MEDICAL MANAGEMENT OF HIV INFECTION

CO-MORBIDITIES AND COMPLICATIONS of HIV AND ARV THERAPY

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NO CONFLICTS TO DECLARE

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SLIDES- CATIE (Canadian AIDS Treatment Information Exchange)
Southern Alberta Clinic - Dr Gill
ClinicalOptions.com
LEARNING OBJECTIVES -
AT THE END OF THE SESSION, ATTENDEES SHOULD BE:

• Aware of current state, and prognosis of HIV infection in Canada
• Aware of medical complications and consequences of long-term HIV infection and antiretroviral treatment
• Able to Monitor and Manage Medical conditions for PLWH
CASE 1 NEW DIAGNOSIS HIV

• 55 YR OLD MALE, PROFESSIONAL, Tested HIV+ 2-3 months ago, Known prior negative HIV -(1 year earlier). Tested at patients request.

• Recalls a significant Flu-like illness 2 months prior to positive test, complete recovery, and well since. CURRENTLY ASYMPTOMATIC

• PMH - Asthma - well controlled, (Singulair Advair)

• -Anxiety/Depression - (Wellbutrin)

• No IDU, Non Smoker, Recreational ETOH, marijuana, cocaine
CASE 2: NEW DX DM 2 IN 48 YO MALE WITH HIV AND MEDICAL CO-MORBIDITIES -

- HIV Diagnosed 2007, CD4 nadir 116 cells; Current CD4 300 cells, VL <40 c/ml; On ART (dolutegavir/abacavir/lamivudine);
- Ileal Crohns disease
- NASH 2014
- Dyslipidemia, Obesity
- Recent diagnosis DM2 - HbA1C 8.4%, FBG>11 (referral to IM)
CASE 3—“MEDICAL ASSESSMENT” PATIENT WITH HIV INFECTION

- 56 yo F, HIV + 1 yr.
- On ART, CD4+ count 380, HIV-1 RNA < 40 c/ml
- HIV genotype- wild type virus; HLA-B5701 negative,
- HCV negative; HAV/HBV immune;
- Hypertension on enalapril
- BP 142/88 mm Hg, BMI 27
- TC 5.4 mmol/L, HDL 1.09 mmol/L, LDL 3.37 mmol/L, TG 4.5 mmol/L
- Serum creatinine 99.89 umol/L, GFR > 60 mL/min/1.73m², UA trace protein
In 2016, an estimated 63,110 people were living with HIV.

Canada’s progress to meet HIV 90-90-90 targets by 2020:

- 86% of Canadians living with HIV were diagnosed.
- 81% of Canadians diagnosed with HIV were on treatment.
- 91% of HIV positive Canadians on treatment had achieved viral suppression.

In 2016, an estimated 2,165 new HIV infections occurred.

- 6 Canadians were infected with HIV every day.

Transmission of new HIV infections:
- 33% Heterosexual contact
- 53% Male-to-male sexual contact
- 11% Injection drug use
- 3% Male-to-male sexual contact & injection drug use
NEW HIV INFECTIONS IN CANADA

Canada doesn’t have a single HIV epidemic. New infections are concentrated in different populations across the country.

Source: Based on 2011 estimates, the most recently available regional estimates from the Public Health Agency of Canada. Exposure categories are based on a hierarchical classification at the time of diagnosis.

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CATIE Ordering Centre Catalogue Number: AIT-40239. Updated in 2018.
ALBERTA NUMBERS AND FACTS

- Alberta has estimated 5,000 persons living with HIV (2011)
- Exposure -30 % MSM, 42 % Heterosexual- 18% HS from Endemic (may have acquired HIV living in Canada), **16% IDU
- Southern Alberta Clinic SAC - 1851 active patients 2017
- Median age is 48 years, 70% over age 40, 40% over age 50; 74% male, 25% female; Exposure - 38.7% MSM, 42% HS, (46% endemic areas), 8.8% IDU

1. www.catie.ca
LIFE EXPECTANCY

• Survival has increased steadily since the advent of HAART. Life expectancy increased from 36.1 years 2000-2002 to 54.1 years by 2006-2007; (Lower for non-whites, Baseline CD4 < 350).

• A 20 year old adult with HIV on ART in Canada is expected to live into their 70s¹

• HIV IS NOW A CHRONIC DISEASE

ANTIRETROVIRAL THERAPY

• ANTIRETROVIRAL THERAPY PROVEN TO REDUCE MORBIDITY AND MORTALITY And TO PREVENT HIV TRANSMISSION

• Without ART most individuals will develop progressive immune deficiency, leading to AIDS defining illnesses and premature death

• DEFERRING ANTIRETROVIRAL THERAPY INCREASES RISK OF BOTH AIDS DEFINING CONDITIONS AND SERIOUS NON AIDS CONDITIONS


TREATMENT GUIDELINES

- https://www.iasusa.org/guidelines
- JAMA. 2018;320(4) 379-396
- Primary Care Guidelines for Management of HIV • CID 2014:58 (1 January)
• **RAPID INITIATION OF ART, WITHIN 14 DAYS**, unless OI for which immediate ART is contraindicated, or the diagnosis is unclear (discordant results)

• Recommended regimen DTG/TAF/FTC, BTG/TAF/FTC, rDRV/TAF/FTC, (Immediate ART should NOT include NNRTI, abacavir pending HLA result)

• In setting of ACTIVE OI ART should start within 2 weeks after Dx. (*TB CD4<50 start within 2 weeks, if CD4>50, within 2-8 weeks; Cryptococcal meningitis- monitor and manage ICP, ART within 2 wks)*
GUIDELINES  “RECOMMENDED INITIAL ART”

• Considerations-Regimens that do not require boost
  • Regimens high barrier to resistance
  • Cost (availability of generics)
  • Individual considerations
• Co-infections, co-morbidities and risks, pregnancy
OPPORTUNISTIC INFECTION PROPHYLAXIS

• Incidence of Major OI has decreased significantly for individuals ON ART
• Incidence, and mortality of MAC (mycobacterium avian complex) is low enough Primary Px NOT recommended
• Pneumocystis (PJP) Primary Px is still RECOMMENDED (CD4<200, 15%)
• Primary Px NOT recommended for cryptococcal diseases
IAS-USA/DHHS - REGIMENS FOR INITIAL ART

RECOMMENDED-
BICTEGRAVIR/TAF/FTC
DOLUTEGRAVIR/ABC/3TC
DOLUTEGRAVIR/TAF/FTC

- DTG dolutegravir, EVG elvitegravir, COBI cobicistat, RAL raltegravir, FTC emtricitabine, TAF tenofovir alafenamide, TDF tenofovir disoproxil fumarate, ABC abacavir, 3TC lamivudine, RIT ritonavir, DRV darunavir, Efavirenz, RPV rilpivirine

ALTERNATE-
cDARUNAVIR/TAF/FTC
rDARUNAVIR/TAF/FTC
EFFAVIRENZ/TDF/FTC
cELVITEGRAVIR/TAF/FTC
RALTEGRAVIR/TAF/FTC
RILPIVIRINE/TAF/FTC * (VL, CD4)
CASE 1 NEW DIAGNOSIS HIV

- 55 YR OLD MALE, PROFESSIONAL, TESTED + 2 MONTHS AGO, PREV NEGATIVE TEST 6 MONTHS PRIOR, TESTED AT HIS REQUEST
- RECALLS SIGNIFICANT FLU-LIKE ILLNESS 2 MOS PRIOR TO POSTIVE TEST, COMPLETE RECOVERY, WELL SINCE AND CURRENTLY ASYMPTOMATIC
- PMH - Asthma - well controlled, (Singulair Advair)
- - Anxiety/Depression - (Wellbutrin)
- No IDU, Non Smoker, Recreational ETOH, marijuana, cocaine
CASE 1 - INITIAL LABS

CD4 595, 41%
VL 21,000 c/ml
HLA B5701 neg
Genotype Clade B, wt
HAV, HBV - immune
HCV neg
STI - prior infection

CBC-N
Lyte-N
Liver Panel - N
Creatinine 87 umol/l, GFR 86 ml/min/1.73 m², U/A Neg
Endocrine - TSH, Testosterone, B12, all N
PE - BMI 23, BP 126/78, HR 71
MANAGEMENT CASE 1

• INITIATE ANTIRETROVIRAL THERAPY

• EDUCATION AND COUNSELLING “HIV 101” - Natural history, treatment, complications, TRANSMISSION

• HEALTH RISK ASSESSMENT - Lifestyle (Diet, exercise, habits, mental health)
  - CV Risk Assessment FRS/ACC/DAD
  - Vaccinations - hepatitis, pneumovax, flu, VZV
  - STI

• AGE APPROPRIATE CANCER - Breast/Colon Cancer, PAP - Anal PAP, cervical PAP
CONSEQUENCES OF LONGTERM HIV INFECTION AND ANTIRETROVIRAL THERAPY

• METABOLIC ABNORMALITIES (METABOLIC SYNDROME, OBESITY, DM, DYSLIPIDEMIA, NAFLD)
• CARDIOVASCULAR DISEASE
• PULMONARY DISEASE
• RENAL DISEASE
• CANCERS (NON AIDS CANCERS, AIDS CANCERS)
• BONE DISEASE
HIV AND METABOLIC ABNORMALITIES

- Metabolic Abnormalities in HIV are multifactorial -
- HIV is associated with impaired glucose metabolism, insulin resistance, dyslipidemia, chronic inflammation
- Early ARV agents caused LIPODYSTROPHY SYNDROMES - (Dyslipidemia, Peripheral lipoatrophy, lipohypertrophy, and VAT - all associated dyslipidemia, insulin resistance and increased CVD risk).
- Also mitochondrial toxicity (polyneuropathy, myopathy, cardiomyopathy, lactatemia)
- Newer ARV agents have less deleterious effects on lipids, less insulin resistance, body fat abnormalities; correlating with improved survival, decreased morbidity
METABOLIC ABNORMALITIES IN HIV INFECTION

• Recommendations for managing these largely based on research in HIV uninfected populations

• Diet, Weight loss, Exercise - still first line - may not have same beneficial effect on insulin resistance, metabolic abnormalities in HIV infected individuals.

• Statins reduce LDL in HIV+ (possibly to a lesser extent), decrease markers of T cell/monocyte activation, inflammatory cytokines in some studies
CASE 2: 48 YO MALE WITH HIV AND MULTIPLE MEDICAL CO-MORBIDITIES

- HIV Diagnosed 2007, CD4 nadir 116; Current CD4=300, VL <40; On dolutegavir/abacavir/lamivudine;
- Ileal Crohn’s disease on pentasa
- NASH 2014
- Dyslipidemia, Obesity
- Recent diagnosis DM2 - HbA1C8.4%, FBG>11 (referral to IM)
DM AND HIV INFECTION

• PREVALENCE DM 2 INCREASED IN PLWH - RANGE 14-18% - (ATPIII/IDF)
  USA population prevalence 8.5% ¹,  Canadian Diabetes Assoc - 9.2% 2016 ²

• Risk factors - age, male, obesity, metabolic syndrome, duration HIV+, CD4/VL, HCV co-infection, ethnicity¹

• Antiretroviral medications - some earlier ART -(stavudine, indinavir) strongly associated with developing DM. Protease inhibitors increase insulin resistance, decrease insulin secretion (B-cell)

• Dolutegravir -one of current “recommended” first line agents - case reports of hyperglycemia, significant weight gain

¹. HIV/AIDS • CID 2015:60 (1 February)  ². https://www.diabetes.ca
MANAGEMENT FOR DM 2 IN PLWH

- Lifestyle modifications, referral to a dietician may impact glycemic control
- Possible switch ART medications - (older PI, ZDV/D4T)
- Medications - Oral Diabetes Medications - Insulin
- Glycemic targets - same as HIV neg individuals - HBA1C<7%
- Individualize management

- 1. HIV/AIDS • CID 2015:60 (1 February),
- 2. Primary Care Guidelines for Management of HIV • CID 2014:58 (1 January)
NAFLD - NON ALCOHOLIC FATTY LIVER DISEASE

- NAFLD prevalence 37% among HIV +; Obesity/WC, DM, M>F, TC, increased GGT/ALT/AST, NRTI treatment, lipodystrophy\(^1\)
- HIV+ with NAFLD = evidence for greater liver injury than non infected, higher rates NASH, higher ALT/AST, TG, fibrosis scores\(^2,3\)
- Monitoring - **No HIV specific recommendation.** Standard FU - If only NAFLD labs/anthropometrics Q6 mos, liver US;
- Fibroscan - if Normal- Q3 years; If advanced fibrosis or cirrhosis - monitor as per cirrhotic; Referral to Hepatology or Biopsy to confirm Dx.

- 2. Aliment Pharmacol Ther 2015; 41: 368-378,
NAFLD MANAGEMENT

• No data specific to patients with HIV infection
• General recommendations - diet and exercise. If NASH - Limit ETOH, avoid hepatotoxic medications
• Weight loss for *obese patients*; One study of 293 patients - loss of 10% body weight 90% had resolution of NASH, 45% had resolution of fibrosis
• No proven pharmacologic therapies - trials ongoing (Pioglitazone - in one study shown to improve advanced fibrosis in NASH in non HIV infected)

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2. JAMA Internal Medicine May 2017 Volume 177, Number 5
CASE 2 - 48 Y M

- DM-2 HbA1C-8.4%, FBS 12.6 mmol/L
- Blood Pressure 118/78 mm/Hg
- Weight 118 kg, (BMI 39)
- NASH/DLD - TG 6.32 mmol/L, TC 3.92 mmol/L -on cholestyramine; GGT 72, AST 30, ALT 57 U/L
- Renal -Cr 91umol/L, GFR 87/ U/A:glc+, protein-
- Phys Exam -otherwise N
CASE 2 - 9 MONTHS LATER

- DM - 2 - Positive LIFESTYLE EFFORT - Wt 109.5kg (118 kg)
  Metformin - dose limited by diarrhea - 500 mg BID, Added Liraglutide 1.8 day/wk sc; HbA1c -8.4% to 6.3%
- NASH/Dyslipidemia - cholestyramine; LDL 1.95 mmol/L, Liver stable
- BP 114/72 mm Hg, Ramipril 5 mg/day
- Renal - U/A negative glucose, trace albuminuria - on Ramipril
- HIV - VL<40 c/ml; on DTG/3TC/ABC
CASE 3- REQUEST “MEDICAL ASSESSMENT”

- 56 yo woman recent dx HIV.
- CD4+ = 380, HIV-1 RNA < 40 c/ml
- HIV genotype- wt; HLA-B5701 neg,
- HCV negative; HAV/HBV immune;
- ART = “Triumeq” (abacavir/lamivudine/dolutegravir)

- Hypertension - enalapril
  - BP 142/88 mmHg
- BMI 27
- TC 5.4 mmol/L, HDL 1.09 mmol/L,
  - LDL 3.37 mmol/L, TG 4.5 mmol/L
- Serum creatinine 99.89 umol/L, GFR > 60 mL/min/1.73m², UA trace protein
CASE 3- FROM AN INTERNIST PERSPECTIVE-

- 56 yo Black F, current smoker; No drugs, ETOH;
- HIV -1-Well controlled (RNA <40copies/ml, CD4 480)- DTG/3TC/ABC. No Co-infections, No pregnancy plans, WT virus
- Overweight - BMI 27 - (on dolutegravir)
- Hypertension, Dyslipidemia, Normal renal function
- RISKS: Metabolic Syndrome
- Cardiovascular Risk
- Bone, Cancer
CARDIO/CEREBROVASCULAR DISEASE AND HIV

• Evidence shows HIV+ persons have 2-3 x the risk of developing CVD- even after controlling for traditional RF\(^1\).

• HIV is an independent risk for silent cerebrovascular disease- (future vascular events, cognitive impairment, frailty, reduced survival) HIV impact differed greater in younger<60; SCVD risk -age, Htn, CD4; - PLWH have 2x risk versus HIVneg\(^2\)

• Interplay of traditional CV risk factors in an ageing population, co-morbidities (HCV), ART toxicities, and inherent inflammatory response and immune activation of HIV infection

2. CID 2018:66 (june 1) Moulignier et al.
SOME ENCOURAGING NEWS

• Early treatment, newer antiretroviral medications, and attention to modification of risk factors may result in improved rates of CVD

• Some studies are now starting to show declining rates of MI/CVA - particularly among persons with VL controlled, and CD4>500

• 1. Clin Infect Dis. 2015;60:1278-1280
• 2. Recent IDSA meeting USA Oct 2017 Kaiser Permanente Cohort- 2010-2011
CV RISK ASSESSMENT IN HIV+ INDIVIDUALS

• Several tools available- none have been validated for PLWH
• D:A:D Study Group\(^1\) risk assessment model- incorporates ART medications, not validated in other cohorts, complicated, no AP!
• ACC/ASCVD or Framingham Risk Calculator - underestimate risk
• Generally should consider HIV as an “additional CV risk factor”, multiply value by 1.5-2x

  1. D:A:D (Data collection on Adverse events of Anti HIV Drugs) prospective multi-cohort study
CASE 2- ASSESS PATIENT’S CVD RISK

• Framingham Risk Estimator: 10 year risk 20.6%

• ACC/ASCVD: Current 10 year risk 11%, Lifetime Risk 50%

• Recommendation = Lower BP, Moderate to high intensity STATIN, Smoking cessation

• HIV Specific - TREAT HIV, Optimize ART- here consider D/C abacavir
STATINS IN HIV POSITIVE INDIVIDUALS

• ‘Statins’ (HMG-CoA Reductase inhibitors) reduce CV events in HIV neg population, said to have ‘pleitropic’ effects on inflammation and vascular health.
• Studies looking at ‘statins’ in HIV+ on ART - most RCTs have not demonstrated improvement in markers of inflammation and immune activation. A couple of cohort studies have seen improvement.¹
• Observational data suggest benefit on all cause mortality in some but not all reports
• Recent systematic review concluded that atorvastatin, rosuvastatin, pravastatin lower LDLc in HIV+ (**ART interactions).²

¹ Statins and HIV • JID 2016:214 (Suppl 2) ² Am J Cardiol. 2015 Jun 15;115(12):17606
STATINS TRIALS IN PLWH

- **SATURN-HIV**\(^1\) - RCT Stopping Atherosclerosis and Treating Unhealthy Bone with Rosuvastatin in HIV - (rosuvastatin 10 mg/day on markers of CVD and immune activation in ART treated/normal LDL - N=147, 48 week FU, median age 47, 78% male, 70% African American, VL<200c/ml, elevated immune markers, N LDLc) Reduction in some markers of immune activation sCD14, *also >50% increase in insulin resistance*, reduced progression of CIMT;

- **REPRIEVE Trial** - (Evaluating Use of Pitavastatin to Reduce the Risk of CVD in HIV+ Adults) enrolling currently, primary prophylaxis, low-mod CV risk. results 2022\(^2\)

- **POSTER - CROI 2016** - Add Rosuvastatin superior to switch rPI for reducing TC, LDL, tolerability (CROI 2016)

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MANAGEMENT OF CVD IN PLWH

• Assessment of cardiovascular risk important in HIV + persons
• Management of modifiable risk factors will improve outcome

• Standard approach - Lifestyle factors **Smoking, Diet, Exercise
• Optimize antiretroviral therapy - Target VL <40, CD4 normal, ARVs with least adverse lipid/metabolic effects, CV risk
• Statins - atorvastatin, rosuvastatin, pravastatin (pitavastatin)
HIV AND BONE DISEASE

• Low bone density is common in HIV. Fracture risk increased due to Traditional and HIV related factors. Patients experience loss in BMD up to 3% with initiation of ART

• Certain antiretroviral medications are associated with greater degree of bone loss - boosted PI, TDF, EFV,

• Study presented at IAS 2017- Zolendronic acid 5mg iv,(0.12m) resulted in greater gain in BMD than switch from TDF to non TDF regimen (Hoy J, et al. IAS 2017 Abs WEAB0106LB)

• Switch from TDF to TAF results in improvement in BMD with no loss of virologic control
RECOMMENDATIONS FOR EVALUATION AND MANAGEMENT OF BONE DISEASE IN HIV

• CALCULATE FRAX-MEN 40-49, WOMEN >40 PREMENOPAUSAL - If FRAX <10% repeat in 2-3 yrs, FRAX > 10% measure BMD, MILD-MOD Osteopenia - repeat BMD 5 yrs, ADVANCED repeat in 1-2 year, Ca/Vit D

• Measure BMD (DXA) IN MEN> 50, POSTMENOPAUSAL WOMEN, Plus Anyone with low trauma fracture, glucocorticoids, high fall risk

• FOR PERSONS WITH LOW BMD - Assess for 2 causes, Calcium and Vitamin D supplement, AVOID TDF

• OSTEOPOROSIS - TREAT-Calcium, Vitamin D, Bisphosphonate, AVOID TDF

• Ref Brown TT et al, Clin Infect Dis 2015;60 1242-1251, and CCO
CANCERS AND HIV INFECTION

• Life expectancy for PLWH approaching that of general population-
  In 2006 - 20 yr old with HIV expected to live 54+ years

• Major causes of mortality for HIV+, on antiretroviral therapy, with
  VL <500, CD4>500, are Cardiovascular Diseases and Malignancies

• Rates of Non-AIDS Defining Cancer (NADC) exceed rates of AIDS
  associated Cancer (ADC) and are increasing

• Rates of NADCs exceed those accounted for by the increased
  lifespan of HIV+
Most common NADCs are Lung Cancer, Hodgkin’s Lymphoma, Anal cancer, Head and Neck cancers. The relative risk of all 4 is elevated among people with HIV infection (2-5x increased).

The relative risk for Lung cancer in HIV+ is 2 to 5 times that of matched HIV- controls; survival for HIV+ with lung cancer is worse for HIV-. Risk factors include >10 pack-yr smoking, prior AIDS pneumonias, increasing age. Most common histology is adenoca, NSCC, squamous cell ca.

Anal cancer -HPV incidence is high even in absence of history of anal intercourse; one study found 46% HIV + heterosexual IDU positive for HPV. Low grade SIL was found in 16%, and high grade SIL in 18%1 (LSIL -Low grade squamous intraepithelial lesion)

CANCER SCREENING

• Given excess rates of NADCs guidelines strongly reinforce age appropriate cancer screening for HIV +
  
• Colon cancer- FIT and refer for colonoscopy at age 50*
  
• Breast cancer - age 50+ mammography annually*
  
• Cervical cancer - PAP on entry to care, at 6 months and then annually. Abnormal results should be followed up with colposcopy and directed biopsy. Anal PAP - annual for all with HPV/genital warts;
  
• Prostate -Current Canadian Guidelines recommend against routine PSA screening1
  
• * Individualize -personal risk, family history
  
• 1. CMAJ November 4, 2014 vol. 186 no. 16
CASE 3 ..

- HIV ensure ART successful - VL< 50, CD4+ recovery;
- Metabolic Syndrome- Patient is at risk, BMI elevated. Counsel lifestyle, dietician; (May need to alter ART)
- CVD - Elevated risk by ASCVD and FRC even without “adding” HIV effect -recommend statin. ART -**abacavir
- Bone -needs BMD
- Cancer - ensure age appropriate screening -Breast, Colon, PAP
- SMOKING CESSATION- (??consider low dose CT screen for lung)
POTENTIAL ASSOCIATION BETWEEN ABC USE AND CVD EVENT RISK: CONFLICTING DATA

- Multiple studies have identified increased risk of MI or overall CVD events with ABC use, including large cohort studies, RCTs, and case-control studies[1-10]
  - Range of risk estimates across studies: 1.3- to 4.3-fold increase
- However, several studies have also demonstrated a lack of increased CVD risk with ABC use, including large cohort studies, a meta-analysis of RCTs, and a case-control study[10-14]
- DHHS: consider avoiding ABC in pts at elevated risk for CVD[15]

LEARNING OBJECTIVES -
AT THE END OF THE SESSION, ATTENDEES SHOULD BE:

• Aware of current state, and prognosis of HIV infection in Canada
• Aware of medical complications and consequences of long-term HIV infection and antiretroviral treatment
• Able to Monitor and Manage Medical conditions for PLWH
TAKE HOME MESSAGES

• HIV is a Chronic Disease, Persons Living with HIV Infection will have *near normal life expectancy*

• Major causes of mortality for HIV positive individuals are - CARDIOVASCULAR DISEASE and non- AIDS MALIGNANCIES

• Comprehensive medical care for HIV+ individuals *must include* treatment of metabolic syndrome, reduction of CVD risk factors, routine age appropriate cancer screening, (as well as ART)
THE END
CASE 4: - THE LOOK OF LIVING 20+ YRS HIV+

- 65 yo M, HIV dx 1994 - Current CD4=800, 32% WNL, VL<40; DTG/TAF/FTC
- HBV Co-infection-fibroscan 24, CPA; US, - HCC, treated TAF/FTC
- DM-2 HbA1C 6.6% on metformin
- Atrial Fibrillation, (prior ablation) on bisoprolol and apixiban
- CKD Stable, Previous Fanconi Syndrome TDF, resolved, Cr 87, GFR 80
- NK-T-cell lymphoproliferative disorder
- Anal dysplasia
- Dyslipidemia, GERD
ANTIRETROVIRAL DRUG CLASSES

- NRTIs - common “backbone” - ABACAVIR (ABC)/3TC or TENOFOVIR DISPROXIL FUMARATE (TDF)/FTC -
- Conflicting data re ABC - re increased CV risk,
- TDF changing to TAF (tenofovir alafenamide fumarate)
- Protease Inhibitors - 1st Generation PI increase CV risk, Currently recommended atazanavir or darunavir have not been assoc with increase CV events
- Integrase inhibitors “Preferred” first line agents in guidelines -not assoc with increased CV risk- insufficient data
- NNRTI - most do not affect metabolic profiles (x efavirenz -TG)
• Renal Risk Factors - smoking, hypertension, dyslipidemia, DM, HCV co-infection, AA race, CD4<200, VL >4000, nephrotoxic ART (tDF, PI, DTG)
• HIVAN-HIV infection in kidney cells, collapsing FSGS picture on BX, Glom and Tubular involvement; HIVICK - HIV immune complex kidney disease- less known; Co-Morbid conditions (DM, Htn, HCV, AKI )
• PI-not very soluble can crystallize, (IND, ATAZ); rit/lopinavir, r/atazanvir can cause decreased GFR
• TDF- typical is tubular injury hypoP, glycosuria, proteinuria, inc creatinine, dec GFR; risk increased with rit/cobi; Tox with HCV meds
• DTG-decreased tubular secretion creatinine
CVD MORTALITY HIGHER IN HIV-INFECTED PTS, EVEN WITH VIROLOGIC SUPPRESSION

- Analysis of CVD-related mortality in HIV-infected pts in New York City HIV Surveillance Registry 2001-2012 (N = 145,845)
  - 71% male; median age: 49 yrs
  - From 2001-2012, CVD mortality increased in HIV-infected pts (from 6% to 15%) while decreasing in the general population
- Age-adjusted rate of CVD mortality markedly decreased for HIV-infected pts with virologic suppression
  - HIV-1 RNA ≥ 400 copies/mL, 8.02/1000 PY
  - HIV-1 RNA < 400 copies/mL, 3.99/1000 PY
  - General population, 3.22/1000 PY

HYPERTENSION IS INCREASING AND MORE PREVALENT AMONG HIV-INFECTED PTS

- Analysis of HTN in HIV-infected pts in UNC CFAR HIV Clinical Cohort, 1996-2013 (N = 3141)\[1\]

- Hypertension incidence
  - 1996: 1.68 cases/100 PY
  - 2013: 5.35 cases/100 PY

- Key risk factors
  - Age
  - Obesity
  - Diabetes
  - Renal insufficiency
  - Nadir CD4+ cell count < 500 cells/mm$^3$

- Analysis of HTN in HIV-infected (n = 527) and HIV-uninfected (n = 517) persons in AGEhIV cohort\[2\]
  - HTN rate higher among HIV-infected vs HIV-uninfected persons
    - 48% vs 36%; aOR: 1.65; 95% CI: 1.25-2.19

References:
CANCER SCREEN IN HIV+ INDIVIDUALS

• Anal cancer - HIV+ men and women with HPV are at risk for anal dysplasia and cancer. All HIV + men and women with receptive anal intercourse, or abnormal cervical PAP, or genital warts should have ANAL Pap tests annually¹

• HPV vaccination - Females 9-26 years, Males 9-26 years

• Liver - AASLD recommends US screening for HCC at 6mos intervals for high risk individuals - (co-infected, cirrhotic)

• Lung cancer - Canadian Task Force on Preventive Health Care recommends low dose CT screen for adults 55-74 years, 30+ pack year, who smoke or quit<15 years ago, annual scan for 3 years²

². CMAJ April 5, 2016 vol. 188 no. 6