HIV in Primary Care: A Path for Integration

Stephen Perez, RN, NP, AAHIV-S
February 9, 2012
Overview and Objectives

• Review the goals of the AETC NCHCMC
• Define HIV/AIDS Epidemiologic trends
• Define Models and Strategies for Integration
• Identify important Clinical Issues around providing care for HIV-positive patients
• Identify specific care needs of Homeless patients living with HIV
• Questions
About HealthHIV

• **Core capabilities:**
  – Education & Training (professional & consumer)
  – Technical Assistance & Capacity Building
  – Health Services Research/Evaluation
  – Advocacy

• **Diverse staff** of 20 with HIV clinical, global, cultural competency, and prevention experience

• **Numerous strategic partnerships** with national and local organizations, from clinical to technological.
Goal

Increasing access to comprehensive HIV care for ethnic and racial minority communities severely impacted by HIV by developing the organizational capacity of health centers that are not directly funded through the Ryan White Program.
EPIDEMIOLOGY OF HIV INFECTION IN THE UNITED STATES
Brief Overview of Epidemic

• Approximately 1.1 million people in U.S. living with HIV/AIDS

• Number of new infections in 2009 was 48,100

• 20% of those infected with HIV do not know their status

• 33% of people with HIV are diagnosed with advanced disease
Brief Overview of Epidemic

• MSM continue to carry the highest burden of new and current infections.

• Women accounted for 23% of new infections, in 2009.

• People of color continue to be disproportionately affected by HIV/AIDS

• Young people (<30 yrs. old) accounted for 39% of new infections in 2009, the percentage of any age group

Note that transmission from injection drug use has declined by about 80% since the 1990's.
Diagnoses of HIV Infection among Adults and Adolescents, by Sex, 2006–2009—40 States and 5 U.S. Dependent Areas

Note: Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. All displayed data have been statistically adjusted to account for reporting delays, but not for incomplete reporting.
Diagnoses of HIV Infection among Adults and Adolescents, by Race/Ethnicity, 2006–2009—40 States and 5 U.S. Dependent Areas

Note: Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. All displayed data have been statistically adjusted to account for reporting delays, but not for incomplete reporting.

*Hispanics/Latinos can be of any race.
Diagnoses of HIV Infection among Adults and Adolescents, by Transmission Category, 2006–2009—40 States and 5 U.S. Dependent Areas

Note. Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. All displayed data have been statistically adjusted to account for reporting delays and missing risk-factor information, but not for incomplete reporting.

* Heterosexual contact with a person known to have, or to be at high risk for, HIV infection.

* Includes hemophilia, blood transfusion, perinatal exposure, and risk factor not reported or not identified.
Estimated Rates of Diagnoses of HIV Infection among Adults and Adolescents, by Sex and Race/Ethnicity, 2009—40 States

Note: Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. All displayed data have been statistically adjusted to accounted for reporting delays, but not for incomplete reporting.

*Hispanics/Latinos can be of any race.
AIDS Diagnoses among Adults and Adolescents, by Race/Ethnicity and Year of Diagnosis, 1985–2009—United States and Dependent Areas

Note. All displayed data have been statistically adjusted to account for reporting delays, but not for incomplete reporting.
*Hispanics/Latinos can be of any race.
*bIncludes Asian/Pacific Islander legacy cases.
HIV Infection by Race/Ethnicity from Kaiser Family Foundation, 2011

Figure 3: New HIV Infections & U.S. Population, by Race/Ethnicity, 2009

- **New HIV Infections**
  - 32% White, non-Hispanic
  - 44% Black, non-Hispanic
  - 20% Latino
  - 2% American Indian/Alaska Native
  - 1% Asian
  - 1% Native Hawaiian/Other Pacific Islander

- **U.S. Population**
  - 65% White, non-Hispanic
  - 12% Black, non-Hispanic
  - 16% Latino
  - 4% Asian
  - 1% American Indian/Alaska Native
  - 1% Native Hawaiian/Other Pacific Islander

The chart indicates that the majority of new HIV infections are among Black, non-Hispanic individuals, followed by Latinos. The U.S. population distribution shows a significant portion of the population is White, non-Hispanic.
Strategies to Integrate in Primary Care
Persistent Factors Affecting HIV Integration in CHCs

• External
  – HIV prevalence
  – Lack of Providers
  – Rural location
  – Urban location close to existing HIV Center
  – Availability of funding
  – Prompting from Health Dept.
  – Access to mentorship and technical assistance

• Internal
  – Motivated Leadership (Board)
  – Supportive CEO
  – Motivated Clinicians
  – Clinicians experienced in HIV Care
  – Desire to provide comprehensive HIV Care
Primary Care Issues

• In 2006, the CDC expanded screening recommendations to all persons aged 13-64.

• More funding for testing and more diagnoses made (many times in high volume settings i.e. emergency departments)

• Patients are presenting with high complexity given longer survival times, medical co-morbidities, and late diagnosis.

• Patients with HIV are also moving from urban to rural areas where specialty care access may be limited.

• Trained HIV specialists (PCP’s, ID, NP’s, PA’s) are not readily available in many areas (what is a "specialist"?)

• Now a chronic care issue a Specialists are confronted with complex co-morbidities and PCPs are confronted with specialty ID issues.

• HIV-positive patients often need other specialty involvement (i.e. GI, Surgery, Endocrine, Pulmonary, Colo-rectal etc…)

• Patient Protection and Affordable Care Act (P.L. 111-148) will be potentially bringing in more patients to primary medical care, including those with HIV/AIDS.
Strategy: Comprehensive Organization-Wide Training

Assessing & Staging
- Assessment of organizational systems, processes and attitudes
- Whole-site HIV Training Needs Assessment
- Individualized Self-Assessments for providers in multiple disciplines.

Laying the Foundation for Integration
- PDSA: Process for Improvement
- Maximizing Revenue
- HIV Training Package
- Group & Individual Training Plans

Supporting HIV Integration
- QI: PDSA HIV Testing/Core Clinical Indicators
- ACCESS: Cultural Competency & Confidentiality
- Patient Recruitment & Retention
- Clinical Training Plan Monitoring & Evaluation
- Distance & Onsite Training
- Mentoring

Sustaining HIV Care in Primary Care
- Building Collaborations for Sustainability
- Population Management
- Expanded Appointment Access
- Continued Clinical Training & Education
Strategy: Learning Community Model

- **Brings together CHCs** and stakeholders to support the expansion of primary care to include HIV
- **Fosters innovation** through peer-to-peer interaction
- **Achieves Community** through the Learning Community’s Virtual Learning Lab, in person meetings, and web-based group training
The HIV Training Package is:

• A set of learning resources and tools to help providers in the HIV in Primary Care Learning Community integrate HIV treatment and care into their overall medical practice
HIV Training Package Conceptual Model:

- Standardized in-service distance learning for care teams lead by clinical learning leader
- Stage-based (Foundation, Stage 1, 2, 3)
- HIV/AIDS Bureau manual and the Department of Health & Human Services Guidelines used as core resources to develop proficiencies and content
Strategy: HIV Training Package

Conceptual model:
• Assessment-based to prioritize self-assessed learning needs
• Self-directed, self-paced
• Flexible, user-friendly (multiple ways to access, mixed media)
• Dynamic content with regular updates to reflect clinical advances
• Linked to VLL to inform clinical consultation/mentors with AETC Collaboration
HIV Curriculum Menu Word version

• The WORD version of the curriculum menu contains the recommended learning resources and associated links in list form.

HIV Curriculum Menu Excel version

• The EXCEL version of the curriculum menu contains the recommended learning resources and associated links in table form.
Proficiency 1: Diagnose and Manage Acute Retroviral Syndrome

CORE RESOURCES:

- pp. 101-103: Primary HIV Infection

DHHS Guidelines: Guidelines for the Use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents 2011.

SUPPLEMENTAL RESOURCES:

CME/CE Resources

Point of Care Resources: (Job Aids, Pocket Guides, Mobile Applications, etc.)
# HIV Training Package Curriculum Menus

## Primary Audience: Providers (MU, DO, NP, PA)

### Stage 1: Diagnosis, Staging and Monitoring HIV Disease

<table>
<thead>
<tr>
<th>Proficiency</th>
<th>Core Curriculum (online)</th>
<th>Supplemental Curriculum (online)</th>
<th>Point of Care Resources (Job Aids, Pocket Guides, Mobile Applications)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>pp. 60-64: Acute HIV Infection</td>
<td>AETC Resources</td>
<td>+ Acute HIV Education and Counseling Pocket Guide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CMEQIE Resources</td>
<td>+ Acute HIV Test Chart &amp; Teaching Guide</td>
</tr>
<tr>
<td></td>
<td>pp. 67-72: Initial Physical Examination</td>
<td>Initial Evaluation of a Patient with a New HIV Diagnosis</td>
<td>+ Acute HIV Test Chart &amp; Teaching Guide</td>
</tr>
<tr>
<td>3. Appropriately Order and Interpret Baseline HIV/Related Lab Tests</td>
<td>pp. 5-8: Laboratory Testing for Initial Assessment and Monitoring While on Antiretroviral Therapy</td>
<td>Laboratory Testing for Initial Assessment</td>
<td>+ Acute HIV Test Chart &amp; Teaching Guide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>+ HIV Web Study</td>
<td>+ Acute HIV Test Chart &amp; Teaching Guide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>+ Appropriate Serology Testing</td>
<td>+ Acute HIV Test Chart &amp; Teaching Guide</td>
</tr>
<tr>
<td>4. Provide Appropriate Immunizations</td>
<td>pp. 143-148: Immunizations for HIV-infected Adults and Adolescents</td>
<td>HIV Disease Classification: Opportunistic Infection, Prophylaxis and Immunizations</td>
<td>+ HIV Web Study</td>
</tr>
<tr>
<td></td>
<td></td>
<td>+ Appropriate Vaccinations</td>
<td>+ Acute HIV Test Chart &amp; Teaching Guide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>+ Vaccinations for Adults and Adolescents: Focus on HIV</td>
<td>+ Acute HIV Test Chart &amp; Teaching Guide</td>
</tr>
<tr>
<td>5. Initiate and Monitor Oral Prophylaxis</td>
<td>pp. 147-158: Preventing Exposure to Opportunistic and other infections</td>
<td>HIV Disease Classification: Opportunistic Infection, Prophylaxis and Immunizations</td>
<td>+ HIV Web Study</td>
</tr>
<tr>
<td></td>
<td>pp. 473-478: Pneumocystis pneumonia</td>
<td>+ Prophylaxis for Tuberculosis: Tuberculosis</td>
<td>+ Acute HIV Test Chart &amp; Teaching Guide</td>
</tr>
<tr>
<td></td>
<td>pp. 499-522: Toxoplasmosis</td>
<td>+ Surveillance for Adults and Adolescents: Focus on HIV</td>
<td>+ Acute HIV Test Chart &amp; Teaching Guide</td>
</tr>
<tr>
<td>6. Identify Need For and Readiness to Begin ART Treatment (includes CDC Staging)</td>
<td>pp. 67-68: HIV Classification: CDC and WHO Staging Systems</td>
<td>HIV Disease Classification: Opportunistic Infection, Prophylaxis and Immunizations</td>
<td>+ Acute HIV Test Chart &amp; Teaching Guide</td>
</tr>
<tr>
<td></td>
<td>pp. 91-94: CD4 and Viral Load Monitoring</td>
<td>+ Prophylaxis for Tuberculosis: Tuberculosis</td>
<td>+ Acute HIV Test Chart &amp; Teaching Guide</td>
</tr>
<tr>
<td></td>
<td>+ pp. 56-57: Risk of HIV Progression/Indications for ART</td>
<td>+ Surveillance for Adults and Adolescents: Focus on HIV</td>
<td>+ Acute HIV Test Chart &amp; Teaching Guide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>+ 2009 HIV Sourcebook for the Primary Care Provider</td>
<td>+ Acute HIV Test Chart &amp; Teaching Guide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>+ Indications for Initiating Antiretroviral Therapy</td>
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<td>+ Indications for Initiating Antiretroviral Therapy</td>
<td>+ Acute HIV Test Chart &amp; Teaching Guide</td>
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<tr>
<td></td>
<td></td>
<td>+ What to Start</td>
<td>+ Acute HIV Test Chart &amp; Teaching Guide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>+ When and What to Start: A Debate on How to Maximize the Long-Term Health of HIV</td>
<td>+ Acute HIV Test Chart &amp; Teaching Guide</td>
</tr>
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<td></td>
<td>+ HIV-155 Patients</td>
<td>+ Acute HIV Test Chart &amp; Teaching Guide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>+ Bringing Life to NRTI: Spurring HIV/AIDS</td>
<td>+ Acute HIV Test Chart &amp; Teaching Guide</td>
</tr>
</tbody>
</table>
Clinical Stages of HIV Care
Developed by HealthHIV

**Foundation**
- Provide HIV Testing (routine or targeted) but no medical management for patients with positive test results

**Stage 1**
- Onsite management of stable HIV-positive patients who are ARV naive or on 1st line ARV therapy, and management of common complaints.

**Stage 2**
- Onsite management of HIV-positive patients on 2nd line therapy and/or those with opportunistic infections or advanced HIV disease.

**Stage 3**
- Onsite management of HIV-positive patients on 2nd line therapy and/or those with opportunistic infections or advanced HIV disease.
HIV Care Integration Models

**External HIV Care**
- HIV testing, (routine or targeted), but no medical management for HIV patients.

**Collaborative HIV Care**
- HIV Care within primary care with extensive collaboration and consultation from clinical mentor.

**Supported HIV Care**
- HIV care within primary care supported by consultation with clinical mentor as needed.

**Comprehensive HIV Care Management**
- HIV and primary care fully integrated for management of complex co-morbid conditions, PMTCT, and complex OIs. Access consultation from clinical experts as needed.
Correlating Models and Stages: Creating the Community Care Continuum

**EXTERNAL HIV CARE Foundation**
- Provide HIV testing (routine or targeted) but no medical management for patients with positive test results

**COLLABORATIVE HIV CARE Stage 1**
- Onsite HIV care integrated with primary care through extensive consultation from clinical mentor for initiation of ARV regimen and for management of more complex patients

**SUPPORTED HIV CARE Stage 2**
- Onsite HIV care integrated with primary care, supported by consultation with clinical mentor as needed for management of treatment failure and/or co-morbid conditions complicated by HIV disease and/or treatment

**COMPREHENSIVE HIV CARE MANAGEMENT Stage 3**
- Onsite integrated HIV care with primary care, including management of complex co-morbid conditions, PMTCT, and complex OI's with access to consultation from clinical mentors as needed
AETC NCHCMC
Community Care Continuum

• Reflects where CHCs and Clinicians are in HIV Care delivery spectrum
• Establishes a framework for graduated, progressive implementation
• Advances training and HIV care delivery through an interdisciplinary approach to care
• Creates benchmarks supporting evaluations and measurement
• Enhances and builds upon the CHCs existing strategies for providing HIV care
QUESTIONS?
3.5 Million People are homeless in the U.S.
3.4 percent are HIV-positive
Exposures to infections
Unstable housing can affect ARV adherence and accessibility to care
Limited or fluctuating food sources can cause difficulty with adherence.
Other chronic illnesses, active substance use, and mental health concerns can all complicate treatment
HIV: THE BIG 10

10 primary care concerns in a patient living with HIV.
Honorable Mentions

- Prevention With Positives

- Adherence
#10: Opportunistic Infection Prophylaxis

>500/mm³
- Acute retroviral syndrome
- Candidal vaginitis
- Persistent generalized lymphadenopathy (PGL)
- Guillain-Barré syndrome
- Myopathy
- Aseptic meningitis

200-500/mm³
- Pneumococcal and other bacterial pneumonia
- Pulmonary tuberculosis
- Herpes zoster
- Oropharyngeal candidiasis (thrush)
- Cryptosporidiosis, self-limited
- Kaposi’s sarcoma
- Oral hairy leukoplakia
- Cervical and anal dysplasia
- Cervical and anal cancer
- B-cell lymphoma
- Anemia
- Mononeuronal multiplex
- Idiopathic thrombocytopenic purpura
- Hodgkin’s lymphoma
- Lymphocytic interstitial pneumonitis

<200/mm³
- Pneumocystis pneumonia
- Disseminated histoplasmosis and coccidioidomycosis
- Miliary/extrapulmonary TB
- Progressive multifocal leukoencephalopathy (PML)
- Wasting
- Peripheral neuropathy
- HIV-associated dementia
- Cardiomyopathy
- Vacuolar myelopathy
- Progressive polyradiculopathy
- Non-Hodgkin’s lymphoma

<100/mm³
- Disseminated herpes simplex
- Toxoplasmosis
- Cryptococcosis
- Cryptosporidiosis, chronic
- Microsporidiosis
- Candidal esophagitis

<50/mm³
- Disseminated cytomegalovirus (CMV)
- Disseminated Mycobacterium avium complex
- Primary central nervous system lymphoma (PCNSL)
- * Most complications occur with increasing frequency at lower CD4 cell counts.

Correlation of Complications With CD4 Cell Counts (see Arch Intern Med 1995;155:1537)
#10: Opportunistic Infection Prophylaxis

## Table 6
**INITIATION OF PRIMARY OI PROPHYLAXIS**

<table>
<thead>
<tr>
<th>Pathogen</th>
<th>Initiate Prophylaxis</th>
<th>Preferred Agent</th>
<th>Alternative Agents</th>
</tr>
</thead>
</table>
| *Pneumocystis jirovecii* pneumonia<sup>b</sup> | CD4 < 200 cells/mm³ or <14% or a history of oropharyngeal candidiasis | TMP/SMX qd or 3x/week | • Dapsone<sup>c</sup>  
  • Dapsone<sup>c</sup> + pyrimethamine + leucovorin  
  • Atovaquone  
  • Aerosolized pentamidine |
| *Mycobacterium avium* complex (MAC) | CD4 < 50 cells/mm³ | Azithromycin Clarithromycin | • Rifabutin  
  • Azithromycin + rifabutin |
| *Toxoplasma encephalitis* (TE) | CD4 < 100 cells/mm³ and Positive serology for *Toxoplasma* (IgG+) | TMP/SMX qd | • Dapsone<sup>c</sup> + pyrimethamine + leucovorin  
  • Atovaquone with or without pyrimethamine + leucovorin |
| Cytomegalovirus (CMV) | Not routinely recommended | NA | NA |
| *Cryptococcus neoformans* | Not routinely recommended | NA | NA |
| Candida | Not routinely recommended | NA | NA |

<sup>a</sup> For information regarding prophylaxis treatment for patients with a TST test result of > 5 mm induration or patients with close exposure to a known case of tuberculosis, please refer to *Infectious Complications Associated With HIV Infection: Mycobacterial Infections*.

<sup>b</sup> Formerly *Pneumocystis carinii*.

<sup>c</sup> Screen for G6PD deficiency before initiating dapsone.

New York State Department of Health AIDS Institute: www.hivguidelines.org, March 2007
#10: Opportunistic Infection

**Prophylaxis**

<table>
<thead>
<tr>
<th>Pathogen</th>
<th>Discontinuation of Primary Prophylaxis</th>
<th>Discontinuation of Secondary Prophylaxis</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Pneumocystis jiroveci</em> pneumonia (PCP)</td>
<td>Patient receiving HAART with increase in CD4 to &gt;200 cells/mm³ for ≥3 months</td>
<td>• CD4 &gt;200 cells/mm³ for ≥3 months in response to HAART</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Adequate viral suppression</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• If PCP occurred with CD4 &gt;200 cells/mm³, prophylaxis should be maintained</td>
</tr>
<tr>
<td><em>Toxoplasma encephalitis</em> (TE)</td>
<td>Patient receiving HAART with increase in CD4 to &gt;200 cells/mm³ for ≥3 months</td>
<td>• CD4 &gt;200 cells/mm³ for ≥6 months in response to HAART</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Completed initial therapy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Asymptomatic for TE</td>
</tr>
<tr>
<td><em>Mycobacterium avium complex</em> (MAC)</td>
<td>CD4 increase to &gt;100 cells/mm³ for ≥3 months in response to HAART</td>
<td>• CD4 increase to &gt;100 cells/mm³ for ≥6 months in response to HAART</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Completed at least 12 months of treatment for disseminated MAC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Asymptomatic for MAC</td>
</tr>
<tr>
<td>Cryptococcosis</td>
<td>NA</td>
<td>• CD4 increase to &gt;100 to 200 cells/mm³ for ≥6 months</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Completed initial therapy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Asymptomatic for cryptococcosis</td>
</tr>
<tr>
<td>Cytomegalovirus (CMV)</td>
<td>NA</td>
<td>• CD4 &gt;100 to 150 cells/mm³ for ≥6 months</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• No evidence of active disease</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Regular ophthalmologic examination</td>
</tr>
</tbody>
</table>

* HIV-infected adults or adolescents with a history of toxoplasmosis in childhood should be administered lifelong prophylaxis to prevent recurrence.

* Obtaining blood cultures or bone marrow cultures may be advisable to ascertain disease activity.
#9: Viral Hepatitis
Screening for Viral Hepatitis in HIV-Infected Patients

– Hepatitis A Antibody: HAV IgG (typically done at initial screening)

– Hepatitis B:
  • Surface Antigen (HBsAg): Active Infection
  • Core Antibody(Anti-HBc, IgG): Past infection and/or active infection
  • Hepatitis B Surface Antibody(Anti-HBs): Indicated immunity from past infection or immunization

– Hepatitis C(HCV IgG): Can indicate chronic or past infection

“Initial History” HRSA/HAB Guide to HIV/AIDS Clinical Care, 2011
#9: Viral Hepatitis

Interpretation of Hepatitis B Serologic Test Results

<table>
<thead>
<tr>
<th>HBsAg</th>
<th>anti-HBc</th>
<th>anti-HBs</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>negative</td>
<td>negative</td>
<td>negative</td>
<td>Susceptible</td>
</tr>
<tr>
<td>HBsAg</td>
<td>anti-HBc</td>
<td>anti-HBs</td>
<td>Immune due to natural infection</td>
</tr>
<tr>
<td>negative</td>
<td>positive</td>
<td>positive</td>
<td></td>
</tr>
<tr>
<td>HBsAg</td>
<td>anti-HBc</td>
<td>anti-HBs</td>
<td>Immune due to hepatitis B vaccination</td>
</tr>
<tr>
<td>negative</td>
<td>negative</td>
<td>positive</td>
<td></td>
</tr>
<tr>
<td>HBsAg</td>
<td>anti-HBc</td>
<td>IgM anti-HBc</td>
<td>anti-HBs</td>
</tr>
<tr>
<td>positive</td>
<td>positive</td>
<td>positive</td>
<td>negative</td>
</tr>
<tr>
<td>HBsAg</td>
<td>anti-HBc</td>
<td>IgM anti-HBc</td>
<td>anti-HBs</td>
</tr>
<tr>
<td>positive</td>
<td>positive</td>
<td>negative</td>
<td>negative</td>
</tr>
<tr>
<td>HBsAg</td>
<td>anti-HBc</td>
<td>anti-HBs</td>
<td>Interpretation unclear; four possibilities:</td>
</tr>
<tr>
<td>negative</td>
<td>positive</td>
<td>negative</td>
<td>1. Resolved infection (most common)</td>
</tr>
<tr>
<td>negative</td>
<td>positive</td>
<td>negative</td>
<td>2. False-positive anti-HBc, thus susceptible</td>
</tr>
<tr>
<td>negative</td>
<td>positive</td>
<td>negative</td>
<td>3. “Low level” chronic infection</td>
</tr>
<tr>
<td>negative</td>
<td>positive</td>
<td>negative</td>
<td>4. Resolving acute infection</td>
</tr>
</tbody>
</table>

“Interpretation of Hepatitis B Serologic Test Results”, Centers for Disease Control and Prevention
## New Developments in HCV Treatments

### Protease Inhibitors

- **Bocepravir**
  - Lead in phase of Peginterferon and ribavirin, then added to therapy.
  - Achieved higher rates than PEG/RBV alone
  - Drug interactions: Lovastatin, Simvastatin, *boosted PI ARV’s, NNRTI’s*

- **Telepravir**
  - 12 week combination therapy
  - Larger side effect profile including more significant anemia, rash and GI side effects
  - Drug interactions: Atorvastatin, Simvastatin, Lovastatin, Efavirenz, ATV/r (Can be compensated for by dose adjustments)
  - Dietary issues (needs to be taken with a fatty snack)

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"Interactions of HIV Meds with HCV drugs Telaprevir and Boceprevir" [www.hepatitisandhiv.com](http://www.hepatitisandhiv.com), 2011
#8 Sexual and Reproductive Health
#8 Sexual and Reproductive Health

- Male Reproductive Health Issues
  - First Visit
    - Serologic Syphilis Test
    - NAAT testing (Urine Based) for GC/CT
    - Serologic testing for Viral Hepatitis (infection/immunity)
  - Repeat and screen based on risk factors (3-6 months)
    - High-risk behaviors
  - MSM
    - Rectal GC/CT
    - Oropharyngeal GC/CT
Male Reproductive Health Issues

- Anal Dysplasia
  - Incidence of anal cancer is significantly higher in HIV-Infected MSM (as high as 70-144 per 100,000)
  - Some studies have shown anal HPV infection in MSM is as high as 93%.
  - Anal Dysplasia is as high as 56% in MSM (any grade)
  - Screening included baseline anal pap smear and repeat in 6 months if wnl. Then annually, based on risk (hx of anogenital warts, prior abnormal pap, anal intercourse, women with abnl cervical cytology)
  - ASCUS or higher should be referred HRA and biopsy to grade the lesion (usually colo-rectal surgeon)
• Female Reproductive Health
  – Cervical Dysplasia
    • Invasive Cervical Cancer is an AIDS-defining illness
    • Oncogenic forms of HPV are more prevalent in women with HIV and are 10 times more likely to develop into cervical dysplasia or SIL
    • Preserved CD4 counts may play a role in reducing risk of developing high grade cervical-lesions.
    • Testing should be done at diagnosis, again at 6 months and annually thereafter if normal
• Testing for HPV DNA????
  – In absence of HPV testing, most experts recommend referring patients for colposcopy
  – Patients who are considered “reliable” with ASCUS
    • Monitored with q 4-6 month PAP for 2 years until three consecutive negatives
    • Then at 6 and 12 months
  – For HPV testing in the setting of ASCUS
    • Data is conflicting (ASCUS + presence of Oncogenic HPV= Colpo)
    • Many experts in HPV and HIV co-infection do not favor this approach.
• Dermatologic Manifestations are among the most common complaint or presenting issue in HIV-infected patients.
  – Pre-ART HIV-infected patients often manifested serious OI’s with dermatologic presentations
  – In the era of ARV’s dermatologic problems are still a huge issue in the HIV-positive patient
• Inflammatory Diseases
  – Psoriasis
    • Can be exacerbated by HIV disease and low CD4 counts
    • Can have alternate types of presentation (not just the classic extensor surfaces)
    • Plaques may be more extensive
  – Photodermatitis
    • Can be an affect of HIV and/or HIV medicines
    • Those with darker skin are more naturally photosensitive
#7 Dermatologic Manifestations
• Prurigo Nodularis
  – Extremely itchy bumps. Many times not relieved by antihistamines
  – Cd4 count usually <50

• Atopic Dermatitis
  – Can flare with HIV infection and immunosuppression
  – Even with ARV’s and immune reconstitution atopic dermatitis can persist.
#7 Dermatologic Manifestations
• Xerosis
  – Severe Dry Skin
  – Can be worse in patients with HIV

• Eosinophilic Foliculitis
  – Numerous extremely itchy bumps on face, scalp, neck and back.
  – Different that prurigo in anatomical sites.
  – Can look similar to acne
  – Typically seen with lower cd4 counts
  – Can see eosinophilia with this although not always the case.
#7 Dermatologic Manifestations
#6 Red Flags of Chronic Infection
#6 Red Flags of Chronic Infection

- Anyone presenting with Zoster
- Thrombocytopenia
- Thrush, OHL
- Latent/recurrent viral infections
  - Herpes with more frequent and more symptomatic outbreaks
- Recurrent Bacterial Pneumonias
- Recurrent MRSA or dermatologic infections
- Persistent generalized lymphadenopathy
- Tuberculosis (pulmonary)
- Chronic Anemia without obvious r/o
- Any of the previously mentioned dermatologic manifestations
#5 Antiretroviral Drug Interactions
# 5 Antiretroviral Drug Interactions

<table>
<thead>
<tr>
<th>Concurrent Medications to be Avoided with Protease Inhibitors or Non-Nucleoside Reverse Transcriptase Inhibitors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Medication or Class</strong></td>
</tr>
<tr>
<td>Amiodarone</td>
</tr>
<tr>
<td>Anticonvulsants</td>
</tr>
<tr>
<td>Astemizole</td>
</tr>
<tr>
<td>Benzodiazepines – Midazolam and triazolam</td>
</tr>
<tr>
<td>Bepridil</td>
</tr>
<tr>
<td>Cisapride</td>
</tr>
<tr>
<td>Ergot Alkaloids – Dihydroergotamine, ergotamine, ergonovine, methylergonovine</td>
</tr>
<tr>
<td>Etravirine</td>
</tr>
<tr>
<td>Flecainide</td>
</tr>
<tr>
<td>Fluticasone</td>
</tr>
<tr>
<td>Garlic supplements</td>
</tr>
<tr>
<td>Irinotecan</td>
</tr>
<tr>
<td>Pimozide</td>
</tr>
<tr>
<td>Propafenone</td>
</tr>
<tr>
<td>Proton pump inhibitors</td>
</tr>
<tr>
<td>Quinidine</td>
</tr>
<tr>
<td>Rifampin</td>
</tr>
<tr>
<td>St. Johns Wort</td>
</tr>
<tr>
<td>Terfenadine</td>
</tr>
<tr>
<td>Simvastatin and lovastatin</td>
</tr>
</tbody>
</table>

#5 Antiretroviral Drug Interactions


- A few notable interactions
  - Statins and PI’s
    - Lovastatin, Simvastatin- AVOID
    - Pravastatin interaction with Prezista
    - Use with caution here (both drug levels can be affected)
  - Proton Pump Inhibitors and H-2 Blockers with Atazanavir and Rilpivirine
  - Antiepileptic meds and PI’s and NNRTI’s
  - Fluticasone and PI’s
  - Methadone and PI’s
  - TB Meds (mainly the Rifampin)
#4 When to Start ARV’s?
#4 When to Start ARV’s?

- ART should be initiated in all patients with a history of AIDS-defining illness or CD4 count <350.
- ART recommended for patients with CD4 counts between 350-500.
- Regardless of CD4 count in: HIVAN, HBV Coinfection when treatment is indicated.
- Combination therapy is recommended in pregnancy to prevent perinatal transmission.
- >500 CD4 cells???
#4 When to Start ARV’s?

• More rapid initiation indicators
  – Pregnancy
  – AIDS-Defining conditions
  – Acute OI’s
    • Some with significant risk of IRIS may require short deferral of ARV’s
    • This decision should be made in conjunction with a specialist
  – Lower CD4 < 200
  – Rapidly declining CD4 > 100 cells per year
  – HIVAN
#4 When to Start ARV’s?

- Long-term Nonprogressors
- Elite HIV Controllers
#3 Syphilis
Why do Syphilis and HIV “go together”?  
Can cause an increase in HIV Viral Load  
Can cause a decrease in CD4 counts  
  – Both these issues improve with treatment  
CMay be a relationship between CD4 count, RPR titer and Neurosyphilis
#3 Syphilis

- Treatment Guidelines are the same for HIV-infected as for non-HIV infected.
- However.............
• Some evidence suggests that titers fall more slowly in patients co-infected with HIV
• One study showed increased treatment failure in late-latent Syphilis
• Most clinicians (this is anecdotal) feel “comfortable” with serofast titers <1:8
• HIV Treatment improves Syphilis treatment outcomes defined by serologic response
• Important to remember that within the Early Syphilis stage relapse can happen
  – Including rash and lesions
• HIV-positive patients much more likely to present with simultaneous symptoms of primary and secondary syphilis
#3 Syphilis

• Neurosyphilis?? LP???
  – Neurological symptoms (All Patients), including ocular symptoms
  – Late-latent syphilis or syphilis of unknown duration (HIV-infected)
  – Tertiary syphilis (All Patients)
  – Titer increases 4-fold after treatment (re-infection is RULED OUT!!!) (2006)

• 2010 offer less specific guidelines and rely more on clinical assessment and neurological symptoms

2006 STD Treatment Guidelines, CDC 2006
#3 Syphilis

## STD/HIV Table 2: Management of Syphilis Co-Infection: Summary*

<table>
<thead>
<tr>
<th>Form</th>
<th>Treatment</th>
<th>LP†</th>
<th>Follow-up VDRL/RPR</th>
<th>Expectation VDRL/RPR</th>
<th>Indications to Re-treat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary and Secondary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>syphilis</td>
<td>Initial:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Benzathine penicillin G 2.4 mil units IM x 1</td>
<td>• Neuro sx</td>
<td>3, 6, 9, 12 &amp; 24 mos</td>
<td>Four-fold decrease by 6-12 mos</td>
<td>Titer increases four-fold; Titer fails to decrease four-fold at 6-12 mos; Symptoms persist or recur</td>
</tr>
<tr>
<td></td>
<td>• Penicillin allergy: doxycycline 100 mg po bid x 14 d or</td>
<td>• Titer increases 4-fold</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Ceftriaxone 1 gm qd IV or IM x 8-10 d or azithromycin 2 gm po x 1</td>
<td>• Symptoms persist or recur</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Re-treatment: Benzathine penicillin G 2.4 mil units IM x 3 (weekly)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early latent (&lt;1 yr)</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Initial:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Benzathine penicillin G 2.4 mil units IM x 1</td>
<td>• Neuro symptoms</td>
<td>3, 6, 12, 18, &amp; 24 mos</td>
<td>Four-fold decrease at 12 to 24 mos</td>
<td>Titer increases four-fold; Titer of &gt;1:32 fails to decrease four-fold at 12-24 mos; Develops signs or sx of syphilis</td>
</tr>
<tr>
<td></td>
<td>• Penicillin allergy: doxycycline 100 mg po bid x 14 d or</td>
<td>• Symptoms persist or recur</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Ceftriaxone 1 gm qd IV or IM x 8-10 d or azithromycin 2 gm po x 1</td>
<td></td>
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<td></td>
<td>• Re-treatment: Benzathine penicillin G 2.4 mil units IM x 3 (weekly)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Late latent (&gt;1 yr or unknown duration)</td>
<td>• Benzathine penicillin, 2.4 mil units IM weekly for 3 wk</td>
<td>All HIV-infected patients</td>
<td>3, 6, 12, 18, &amp; 24 mos</td>
<td>Four-fold decrease in titer at 6-12 mos (lower initial titers may remain unchanged)</td>
<td>Titer fails to decrease four-fold at 12-24 mos; Increase titer by four-fold at any time after 3 mos</td>
</tr>
<tr>
<td></td>
<td>• Penicillin allergy: doxycycline 100 mg po bid x 28 dî†</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Late syphilis (tertiary, not neurosyphilis)</td>
<td>• Benzathine penicillin, 2.4 mil units IM weekly for 3 wk</td>
<td>All patients</td>
<td>6 &amp; 12 mos</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Penicillin allergy: doxycycline 100 mg po bid x 28 dî†</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neurosyphilis (or ocular syphilis)</td>
<td>• Aq penicillin G, 18-24 mil units/d x 10-14 d administered as 3-4 million units IV q4h or Procorne penicillin 2.4 million units IM qd + probenecid 500 mg po qid x 10-14 d</td>
<td>Required</td>
<td>Every 6 mos until CSF normal</td>
<td>CSF WBC decrease at 6 mos and CSF normal at 2 yr</td>
<td>CSF WBC fails to decrease at 6 mos or if CSF VDRL is still positive; Persisting signs and symptoms</td>
</tr>
<tr>
<td></td>
<td>• Some recommend benzathine penicillin, 2.4 million units IM weekly x 3 wks after completion of IV course</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Penicillin allergy: ceftriaxone 2 gm qd IV or IM x 10-14 d or desensitize and treat with penicillin (preferred).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* CDC STD treatment guidelines updated by authors to reflect latest research data.
† Some experts recommend CSF examinations of all syphilis-HIV co-infected patients before treatment, regardless of stage, and modification of treatment accordingly. Consultation with an expert may be appropriate.

Alternative to penicillin have not been sufficiently evaluated in HIV infected persons and cannot be considered first-line therapy. If required, there needs to be close clinical monitoring. If adherence cannot be assured, desensitization and tx with penicillin is recommended.
# Health Maintenance Screening

## Table 6. Routine Health Care Maintenance in the Human Immunodeficiency Virus (HIV)–Infected Adult

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Recommendation</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood pressure check</td>
<td>Perform annually in all patients</td>
<td></td>
</tr>
<tr>
<td>Digital prostate examination</td>
<td>Consider annually in all men</td>
<td>Controversial; testing at an earlier age may be advisable in men at higher risk of prostate cancer (eg, black patients and those with family history)</td>
</tr>
<tr>
<td>Ophthalmologic examination</td>
<td>Perform dilated examination every 6–12 months in patients with a CD4 cell count &lt;50 cells/mL</td>
<td>Examination with tonometry is advised every 2–3 years in all patients aged ≥50 years</td>
</tr>
<tr>
<td>Depression screening</td>
<td>Perform annually in all patients</td>
<td>Use conventional mental health interview or standardized test</td>
</tr>
<tr>
<td>Fasting glucose</td>
<td>Perform every 6–12 months in all patients</td>
<td>Consider testing 1–3 months after starting or modifying antiretroviral therapy; hemoglobin A1c level should be obtained every 6 months in patients with diabetes mellitus</td>
</tr>
<tr>
<td>Fasting lipid profile</td>
<td>Perform every 6–12 months in all patients</td>
<td>Consider testing 1–3 months after starting or modifying antiretroviral therapy</td>
</tr>
<tr>
<td>Syphilis serology (RPR, VDRL)</td>
<td>Perform annually in patients at risk for STDs</td>
<td>More frequent testing may be indicated in patients at high risk for STDs</td>
</tr>
<tr>
<td>Gonorrhea and chlamydia testing</td>
<td>Perform annually in patients at risk for STDs</td>
<td>More frequent testing may be indicated in patients at high risk for STDs</td>
</tr>
<tr>
<td>Prostate-specific antigen</td>
<td>Discuss pros and cons with patient and consider annually in men aged ≥50 years</td>
<td>Controversial; testing at an earlier age may be advisable in men at higher risk of prostate cancer (eg, black patients and those with family history)</td>
</tr>
<tr>
<td>Tuberculin screening test</td>
<td>Perform annually in patients at risk for tuberculosis</td>
<td>No need to repeat in patients with prior positive purified protein derivative test; additional tuberculosis testing may be indicated depending on potential exposure</td>
</tr>
<tr>
<td>Colonoscopy</td>
<td>Perform at age 50 years and every 10 years thereafter in all patients</td>
<td>More frequent testing is indicated in patients with a history of adenomatous polyps; testing at an earlier age may be advised in patients with a strong family history of colon cancer</td>
</tr>
<tr>
<td>Mammography</td>
<td>Perform annually in all women age 50 years or older</td>
<td>Some authorities advise initiation of screening starting at age of 40 years based on an individual risk/benefit assessment</td>
</tr>
<tr>
<td>Cervical Pap smear</td>
<td>Perform annually in all women after 2 normal Pap tests documented during the first year after HIV diagnosis</td>
<td>More frequent testing is indicated in women with a history of atypical squamous cells of unknown significance or cervical dysplasia</td>
</tr>
<tr>
<td>Bone densitometry</td>
<td>Perform baseline examination in postmenopausal women aged ≥65 years and in younger postmenopausal women with 1 or more other risk factor(s) for premature bone loss; consider in persons aged ≥50 years, especially if they have ≥1 risk factor(s) for premature bone loss</td>
<td>Detection of premature bone loss requires periodic monitoring thereafter; risk factors for premature bone loss include white race, small body habitus, sedentary lifestyle, cigarette smoking, alcoholism, phenytoin therapy, corticosteroid therapy, hyperparathyroidism, vitamin D deficiency, thyroid disease, and hypogonadism</td>
</tr>
<tr>
<td>Abdominal ultrasonography</td>
<td>Perform once in men aged 65–75 years who have ever smoked</td>
<td>Screening test for abdominal aortic aneurysm</td>
</tr>
<tr>
<td>Patient education</td>
<td>Address regularly in all patients</td>
<td>Issues may include sexual behavior and drug counseling, dietary teaching, weight reduction, smoking cessation, and seat belt use</td>
</tr>
</tbody>
</table>

**NOTE.** For information on digital prostate examination, prostate-specific antigen, colonoscopy, and mammography, see United States Preventive Services Task Force (http://www.ahrq.gov/clinic/USpstfix.htm). RPR, rapid plasma reagin; STD, sexually transmitted disease; VDRL, Venereal Disease Research Laboratory.

**Primary Care Guidelines for the Management of Persons Infected with Human Immunodeficiency Virus: 2009 Update by the HIV Association of the Infectious Disease Society of America**
# Recommended Immunizations for HIV Positive Adults

<table>
<thead>
<tr>
<th>Immunization Name</th>
<th>Associated Disease</th>
<th>Dosage</th>
<th>Comments and Warnings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recommended for All HIV Positive Adults</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis B virus (HBV)</td>
<td>Hepatitis B</td>
<td>3 shots over a 6-month period</td>
<td>Recommended unless there is evidence of immunity or active hepatitis. Blood test to check for HBV antibody levels should be done after completion of immunization series. Additional shots may be necessary if antibody levels are too low.</td>
</tr>
<tr>
<td>Influenza</td>
<td>Flu</td>
<td>1 shot</td>
<td>Must be given every year. Only injectable flu vaccine should be given to those who are HIV positive. The nasal spray vaccine (Flumist/LAIV) should not be used in this population.</td>
</tr>
<tr>
<td>Polysaccharide pneumococcal</td>
<td>Pneumonia</td>
<td>1 or 2 shots</td>
<td>Should be given soon after HIV diagnosis, unless vaccinated within the previous 5 years. If CD4 count is &lt; 200 cells/mm³ when the vaccine is given, immunization should be repeated when CD4 count is ≥ 200 cells/mm³. Repeat one time after 5 years.</td>
</tr>
<tr>
<td>Tetanus and Diphtheria Toxoid (Td)</td>
<td>1. Lockjaw 2. Diphtheria</td>
<td>1 shot</td>
<td>Repeat every 10 years.</td>
</tr>
<tr>
<td>Tetanus, Diphtheria, and Pertussis (Tdap)</td>
<td>1. Lockjaw 2. Diphtheria 3. Pertussis</td>
<td>1 shot</td>
<td>Recommended for adults 64 years of age or younger and should be given in place of next Td booster. Can be given as soon as 2 years after last Td for persons in close contact with babies under 12 months and health care workers.</td>
</tr>
</tbody>
</table>
# Health Maintenance Screening

## #2 Recommended Immunizations for HIV Positive Adults

<table>
<thead>
<tr>
<th>Immunization Name</th>
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<th>Dosage</th>
<th>Comments and Warnings</th>
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<tr>
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</tr>
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<td>Influenza Flu</td>
<td></td>
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</tr>
<tr>
<td>Tetanus and Diphtheria Toxoid (Td)</td>
<td></td>
<td></td>
<td>1. Lockjaw 2. Diphtheria</td>
</tr>
<tr>
<td>Tetanus, Diphtheria, and Pertussis (Tdap)</td>
<td></td>
<td></td>
<td>1. Lockjaw 2. Diphtheria 3. Pertussis</td>
</tr>
<tr>
<td><strong>Recommended for Some HIV Positive Adults</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis A virus (HAV)</td>
<td>Hepatitis A</td>
<td>2 shots over a 1 or 1.5 year period</td>
<td>Recommended for health care workers, men who have sex with men, injection drug users, people with chronic liver disease (including chronic hepatitis B or C), hemophiliacs, and people traveling to certain parts of the world.</td>
</tr>
<tr>
<td>Hepatitis A/Hepatitis B combined vaccine (Twinrix)</td>
<td>1. Hepatitis A 2. Hepatitis B</td>
<td>3 shots over a 6 month period or 4 shots over a 1-year period</td>
<td>Can be used in those who require both HAV and HBV immunization.</td>
</tr>
<tr>
<td><em>Haemophilus influenzae</em> type B</td>
<td>Bacterial meningitis</td>
<td>1 shot</td>
<td>HIV positive adults and their health care providers should discuss whether <em>Haemophilus influenzae</em> immunization is needed.</td>
</tr>
<tr>
<td>Human papillomavirus (HPV)</td>
<td>Human papillomavirus</td>
<td>3 shots over 6 months</td>
<td>Recommended for females ages 9-26. Not recommended to be given during pregnancy.</td>
</tr>
<tr>
<td>Measles, Mumps, and Rubella (MMR)</td>
<td>1. Measles 2. Mumps 3. Rubella (German Measles)</td>
<td>1 or 2 shots</td>
<td>People born before 1957 do not need to receive this vaccine. HIV positive adults with CD4 counts &lt; 200 cells/mm³, a history of AIDS-defining illness, or clinical symptoms of HIV should not get the MMR vaccine. Each component can be given separately if needed to achieve adequate antibody levels.</td>
</tr>
<tr>
<td>Meningococcal</td>
<td>Bacterial meningitis</td>
<td>1 or 2 shots</td>
<td>Recommended for college students, military recruits, people who do not have a spleen, and people traveling to certain parts of the world. Repeat after 5 years if still at risk for infection.</td>
</tr>
<tr>
<td>Varicella</td>
<td>Chickenpox</td>
<td>2 shots over 4-8 weeks</td>
<td>People born before 1980 do not need to receive this vaccine. Recommended unless there is evidence of immunity or CD4 count is 200 cells/mm³ or below. Not recommended to be given during pregnancy.</td>
</tr>
</tbody>
</table>
#1 Acute Retroviral Syndrome

Main symptoms of Acute HIV infection:

- **Systemic:**
  - Fever
  - Weight loss

- **Central:**
  - Malaise
  - Headache
  - Neuropathy

- **Pharyngitis**
  - Mouth:
    - Sores
    - Thrush

- **Lymph nodes:**
  - Lymphadenopathy

- **Esophagus:**
  - Sores

- **Muscles:**
  - Myalgia

- **Liver and spleen:**
  - Enlargement

- **Gastric:**
  - Nausea
  - Vomiting

- **Skin:**
  - Rash
#1 Acute Retroviral Syndrome

- Culturable plasma viremia
- CD4+ count
- HIV RNA

![Graph depict the progression of HIV infection with CD4+ count, HIV RNA, and clinical latency over time.](image-url)
#1 Acute Retroviral Syndrome

• By sheer numbers of viral particles, this phase is highly infectious.
  – Many people don’t know they are infected and remain sexually active.
  – Estimated 40% of transmissions during this phase

• Symptoms MAY include fever, swollen lymph glands, sore throat, rash, muscle aches, but may be without symptoms (30%)

• Lasts 1-6 weeks

Bartlett, J. Gallant, J. & Pham, P. 2009-2010 Medical Management of HIV Infection. Johns Hopkins University School of Medicine, 2010
#1 Acute Retroviral Syndrome

- Clinical presentation may mimic other febrile illnesses
- Symptoms non-specific
  - May mimic mono, flu or acute viral illness
- HIV antibodies not present at this time, early dx relies on hx of exposure, or detectable viral load
Acute HIV Infection: Common Signs & Symptoms

- fever: 96%
- lethargy: 74%
- myalgias: 54%
- rash: 70%
- headache: 32%
- pharyngitis: 70%
- adenopathy: 74%

DHHS Guidelines [Ann Intern Med 2002;137:381]
#1 Acute Retroviral Syndrome

**Acute HIV Infection: Other Signs & Symptoms**

- **Aseptic meningitis**: 12%
- **Oral ulcers**: 15%
- **Genital ulcers**: 10%
- **Thrombocytopenia**: 45%
- **Leukopenia**: 40%
- **Transaminitis**: 21%

Based on a high degree of suspicion:

“Because the spectrum of signs and symptoms is so wide, any nonspecific viral syndrome or mononucleosis-like illness should prompt healthcare providers to inquire about possible HIV risk factors.”

Hurtado, R and Rosenberg ES, AIDS Clinical Care. 2001;13:1

- If you suspect acute or early HIV but have a negative EIA, contact a specialist or consult for the best way to approach further diagnostic testing.
#1 Acute Retroviral Syndrome

• Testing Strategies
  – An HIV serologic screening test should be used in conjunction with a plasma HIV RNA assay
  – Detection of HIV RNA or antigen in the absence of HIV antibody should be considered a preliminary positive result
  – Both serologic and RNA testing should be repeated to exclude a false-positive result when low-level quantitative results (<5,000 copies/mL) from an HIV RNA assay are reported in the absence of serologic evidence of HIV infection
#1 Acute Retroviral Syndrome

Diagnostic Testing: HIV RNA Viral Load

- **Gold standard for early detection**
- Positive one to three weeks before antibody test\(^1\)
- Typically high level result: > 50,000-100,000 Copies/mL\(^2,3\)
- False positives can occur
  - Most false positives are low level (<10,000 copies/mL)
  - HIV VL <10,000 copies/mL should probably be considered “indeterminate”
- **Cost: $100 - $150**

QUESTIONS?
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