HIV Screening:
A Guide for Primary Care Providers

Updated November 2013
Learning Objectives

• Analyze the rationale for HIV screening recommendations
• Assess clinical benefits of routine HIV screening
• Formulate application and approaches for simplifying routine HIV screening in practice
• Evaluate and select appropriate HIV tests
Stage 3 (AIDS) Classifications and Deaths of Persons with HIV Infection Ever Classified as Stage 3 (AIDS), among Adults and Adolescents, 1985-2011—United States and 6 Dependent Areas

Estimated Number of Persons Living with HIV Among Persons Aged ≥ 13 — United States 1981-2008

Rates of Adults and Adolescents Living with Diagnosed HIV Infection, Year-end 2010—United States and 6 Dependent Areas

N = 888,921  Total Rate = 342.2

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.

HIV Prevalence in Adults from Selected Countries

In Sub-Saharan Africa and Subpopulations in the United States

Do you routinely offer (opt-out) HIV testing in your clinical setting?

1. Yes
2. No
A 64-Year-Old Male…

• Long-term patient in for 6-month check-up...
• In need of prescription renewals including his sildenafil script

Would you offer an HIV test?

1. Yes
2. No
A 23-Year-Old, Single Male...

- Presents for an annual physical
- Upon physical exam, you find that he
  - does not smoke
  - drinks weekly (2-6 beers)
  - does not use illegal substances
  - has an exam otherwise unremarkable
  - is sexually active and occasionally uses condoms, but not always

Would you offer an HIV test?

1. Yes
2. No
A 33-Year-Old Female...

- Presents for her annual well-woman physical and birth control
- Is married, 2 living children
- Has no other significant history

Would you offer an HIV test?

1. Yes
2. No
HIV SCREENING RECOMMENDATIONS
Criteria that Justify Routine Screening

1. Serious health disorder that can be detected before symptoms develop
2. Treatment more beneficial when begun before symptoms develop
3. Reliable, inexpensive, acceptable screening test
4. Costs of screening reasonable in relation to anticipated benefits

Revised Recommendations for HIV Testing of Adults, Adolescents, and Pregnant Women in Health-Care Settings

CDC’s Recommendations

- HIV screening for all patients aged 13 to 64 years
  - Opt-out screening: patients should be told screening will be performed but may decline testing
- Written consent and prevention counseling not required
- Annual HIV screening for those at high risk for HIV
- Prompt clinical care for HIV-infected persons

Screening for HIV in Health Care Settings: A Guidance Statement
From the American College of Physicians and HIV Medicine
Association

Amir Qaseem, MD, PhD, MHA; Vincenza Snow, MD; Paul Shekelle, MD; Robert Hopkins Jr., MD; and Douglas K. Owens, MD, MS, for the
Clinical Efficacy Assessment Subcommittee of the American College of Physicians*

Description: The American College of Physicians (ACP) developed
this guidance statement to present the available evidence on
screening for HIV in health care settings.

Methods: This guidance statement is derived from an appraisal of
available guidelines on screening for HIV. Authors searched the
National Guideline Clearinghouse to identify guidelines on screening
for HIV in the United States and used the AGREE (Appraisal of
Guidelines Research and Evaluation) instrument to evaluate guidelines from the U.S. Preventive Services Task Force and the Centers
for Disease Control and Prevention.

Guidance Statement 1: ACP recommends that clinicians adopt
routine screening for HIV and encourage patients to be tested.

Guidance Statement 2: ACP recommends that clinicians determine
the need for repeat screening on an individual basis.

For author affiliations, see end of text.
This article was published at www.annals.org on 1 December 2008.

Screening Recommendations of the American College of Physicians

- Clinicians adopt routine screening for HIV and encourage patients to be tested.
- Clinicians determine the need for repeat screening on an individual basis.

Medical Associations Who Endorse HIV Screening

USPSTF. Screening for HIV: Clinical Summary of USPSTF Recommendation [http://www.uspreventiveservicestaskforce.org/uspstf/uspshivi.htm](http://www.uspreventiveservicestaskforce.org/uspstf/uspshivi.htm)
Desired Outcome of Routine HIV Screening

- HIV Screening
- HIV Diagnosis
- Link to Care

- Improve Survival and Quality of Life
- Prevent New HIV Infections
Why Routine Screening?

• Risk-based screening has not been successful.
• Risk assessment and prevention counseling are resource intensive.
• The HIV/AIDS epidemic affects all populations, and risk-based testing can fail to identify HIV in some patients.

Why Routine Screening?

• Patients do not always disclose or may not be aware of their risk.\(^1\)
  – 39% of men who had sex with a man within the past year did not disclose to their health care provider\(^2\)
  – 51% of rapid test positive patients identified in Emergency Department (ED) screening had no identified risk\(^3\)

IMPORTANCE OF SCREENING, EARLY DIAGNOSIS, AND TREATMENT
## Where Patients Underwent Testing for HIV Infection in 2006

<table>
<thead>
<tr>
<th>Setting</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private doctor/health maintenance organization</td>
<td>53.2</td>
</tr>
<tr>
<td>Hospital, emergency department, outpatient</td>
<td>17.6</td>
</tr>
<tr>
<td>Nonclinical site (AIDS clinic/counseling and testing site, military induction, etc)</td>
<td>17.4</td>
</tr>
<tr>
<td>Public health department or community clinic</td>
<td>7.1</td>
</tr>
<tr>
<td>Family planning or prenatal clinic</td>
<td>2.2</td>
</tr>
<tr>
<td>Other clinic</td>
<td>1.8</td>
</tr>
<tr>
<td>Correctional facility</td>
<td>0.4</td>
</tr>
<tr>
<td>Drug treatment clinic</td>
<td>0.4</td>
</tr>
<tr>
<td>Sexually transmitted disease clinic</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Importance of the Physician’s Recommendation

- Only 17% of adults say a physician or health-care worker has ever suggested an HIV test.
- Of those never tested, 27% stated that their physician had never recommended testing.
- 26% of people tested said they underwent testing because their physician recommended it.
- 25% of patients assumed they were tested as a routine part of their examination.

In 2006, what percentage of those persons who reported being tested for HIV in the preceding 12 months reported being tested in a private doctor/health maintenance organization (HMO) setting?

1. 7.1%
2. 17.4%
3. 34.6%
4. 53.2%
HIV Screening and Antiretroviral Therapy (ARV) Help Reduce Perinatally Acquired AIDS Cases

ACTG 076 Published & CDC ZDV Recommendations

CDC HIV Screening Recommendations

> 95% decrease

ACTG, AIDS Clinical Trials Group; USPHS: United States Public Health Services

Uncontrolled HIV Replication May Have Implications in Other Clinical Conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular disease</td>
<td>Increased risk of MI$^1$ and of early carotid atherosclerosis$^2$</td>
</tr>
<tr>
<td>Hepatic disease</td>
<td>Faster progression of fibrosis and increased risk of cirrhosis, end-stage liver disease, and hepatocellular cancer in patients with hepatitis B or C coinfection$^3$</td>
</tr>
<tr>
<td>Renal disease</td>
<td>Increased risk of HIV-associated nephropathy, especially among African Americans and older patients and those with diabetes, hypertension, or a low CD4 count$^3$</td>
</tr>
<tr>
<td>Non-AIDS cancer</td>
<td>Possible role in non-AIDS cancers. The direct inflammatory effects of HIV infection can also raise the risk of some non-AIDS cancers$^3$</td>
</tr>
</tbody>
</table>

Baseline CD4 Count Associated with Cardiovascular Disease Events: HIV Out Patient Study (HOPS)

Cox Proportional Hazard: Relationship of Baseline CD4 and Risk of Subsequent Cardiovascular Events

Baseline Factors Associated with Cardiovascular Disease Events: HOPS

Community Viral Load Mirrors Reduced Rate of New HIV Cases in San Francisco

ART, Serodiscordant Couples, and HIV Transmission: Study Results

- ART initiation substantially protected HIV-negative sexual partners from acquiring HIV infection
  - **Group 1**: Early treatment group—only 1 partner infected by the HIV-infected participant, with a 96% reduction in risk of HIV infection
  - **Group 2**: Late treatment group—27 partners infected by the HIV-positive participant

- The difference was statistically significant (P<0.0001)

Late Diagnosis of HIV in United States

• “Late diagnosis of HIV infection is common. Among persons with newly diagnosed HIV in 2008, 33% developed AIDS within 1 year of initial HIV diagnosis. These persons likely were infected an average of 10 years before diagnosis. During this period, they missed opportunities to obtain medical care and to prevent unwitting transmission of HIV to others.”

Survival Gains Due to Antiretroviral Treatment

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Per Person Survival Gain, months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemotherapy</td>
<td>Non-small cell lung cancer</td>
</tr>
<tr>
<td>Adjuvant chemotherapy</td>
<td>Node + breast cancer</td>
</tr>
<tr>
<td>Comprehensive post-MI care</td>
<td>Coronary artery disease</td>
</tr>
<tr>
<td>BMT</td>
<td>Relapsed non-Hodgkins lymphoma</td>
</tr>
<tr>
<td>OI prophylaxis</td>
<td>AIDS</td>
</tr>
</tbody>
</table>

MI, myocardial infarction; BMT, bone marrow transplant; OI, opportunistic infection; ART, antiretroviral therapy.


Reproduced with permission from University of Chicago Press.
New Recommendations for Initiating Therapy

Recommended
Based on Expert Opinion

Strongly Recommended
Based on Non-randomized Trials

Strongly Recommended
Based on Randomized Controlled Trials

Probability Curve of Survival According to Baseline CD4 Cell Count

Discussion

Which of the following statements is false?

1. One-third of people with HIV are diagnosed with AIDS within a year of their HIV diagnosis.
2. Most people who become aware of their HIV diagnosis will significantly reduce their HIV high-risk behavior.
3. Unrecognized and untreated HIV can contribute to cardiovascular, renal, and non-AIDS associated cancers.
4. The average CD4 count at time of HIV diagnosis in the United States is currently 635 cells/mm³.
What is responsible for the decline in perinatally acquired AIDS?

1. Widespread HIV screening of all pregnant women
2. Antiretroviral use during the antenatal, perinatal, and newborn periods
3. Overall reduction in cases of HIV
4. 1 & 2
Which of the following conditions may be affected by uncontrolled HIV replication?

1. Cardiovascular disease
2. Diabetes
3. Arthritis
4. Obesity
In 2007, approximately how many HIV-positive patients in the United States were “late testers” or diagnosed with AIDS within a year of receiving HIV diagnosis?

1. 2%
2. 5%
3. 21%
4. 33%
5. 57%
CASE STUDY
Case Study: MH

- 51 year old, African American female, recently engaged
- Identified as HIV+ at the American Red Cross when she went to donate blood
- She received a phone call from the Red Cross telling her she was HIV+ and should go to her doctor
- She and her fiancé presented for rapid testing

Donna Sweet MD, AAHIVS, MACP, Professor of Medicine, The University of Kansas School of Medicine – Wichita
### MH: Laboratory

- **CD4:** 716
- **HIV-1 RNA by PCR:** 1,480mL
- **Quantiferon -TB** Negative
- **HCVAb** <0.1
- **HBsAb** <0.1
- **HBsAg** Negative
- **Hep A Ab** Negative
- **RPR** Non-reactive

Donna Sweet MD, AAHIVS, MACP, Professor of Medicine, The University of Kansas School of Medicine – Wichita
Case Study: WG

- 52 year old, African American male
- Fiancé of MH who presented with her for HIV testing
- Found to be HIV+

Donna Sweet MD, AAHIVS, MACP, Professor of Medicine, The University of Kansas School of Medicine – Wichita
# Case Study: WG

- **CD4:** 147/uL
- **HIV-1 RNA by PCR:** 155,790 copies/mL
- **HCVAb** Positive
- **HBsAb** <0.1
- **HBsAg** Negative
- **Hep A Ab** Negative
- **RPR** Non-reactive

Donna Sweet MD, AAHIVS, MACP, Professor of Medicine, The University of Kansas School of Medicine – Wichita
Discussion

What are the benefits of universal screening for HIV?

1. Earlier diagnosis of HIV
2. Decreased transmission of HIV
3. Improved survival
4. Cost-effective strategy
5. All of the above
Establishing HIV Screening as Standard Care

- Offer routine HIV screening in conjunction with other standard preventive screenings
  - Cholesterol
  - Blood glucose
  - Prostate-specific antigen

- Regardless of a patient’s
  - Race/ethnicity
  - Sexual orientation
  - Sex
  - Relationship status
  - Socioeconomic status
### Implementing HIV Screening

#### Integrating HIV Screening into Practice

- Train staff to perform HIV opt-out screening
- Instruct nurses and physician assistants to review the wellness visit checklist
- Provide easily understood patient informational materials
- Include testing reminders in patient’s electronic medical record

#### Address Patients’ Misperceptions

- Your patients may not know the basic facts about HIV
- Many patients believe they were previously tested for HIV, particularly if blood was drawn
- Many patients assume an HIV test was performed and if they didn’t receive a call from the doctor, that they do not have HIV
Commonly Asked Questions From Patients

- Why should I have an HIV test?
- How do you test for HIV?
- How is HIV infection diagnosed?
- Who will pay for my HIV test?

If a Patient Has Concerns About Undergoing an HIV Test

- Provide informational materials

- Listen and respond to the patient’s questions and concerns

- Emphasize that the HIV screening test is routine for all patients; suspicion of risk or disease is not the reason it is being performed

- Explain to the patient that he or she may never have been screened for HIV infection, even if other physicians have performed other types of blood tests
Communicating the Negative HIV Test Result

- Does not require direct personal contact

- Discuss how high-risk negative patients can remain HIV-negative
  - Periodic retesting for persons at high risk
  - Prevention measures

Communicating Positive HIV Test Result

- Provide result by direct personal contact
- Provide result confidentially
- Ensure patient understands test result
- Connect to services

What is opt-out screening?

1. Patients may be screened without notification or consent.
2. Patients should be told screening will be performed, but they may decline testing.
3. Patients must request an HIV test.
Which of the following are parts of the CDC screening recommendations?

1. HIV screening for all patients aged 13 to 64 years
2. Written consent and prevention counseling
3. Annual HIV screening for those at high risk for HIV
4. Prompt clinical care for HIV-infected persons
5. 1, 3, & 4
6. All of the above
UPDATE ON HIV TESTING: NEW TESTS, NEW ALGORITHMS
Clinical Syndrome of Acute HIV

- 40-90% develop symptoms of Acute HIV
- 50-90% with symptoms seek medical care
- Of those diagnosed with Acute HIV, 50% of patients were seen at least 3 times before diagnosis

## Clinical Manifestations

### 101 seroconverters, HIVNET cohort 1995–98

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Percent</th>
<th>Median Duration Days (IQR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any symptom</td>
<td>85%</td>
<td></td>
</tr>
<tr>
<td>Fatigue</td>
<td>56%</td>
<td>9 (5-29)</td>
</tr>
<tr>
<td>Fever</td>
<td>55%</td>
<td>5 (4-10)</td>
</tr>
<tr>
<td>Pharyngitis</td>
<td>43%</td>
<td>7 (5-10)</td>
</tr>
<tr>
<td>Lymphadenopathy</td>
<td>36%</td>
<td>7 (4-14)</td>
</tr>
<tr>
<td>Rash</td>
<td>16%</td>
<td>8 (6-14)</td>
</tr>
</tbody>
</table>

Window Period and HIV Infection

Detecting Acute HIV Infection

We Cannot Close the Window

HIV Diagnostic Testing Algorithm

A1: 4th generation HIV-1/2 immunoassay

- **A1+:**
  - HIV-1 antibodies detected
  - Initiate care (and viral load)
  - **HIV-1 +**
  - **HIV-2 +**
  - **HIV-1&2 (-)**

- **A1(-):**
  - Negative for HIV-1 and HIV-2 antibodies and p24 Ag
  - **HIV-1&2 (-)**
  - **RNA**
    - RNA+
      - Acute HIV-1 infection
      - Initiate care
    - RNA (-)
      - Negative for HIV-1

Branson, B. Paper presented at 2010 HIV Diagnostics Conferences; March 24, 2010; Orlando, FL.
Risk of Sexual Transmission of HIV

HIV-1 Transmission, by Stage of Infection and Behavior Pattern

<table>
<thead>
<tr>
<th>Infection Stage</th>
<th>Transmission Hazard per Person-year</th>
<th>Mean Duration, Years (%)</th>
<th>No. (%) New Transmissions, by Sexual Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute</td>
<td>2.76</td>
<td>0.24 (2%)</td>
<td>Serial Monogamy: 0.10 (9%)  Random Mixing: 0.67 (31%)</td>
</tr>
<tr>
<td>Asymptomatic</td>
<td>0.106</td>
<td>8.38 (82%)</td>
<td>0.77 (71%)  0.91 (42%)</td>
</tr>
<tr>
<td>AIDS</td>
<td>0.760</td>
<td>0.75 (16%)</td>
<td>0.21 (20%)  0.57 (27%)</td>
</tr>
</tbody>
</table>

Summary

• New HIV immunoassays are more sensitive during early infection; results are available more quickly.

• Increasingly important to identify highly infectious stage of acute HIV infection.

• Algorithms for HIV diagnostic testing are being updated to keep pace with technology.
Discussion

What proportion of patients with Acute HIV Infection develops symptoms?

1. <20%
2. 20–30%
3. 31–40%
4. >40%
CASE STUDY
Case Study: John D.

• 45 years old
• Married
• Business owner
• Lives in a rural area
• History of good health

Joel Gallant, MD, MPH, Professor of Medicine, Division of Infectious Diseases, Johns Hopkins University School of Medicine.
Case Study: John D.

- Late 2002
  - Is hospitalized for febrile illness
  - Extensive work-up negative; no HIV test performed
  - Dx: Rocky Mountain spotted fever and Lyme disease (presumptive)

- February and July 2005
  - Has exertional dyspnea and chest tightness
  - Treatment: antibiotics

Joel Gallant, MD, MPH, Professor of Medicine, Division of Infectious Diseases, Johns Hopkins University School of Medicine.
Case Study: John D.

- **August 2005**
  - Oral thrush
  - No HIV test performed
  - Treatment: fluconazole

- **September 2005**
  - Dyspnea
    - Treatment: antibiotics for bronchitis
  - Pneumonia
    - Treatment: prednisone and antibiotics
    - Admitted to the ICU and transferred to a major medical facility
  - Hypoxia with bilateral diffuse ground-glass infiltrates on computed tomography
    - Diagnosis: *Pneumocystis* pneumonia
    - Treatment: trimethoprim-sulfamethoxazole and prednisone

Joel Gallant, MD, MPH, Professor of Medicine, Division of Infectious Diseases, Johns Hopkins University School of Medicine.
Case Study: John D.

- September 2005
  - HIV-positive
  - CD4 count: 14 cells/mm³
  - Viral load: 123,352 copies/mL
  - Diagnosed with secondary syphilis

Joel Gallant, MD, MPH, Professor of Medicine, Division of Infectious Diseases, Johns Hopkins University School of Medicine.
Case Study: John D.

- September 2005
  - John’s wife is HIV-positive
  - Had been seen in ER in 1/05 for “viral meningitis”
  - CD4 count: 423 cells/mm$^3$
  - Viral load: 42,000 copies/mL

Joel Gallant, MD, MPH, Professor of Medicine, Division of Infectious Diseases, Johns Hopkins University School of Medicine.
Case Study: John D.

• John’s additional history
  - Donated blood in 2001
  - Underwent HIV test in 2002 to qualify for a life insurance policy; policy granted
  - Denied extramarital sexual activity
    • Specifically denied sex with men
  - Denied injection drug use

Joel Gallant, MD, MPH, Professor of Medicine, Division of Infectious Diseases, Johns Hopkins University School of Medicine.
Case Study: Lessons Learned

• Risk-based testing not reliable

• Routine HIV screening could have led to earlier diagnosis

• Failure to diagnose HIV infection early can lead to morbidity, high health-care costs, and transmission of disease

• Late HIV diagnosis is common

Joel Gallant, MD, MPH, Professor of Medicine, Division of Infectious Diseases, Johns Hopkins University School of Medicine.
Connecting to Services

- Initiate or refer patients to appropriate treatment
- Help identify support services, if needed
- Refer patients to partner services:
  - free services to persons infected with HIV, including partner notification, testing, counseling, and referral
- Report an HIV-positive case per local or state laws
- Reference the National HIV/AIDS Clinicians’ Consultation Center for any questions you have (http://nccc.ucsf.edu)

National HIV/AIDS Clinicians’ Consultation Center (NCCC)

NCCC: http://nccc.ucsf.edu

- **Warmline:** 1-800-933-3413
  - National HIV Telephone Consultation Service
  - All aspects of HIV testing and clinical care

- **PEPline:** 1-888-448-4911
  - National Clinicians’ Post-Exposure Prophylaxis Hotline
  - Occupational HIV and hepatitis B & C exposures

- **Perinatal Hotline:** 1-888-448-8765
  - National Perinatal HIV Consultation and Referral Service
  - Advice on preventing mother-to-child transmission of HIV

HIV e-Inquiry Service

- Launched June 2012
- Provides e-mail response to HIV testing and linkage-to-care questions
  - Daily (weekday) review of inquiries
  - Same-day response to urgent/emergent inquiries
  - Two-business-day response for most inquiries

HIVtesting@nccc.ucsf.edu
State HIV Testing Laws

- NCCC Compendium of State HIV Testing Laws: [http://nccc.ucsf.edu](http://nccc.ucsf.edu)
  - Describes key state HIV testing laws and policies
  - Compendium designed to help clinicians understand HIV testing laws and to implement sound HIV testing policies.

A program developed to help physicians establish HIV screening as a routine part of medical care.
HIV Screening. Standard Care.™

• Free materials for providers
  – Annotated Guide to CDC Recommendations
  – Resource Guide
  – AMA/AAHIVM CPT Coding Guide
  – ACP Guidance Statements
  – National HIV/AIDS Clinicians Consultation Center Flyer

• Free patient materials
  (available in English and Spanish)
  – Brochure
  – Poster

Download at
http://www.cdc.gov/actagainstaids/campaigns/hssc/index.html
Find HIV Providers in Your Area

- **AAHIVM – Referral Link**
  - [http://www.aahivm.org](http://www.aahivm.org)

- **HIVMA Provider Directory**

- **HealthFinder.gov**
  - [http://www.healthfinder.gov](http://www.healthfinder.gov)
What factors should you consider when deciding whether to offer an HIV test?

1. Race/ethnicity
2. Sexual orientation
3. Relationship status
4. All of the above
5. None of the above
The number of persons living with HIV infection in the United States (prevalence) has steadily ______________________ since the mid-1990s.

1. Increased
2. Decreased
3. Neither - remained the same