Opportunistic Infections and ART CASES

Graeme Meintjes
University of Cape Town
GF Jooste Hospital
Imperial College London
CASE 1

Anaemia on ART
• 36 year old woman
• HIV+ with CD4 = 202
• Disseminated TB Nov 2010
  – Sputum cultured MTB, no DST
  – Cervical lymphadenopathy
• TB symptoms improved on TB treatment and LN decreased in size
• Commenced **TDF, 3TC, EFZ** Dec 2010
• Baseline Hb = 7.6
• Never on co-trimoxazole
• Reports adherence
• Presented in March 2011
  – Severe symptoms of
    • dizziness, palpitations, weakness, headaches
  – No history of blood loss
  – Hb = 2.4 (MCV = 96)
  – WCC = 3.9 (Neut = 2.0)
  – Plt = 280

• What are the possible causes?
Causes of anaemia in HIV

• Nutritional
  – Iron, folate, B12 deficiencies
• Haemolysis
  – Auto-immune, drugs, TTP
• Anaemia of chronic disorders
• Bone marrow infiltration
• Drugs
• Parvovirus B19
• Malaria
• GIT blood loss (KS)
Results

• Iron studies: no deficiency
  – Fe = 39,5  TF = 1,5  TF sats = 100%  Ferritin = 451
• B12 = 592
• RBC folate = rejected
• No fragments on smear, Rouleaux formation only
• LDH = 453
• Total bilirubin = 4
• Reticulocyte count = 0.1% and RPI = 0
• Parvovirus B19 PCR negative
• Transfused 4 units

• What next?
Bone marrow biopsy

• Features of pure red cell aplasia
  – Erythropoiesis = markedly hypocellular

• No infiltration

• Cause?
Possible causes

• Parvovirus B 19 (excluded)

• 3TC

• INH
Management

• Switched ART to TDF, D4T, EFZ
• Required further transfusions
• Then Hb normalised (13.2) and remained stable
• Reticulocyte count normalised (1.1%) and RPI = 1
• Switched to TDF, AZT, EFZ in Aug 2011 and monitored

• Discharged back to primary care in Oct 2011
  – Diagnosis: 3TC-induced pure red cell aplasia
  – Hb 12.1  WCC 3.5  Plt 185
  – HIV VL = LDL
3TC Pure Red Cell Aplasia

• 3TC is generally very well tolerated
• Rare, isolated case reports of PRCA
• 5/269 (1.9%) developed 3TC PRCA in 1 cohort
  – Hb dropped from median 11.8 to 5.2 g/dl after median 12 weeks
  – Rapid response after stopping 3TC (within 6 weeks)
• Bone marrow biopsy
• Exclude Parvovirus B19 and other drugs

Maijluf-Cruz, Am J Hematol 2000
John, J of Med Micro 2008
CASE 2

An unusual combination of conditions
Case

- 52 year-old man
- Ex-prisoner, living in an informal settlement
- Heavy smoker
- Previous PTB 2004, completed TB treatment
- HIV diagnosed 2009
- Defaulted ART on 3 occasions since 2009
- HIV-related thrombocytopenia (Plt 50-80)
- Back on AZT/3TC/EFV since Nov 2011
• Presented in Feb 2012 with 2 month history
  – Nodular skin rash. Started on face. Spread to trunk and limbs. Associated pruritus and pain.
  – Chronic productive cough. Green and white sputum.
  – Loss of weight

• Failing ART
  – CD4 = 139
  – HIV viral load = 401795
Examination

• Multiple red-purplish nodular lesions up to 2cm in size
  – Eyelids, neck, shoulders, chest, back and limbs
  – Some pedunculated and some ulcerated
  – No oral lesions
• Tinea unguium

• Temp 36    Pulse 84    BP 106/68
• Heart sounds normal
• Chest clear
• No hepatosplenomegaly
• No meningism and no neurological deficits
• Dipstix NAD
Other investigations

• FBC
  – Hb = 11.1 (MCV 96)
  – WCC = 5.7
  – Platelets = 228
• Creatinine = 73
• ALT = 15
• CRP = 24
What is your diagnosis?
Assessment

• Skin lesions
  – Bacillary angiomatosis (Treatment?)
  – Kaposi’s sarcoma

• CXR infiltrates
  – Active or past TB or due to one of above

• Virological failure
• Started Erythromycin 500mg qid

• Skin biopsy
Warthin – Starry stain
Then received CLAT result

- Serum CLAT = positive, titre < 1:8
- Repeat CLAT also positive, titre < 1:8
- 2-week conventional and MycoFlytic blood cultures negative
- Declined LP to exclude meningitis
- No neurological symptoms

- Sputum AFB - and TB culture -
Management

• Fluconazole
  – 800mg/d x 2 weeks
  – 400mg/d x 8 weeks
  – 200mg/d x 1 year and CD4 > 200

• Changed Erythromycin to Doxycycline when Fluconazole started (3 months treatment planned)

• Change to 2nd line ART (TDF/3TC/Aluvia) 2 weeks later

• Skin lesions resolved, 2kg weight gain, CXR unchanged

• Returned after defaulting ART again
Discussion

1. Bartonella infection in HIV

2. Cryptococcal antigenaemia

3. Erythromycin, Fluconazole, Aluvia and prolonged QT
**Bacillary angiomatosis (BA)**

- **Bartonella**
  - Gram-negative slow-growing intracellular bacillus
  - 19 species, 5 cause human disease
  - B.henselae and B.quintana cause BA in HIV+ patients (typically CD4 < 100)
  - BA manifests with skin rash, intermittent bacteraemia and other organ involvement
- **B. henselae**
  - Vector = cat flea (cat scratch or bite)
  - Peliosis hepatis
- **B.quintana**
  - Vector = body louse (homeless people)
  - Osteomyelitis
- **Many other organs can be involved**
  - Endocarditis, spleen, CNS, eye, lung
  - Chronic fever and weight loss
BA: Diagnosis

- Skin biopsy
  - Characteristic histology
  - Warthin-Starry stain positive
  - Does not stain on Gram stain
- Prolonged blood culture
- Blood PCR
  - 10.1% of 188 HIV+ patients were PCR+ in Joburg
- Current NICD study (EDTA tube for culture & PCR)

BA: Treatment

• Erythromycin or Doxycycline for 3 months

• Alternatives
  – Azithromycin, Clarithromycin

• CNS: Doxycycline +/- Rifampicin

NIH/CDC/HIVMA-IDSA guidelines 2008
Cryptococcal transmission and disease
Cryptococcal antigenaemia

- Ugandan study: preceded symptoms by median 22 days (>100 days in 11%)
- Serum cryptococcal antigen + in 7% entering ART programme in Guguletu without previous CM

French, AIDS 2002

Jarvis, Clin Infect Dis 2009

Rajasingham, JAIDS 2012
• Screening advocated for those with CD4 < 100
• Pre-emptive treatment to prevent meningitis
  – CM mortality 30-70% in SA
• No evidence-based pre-emptive treatment but an approach suggested
• Phased implementation in SA starting in Free State, Gauteng and W.Cape government clinics

Jarvis, SAMJ 2011
Decision-Making Guide for Cryptococcal Screening

Reflex cryptococcal antigen screening
CD4 < 100 specimens

Positive
Contact patient for urgent follow-up
Screen for meningitis symptoms *
Check for other clinical conditions †

Symptomatic
Start Fluconazole 400 mg daily and refer immediately for lumbar puncture
Lumbar puncture (-)
In hospital treatment with Amphotericin B alone for 2 weeks
Start ART after 2 weeks of cryptococcal therapy

Asymptomatic §
Outpatient treatment with Fluconazole 400 mg daily ¶

Outpatient treatment with Fluconazole 400 mg daily for 2 months, then 200 mg daily until CD4 > 200 for at least 6 months on ART

Initiate ART
No fluconazole

* Patient is symptomatic if they have any of the following:
1. Headache greater than 24 hours
2. Fever
3. Confusion or coma
4. Blurry vision
5. Neck stiffness

† Other clinical conditions include:
- Patients on tuberculosis medications
- Patients on nevirapine
- Patients with previous history of cryptococcal meningitis
- Pregnancy or breastfeeding mothers
- Liver disease
- Children

§ A lumbar puncture may be considered if available.

¶ Some clinicians prefer to use a higher dose.
Low titre CLAT (<1:8)

- False positive

- Early disease (2 anecdotes)
Erythromycin, Fluconazole and Aluvia

– Case reports of QT prolongation and Torsades with Erythromycin and Fluconazole
– Aluvia may also prolong QT and PR, particularly in patients with underlying cardiac disease
– Likely additive risk, thus avoid combination where possible or monitor ECG

Khazan, Pharmacotherapy 2002
Wassmann, Ann Intern Med 1999
Oberg, Pharmacotherapy 1995
Poluzzi, Drug Saf 2010
Aluvia package insert
CASE 3

Severe weakness on ART
• 29 year old HIV+ woman
• Previous PTB 2003
• Recurrent PTB Jan 2012 (Rif susceptible)
• Started ART 2 weeks after TB treatment with baseline CD4 = 17 (TDF/3TC/EFZ)
• Referred to hospital 3 Apr 2012
  – 3 day history of generalised weakness and painful limbs and back
  – 2 x vomit, but no diarrhoea
• On ART, RHZE, Co-trimoxazole, BCo
Examination

• Afebrile
• BP 99/57    P98    RR30    Sats 100%
• Visidex 5.8
• Dipstix: Trace glucose 4+ RBC
• Oral candida and pale
• Power 2/5 proximally, 3/5 distally
• Reduced reflexes
• No cranial nerve or sensory deficits
• Tender muscles
“A diagnostic test was performed” ?
• Na = 134
• K = 1.5
• Urea = 5.1
• Creat = 210
• Mg = 1.08
• Phos = 0.77
• Corr Ca = 2.26
• CK peak = 2760
- pH = 7.29
- pO2 = 13.7
- pCO2 = 2.4
- sHCO3 = 12.1

- Urine K = 5.4 mmol
- Urine Creat = 1.0 mmol
- Ratio = 5.4 (>1.5 suggests renal wasting)
• Cause?
Hypokalemia in HIV patients on tenofovir.

Cirino CM, Kan VL.
Infectious Diseases Section, Veterans Affairs Medical Center, Washington, DC, USA.

Abstract
Although adverse events in HIV patients taking tenofovir are relatively rare, postmarketing reports of nephrotoxicity have alerted physicians to other potentially serious outcomes. We present a series of 40 patients who developed hypokalemia associated with tenofovir. Identified risk factors included concomitant ritonavir or didanosine use, a lower weight and longer duration of tenofovir use. Recovery or improvement was seen in the majority of patients (66%) after the discontinuation of tenofovir; however, four deaths occurred. The associated consequences of tenofovir-related hypokalemia may be profound and life-threatening.
Management

• Intravenous and oral potassium supplementation
• IVI fluids
• Switched to TDF to D4T (anaemic)
• At discharge
  – K = 4
  – Creat = 70
CASE 5

Deterioration despite TB treatment
• 27 year old HIV+ woman
• CD4 = 74
• Diagnosed with TB at TB clinic in Sep 2011
• Regimen 1 TB treatment on 4 Sep 2011
• ART (TDF, 3TC, EFZ) on 14 Sep 2011
• Referred in Jan 2012 to our hospital for admission
  – Weakness, lethargy, weight loss (19kg), night sweats, dizziness
  – Nausea, vomiting and diarrhoea for one month
  – No cough

• Significant findings
  – Pale and wasted on examination
  – Hb = 6.1 (MCV 106)  WCC 10.6  Plt 516
  – Creat = 147
  – LFTs normal
Management

- Investigated for anaemia:
  - no evidence of haemolysis
  - no evidence of nutritional cause
  - parvovirus B19 PCR negative
- No stool obtained
- Sputa sent for TB microscopy and culture
- VL = LDL and CD4 = 52
- Transfused 2 units
- TDF switched to D4T (renal impairment)
- Nutritional support
- Discharged for outpatient follow-up at our hospital
  - Was seen once but then did not return.
## Sputum TB results

<table>
<thead>
<tr>
<th>Date</th>
<th>Microscopy</th>
<th>Culture</th>
<th>DST</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Aug 2011</td>
<td>Neg</td>
<td>MTB</td>
<td>-</td>
</tr>
<tr>
<td>23 Aug</td>
<td>Pos 1+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>23 Aug 2011</td>
<td>Neg</td>
<td>MTB</td>
<td>-</td>
</tr>
<tr>
<td>13 Oct</td>
<td>Neg</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>13 Oct</td>
<td>Neg</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>13 Jan 2011</td>
<td>Scanty +</td>
<td>MTB</td>
<td>Rif sens</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>INH sens</td>
</tr>
<tr>
<td>20 Jan 2011</td>
<td>Neg</td>
<td>Neg</td>
<td>-</td>
</tr>
<tr>
<td>20 Jan 2011</td>
<td>Scanty +</td>
<td>Contaminated</td>
<td>-</td>
</tr>
</tbody>
</table>
Re-admitted April 2011

- Intentional organophosphate poisoning
- Stabilised in high care

- Noted to be wasted and ill
- Abdominal pain and tenderness noted (especially RIF)
- Swollen right leg
- Hb = 4.9  (MCV 98)  WCC 14.3  Plt 238
- Creat = 108
- CRP = 125
- CXR = Subtle nodular infiltrate in left lower zone

- What next?
What next?

• Assessed adherence
  – **ART**: Possible inadequate adherence noted on pill count. Viral load in Jan LDL, but viral load in Apr was 1100 copies/ml.
  – **TB**: Self-reported good adherence, and TB card reviewed in Jan showed this. Phoned TB clinic and they could not provide information.

• Review of sputum TB results
• Abdominal USS
• Serum CLAT = negative
Abdominal ultrasound

- Hypoechoic area inferior to pancreas, likely necrotic LN (4 x 3 x 2 cm)
- Right psoas abscess extending from kidney to femoral head (17 x 8 x 6 cm)
- Splenic microabscesses
- Free fluid in pouch of Douglas
- DVT in right common and superficial femoral veins
Abdominal USS

Right psoas abscess

Necrotic lymph nodes
Next step?
USS guided aspirate of psoas abscess (and further sputa sent) and requested Xpert
• Psoas abscess aspirate (19 April)
  – Smear 3+ AFB
  – Xpert: MTB with Rif resistance
  – Culture: MTB
  – DST on culture: Rif resistance, but susceptible to INH, Oflox, Ethio and Amikacin

• Sputum
  – 13 Apr: Smear negative, cultured MTB, also Rif monoresistance
  – 26 Apr: Smear and culture negative
  – 26 Apr: Smear and culture negative
Follow-up

• Referred for inpatient TB treatment with Rifafour plus Kana/Moxi/Ethio/Terizidone

• Two recent sputum cultures negative and discharged for outpatient treatment
Questions and issues

• Should she have been started on empiric MDR TB treatment earlier?

• Adherence difficult to assess at referral hospital
  – How does clinician differentiate poor adherence from possible drug resistance?
  – What are your experiences in this regard?

• Was this initially mixed infection or was rifampicin resistance selected due to inadequate adherence?

• Psychological issues poorly assessed and addressed
  – Seen by Social Worker and “social isolation” reported
  – No formal assessment for depression or consideration of treatment

• Diagnosis of drug-resistant TB can be very difficult
Diagnosing extrapulmonary MDR TB

- Lymph node or cold abscess needle biopsy
  - Aspirate pus
  - Flush needle with saline
- Lymph node excision biopsy
- Ultrasound-guided needle biopsy of intra-abdominal nodes or pus collections
- Aspirate of effusion
- Lumbar puncture
  - but diagnostic delays in MDR TBM frequently fatal
- Xpert showing promise in extra-pulmonary samples
Extensively Drug-Resistant Mycobacterium tuberculosis from Aspirates, Rural South Africa


The yield from aspirating lymph nodes and pleural fluid for diagnosing extensively drug-resistant (XDR) tuberculosis is unknown. Mycobacterium tuberculosis was cultured from lymph node or pleural fluid aspirates of 21 patients; 7 (33%) cultures grew XDR M. tuberculosis. Additive diagnostic yield for XDR M. tuberculosis was found in parallel culture of sputum and fluid aspirate.
Blood cultures for the diagnosis of multidrug-resistant and extensively drug-resistant tuberculosis among HIV-infected patients from rural South Africa: a cross-sectional study

Scott K Heysell1,2, Tania A Thomas1,2, Neel R Gandhi1,3, Anthony P Moll1,4, François J Eksteen1,4, Yacoob Coovadia5,6, Lynette Roux5, Palav Babaria1,7, Umesh Laloo6, Gerald Friedland1,7, Sarita Shah1,3

Abstract

Background: The yield of mycobacterial blood cultures for multidrug-resistant (MDR) and extensively drug-resistant tuberculosis (XDR-TB) among drug-resistant TB suspects has not been described.

Methods: We performed a retrospective, cross-sectional analysis to determine the yield of mycobacterial blood cultures for MDR-TB and XDR-TB among patients suspected of drug-resistant TB from rural South Africa. Secondary outcomes included risk factors of Mycobacterium tuberculosis bacteremia and the additive yield of mycobacterial blood cultures compared to sputum culture.

Results: From 9/1/2006 to 12/31/2008, 130 patients suspected of drug-resistant TB were evaluated with mycobacterial blood culture. Each patient had a single mycobacterial blood culture with 41 (32%) positive for M. tuberculosis, of which 20 (49%) were XDR-TB and 8 (20%) were MDR-TB. One hundred fourteen (88%) patients were known to be HIV-infected. Patients on antiretroviral therapy were significantly less likely to have a positive blood culture for M. tuberculosis (p = 0.002). The diagnosis of MDR or XDR-TB was made by blood culture alone in 12 patients.

Conclusions: Mycobacterial blood cultures provided an additive yield for diagnosis of drug-resistant TB in patients with HIV from rural South Africa. The use of mycobacterial blood cultures should be considered in all patients suspected of drug-resistant TB in similar settings.
Xpert on extrapulmonary specimens

<table>
<thead>
<tr>
<th>Study (year)</th>
<th>Country</th>
<th>TB gold standard diagnoses (n)</th>
<th>TB not diagnosed (n)</th>
<th>Main sample types testing positive for TB (n)</th>
<th>Gold standard for TB diagnosis</th>
<th>Xpert sensitivity, % (95% CI)</th>
<th>Xpert specificity, % (95% CI)</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tortoli et al. (2012)</td>
<td>Italy</td>
<td>268</td>
<td>1206</td>
<td>Tissue biopsies/fine-needle aspirates (94); pleural fluid (18); gastric aspirates (61); pus (55); CSF (14); urine (16); peritoneal/synovial/pericardial fluid (10)</td>
<td>Culture (solid and liquid) or suggestive radiology/histology with documented positive response to TB treatment</td>
<td>81.3 (76.2–85.8)</td>
<td>99.8 (99.4–100)</td>
<td>[5]</td>
</tr>
<tr>
<td>Armand et al. (2011)</td>
<td>France</td>
<td>32</td>
<td>NA</td>
<td>LNs (16); pleural (7); bone (5)</td>
<td>Culture (solid and liquid media)</td>
<td>53.1 (34.7–70.9)</td>
<td>NA</td>
<td>[6]</td>
</tr>
<tr>
<td>Causse et al. (2011)</td>
<td>Spain</td>
<td>41</td>
<td>299</td>
<td>Tissue biopsies (18); CSF (6); gastric aspirates (8); pleural fluid (4); purulent exudates (5)</td>
<td>Culture (solid and liquid media)</td>
<td>95.1 (83.5–99.4)</td>
<td>100 (98.8–100)</td>
<td>[7]</td>
</tr>
<tr>
<td>Friedrich et al. (2011)</td>
<td>South Africa</td>
<td>20</td>
<td>5</td>
<td>Pleural fluid (25)</td>
<td>Culture (liquid media)</td>
<td>25.0 (8.7–49.1)</td>
<td>100 (47.8–100)</td>
<td>[8]</td>
</tr>
<tr>
<td>Hillemann et al. (2011)</td>
<td>Germany</td>
<td>45</td>
<td>476</td>
<td>Tissue (30); gastric aspirate (8); urine (5)</td>
<td>Culture (solid and liquid media)</td>
<td>77.3 (60.5–87.1)</td>
<td>98.2 (96.0–98.9)</td>
<td>[9]</td>
</tr>
<tr>
<td>Ligthelm et al. (2011)</td>
<td>South Africa</td>
<td>30</td>
<td>18</td>
<td>Fine-needle aspiration LN biopsy</td>
<td>Composite standard: positive cytology + AFB and/or culture of MTB</td>
<td>96.6 (86.6–100)</td>
<td>88.9 (69.6–100) (note: only 18 samples)</td>
<td>[10]</td>
</tr>
<tr>
<td>Moure et al. (2011)</td>
<td>Spain</td>
<td>108</td>
<td>41</td>
<td>All smear-negative. Pleural fluid (26); LNs (34); abscess aspirates (17); tissues (12)</td>
<td>Culture (solid and liquid media)</td>
<td>58.3 (48.5–67.8)</td>
<td>100 (91.4–100)</td>
<td>[11]</td>
</tr>
<tr>
<td>Vadwai et al. (2011)</td>
<td>India</td>
<td>283</td>
<td>250</td>
<td>Tissue biopsies (105); pus (98); body fluids (24)</td>
<td>Composite of smear, culture, clinical, radiology and histology</td>
<td>80.6 (75.5–85.0)</td>
<td>99.6 (97.8–100)</td>
<td>[12]</td>
</tr>
</tbody>
</table>

Only studies with at least 20 gold standard diagnoses of extrapulmonary TB were included.

AFB: Acid-fast bacilli; CSF: Cerebrospinal fluid; LN: Lymph node; MTB: Mycobacterium tuberculosis; NA: Not available.
Causes of deterioration
HIV-infected patients (n=291)

- Rifampicin-resistant TB - 10%
- Poor adherence - 7%
- TB-IRIS/Paradoxical reaction - 21%
- Alternative illness to TB - 4%
- Additional illness to TB - 72%

Bacterial infections n= 53
Gastroenteritis n = 37
Drug toxicity n = 35
PCP n = 20
Cryptococcal meningitis n = 18
DVT n = 12

Pepper, PLoS ONE 2009
# Approach to deterioration

<table>
<thead>
<tr>
<th>Approach</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the diagnosis of TB correct?</td>
<td>Review TB results</td>
</tr>
<tr>
<td>Is patient adherent?</td>
<td>History and collateral</td>
</tr>
<tr>
<td>Exclude MDR</td>
<td>Drug susceptibility testing (preferably rapid test)</td>
</tr>
<tr>
<td>If rapid deterioration or clinical suspicion of bacterial infection</td>
<td>Blood culture, Other bacterial cultures, Antibiotic</td>
</tr>
<tr>
<td>Exclude other opportunistic infection/malignancy</td>
<td>Examine for Kaposi’s sarcoma, Serum cryptococcal antigen, Mycobacterial blood culture, Tissue biopsy</td>
</tr>
<tr>
<td>Chronic gastro-enteritis</td>
<td>Stool for stains, Endoscopy and biopsy</td>
</tr>
</tbody>
</table>
CASE 6

Breast enlargement on ART
Breast enlargement

• What are the three mechanisms of breast enlargement in HIV+ patients on ART?

• Name the commonest causes of each
## Breast enlargement

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Common causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gynaecomastia</td>
<td>Efavirenz</td>
</tr>
<tr>
<td></td>
<td>ddI</td>
</tr>
<tr>
<td>Lipomastia (associated with lipodystrophy)</td>
<td>Weight gain on ART</td>
</tr>
<tr>
<td>Infiltrative processes</td>
<td>TB</td>
</tr>
<tr>
<td></td>
<td>Lymphoma</td>
</tr>
<tr>
<td></td>
<td>Breast Ca</td>
</tr>
</tbody>
</table>
Gynaecomastia in HIV-infected men on HAART: association with Efavirenz and Didanosine treatment
Mira et al, Antivir Ther 2004; 9(4): 511-7

• Prospective study of 1304 men on HAART
• 30 (2.3%) gynaecomastia
• 22/30 (73%) resolved completely after median of 9 months (range 5-22)
• Association with
  – EFV 57% vs 17% (p = 0.004)
  – ddl 50% vs 13% (p = 0.003)
  – Lower bioavailable testosterone levels
CASE 8

Hypertensive patient with HIV-TB
CASE

- 47 year old man
- HIV+ with CD4 = 61
- Hypertensive
- Creatinine 131 prior to ART
- RHZE plus Streptomycin for retreatment TB
- Commenced TDF, 3TC and Efavirenz
- What are the problems?
• Admitted 3 weeks later with vomiting, weakness and confusion
• Creat = 1902
• TDF and streptomycin stopped and IVI fluids
• Creat decreased to 160 over 3 weeks
• Duke University, North Carolina HIV Clinic
• 35/744 (4.7%) on TDF developed renal impairment, similar rate to non-TDF controls
• 20 discontinued TDF
  – 16 significant renal improvement
• 15 continued TDF
  – 10 continued to have abnormal renal function
Risk factors

• Concurrent nephrotoxic mediactions
  – ACEI, NSAIDs, AmphoB
• Medical comorbidities
• Hypertension
• Chronic pain
• Concurrent and previous PI use
• History of OI
Risk factors

• Nephrotoxicity seen in all 25 patients who had both hypertension and were using other nephrotoxic drugs

• Only one patient (1/39) experienced nephrotoxicity when both were absent

• NNRTI use with TDF - nephrotoxicity rare