC (Descovy) FDA-approved for PrEP 10/2/19
- Cabotegravir (Apretude) FDA-approved for PrEP 12/20/21



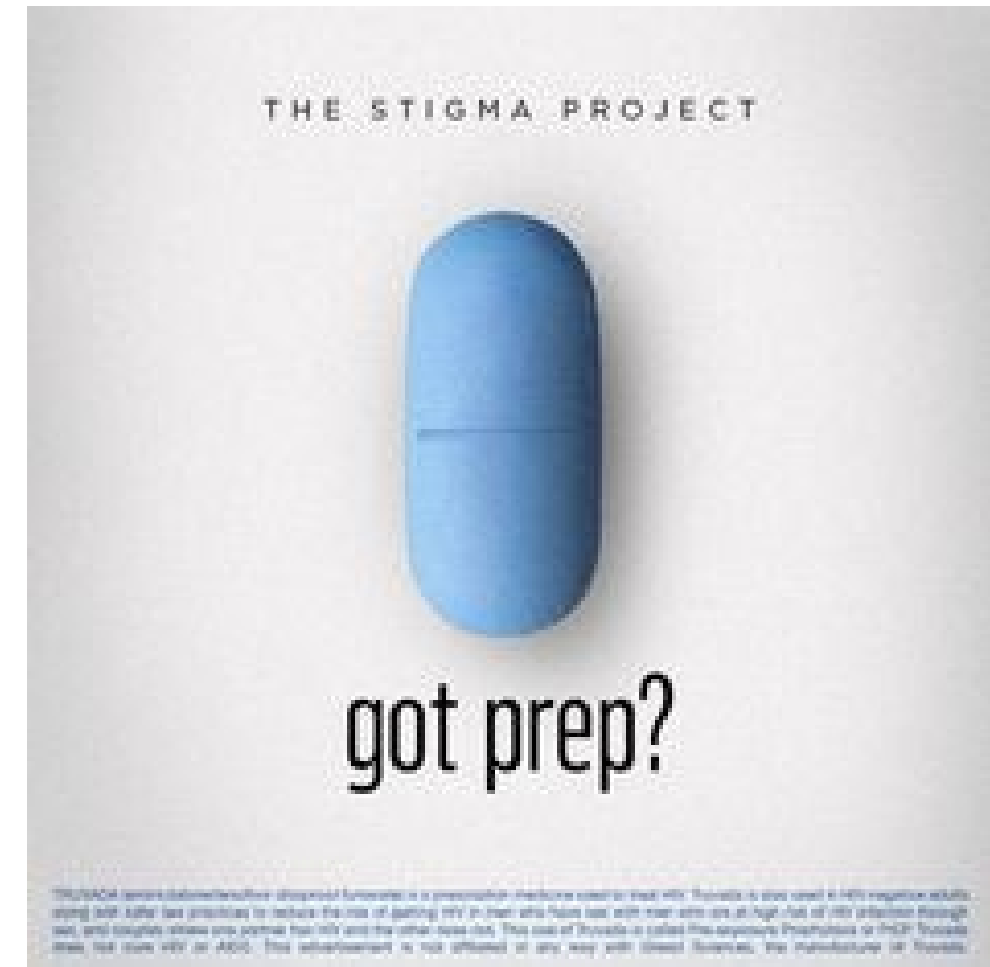
Clinical Eligibility Criteria for PrEP

- Documented *negative HIV test* result
- No signs/symptoms of acute HIV infection



Where to Get PrEP?

- UCI
- Orange County Health Care Agency
- Radiant (formerly ASF)
- LGBT center
- Altamed
- Planned Parenthood



When to Use Non Occupational Post Exposure Prophylaxis (nPEP)

- Evaluate persons rapidly for nPEP when care is sought ≤ 72 hours after a nonoccupational exposure that presents a substantial risk for HIV acquisition
- Preferred regimen for otherwise healthy adults is tenofovir disoproxil fumarate (TDF) (300 mg) with emtricitabine (200 mg) once daily ***plus*** dolutegravir (DTG) 50 mg daily for 28 days
- FUP 4 weeks, 3 months, 6 months
- Want to transition to PrEP afterward

Case 3

A 21YO Latino reports to urgicare with fever, sore throat and swollen lymph nodes. He has a PMH of syphilis and reports male sexual partners. Current RPR is negative and rapid strep test also is negative. The lab reports the HIV test as indeterminate.

What Would Be the Most Important Test to Order?

- A. HIV RNA
- B. Group A Strep Culture
- C. Epstein Barr Virus (EBV) serology
- D. West Nile IgG

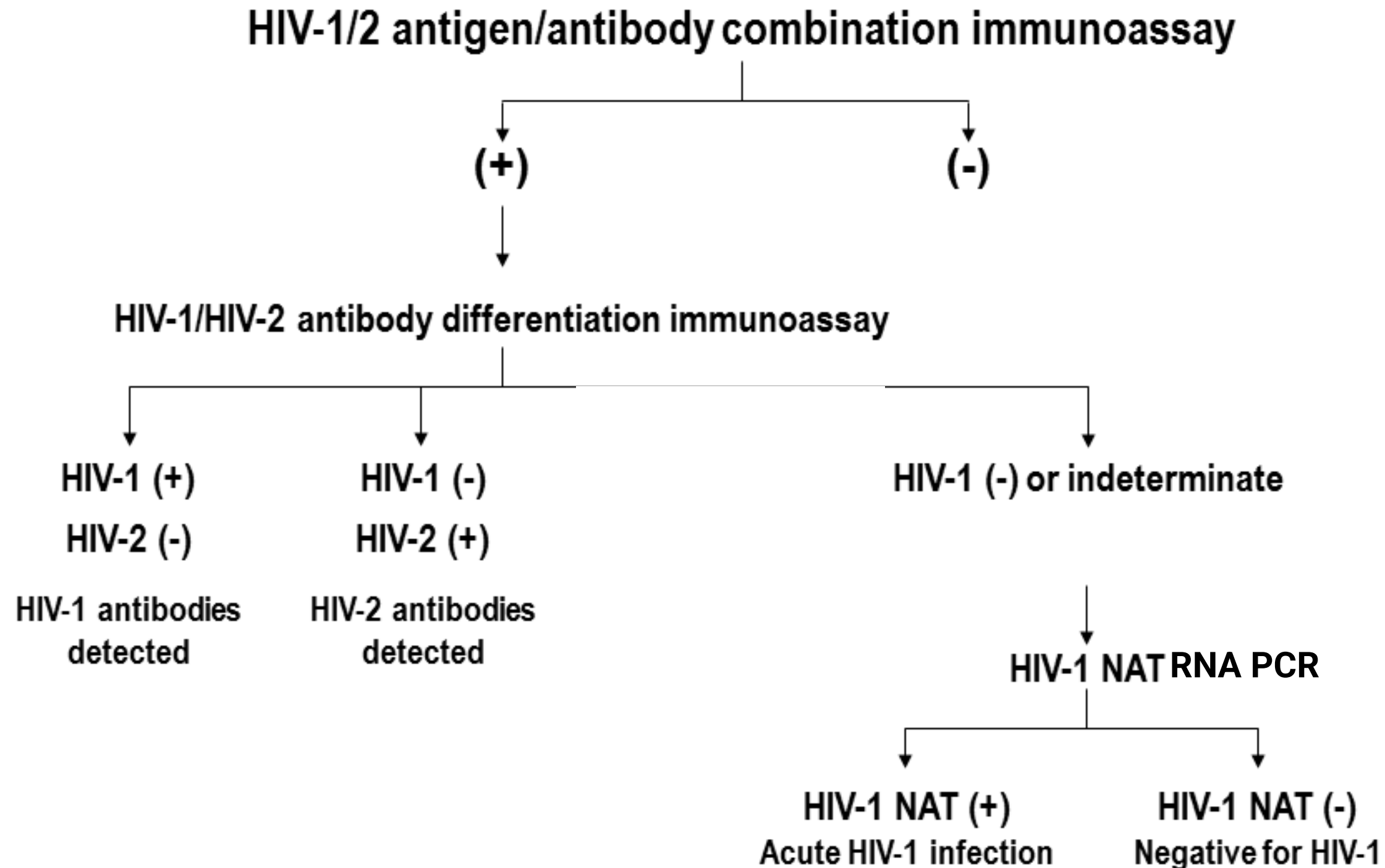
When to Do HIV RNA?

- HIV-infected
 - Establishing baseline
 - Monitoring HIV treatment
- Not diagnosed with HIV
 - History of *high risk exposure* within last 4 weeks
 - Signs or *symptoms of acute HIV*
 - *Indeterminate* HIV screen
 - PrEP

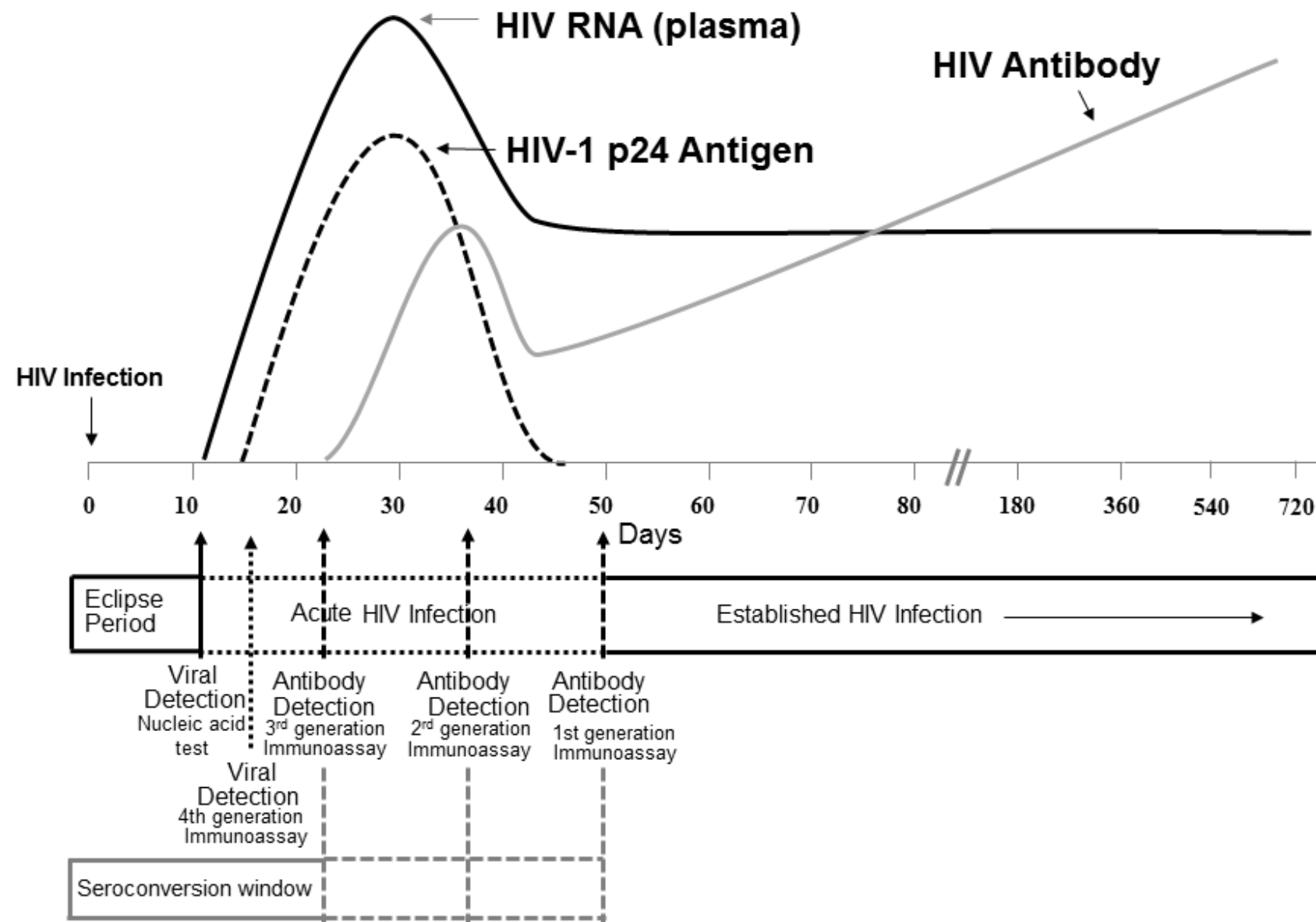
When to do HIV Antigen/Antibody Test?

- All adults aged 13-64 at least once
- MSM and others at risk at least annual
- Sexually active MSM every three months

Simplified HIV Testing Algorithm for Blood



HIV RNA +10-15 days vs 4th Generation Immunoassay + at 15-20 days

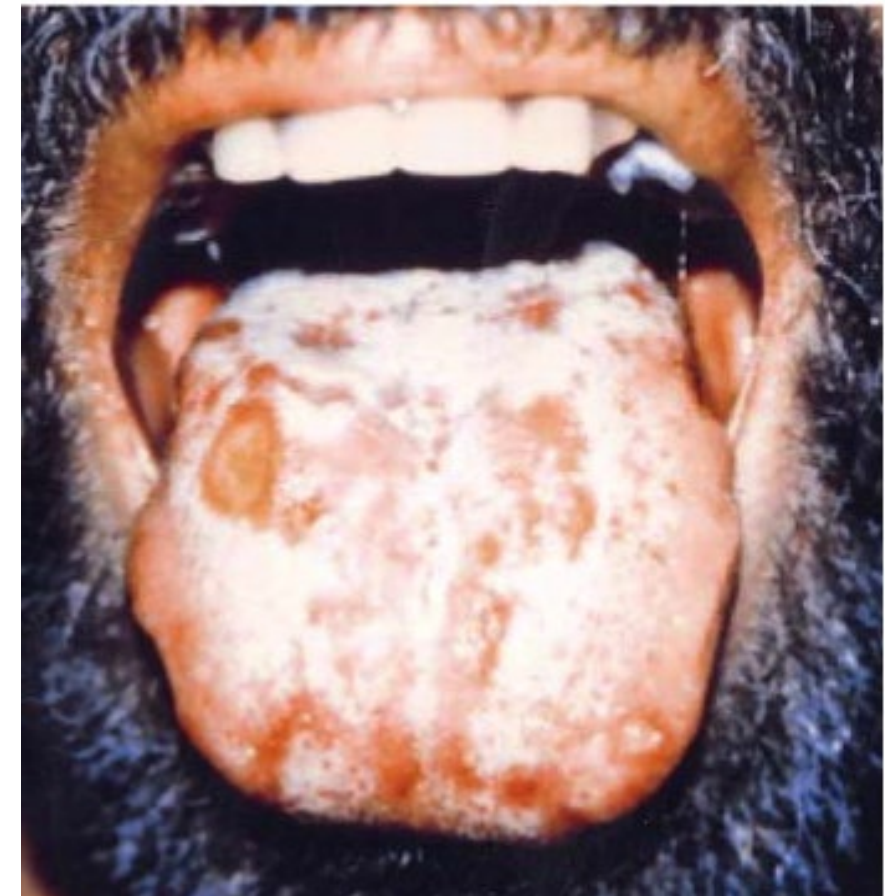


Features of Acute HIV

FEATURE	FREQUENCY (%)
Fever	77
Myalgia	52
Rash	51
Headache	47
Pharyngitis	43
Cervical adenopathy	41
Diarrhea	28

Acute Antiretroviral Syndrome Kahn JO, Walker BD. N Engl J Med 1998;339:33-39.

- Fever/night sweats
- Fatigue/weight loss
- Pharyngitis
 - Unique mucocutaneous ulcers ---oral, genital or esophageal
- Rash
 - Maculopapular
 - Starts 28-72 hours after onset of fever
 - Persists 5-8 days
 - Usually non-pruritic , on chest & face
- Myalgia/arthralgia common but rhabdomyolysis rare
- Headache
 - Retro orbital
 - Aseptic meningitis with lymphocytic pleocytosis
 - Encephalopathy, myelopathy, Guillain-Barre, nerve palsies
- LAD usually during 2nd week of illness concomitant with immune response
 - Also hepatosplenomegaly
- Diarrhea---GI tract is target of acute infection
 - Hepatitis rare



Symptomatic HIV Seroconversion

- Time from exposure to symptoms is usually 2-4 weeks
- What % presented for care?
 - ~50%
 - Argument for universal testing of hospital/ED patients
- What % retrospectively recalled symptoms?
 - ~90%
 - Recall bias
- What % reported symptoms when queried during seroconversion?
 - >90%

Differential Diagnosis of Acute HIV

- Mononucleosis
 - EBV
 - CMV
 - Toxoplasmosis
- Childhood exanthems
 - Measles
 - Rubella
 - Enterovirus
- GAS pharyngitis
- Influenza
- STDS
 - Syphilis
 - HSV
- HAV/HBV/HCV
- West Nile
- SLE

Missed Diagnosis

- In Seattle case series, only 5/19 (26%) who went to PCP/ED/urgicare were diagnosed, even though they were enrolled in an HIV surveillance study!
- Symptoms often vague & mild, resolving spontaneously
- Risk
 - Drs don't ask
 - Patients go to STD clinic for STDs not to PCP
 - Patients don't perceive risk
 - Youth
 - Drs and patients assume prior negative test still valid

Treatment Benefits

- Public health benefits
- Treatment may improve symptoms
- Preserve immune function

Laboratory Diagnosis of Early HIV

- High HIV RNA (>100,000 copies/ml)
 - Be suspicious of false positive or chronic infection if low viral load (<10,000)
 - Median peak 5 million copies/ml at median 13 days following initial detection of viral RNA
- 4th generation HIV EIA (includes p24 antigen) usually positive but may be negative very early
- Antibody differentiation immunoassay negative early
- Interpret labwork in context of
 - Clinical presentation
 - Risk history
 - History/documentation of prior testing

Laboratory Features

- Leukopenia with CD4 nadir with viral load peak and then rebound
 - Atypical lymphocytosis can occur <50% of cases
 - Positive heterophile can occur
- Anemia, transaminitis, thrombocytopenia

Why Is It Important to Identify Cases?

- People seroconverting are highly infectious
- Patients seroconverting are unaware that they are HIV-infected
- Successful treatment slows disease progression

Rapid ART

- Starting HIV treatment as soon as possible after the diagnosis of HIV, on the day of diagnosis -"treatment upon diagnosis"
- Safe, improves retention in care and increases the proportion of virally suppressed at 12 months
- Eliminates potentially stressful waiting period and reduces barriers to care
- Assist with transition of care
 - CD4, HIV RNA, HIV genotype
 - Warm-hand off to infectious disease/HIV specialist
- Partner notification



HIV Providers at UCI

- Drs Catherine Diamond, Rosa Andrade, Steven Park
- Dr Don Forthal (division head) supervises ID fellows in clinic
- Location: Pavilion 1 second floor (with general ID)
- (714) 456-7720
- LVN RJ Sampang
- MA Blanca Ruiz
- Manager Teresa Gonzalez Martinez
- We are not in the same area as the hospitalist antibiotic clinic with Drs Watanabe and Hsieh in Pavilion 3



Don
Forthal

Steve
Park

Rosa
Andrade

Catherine
Diamond

Who Needs to Receive Care in a Timely Manner?

- New diagnosis
- Out of care
- Pregnant
- PrEP
- Opportunistic infection
- Untreated sexually transmitted disease

Orange County Health Care Agency



1725 West 17th St Santa Ana
714 834 7991
HIV, STD, PrEP



Dr. Christopher Ried
STD Controller



Thank you Ryan White for providing the impetus for universal care!

Role of OC Public Health HIV and Syphilis Investigation

- Ensure individuals are adequately treated
- Attempt to locate patients that PMDs cannot contact for result disclosure
- Contact patients by phone, text, field visit and jail visitation
- Offer patients transportation to medical evaluation and treatment
- Link patients to prevention strategies such as PrEP and Rapid ART
- Follow-up on patients who have not engaged in HIV care

FREE, CONFIDENTIAL, PRIVATE

We help let partners know they may have been exposed to HIV or an STD.



I needed help figuring out what to say.

My ex needed to know, but I was afraid to tell him myself.

**I CALLED
PARTNER
SERVICES
BECAUSE**

I wish someone had told me.

My partners can get tested and treated.

My past partners could be infecting others and not even know it.

We're Here to Help
714.834.7748
www.ocalthinfo.com/STDHIV
08/16/18

Disease Control and Epidemiology

ocalth
CARE AGENCY

1725 W. 17th Street | Santa Ana, CA 92706 | (714) 834-7991 | ocalthinfo.com

The image shows a wooden desk set with a dark brown frame and a lighter brown base. Inside the frame is a white card with the word 'THINK' in large, bold, black serif capital letters. Below the word, in smaller black capital letters, is the text 'COMPLIMENTS OF IBM CORPORATION'.

THINK

COMPLIMENTS OF IBM CORPORATION

Conclusions

- Up to 15% of people with HIV are undiagnosed; please test
- Early diagnosis and antiretroviral adherence will prevent HIV-related morbidity
- Prevent the spread of HIV; support effective antiretroviral therapy and PrEP
- People with HIV may present with illness that is unusual for your practice; review CD4 and other risk factors when diagnosing

Questions

?