HIV and Common Comorbidities
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&
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Learning Objectives

1) Confidently discuss basics of ARVs and common side effects of these medications

2) Understand the importance of HIV control and its impact on chronic diseases

3) Be able to identify some of the major chronic diseases affecting persons living with HIV and the critical role of HIV treatment regardless of other disease

4) Confidently discuss prevention interventions
Conclusions

- A 20-year-old HIV-positive adult on ART in the U.S. or Canada is expected to live into their early 70’s, a life expectancy approaching that of the general population. Differences by sex, race, HIV transmission risk group, and CD4 count remain.

Case Presentation-Heather V.

Heather V. is a 59 year old female who has been HIV+ since 2007. She also has diabetes, heart disease, and depression.

HIV was well controlled with CD4 1053 and undetectable VL. Returns to care after 18 months, CD4 dropped from 1053 to 610 and a VL from <20 to 53,400

**Diabetes**: diagnosed after her HIV dx. Initially on 1 oral med, now off meds with blood sugar 180-250 and not on cholesterol meds or kidney protecting meds

**Heart Disease**: had a heart attack 2 years ago. Is currently off her heart meds

**Depression**: Current score is 17, previous score was 6. Off meds and not engaged in counseling.
HIV Control

What is HIV Control?
This means having the HIV reduced to an undetectable level in your body

- Most labs measure to a level of 20, so < 20 is undetectable

Why is HIV control important?
1. HIV itself causes damage to the immune system (low CD4) and also can cause other health problems by changing the way the body reacts and handles internal inflammation and other illnesses
2. HIV control helps to reduce risks for some other chronic diseases
ARV 101 - you know a lot already - brief review

- HIV requires CD4 cells (a part of our immune system) to replicate.
  - When it replicates it destroys CD4 cells, and infects new ones
- AntiRetrovirals (ARVs) inhibit the ability of HIV to replicate
- Over time, we have found that certain combinations of ARVs work better than others, and those are the currently recommended meds.
- These meds are grouped by the different drug types (or ‘classes’) based on how they do their job.
ARV Drug classes (groups)

NRTIs - nucleoside/nucleotide reverse transcriptase inhibitors

NNRTIs - nonnucleoside reverse transcriptase inhibitors

PIs - protease inhibitors

INSTIs - integrase inhibitors

-- less frequently used—

EIs - entry inhibitors
## Common Side Effects of ARVs

<table>
<thead>
<tr>
<th>NRTIs</th>
<th>NNRTIs</th>
<th>PIs</th>
<th>INSTIs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nervous system</strong></td>
<td><strong>Nervous System</strong></td>
<td><strong>Stomach/Gut</strong></td>
<td><strong>Nervous system</strong></td>
</tr>
<tr>
<td>Neuropathy</td>
<td>Sleep changes</td>
<td>Nausea/Diarrhea all possible, less with newer (ATV, and DRV)</td>
<td>Headaches</td>
</tr>
<tr>
<td></td>
<td>depression</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Heme (blood)</strong></td>
<td><strong>Liver</strong> - espec NVP</td>
<td><strong>Liver</strong> - all possible</td>
<td></td>
</tr>
<tr>
<td>Anemia,Low white counts - AZT</td>
<td>(viramune)</td>
<td>Incr bilirubin esp with ATV (Reyataz)</td>
<td></td>
</tr>
<tr>
<td><strong>Lipids/cholesterol</strong></td>
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<td></td>
</tr>
<tr>
<td>AZT, TAF,</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EFV (sustiva, Atripla)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Kidney</strong></td>
<td></td>
<td><strong>Kidney</strong> - stones</td>
<td></td>
</tr>
<tr>
<td>Decreased efficiency</td>
<td></td>
<td>(ATV, LPV, IDV)</td>
<td></td>
</tr>
<tr>
<td>Rare more severe kidney injury (TDF)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Metabolic</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Lipodystrophy</td>
<td></td>
<td>diabetes</td>
<td></td>
</tr>
<tr>
<td>Bone effects (TDF)</td>
<td></td>
<td>lipodystrophy</td>
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</table>
HIV and Other Chronic Diseases

1 in 2 adults in the US has a chronic disease

1 in 4 adults in the US has two or more
HIV and Heart Disease

• People with HIV have higher rates of Cardiovascular Disease (CVD) than their HIV negative peers.

• Cardiovascular Disease (CVD) includes:
  – hypertension
  – heart attack
  – stroke

• There are multiple risk for these problems, but comparing HIV+ to HIV- people in large studies shows:

<table>
<thead>
<tr>
<th>HIV positive</th>
<th>HIV negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 - 22%</td>
<td>4 - 8%</td>
</tr>
</tbody>
</table>
HIV and Heart Disease

- Some evidence suggests that HIV is an additional risk factor for CVD, especially at low CD4 counts, uncontrolled viral loads.
- Certain HIV meds have been implicated as additional risks, but new data shows the gap between rates with people HIV+ and HIV- has been closing. A large Kaiser study showed no increased risk in people HIV + if: CD>500 and VL < 500.
- However, still a major cause of death in people HIV +, particularly as the other risk factors are often higher (TOB use, DM, HTN, hyperlipidemia).
Heart Risk Calculator

25.9%
10-year risk of heart disease or stroke
Learn how you can track your risk.

On the basis of your age and calculated risk for heart disease or stroke over 10%, the USPSTF guidelines suggest you start taking aspirin 81mg every day if you are not at increased risk for bleeding and are willing to take it every day for at least 10 years.

On the basis of your age, your calculated risk for heart disease or stroke over 7.5%, and diabetes, the ACC/AHA guidelines suggest you should be on a high intensity statin.

Based on your age and race, your blood pressure is poorly-controlled, and you should initiate lifestyle interventions and consider starting a thiazide diuretic, ACEI/ARB, or calcium channel blocker.

<table>
<thead>
<tr>
<th>Demography</th>
<th>Cholesterol</th>
<th>Blood pressure</th>
<th>Risk factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age: 59</td>
<td>Total: 220</td>
<td>Systolic: 156</td>
<td>Diabetes: yes</td>
</tr>
<tr>
<td>Gender: female</td>
<td>HDL: 50</td>
<td>Diastolic: 94</td>
<td>Smoking: yes</td>
</tr>
<tr>
<td>Race: not African-American</td>
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<td>On medication: yes</td>
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Heart Risk Calculator

16.2%
10-year risk of heart disease or stroke
Learn how you can track your risk.

On the basis of your age and calculated risk for heart disease or stroke over 10%, the USPSTF guidelines suggest you start taking aspirin 81mg every day if you are not at increased risk for bleeding and you are willing to take it every day for at least 10 years.

Based on your age, your blood pressure is well-controlled.

On the basis of your age, your calculated risk for heart disease or stroke over 7.5%, and diabetes, the ACC/AHA guidelines suggest you should be on a high-intensity statin.

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Heart Risk Calculator

12.8%
10-year risk of heart disease or stroke
Learn how you can track your risk.

On the basis of your age and calculated risk for heart disease or stroke over 10%, the USPSTF guidelines suggest you start taking aspirin 81mg every day if you are not at increased risk for bleeding and are willing to take it every day for at least 10 years.

On the basis of your age, your calculated risk for heart disease or stroke over 7.5%, and diabetes, the ACC/AHA guidelines suggest you should be on a high intensity statin.

Based on your age and race, your blood pressure is poorly-controlled, and you should initiate lifestyle interventions and consider starting a thiazide diuretic, ACEI/ARB, or calcium channel blocker.

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DISSEMINATION OF EVIDENCE-INFORMED INTERVENTIONS
Heart Risk Calculator

6.6%
10-year risk of heart disease or stroke
Learn how you can track your risk.

On the basis of your age and calculated risk for heart disease or stroke under 10%, the USPSTF guidelines suggest you would not likely benefit from starting aspirin.

On the basis of your age and diabetes, the ACC/AHA guidelines suggest you should be on a moderate intensity statin.

Based on your age, your blood pressure is well-controlled.

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Take home message:

• Treat HIV!!

• Assess CVD risks and address them especially if patients smoke
HIV and Hepatitis C

More common in people with HIV than the general population.

HIV positive: 23%          HIV negative: 1.5%

Major difference between HIV and Hep C:  Hep C is curable.

- Treatment depends on the type of Hep C, the amount of damage to the liver (scarring, also called fibrosis)
  - Fibrosis is measured on a scale of 0 to 4 (F0 --> F4)

- Usually requires insurance approval and often sobriety from alcohol

- Most common treatments take 12 weeks- though very expensive
HIV and Hepatitis C

Anyone with both these infections needs support to treat their liver well:

- Avoiding alcohol (a liver toxin)

- Limiting acetaminophen (Tylenol use) to no more than 8 reg strength tabs/day

- Controlling diabetes helps limit liver damage

- Losing weight helps

- Assess and offer vaccination for Hep A and B. The last thing they need is another hepatitis

- Marijuana use may cause more liver injury in people who have Hep C
HIV and Type 2 Diabetes

- A chronic condition that affects the way the body handles blood sugar (glucose)
- Most of our patients with HIV develop diabetes as an adult - which is different than childhood diabetes (Type 1)
- It can be caused by many things, and we don't always know why, BUT we do know factors that influence it:
  - *Family History
  - *Diet
  - *Obesity
  - *Medications (some HIV meds) can cause or make it worse
HIV and Diabetes

What can we do for someone living with diabetes?

• Encourage them to learn how to read food labels - what they eat is important to helping control their blood sugar

• Many people can control their blood sugar with diet change, increased exercise (even walking!) and taking meds their provider recommends.

• Many patients with diabetes can avoid insulin if they make those changes
Look at the # servings in a package (here = 8. So each serving has 230 calories, 37 g carbs, etc)

The # of grams (g) of Total Carbohydrates NOT just sugars! Carbs become glucose in our bodies.(see here 37g carbs vs 1g sugar!)

The % is referring to total recommended for the WHOLE DAY.
Big Mac

Note the presence of:

- Sugars (9g)
- Total carbs (46g)
- Sodium (1000mg)
- Total calories (550)
HIV and Mental Health

could be a whole talk and influences everything else

• People living with HIV often deal with many stressors;
  – prior or ongoing stigma
  – rejection
  – substance use
  – housing
  – other illness

• During their lifetime, 22% to 45% of patients living with HIV/AIDS will experience depression compared with 5% to 17% of the general population.

• In addition, the rates of HIV in those people with mental health disorders is higher (varying in studies from 5- 23%: WHO report 2008)
Untreated or undertreated mental health diagnoses affect:

- Medical Visit adherence
- Medication adherence
- Engagement in care
- Disclosure of status
- Relationship /support systems
- Housing
- Risk of hospitalization
- ED visit frequency
- Justice system contacts
Being the person someone trusts can have a huge impact

Invaluable resources would be:

- Clinic or support staff that can reach out to patients in the community (phone, in person)
- Staff that can visit if someone is in jail, a shelter, or has become disconnected from services

Those linkages and contacts make a difference
HIV and Cancer

• Some cancers are so-called AIDS related malignancies (malignancy = cancer)

• Others, just as severe (and sometimes worse) are not classified that way

• Either way, cancer is one of the leading causes of death in people with HIV (15% of deaths in people with HIV in recent studies)
## What cancers are most common in people with HIV?

<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>Risk compared to HIV neg</th>
<th>How to prevent?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kaposi’s Sarcoma (KS)</td>
<td>1000’s x</td>
<td>treat HIV</td>
</tr>
<tr>
<td>NonHodgkin’s &amp; Hodgkins Lymphoma</td>
<td>70x &amp; 10x</td>
<td>treat HIV</td>
</tr>
<tr>
<td>Anal</td>
<td>25x</td>
<td>treat HIV, ? role of anal pap smears</td>
</tr>
<tr>
<td>Cervical</td>
<td>12x</td>
<td>treat HIV, paps</td>
</tr>
<tr>
<td>Liver</td>
<td>5x</td>
<td>screen &amp; RX Hep B and C</td>
</tr>
<tr>
<td>Lung</td>
<td>3x</td>
<td>stop smoking, ? Screen</td>
</tr>
</tbody>
</table>
Chronic Disease Prevention - what can you do?

• Access to care, testing and knowledge are the first steps to prevention.
• Personal motivation for change is fundamental in changing behaviors.
• Set SMART goals: Specific, Measurable, Attainable, Relevant, Time
• Use Motivational Interviewing (don’t forget the Readiness Ruler)
• Use your Reflective Listening skills.
• Remember, change takes time. It takes anywhere from 2-8 months to build a new behavior into your life.
So back to Heather V. - what should we do?

- Assess where she is at, what brought her back, why is she engaged again?
- Assess current stability (SUD, housing, support, basic needs)
- What is her primary goal, what is her focus?

<table>
<thead>
<tr>
<th>Short term medical goals</th>
<th>Long term medical goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Help her choose what she is ready to start treating (HIV, diabetes, heart disease, hypertension, smoking, depression)</td>
<td>HIV control</td>
</tr>
<tr>
<td></td>
<td>Diabetic control</td>
</tr>
<tr>
<td></td>
<td>Treatment of heart disease and prevention of complications</td>
</tr>
<tr>
<td></td>
<td>Engagement in depression care</td>
</tr>
</tbody>
</table>
One of these days
I will reduce
my risk factors
Remember the DOCTORS
CALL SURGERY
COLLECT PRESCRIPTION
DON’T FORGET MEDICINE
NEXT APPOINTMENT?

Hm! Nothing to do today!
Questions?
Resources

National Cancer Institute


NIH Guidelines

Risk Calculator
http://www.cvriskcalculator.com

Estimating the proportion of patients infected with HIV who will die of comorbid diseases, The American Journal of Medicine, 2005

Co-Morbidities in Persons Infected with HIV: Increased Burden with Older Age and Negative Effects on Health-Related Quality of Life, AIDS Patient Care and STD, 2013