

# 52 – Non AIDS-Defining Complications of HIV/AIDS

Speaker: Michael Saag, MD



## Non AIDS-Defining Complications of HIV/AIDS

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## Disclosures of Financial Relationships with Relevant Commercial Interests

- None

## CASE 1

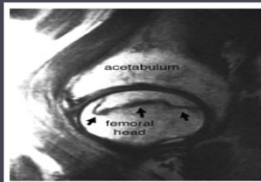
- ▶ 55 year old man presents with R hip pain
- ▶ H/o COPD requiring steroids frequently
- ▶ HIV diagnosed 17 years ago
- ▶ On TDF / FTC / EFV for 10 years; originally on IND / AZT / 3TC
- ▶ Initial HIV RNA 340,000; CD4 43 cells/ul
  - ▶ Now HIV RNA < 50 c/ml; CD4 385 cells/ul
- ▶ Electrolytes NL; Creat 1.3; Phos 3.5 Ca 8.5
- ▶ Mg 2.1, alk phos 130; U/A neg
- ▶ R Hip film unremarkable

## QUESTION #1

Which if the following is the most likely underlying cause of his hip pain?

- A. Osteonecrosis of Femoral Head
- B. Fanconi's syndrome
- C. Vitamin D deficiency
- D. Tenofovir bone disease
- E. Hypogonadism

## Osteonecrosis



This image demonstrates a classic segmental area of osteonecrosis with a dark line denoting the border between dead bone and living bone.

▶ M. Levine. Osteonecrosis of the hip- emedicine.com



## Avascular necrosis in HIV

- ▶ Reported prior to the HAART era; increasing in HAART era.
- ▶ Rates of AVN 4.8/1000 person years >> general population.
  - ▶ Age ~ 35 yrs
  - ▶ Male predominance
  - ▶ H/o IDU
  - ▶ Increased duration of HIV
  - ▶ Low CD4
  - ▶ Elevated lipids
  - ▶ Glucocorticoid steroid use
  - ▶ Alcohol use

▶ Monier et al, CID 2000;31:1488-92, Moore et al, AIDS 2003

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### CASE 2

- ▶ 46yowf c/o (CD4 582, VL <50 c/ml) c/o 1 week cramps in calves, tingling in hands, feet
- ▶ Today awoke and can't move except hands/feet
- ▶ No F/C, chest pain, SOB, incontinence
- ▶ + chronic diarrhea 4x/day
- ▶ Chronic fatigue, poor appetite
- ▶ Meds
  - ▶ TDF/FTC/EFV (2008), on TDF/FTC/Elv/cobi since 2014
  - ▶ zolof, bupropion, norco, prilosec, trazodone, pravachol ibuprofen

### CASE 2: Exam

- ▶ VS: T 98.2 P 79 BP 112/73
- ▶ RR 16, O2 sat 97%
- ▶ **Pertinent findings**
- ▶ Neuro: CNII-XII intact, strength 1+ all extremities except 4+ hand/wrist and ankles.
- ▶ NI reflexes. Alert, oriented.

### CASE 2: Labs

137|116|5      Gluc 83  
1.6 |18 |1.0      AG 3

Ca 8.3      Phos 1.8      Mg 2.1  
Lactate 1.5      CK 186  
UDS +cocaine/benzo/opiate  
UA: 1.015 pH 6.5 2+ pro  
Neg: gluc/ketones

### QUESTION #2

Which of the following is the most likely diagnosis?

- Cocaine toxicity
- Nucleoside-induced myopathy (ragged red fiber disease)
- Serotonin Syndrome
- Statin toxicity
- Fanconi's syndrome

### CASE 3

- ▶ 35 year old man presents with complaints of increasing fatigue, headache, SOB / DOE
- ▶ HIV diagnosed 4 mos ago with PCP; intolerant to TMP/SMX
- ▶ Now on TAF / FTC / BIC + PCP Prophylaxis with Dapsone
- ▶ Claims adherence to all meds; "Doesn't miss a dose!"
- ▶ Normal PE
- ▶ Pulse Ox 85%; CXR no abnormalities
- ▶ ABG: 7.40 / 38 / 94/ 96% (room air)

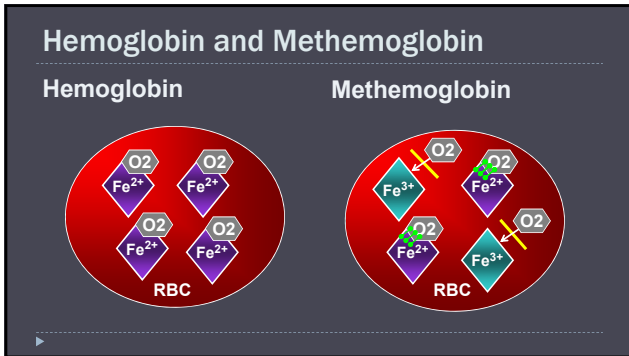
### QUESTION #3

Which of the following is the most likely underlying cause of his symptoms?

- Recurrent PCP
- IRIS Reaction
- Drug toxicity
- Pulmonary Embolus
- Patent Foramen Ovale

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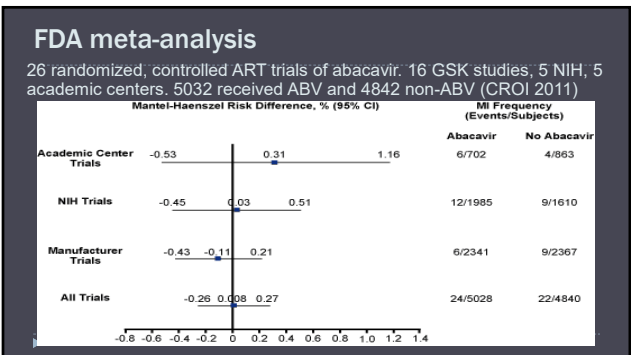
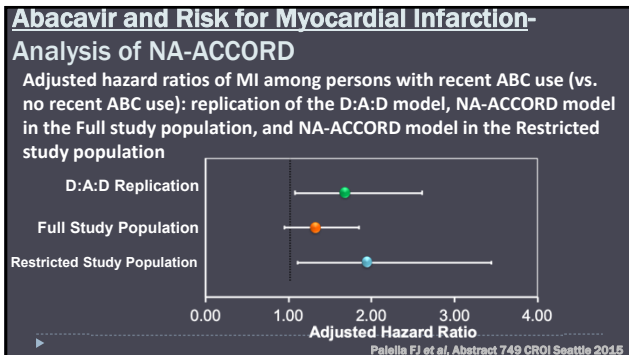
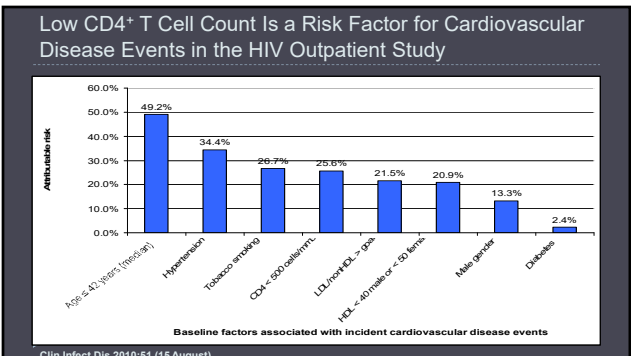
### CASE 4

- ▶ 55 year old man presents with complaints of crushing chest pain
- ▶ HIV diagnosed 10 years ago
- ▶ Initial HIV RNA 340,000; CD4 43 cells/ul
  - ▶ Now HIV RNA < 50 c/ml; CD4 385 cells/ul
- ▶ Initially Rx with ZDV/3TC / EFV; now on ABC/3TC/ EFV
- ▶ On no other medications / smoker
- ▶ ECG shows acute myocardial infarction

### QUESTION #4

Which of the following is the highest relative risk for his Acute MI?

- Cigarette smoking
- Lipid levels (LDL level of 180 / HDL 30)
- Abacavir use
- Lack of use of aspirin
- HIV infection




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### MI Classification Protocol


**Universal Definition of MI:**

Primary MI (Type 1 'traditional' MI atherosclerosis)



Plaque rupture with thrombus

Secondary MI (Type 2 supply-demand mismatch)



Vasospasm

Secondary MIs common in HIV-infected individuals before age 50

Causes of Secondary MI in HIV-infected individuals*	N (%)
Sepsis/bacteremia	100 (35%)
Cocaine induced/illicit drug	39 (14%)
Hypertensive urgency/emergency	28 (10%)
Respiratory failure	26 (9%)
Non-coronary cardiac	23 (8%)
Hypotension	15 (5%)
Procedure related	12 (4%)
GI bleed	11 (4%)
Neurologic	6 (2%)
Overdose	5 (2%)
Other/unknown	23 (8%)

\*Crane et al. Am J Epidemiol Apr 15 2014

### CASE 5

**PREVIEW QUESTION**

- ▶ 25 year old black woman presents with fatigue
- ▶ History of IV Heroin use; intermittently takes TDF/FTC PreP
- ▶ Exam no edema
- ▶ Work up in ER shows creatinine 8.4 BUN 79; mild anemia; mild acidemia
- ▶ In ER 10 weeks earlier; normal renal function
- ▶ U/A high grade proteinuria
- ▶ US of kidneys: Normal to increase size; no obstruction
- ▶ Rapid HIV test positive

### QUESTION #5

**PREVIEW QUESTION**

Which of the following is the most likely cause of her renal failure?

- A. Volume depletion / ATN
- B. Heroin Associated Nephropathy
- C. HIVAN
- D. Membranous glomerulonephritis
- E. Tenofovir Toxicity (PrEP)

### Bonus Question:

In a patient with HIV Associated Nephropathy, which of the following is the most effective intervention to prevent progression to ESRD?

- A. An ACE inhibitor
- B. Corticosteroids
- C. High Molecular Weight Dextran
- D. Antiretroviral Therapy
- E. A calcium channel blocker

### CASE 6

- ▶ 55 year old man presents with complaints of fever / volume depletion
- ▶ HIV diagnosed in ER on rapid test
- ▶ Lymphadenopathy / splenomegaly / few petechiae / Oriented X 3
- ▶ HIV RNA 340,000; CD4= 3 cells/ul
- ▶ On no medications

Hb 8.2 gm/dl; Plt count 21,000; Creatinine 2.0  
Rare schizocytes on peripheral blood smear

### QUESTION #6

Which of the following is the most effective intervention to increase the platelet count?

- A. Splenectomy
- B. Corticosteroids
- C. Plasmapheresis
- D. Ethambutol + Azithromycin
- E. Antiretroviral Therapy

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### CASE 7

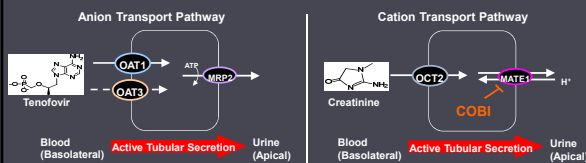
- ▶ 45 year old recently diagnosed with HIV
- ▶ HIV RNA 140,000; CD4= 230 cells/ul
- ▶ Baseline labs:  
Hb 11.2 gm/dl; AST 310 / ALT 120  
140|101 | 5                      Gluc 100  
4.2 | 28 | 1.1                      eGFR = 65 ml/min
- ▶ Started on TAF/FTC+ Dolutegravir; No other medications
- ▶ Returns 4 weeks later, labs unchanged except creatinine now 1.3 mg/dl (eGFR 55)

### QUESTION #7

Which of the following is the most likely cause of her increased creatinine / reduced eGFR?

- Glomerular lesion
- Proximal Tubule damage
- Proximal Tubule inhibition
- Distal Tubule damage
- Distal Tubule inhibition

### Tenofovir and COBI Interact with Distinct Renal Transport Pathways

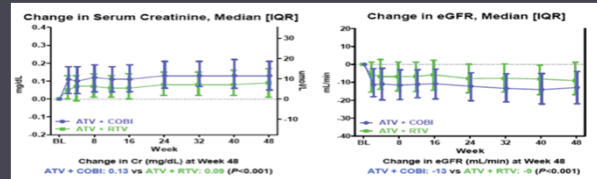


The active tubular secretion of tenofovir and the effect of COBI on creatinine are mediated by distinct transport pathways in renal proximal tubules

Ray A, et al. Antimicro Agents Chemo 2006;3297-3304  
Lepist E, et al. ICAAC 2011; Chicago. #A1-1724

### Changes in Serum Creatinine and eGFR Study 114

- ▶ COBI increases serum creatinine by inhibiting renal creatinine secretion<sup>1</sup>
- ▶ COBI does not affect actual glomerular filtration rate<sup>2</sup>



Gallant IAS 2012

### CASE 8

- ▶ 26 year old presents with cryptococcal meningitis and newly diagnosed HIV (Rx with AMB +5FC; to fluconazole)
- ▶ HIV RNA 740,000; CD4= 23 cells/ul
- ▶ Baseline labs:  
CSF: 2 lymphocytes / protein 54 / glu 87 (serum 102)  
OP = 430 mm H<sub>2</sub>O
- ▶ Started on TAF/FTC /Bictegravir at week 2
- ▶ Returns 6 weeks later, Fever 103 and a mass in supra-clavicular region (3 x 4 cm)

### QUESTION #8

Which of the following is the most likely cause of the new mass?

- B Cell Lymphoma
- Multicentric Castleman's Disease
- IRIS reaction to cryptococcus
- Mycobacteria Avium Complex
- Bacterial Abscess from prior PICC line

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## CASE 9

- 48 yo Male presents with newly diagnosed HIV infection
- Asymptomatic
- Initial: HIV RNA 160,000 c/ml  
CD4 count 221 cells/ul
- Other labs are normal; Started on ARV Rx with DTG + TAF/FTC
- Returns for a 3 month follow up visit
- HIV RNA < 20 c/ml; CD4 390 cells/ul

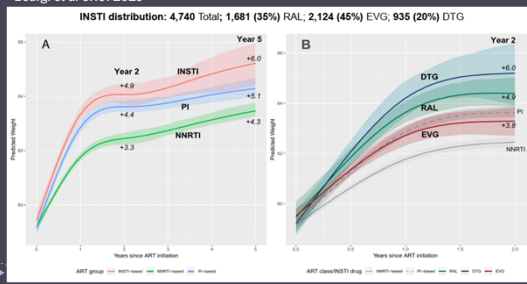
## QUESTION # 9

Which of the following will most likely be present on his 3 month visit from use of dolutegravir:

- Morbilliform skin rash (extremities)
- 3 kg weight gain
- Mild cognitive impairment
- Depression
- Anemia

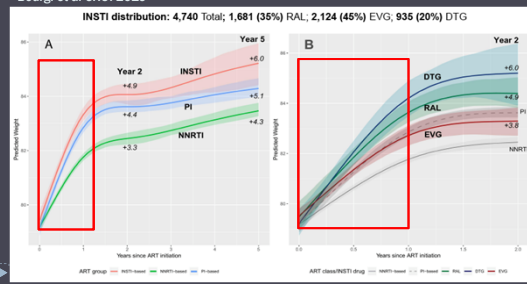
## Change in Weight Overtime – NA-ACCORD

Bourgi et al CROI 2019



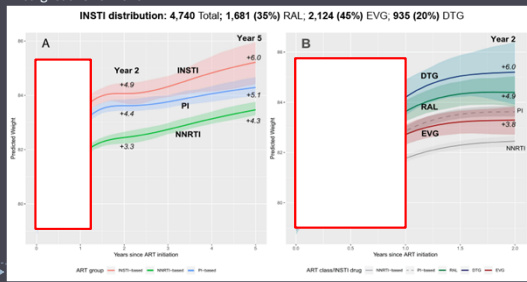
## Change in Weight Overtime – NA-ACCORD

Bourgi et al CROI 2019



## Change in Weight Overtime – NA-ACCORD

Bourgi et al CROI 2019



## CASE 10

- 48 yo Male presents with newly diagnosed HIV infection
- Asymptomatic except for weight loss / fatigue
- Initial: HIV RNA 160,000 c/ml  
CD4 count 221 cells/ul
- Other labs are normal; Started on ARV Rx
- Returns for a 3 month follow up visit
- HIV RNA < 20 c/ml; CD4 390 cells/ul

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## QUESTION # 10

Assuming he remains undetectable, you tell him that his risk of transmitting HIV to his seroneg partner via sex is:

- A. Virtually zero risk (< 0.2%)
- B. Very low risk (< 2%)
- C. Possible (<10 %)
- D. It depends on which ARV regimen he's on

## PARTNERS Study

- ▶ 548 heterosexual and 972 discordant gay couples followed up to 8 years
- ▶ Seropositive partner had VL < 200 c/ml
- ▶ 77,000 sexual acts without condoms
- ▶ Zero transmissions (from seropositive partner)
- ▶ Upper bound of 95% CI: 0.23 /100 CYFU
- ▶ **Sexual Transmission from a person with Undetectable Viral Load is Effectively Zero**

Rodger AJ, et al. Lancet 393: 2428-38, 2019

## U=U: Undetectable=Untransmittable

There has never been a more hopeful time in the history of AIDS. Revolutionary advances in HIV prevention and treatment can now stop the epidemic of HIV stigma and HIV to a halt.

"The scientific evidence is clear: Someone whose HIV is undetectable does not pose an infection risk to their sexual partners."

U=U Undetectable Equals Untransmittable

New York State Becomes the First State in the U.S. to join U=U

NEW YORK STATE Department of Health

Dear Colleague

INFORMATION FROM CDC'S DIVISION OF HIV/AIDS PREVENTION

Dear Colleague: September 27, 2017

A PERSON LIVING WITH HIV WHO HAS AN UNDETECTABLE VIRAL LOAD DOES NOT TRANSMIT THE VIRUS TO THEIR PARTNERS.

## CASE 11

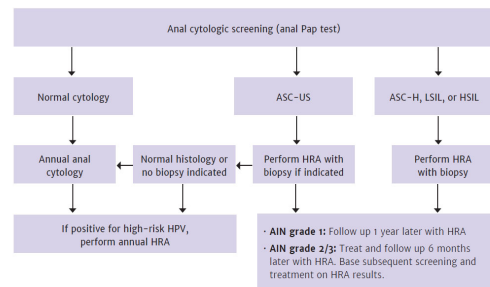
- 58 yo MSM Male presents for routine evaluation
- On ARV Rx:
- HIV RNA < 20 c/ml; CD4 590 cells/ul
- He is sexually active with 3 to 4 different partners / year
- Receptive and insertive anal intercourse
- A routine annual anal PAP is collected and shows LSIL

## QUESTION # 11

Which of the following should be performed?

- A. High Resolution Anoscopy with Biopsy
- B. Digital Rectal Exam; if negative monitor for 1 yr
- C. Sigmoidoscopy
- D. Colonoscopy
- E. Monitor only; repeat anal PAP in 6 months

Figure 1. Follow-up of Anal Cytologic Screening Results



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### Recommendations: Screening

- ▣ Clinicians should promote smoking cessation for all patients with HIV, especially those at increased risk for anal cancer. (A3)
- ▣ For all patients aged  $\geq 35$  years with HIV, clinicians should recommend and perform DARE annually to screen for anal pathology (B3)
- ▣ Clinicians should evaluate any patient with HIV who is  $< 35$  years old and presents with signs or symptoms that suggest anal dysplasia. (A3)
- ▣ Clinicians should conduct or refer for HRA and histology (via biopsy) in any patient with abnormal anal cytology. (A2)
- ▣ Clinicians should refer patients with suspected anal cancer determined by DARE or histology to an experienced specialist for evaluation and management. (A3)

8/13/2021

NYSDOH AIDS Institute Clinical Guidelines Program

