Prevalence of HIV Infection

Persons living with HIV/AIDS (PLWHA) in Indiana 9,893 by the end of December 2010 rate is 275 per 100,000 or .28%

Most PLWHA live in the urban areas of the State
The majority are living in Health Region 5, corresponding to Central Indiana and the Indianapolis Metropolitan area.

HIV/AIDS Incidence

In 2010, the number of newly diagnosed persons in Indiana was 496 (slightly up from 489 in 2009).
The diagnosis rate in 2010 was 7.6 per 100,000 people.

Includes people that are diagnosed with HIV non-AIDS infection and people that are diagnosed first as HIV positive at the same time that they receive an AIDS diagnosis

Does NOT include people who were previously diagnosed with HIV non-AIDS who convert to AIDS.
As of December 31, 2010, there were:
- 4,675 PLWH/A
- 144 deaths from HIV/AIDS

Of the total number of PLWH/A:
- 2,133 were PLWH-not AIDS
- 2,542 were PLWA
- 459 were foreign-born
- 25 were Transgender

Marion County and the surrounding counties account for 47.5% of all living HIV/AIDS cases in Indiana.

The HIV/AIDS epidemic in the region mirrors that of Indiana.

About 1,243 persons in the region are infected with HIV and do not know it (based on CDC’s 21% estimate).
Reported HIV/AIDS Cases
People living with HIV/AIDS, and Deaths, Indianapolis TGA

HIV/AIDS in Indiana 2010
Affects African Americans Disproportionately
- 9.1% of the population
- 35.1% of living cases of HIV and AIDS
- 45.8% of newly diagnosed HIV cases
- Greatest number of deaths among PLWH/A (1.7/100)
- Prevalence of HIV infection is nearly six times higher than the White population
  - Black (387.3/100,000)
  - Hispanic (182.4/100,000)
  - White (98.8/100,000)

Newly Diagnosed HIV/AIDS Cases by Race
Source: eHARS, 2009-2010

Newly Diagnosed HIV/AIDS Cases by Sex
Source: eHARS, 2009-2010

Newly Diagnosed HIV/AIDS Cases by Age
Source: eHARS, 2009-2010
**Human Immunodeficiency Virus (HIV)**

What is it?  How do we test for it?

What does it do?

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Sylvia Wiley, MSN, ANP-BC, CCM
Lifecare Program
IU Health Methodist Hospital

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**Pathophysiology of HIV Infection**

HIV is a retrovirus. This means it contains RNA as its genetic material instead of DNA. In order for the virus to replicate within the T-cell, the viral RNA must first be converted to DNA, by a process called reverse transcription. This process is performed by an enzyme called reverse transcriptase. The DNA is then integrated into the chromosomal DNA. The integrated viral DNA is used to make both viral proteins as well as viral RNA.

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**Infection of T cells**

The arrows indicate the path of the virus. The viral-envelope protein binds to the CD4 molecule on dendritic cells. Entry into the cells requires the presence of CCR5, a surface chemokine receptor. Dendritic cells, which express the viral coreceptors CD4 and CCR5, are selectively infected by R5 (macrophagetropic) strains.

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**Missed Opportunity?**

Symptoms present days to weeks after initial exposure
Most common presentation:
fever, fatigue, headache, and rash
Nonspecific symptoms overlap with common viral illnesses
High index of suspicion is CRITICAL

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**HIV Antibody Tests**

- Serum antibody (EIA)
- Saliva and urine antibody tests (EIA)
- Rapid tests
  - SUDS (microfiltration EIA)
  - Laboratory-based
  - OraQuick
  - Point of care
- Western blot assay
  - Confirmatory test

**Elisa/Western Blot**

- 10 Potential positive antibody bands:
gp120, gp160, gp40, gp41, p18, p24, p31, p51, p55, p65
- Positive test: any 2 of the following bands: p24, gp41, or gp120/gp160
- Inconclusive test: bands present but inconsistent with positive criteria
  - Inconclusive test but high suspicion of infection: check HIV-RNA/PCR
**Opportunistic Infections**

- An infection by a microorganism that normally does not cause disease but becomes pathogenic when the body’s immune system is impaired and unable to fight off infection.
  - Primarily seen in patients with CD4 counts below 200 cells
  - Oral, vaginal candida; can be seen in patients with CD4 counts up to 400
  - Skin infections/MRSA

**Pneumocystis Pneumonia aka PCP**

- This type of pneumonia is caused by the fungus *Pneumocystis jiroveci*. This fungus is common in the environment and does not cause illness in healthy people.
- Seen when CD4 counts drop below 200 cells
- Symptoms: cough, fever, tachypnea, SOB, DOE
- Prophylaxis: Bactrim DS daily; effective when given 3x weekly

**Mycobacterium Avium aka MAC**

- Mycobacterium intracellulare
- Seen when CD4 counts drop below 50/cells
- Primarily a pulmonary disease, but can disseminate to other organs
- Prophylaxis: azithromycin 1200 mg weekly (can be taken in divided doses)

**Test Your Knowledge**

After a repeat HIV antibody test, a client continues to have positive test results but is asymptomatic. What is important for the NP to understand regarding the transmission of the virus by this client?

- The client is infectious when symptoms are active
- The client is infectious for life
- The dormant virus is not infectious while the client is asymptomatic and the T-cell count is high
- Laboratory tests should be done monthly to identify the infectious periods of the disease process
Summary

- HIV/AIDS is an Indiana disease!
- Recognizing the presentation of HIV disease is important for ALL clinicians
- Identifying HIV-infected individuals is important for:
  - The person living with HIV
  - The spouse / partner
  - Unborn children
  - Society
- Referral specialty services ARE available

Goals of Therapy

- Maximal and durable suppression of HIV viral load < 20 copies.
- Restoration and preservation of immune function.
- Improved quality of life
- Reduction of HIV-related morbidity/mortality.
- Prevent HIV transmission
- Decrease inflammation and immune activation thought to contribute to higher rates of CAD, CKD, neuro-cognitive decline, and cancers.

Treatment recommendations per DHHS Guidelines

- AIDS defining illness/opportunistic infections with CD4 count < 350.
- Lymphomas, PCP, MCL, MAC.
- Disseminated histio, Kaposi sarcoma, CNS toxo, CMV retinitis, HIV encephalopathy, MIB, HIV wasting, invasive cervical cancer, candidiasis (esophageal, bronchi, lung, trachea) etc.
- CD4 cell counts between 350-500 cells.
- HIV/ HBV co-infection when HBV treatment is indicated.
- HIVAN- HIV associated nephropathy.
- Any HIV+ pregnant female.
- Patients willing to commit to lifelong adherence to therapy. 50% of panel recommended starting therapy with CD4 counts > 500.
- Patients with symptoms of disease progression; weight loss, frequent bacterial/viral illnesses, adenopathy, fatigue.

Antiretroviral Therapy

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Lifecare Program
IU Health Methodist Hospital

Antiretroviral therapy blocks entry or attachment to CD4 cell, disrupts viral replication within the CD4 or prevents HIV core maturation.
**HIV ANTIRETROVIRAL MEDICATIONS**

**Drug Classes**

- **NRTIs**: Nucleoside/nucleotide reverse transcriptase inhibitors.
  - AZT (1987)
  - DDI (1991)
  - Co-formulated Hivid (1992)
  - AZT+Epivir=Combivir (1995)
  - Ziagen+Epix=Epzicom (1998)
  - Emtriva+Viread=Truvada (2001)
  - Epivir (1995)
  - Ziagen (1998)

- **Integrase Inhibitor**: Inhibit viral enzyme integrase from inserting viral DNA into host CD4 cell.
  - Isentress (2007)
  - Dolutegravir (in clinical trials)
  - Elvitegravir (in clinical trials)

- **Fusion Inhibitor**: Fuzeon (2002)

- **CCR5 Inhibitor**: Maraviroc (2008)

- **NNRTIs**: Bind to reverse transcriptase and inhibit viral RNA and DNA dependent polymerase activities.
  - Nevirapine (1996)
  - Delavirdine (1996)
  - Sustiva (1996)
  - Etravirine (2007)
  - Rilpivirine (2011)

- **Protease Inhibitor**: Bind HIV-1 protease, rendering Virion immature and unable to infect host cells.
  - Saquinavir (1995)
  - Ritonavir (1996)
  - Viracept (1997)
  - Kaletra (1998)
  - Reyataz (2003)
  - Aptivus (2005)
  - Prezista (2006)

**Resistance**

- Resistance to HIV antiretroviral medications is a function of two conditions: susceptibility of the virus to ARV and achievable level of the ARV in the target cell.

- ARV naive patients may have transmitted drug resistance ~ 10–15%.

- Resistance testing is recommended prior to starting HIV regimen, when resistance is suspected due to viral rebound, or entry into care.

- Viral mutations occur when there is reduced level of ARV and viral replication is not suppressed, the virus changes/mutates. Some viral mutations confer resistance to ARV's in regimen and possibly to additional ARV's in the class.

- Genotype: Analyzes genome to detect specific mutations that confer drug resistance.

- Phenotype: Examines the drug susceptibility of virus to the ARV...
Drug Interactions/Special Considerations

All Protease Inhibitors and NNRTI’s are metabolized by P450(CYP) system producing either inhibitor or inducing effects. Predominately effects of ritonavir booster/protease inhibitor increase levels of routinely prescribed meds.

Steroids: Specifically inhaled or nasal spray fluticasone, can lead to Cushing syndrome. Prefer beclamethasone, QVAR and Nasonex with PIs.

Statins: No noticeable increases levels. Use pravastatin, low dose lipitor - up to 20 mg, or atorvastatin 5 mg.

ED drugs: Increase levels and prolong side effects; prescribe Viagra 25 mg.

Axiolytics: Increases levels of Versed, halcion, xanax.

Antiarrhythmics: Increase levels of amiodarone, quinidine, flecainide.

Methotrexate: Decreased levels.

Oral Contraceptives/PPI’s: Significant interactions increase/decrease OC levels, ARV levels.

Depo-Provera has been studied in Nelfinavir, Sustiva, and Nevirapine without interactions.

Intolerance: Maraviroc: Intolerance can be safely used in combination.

Reyataz/Ritonavir: PPI’s/H2 blockers reduce Reyataz levels. Omeprazole 20 mg/H2 blockers 12 hours apart.

* Not inclusive of all known interactions; consult pharmacists’ drug interaction sites. Have patient call us with starting new medications. Review med list with each visit.

ARV Adverse Side Effects

Newer HIV medications have decreased incidence/severity of side effects. Any HIV medication could be associated with a rash that needs to be evaluated.

Protease Inhibitors: First generation Viracept, Crixivan, Invirase associated with higher potential for lipodystrophy (abnormal increase with visceral fat accumulation).

NNRTI’s: Sustiva: CNS effects of vivid dreams, hangover feelings, sleep disruption.

NRTI’s: Hivid, Zerit, and didanosine associated with peripheral neuropathy/lipoatrophy.

Abacavir associated with life threatening hypersensitivity testing now able to pre-test, HLA B5701 for immune probability toward hypersensitivity.

Viread renally excreted monitor serum creatinine/creatinine clearance.

AZT associated with anemia, macrocytosis, and lipoatrophy.

Take Home Messages

- Inquire about ongoing HIV follow up and medication adherence/changes.
- Check for potential drug interactions with pharmacists, or contact HIV providers to assess for drug interactions, any questions or concerns.
- All prescribed antiretroviral agents or none.
- Encourage patients to call HIV providers to discuss symptoms or side effects.
- Encourage condom use with sexual activity.
- Encourage any patient who has unprotected sexual activity to be tested.
- Thanks for improving the health of our shared patients!

PREVALENCE

- Women account for 25% of the HIV positive individuals in the U.S. and Indiana.
- The rate among African American women is 20 times greater than for white women, and 4 times greater than Hispanic women.
- The risk factor for most women (90%) is heterosexual sex.

WOMEN AND HIV

What the Primary Care Provider Needs to Know

Marcia Plant Jackson, FNP, MPA, MSN
Lifecare Program
IU Health Methodist Hospital

Diagnoses of HIV Infection among Adult and Adolescent Females, by Race/Ethnicity, 2009—40 States

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>No.</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Indian/Alaska Native</td>
<td>51</td>
<td>6.6</td>
</tr>
<tr>
<td>Asian</td>
<td>103</td>
<td>3.4</td>
</tr>
<tr>
<td>Black/African American</td>
<td>6,627</td>
<td>47.8</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>1,352</td>
<td>11.9</td>
</tr>
<tr>
<td>Native Hawaiian/Other Pacific Islander</td>
<td>8</td>
<td>13.3</td>
</tr>
<tr>
<td>White</td>
<td>1,699</td>
<td>2.4</td>
</tr>
<tr>
<td>Multiple races</td>
<td>132</td>
<td>13.4</td>
</tr>
<tr>
<td>Total</td>
<td>9,973</td>
<td>9.8</td>
</tr>
</tbody>
</table>
PREGNANCY CONCERNS
- 50% of HIV positive pregnant women in Indiana were diagnosed during pregnancy.
- 1992 there were 911 new diagnoses of HIV/AIDS in children under age 13 in the U.S. (mostly perinatal transmission).
- 2009 there were 13 new diagnoses of children under age 13 in the U.S.

SPECIAL CONCERNS
- HIV positive women have a higher risk of cervical cancer and HPV infection.
- Recommendation is 2 PAP smears 6 months apart in first year after diagnosis, then annually if normal.
- Refer all abnormals for colposcopy.

PSYCHOSOCIAL CONCERNS
- HIV positive women feel more socially isolated and have diminished feelings of well being compared to HIV positive men.
- Social roles: breadwinners, primary childcare givers, homemakers.
- Women tend to be poorer than men (can’t afford transportation, childcare, medication copays, good nutrition).

LONGEVITY
- With new and easier ARV regimens, HIV positive patients are living near normal life spans.
- HIV adds an additional layer of ‘inflammation’ to the common chronic illnesses of HTN, Heart disease, Diabetes, Cancers.
- These conditions should be managed aggressively by primary care providers who know best how to do this.

WHAT CAN YOU DO?
- Screen all of your female patients. Screen patients at high risk for STDs annually.
- Be sure your HIV positive patients are getting regular well woman exams. Infectious Disease practices don’t do this.
- Talk to your HIV positive patients about how they are coping. Provide them with comprehensive primary care.
- Remember that women over 40 still have sex.
**Special Populations**

Barb de Rose, NP-C, AACRN  
Lifecare Program  
IU Health Methodist Hospital

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**Definitions of immigration status**

- **Immigrant**  
  A person who migrates to another country, usually for permanent residence

- **Refugee**  
  A person who seeks or takes refuge in a foreign country, especially to avoid war or persecution

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**Immigration in Indiana**

- **Indiana facts:**
  - Indiana uses terms immigrants and foreign-born interchangeably
  - In 2009, 4.4% of Indiana’s total population were immigrants compared to 1.7% in 1990
  - Foreign-born population in Indiana increased by 50.8% from 2000 to 2009
  - Indiana immigrants in 2009 – 48% from Latin America, 27% from India and China
  - Estimated HIV-infected immigrants in central Indiana: 459

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**Health care challenges for HIV infected immigrants**

- **Fear**  
  - If undocumented, uncertain future
- **Language barriers**  
  - Assess need for translation services
- **Alienation**  
  - May be separated from family and community
- **Sadness or depression**  
  - May have difficulties in establishing intimate relationships due to HIV status

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**Refugees in Indiana**

- **Local refugee programs:**
  - Exodus  
    - Assists persons from Burma, Iraq, Eritrea, Somalia, Iran with English language training, cultural outreach and employment readiness  
    - Projects 600 new refugees in 2012
  - Indiana State Department of Health  
    - Focus on Haitian refugees
  - Attempts to find medical home within 90 days of arrival
  - ISHD contact – Family and Children Services (FSSA)

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**Challenges for refugee patients**

- **Language barriers**  
  - Need for translation services
- **Mental health issues**  
  - May be overwhelmed, disoriented, insecure, culture shock, grief and loss
- **Co-morbidities/health concerns**  
  - History of TB, hepatitis, inadequate vaccinations

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www.immigrationdirect.com  
www.migrationinformation.org/database/state  
www.exodusrefugee.org
How we (providers) can help

- Recognize HIV symptoms, test, refer for treatment
  - Once referred, case managers can assist with needs
- Ryan White services provides funds for medical and psychosocial needs of people living with HIV/AIDS
  - Case management
  - Primary medical care
  - Regional AIDS education and training, provides HIV training to providers*

*Indiana organization is MATEC (Midwest AIDS training and education center)

Key Action Steps to Improve Immigrant Health

- Provide equal access to care to all, regardless of immigration or insurance status
- Access language preference, and organizational capacity to provide appropriate care
- Recognize difference costs of healthcare for recent immigrants and provide equitable payment
- Develop clinical guidelines and best practice orders for immigrant healthcare
- Diversify the workforce
- Use trained interpreters
- Use bilingual and bicultural community health workers
- Train healthcare providers and educate immigrant patients

Source: Immigrant Medicine, by Patricia Ohmans, 2007

Practicing Medicine in the Global Village

- Six principles:
  - Safe
  - Timely
  - Effective
  - Efficient
  - Equitable
  - Patient centered

Source: University of Minnesota and CDC co-sponsored Global Health Course

Practicing Medicine in the Global Village

- Values based approach:
  - Cultural humility
  - Trust
  - Respect
  - Global Health Equity
  - Compassion

Source: University of Minnesota and CDC co-sponsored Global Health Course

Available on line or in person, www.globalhealth.umn.edu