Highlights in HIV Medicine for Internists

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Disclosure

• Speaker- Gilead Sciences
• Advisory Board-Boehringer-Ingleheim
TOPICS

• HIV Epidemiological Landscape in the United States
• HIV and Aging
• Antiretroviral Therapy for Internists
• Best Practices in HIV Prevention
HIV EPIDEMIOLOGICAL LANDSCAPE IN THE UNITED STATES
Rates of Diagnoses of HIV Infection among Adults and Adolescents, 2011—United States and 6 Dependent Areas

N = 50,007  Total Rate = 19.1

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.
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 incompleteness reporting.
Rates of Diagnoses of HIV Infection among Adults and Adolescents, by Sex and Race/Ethnicity, 2011—United 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 account for reporting delays, but not for incomplete reporting. Rates are per 100,000 population.

^ Hispanics/Latinos can be of any race.
Percentages of Stage 3 (AIDS) Classifications among Adults and Adolescents with HIV Infection, by Transmission Category and Year of Diagnosis, 1985–2011—United States and 6 Dependent Areas

- Male-to-male sexual contact
- Injection drug use (IDU)
- Heterosexual contact
- Male-to-male sexual contact and IDU
- Other

Year of diagnosis

Note. All displayed data have been statistically adjusted to account for reporting delays and missing transmission category, but not for incomplete reporting.

a Heterosexual contact with a person known to have, or to be at high risk for, HIV infection.
b Includes hemophilia, blood transfusion, perinatal exposure, and risk factor not reported or not identified.

Diagnoses, No.

Year of diagnosis

Aged <13 years
Aged ≥ 13 years

Note. All displayed data have been statistically adjusted to account for reporting delays, but not for incomplete reporting.
Stage 3 (AIDS) Classifications and Deaths of Persons with HIV Infection Ever Classified as Stage 3 (AIDS), among Adults and Adolescents, 1985–2010—United States and 6 Dependent Areas

Note. All displayed data have been statistically adjusted to account for reporting delays, but not for incomplete reporting. Deaths of persons with HIV infection, stage 3 (AIDS) may be due to any cause.
Rates of Stage 3 (AIDS) Classifications among Persons with HIV Infection, 2011—United States and 6 Dependent Areas

N = 32,561  Total Rate = 10.3

Rates per 100,000 population
- <5.0
- 5.0 – 9.9
- 10.0 – 14.9
- ≥15.0

American Samoa  0.0
Guam  2.2
Northern Mariana Islands  5.8
Puerto Rico  13.1
Republic of Palau  0.0
U.S. Virgin Islands  13.9

Note. All displayed data have been statistically adjusted to account for reporting delays, but not for incomplete reporting.

Note. All displayed data have been statistically adjusted to account for reporting delays, but not for incomplete reporting. Death may be due to any cause.
Age Distribution of HIV-Positive People in the United States

By 2015, the proportion of persons older than 50 yrs of age living with HIV/AIDS in the US will increase by 50% compared with 2010\textsuperscript{[1,2]}

Current HIV Epidemiology Landscape

- Increase prevalence of HIV diseases
- NOT decrease newly diagnosis and AIDS death
- Increase disease burden in aging population
HIV AND AGING
Mortality and HAART Use Over Time
HIV Outpatient Study, CDC, 1994-2003

- Deaths per 100 PY
- Patients on HAART
- Deaths per 100 PY

Year:

Deaths per 100 PY:
0 2 4 6 8 10 12 14

Patients on HAART:
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9
Survival rate in HIV patients, Denmark

Survival of persons with and without HIV infection from 25 yrs of age in Denmark, 1995-2005

- Population controls
- Late cART (2000-2005)
- Early cART (1997-1999)
- Pre-cART (1995-1996)

HIV and Aging

- Cohort study of HIV and comorbidities in the Netherlands (N = 452 HIV-negative and 489 HIV-positive persons)
- Significantly more HTN, angina, MI, PVD, liver dx, CRF, and CA in HIV+

Number of Comorbidities per Patient

<table>
<thead>
<tr>
<th>Age Group</th>
<th>HIV Negative</th>
<th>HIV Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>45-50</td>
<td>0.68</td>
<td>0.89</td>
</tr>
<tr>
<td>50-55</td>
<td>0.80</td>
<td>1.35</td>
</tr>
<tr>
<td>55-60</td>
<td>1.03</td>
<td>1.52</td>
</tr>
<tr>
<td>60-65</td>
<td>1.15</td>
<td>1.65</td>
</tr>
<tr>
<td>65+</td>
<td>1.47</td>
<td>2.04</td>
</tr>
</tbody>
</table>

Mean Number of Age-Associated Noncommunicable Comorbidities

<table>
<thead>
<tr>
<th>Age Group</th>
<th>HIV Negative</th>
<th>HIV Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>45-50</td>
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<td>1.65</td>
</tr>
<tr>
<td>65+</td>
<td>1.47</td>
<td>2.04</td>
</tr>
</tbody>
</table>

Number of Participants

<table>
<thead>
<tr>
<th>Age Group</th>
<th>HIV Negative</th>
<th>HIV Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>45-50</td>
<td>166</td>
<td>159</td>
</tr>
<tr>
<td>50-55</td>
<td>108</td>
<td>111</td>
</tr>
<tr>
<td>55-60</td>
<td>70</td>
<td>86</td>
</tr>
<tr>
<td>60-65</td>
<td>53</td>
<td>62</td>
</tr>
<tr>
<td>65+</td>
<td>34</td>
<td>52</td>
</tr>
</tbody>
</table>

Serious Non-AIDS Outcomes in SMART

<table>
<thead>
<tr>
<th>Endpoints</th>
<th>No. of Patients with Events</th>
<th>Rate</th>
<th>Hazard Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major CVD, hepatic or renal disease</td>
<td>104</td>
<td>1.8</td>
<td>1.7</td>
</tr>
<tr>
<td>CVD+</td>
<td>79</td>
<td>1.3</td>
<td>1.6</td>
</tr>
<tr>
<td>Hepatic (Cirrhosis)</td>
<td>17</td>
<td>0.3</td>
<td>1.4</td>
</tr>
<tr>
<td>Renal (ESRD)</td>
<td>11</td>
<td>0.2</td>
<td>1.4</td>
</tr>
<tr>
<td>NADM++</td>
<td>47</td>
<td>0.8</td>
<td>1.4</td>
</tr>
<tr>
<td>Other non-AIDS death</td>
<td>51</td>
<td>0.9</td>
<td>1.8</td>
</tr>
<tr>
<td>Any of the above</td>
<td>186</td>
<td>3.2</td>
<td>1.6</td>
</tr>
</tbody>
</table>

+ MI (clinical or silent), stroke, surgery for CAD
++ Except non-melanoma skin
DC=Drug Conservation
VS=Viral Suppression

Favors DC  Favors VS
SMART Study Group NEJM 2006
Plasma LPS in HIV Infected Patients (Hunt 2008)

A

B

Spearman's ρ = 0.56
P = .039

Plasma LPS level, pg/mL

CD38-HLA-DR*CD8+ T cells, %

Plasma LPS level, pg/mL

HIV- n = 31
HIV+ ART- VL<75 n = 14
HIV+ ART- VL>75 n = 33
The Gut and Inflammation

- ART fails to completely restore normal health in HIV infected patients
- Persistent immune activation may drive non-AIDS associated morbidities
- Microbial translocation and Th17 depletion causing persistent immune activation
- Role of Th17 and Treg imbalance in pathogenesis of arthrosclerosis

(Siliciano 2007, Cheng Clin Imm 2009, Xie Cytokine 2010)
Pathogenesis of Serious Non-AIDS Morbidity and Mortality During Treatment with ART

Residual Viral Replication
Persistent Viral Expression (in LN)
Loss of $T_{reg}$/Th17
Collagen Deposition
Microbial Translocation
High Pathogen Load (CMV, HCV)
Thymic Dysfunction

Suboptimal CD4 Gains
Residual Inflammation
Immunosenescence

Non-AIDS Events and Premature Mortality

Volberding P et al, Lancet 2010
HIV Disease Contributes to Non-AIDS Events

- Low CD4+ T-cell nadir
- Coinfections (hepatitis, CMV, EBV, and HPV)
- Persistent inflammation
- Increased comorbidities
- Lifestyle (smoking, etc)
- Cumulative cART exposure
- Aging

HIV and Age related comorbidities

- HIV and/or ART may increase the risk
- Many of Non-HIV Comorbidities are age-related
- Non-HIV Comorbidities – increasingly important in HIV care
  - Diabetes mellitus
  - Cardiovascular disease
  - Non-AIDS malignancies
  - Renal disease/hypertension
  - Osteoporosis
Factors Associated With Late Diagnosis in Older Patients

- Compared with younger patients, older patients:
  - Are more likely to present late for HIV diagnosis and care\(^1\)\(^-\)\(^3\)
  - Are more likely to have been diagnosed with HIV infection while presenting with other illnesses\(^1\)
  - Have poorer routine access to HIV testing

- Physicians less likely to discuss HIV/AIDS and related risk factors with older patients\(^4\)

- Patients with undocumented HIV infections significantly more likely to be older than 55 yrs of age \(^5\)

According to the 2010 Florida population estimates, persons age 50 and over represent 24% (N=4,433,270) of the total population (N=18,788,794). In 2010, persons age 50 plus accounted for 28% of all reported AIDS cases, and 19% of all HIV cases.
Starting ART in a Newly Diagnosed Older Patient

• Assess readiness for ART
  – Disease characteristics
  – Psychological readiness
    • Adjustment to diagnosis
    • Ability to disclose

• Evaluate comorbidity and other concurrent drugs to guide choice of ART regimen

• Guideline “alternative” agents or regimens should be considered
Aging and HIV: Relationship

• HIV infection is related to aging and inflammation
• More co-morbidities in aging HIV patients
• Aging increases complexity in HIV care
• Aging population is hidden population for HIV diagnosis
ANTIRETROVIRAL THERAPY FOR INTERNISTS
Risks and Benefits of Earlier Initiation of ART

- **Delayed ART**
  - Drug toxicity
  - Preservation of limited Rx options
  - Risk of resistance (and transmission of resistant virus)

- **Early ART**
  - ↑ potency, durability, simplicity, safety of current regimens
  - ↓ emergence of resistance
  - ↓ toxicity with earlier therapy
  - Risk of uncontrolled viremia
  - Near normal survival if CD4+ count > 500
  - ↓ transmission
## Swinging Pendulum for ART Initiation: DHHS

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 500</td>
<td>Offer if VL &gt; 20,000</td>
<td>Offer if VL &gt; 55,000</td>
<td>Consider if VL ≥ 100,000</td>
<td>Consider in certain groups</td>
<td>Consider</td>
<td>Treat</td>
</tr>
<tr>
<td>350-500</td>
<td>Offer if VL &gt; 20,000</td>
<td>Consider if VL &gt; 55,000</td>
<td>Consider if VL ≥ 100,000</td>
<td>Consider in certain groups</td>
<td>Treat</td>
<td>Treat</td>
</tr>
<tr>
<td>200-350</td>
<td>Offer if VL &gt; 20,000</td>
<td>Offer, but controversy exists</td>
<td>Offer after discussion with patient</td>
<td>Treat</td>
<td>Treat</td>
<td>Treat</td>
</tr>
<tr>
<td>&lt; 200 or symptomatic disease</td>
<td>Treat</td>
<td>Treat</td>
<td>Treat</td>
<td>Treat</td>
<td>Treat</td>
<td>Treat</td>
</tr>
</tbody>
</table>
## Current Guidelines for Initiating ART

<table>
<thead>
<tr>
<th>Guideline</th>
<th>Symptomatic/ AIDS</th>
<th>CD4+ Count &lt; 200</th>
<th>CD4+ Count 200-350</th>
<th>CD4+ Count 350-500</th>
<th>CD4+ Count &gt; 500</th>
</tr>
</thead>
<tbody>
<tr>
<td>DHHS (2/2013)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>IAS-USA (7/2012)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>British HIV Association (9/2012)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Defer*</td>
<td>Defer*</td>
</tr>
<tr>
<td>European AIDS Clinical Society (11/2012)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Consider</td>
<td>Defer</td>
</tr>
<tr>
<td>WHO (6/2013)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes**</td>
<td>Not addressed</td>
</tr>
</tbody>
</table>

*If a patient with CD4+ count > 350 cells/mm³ wishes to start ART to reduce the risk of transmission to partners, that wish should be respected and ART started.

**As a priority, initiate ART in all individuals with severe/advanced HIV disease (WHO clinical stage 3 or 4) or CD4 count ≤350 cells/mm³
Rating Scheme for Recommendations

• Strength of recommendation:
  – A: Strong
  – B: Moderate
  – C: Optional

• Quality of evidence:
  – I: \( \geq 1 \) randomized controlled trials
  – II: \( \geq 1 \) well-designed nonrandomized trials or observational cohort studies with long-term clinical outcomes
  – III: Expert opinion
Transmitted resistance in 6-16% of HIV-infected patients

- In absence of therapy, resistance mutations may decline over time and become undetectable by current assays, but may persist and cause treatment failure when ART is started
- Identification of resistance mutations may optimize treatment outcomes
- Resistance testing (genotype) recommended for patients with acute HIV infection and all chronic infection at entry to care
- Recommended for all pregnant women

Adapted from DHHS Guidelines; Revision January 10, 2011. Available at: http://aidsinfo.nih.gov.
2013 DHHS Guidelines on ART for HIV-Infected Adults and Adolescents

• ART to reduce risk progression:
  – CD4 <350cells/mL (AI),
  – 350-500 cells/mL (AII),
  – >500 cells/mL (BIII)
• ART to prevent transmission:
  – perinatal transmission (AI),
  – heterosexual transmission (AI);
  – other risk group (AIII)
• Patients should be willing and commit to treatment (AIII)

2013 DHHS Guidelines on ART for HIV-Infected Adults and Adolescents

Recommended regardless of CD4 count:

- Pregnancy (AI)
- History of AIDS-defining illness including HIV associated dementia (AI)
- HIV-associated nephropathy (HIVAN) (AII)
- Hepatitis B (HBV) coinfection (AII)
- Hepatitis C (HCV) coinfection (BII)
- Acute HIV infection (BII)

Age >50 years (BIII)
Tool for treatment success

Goal: HIV RNA below limit of detection, as long as possible

- Selection of ARV regimen
- Maximizing adherence
- Pretreatment resistance testing
Antiretroviral Agents
Antiretroviral Drugs 2013

- **NRTIs**
  - AZT/ZDV
  - ddI
  - d4T
  - 3TC
  - ABC
  - FTC
  - TDF

- **NNRTIs**
  - NVP
  - DLV
  - EFV
  - ETR
  - RVP

- **PIs**
  - SQV
  - RTV
  - IDV
  - NFV
  - LPV/r
  - ATV
  - FPV
  - TPV
  - DRV

- **EIs**
  - Enfuvirtide(T-20)
  - MVC

- **IIs**
  - RAL
  - EGV
  - DGV
Initial Treatment

- Combination of NNRTI, PI, or II+ 2 NRTIs preferred for most patients
- Fusion inhibitor, CCR5 antagonist not recommended in initial ART
- Few clinical end points to guide choices
- Advantages and disadvantages to each type of regimen
- Individualize regimen choice

Dual-NRTI Pairs

ADVANTAGES

• Established backbone of combination therapy
• Minimal drug interactions

DISADVANTAGES

• Lactic acidosis and hepatic steatosis reported with most NRTIs (rare)
What to pair with?

<table>
<thead>
<tr>
<th>PI</th>
<th>NNRTI</th>
<th>II</th>
</tr>
</thead>
<tbody>
<tr>
<td>QD or BID dosing</td>
<td>QD or QD doing, STR option</td>
<td>QD or BID dosing, STR option</td>
</tr>
<tr>
<td>Long term follow ups</td>
<td>Long term follow ups</td>
<td>5+ years follow up, 2 new agents</td>
</tr>
<tr>
<td>Mostly GI and lipids side effects</td>
<td>CNS, rash side effects</td>
<td>Minimal side effects</td>
</tr>
<tr>
<td>High resistance barriers</td>
<td>Low resistance barriers</td>
<td>Low resistance barriers</td>
</tr>
<tr>
<td>Low resistance in community</td>
<td>High Resistance in Community</td>
<td>Low resistance in community</td>
</tr>
</tbody>
</table>
Preferred Regimens

www.aidsinfo.nih.gov/guidelines

- NNRTI-Based Regimen
  - EFV/TDF/FTC (AI)
- PI-Based Regimens (in alphabetical order)
  - ATV/r + TDF/FTC (AI)
  - DRV/r (once daily) + TDF/FTC (AI)
- Integrase inhibitor-Based Regimen
  - RAL + TDF/FTC (AI)
- Preferred Regimen for Pregnant Women
  - LPV/r (twice daily) + ZDV/3TC (AI)

Alternative Regimens

www.aidsinfo.nih.gov/guidelines

• Alternative regimens for ART-naive patients
  – RPV-based regimens recommended *only* for patients with baseline HIV-1 RNA ≤ 100,000 copies/mL
  – Fixed-dose EVG/COBI/TDF/FTC recommended for patients with CrCl > 70 mL/min
  – 3-NRTI regimens no longer recommended

ART Modification in HIV-Infected Patients With CKD

- NRTIs generally require dose adjustment in pts with kidney disease
  - Exception: abacavir
- Among PIs, renal toxicities have mainly been reported with ATV, IDV, and LPV/RTV\textsuperscript{[1]}
- Renal toxicities are rare with NNRTIs, entry inhibitors, and integrase inhibitors
- Changes in eGFR seen with new pharmacologic booster, cobicistat\textsuperscript{[2-4]}
  - Inhibits renal creatinine secretion but does not affect actual GFR

Treatment Failure

- Poor adherence
- Baseline resistance/cross resistance
- Prior ART use
- Less potent regimen
- Drug interaction/poor absorption
- Tissue reservoir
- Others
Factors Associated With Poor Adherence

- Psychosocial factors (eg, depression, homelessness, dementia)
- HIV-related stigma
- Low literacy level
- Current substance abuse
- Age-specific factors (eg, visual or cognitive impairment)
- Treatment fatigue
- Difficulty taking meds (eg, problems swallowing pills, erratic schedule)
- Complicated drug regimens
- Adverse effects of drugs

DHHS. Available at: http://aidsinfo.nih.gov/contentfiles/AdultandAdolescentGL.pdf.
Antiretroviral Therapy Pearls

• Antiretroviral for all
• Baseline resistance testing
• Preferred regimen: efficacy, tolerability, easy dosing
• Poor adherence is #1 reason of treatment failure
BEST PRACTICES IN HIV PREVENTION
# Awareness of HIV Status among Persons with HIV, United States

<table>
<thead>
<tr>
<th>Category</th>
<th>Range</th>
<th>Percentage Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number HIV infected</td>
<td>1,039,000 – 1,185,000</td>
<td></td>
</tr>
<tr>
<td>Number unaware of their HIV infection</td>
<td>252,000 - 312,000 (24%-27%)</td>
<td></td>
</tr>
<tr>
<td>Estimated new infections annually</td>
<td>40,000</td>
<td></td>
</tr>
</tbody>
</table>

*Glynn M, Rhodes P. 2005 HIV Prevention Conference*
Awareness of Serostatus Among People with HIV and Estimates of Transmission

- ~25% Unaware of Infection
- ~75% Aware of Infection

People Living with HIV/AIDS: 1,039,000-1,185,000

Accounting for:

- ~54% of New Infections
- ~46% of New Infections

New Sexual Infections Each Year: ~32,000

Marks, et al AIDS 2006;20:1447-50
## PrEP Trials to Date

<table>
<thead>
<tr>
<th>Trial</th>
<th>Population/Setting</th>
<th>Intervention</th>
<th>Reduction in HIV Infection Rate, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPRISA(^1) (N = 899)</td>
<td>High-risk women in South Africa</td>
<td>Coitally applied vaginal TFV gel</td>
<td>39</td>
</tr>
<tr>
<td>iPrEX(^2) (N = 2499)</td>
<td>MSM, transgender women, 11 sites in US, South America, Africa, Thailand</td>
<td>Daily oral TDF/FTC</td>
<td>44</td>
</tr>
<tr>
<td>Partners PrEP(^3) (N = 4747)</td>
<td>Serodiscordant couples in Africa</td>
<td>Daily oral TDF</td>
<td>Women: 71; men: 63</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Daily oral TDF/FTC</td>
<td>Women: 66; men: 84</td>
</tr>
<tr>
<td>TDF2(^4) (N = 1219)</td>
<td>Heterosexual males and females in Botswana</td>
<td>Daily oral TDF/FTC</td>
<td>62(^*)</td>
</tr>
<tr>
<td>FEM-PrEP(^5) (N = 2120)</td>
<td>High-risk women in Africa</td>
<td>Daily oral TDF/FTC</td>
<td>Equal numbers of infections in active and control arms</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Study stopped for lack of efficacy</td>
</tr>
</tbody>
</table>

*Underpowered to detect differences between sexes.

Effect of ART on Risk of Transmission in HIV Discordant Couples: HPTN 052

• 1,763 discordant couples; HIV+ partner with CD4+ 350-550 cells/mm³ and not on ART

• Randomization to immediate ART versus deferral of ART until CD4+ < 250 cells/mm³

• 27 linked HIV infections in deferred arm and 1 in immediate arm – 96% reduction in HIV transmission

Cohen MS. NEJM 2011;365:493-505
Informed Consent for HIV Testing in Florida(I)

• No person shall perform an HIV test without first obtaining the informed consent of the test subject or his or her legal representative. The limited exceptions to obtaining informed consent can be found in s. 381.004 (3)(h), F.S.

• When obtaining informed consent, explain the right to confidential treatment of information identifying the subject of the test and the results of the test to the extent provided by law. Persons with knowledge of an individual's HIV test result have legal obligations to protect this information from unauthorized disclosure. Florida law imposes strict penalties for breaches of confidentiality.

• Registered Testing Programs do not need to obtain written consent provided that documentation is included in the medical record indicating that the test was explained and informed consent was obtained. [A few limited exceptions are included in Rule 64D-2.004(4), F.A.C.] County Health Departments must obtain written informed consent.

• In accordance with Administrative Rule 64D-2.004, Testing Requirements, an explanation of the following information represents a sound and reasonable standard for obtaining informed consent:

• .
Informed Consent for HIV Testing in Florida (II)

• An HIV test is a test to determine if an individual is infected with the virus which causes AIDS; The potential uses and limitations of the test (the reliability of the results and what positive, negative and indeterminate results do and do not mean);
• The procedures to be followed; and,
• HIV testing is voluntary and consent to be tested can be withdrawn at any time prior to testing.
• Persons who volunteer to be tested confidentially for HIV should be informed that positive test results will be reported to the local county health department so that health department staff may contact persons who test positive to offer follow-up activities. Examples of voluntary follow-up activities are post-test counseling for persons who do not return for test results, referrals for medical evaluation, case management services and voluntary partner notification. Persons who test positive anonymously should also be offered follow-up services. (Exemptions from HIV-reporting include persons tested anonymously at a registered anonymous test site, testing in the event of a significant exposure or university-based medical research protocols approved by the Department of Health.)
• The test subject must also be given information on the availability and location of anonymous test sites. Each county health department shall maintain a list of available anonymous test sites to be disseminated to all persons and programs offering HIV testing within their service area.
Pregnant Women/Special Provisions (Effective October 1, 1996)

- Florida law (s. 384.31, F.S.) requires a health care provider who attends a pregnant woman for conditions relating to her pregnancy to offer testing for HIV and counsel her on the availability of treatment if she tests positive.
- If the pregnant woman objects to HIV testing, a reasonable attempt must be made to obtain a written statement of objection, signed by the patient, which shall be placed in her medical record. (If a pregnant woman tests HIV negative, consideration should be given to offering the test again at a later date during her pregnancy because of the window period of up to 6 months between exposure to HIV and testing positive for antibodies and the risk of exposure during pregnancy through sex or needle sharing.)
- When a pregnant woman tests HIV positive, in addition to the medical and support services listed above, she should also be referred to the Healthy Start Care Coordination System. For more information on the availability of services, contact the Family Health Line at 1-800-451-BABY or the Florida AIDS Hotline at 1-800-FLA-AIDS
Source of HIV Tests and Positive Tests

- 38% - 44% of adults age 18-64 have been tested
- 16-22 million persons age 18-64 tested annually in U.S.

<table>
<thead>
<tr>
<th>Source</th>
<th>HIV tests*</th>
<th>HIV+ tests**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private doctor/HMO</td>
<td>44%</td>
<td>17%</td>
</tr>
<tr>
<td>Hospital, ED, Outpatient</td>
<td>22%</td>
<td>27%</td>
</tr>
<tr>
<td>Community clinic (public)</td>
<td>9%</td>
<td>21%</td>
</tr>
<tr>
<td>HIV counseling/testing</td>
<td>5%</td>
<td>9%</td>
</tr>
<tr>
<td>Correctional facility</td>
<td>0.6%</td>
<td>5%</td>
</tr>
<tr>
<td>STD clinic</td>
<td>0.1%</td>
<td>6%</td>
</tr>
<tr>
<td>Drug treatment clinic</td>
<td>0.7%</td>
<td>2%</td>
</tr>
</tbody>
</table>

*National Health Interview Survey, 2002
**Suppl. to HIV/AIDS surveillance, 2000-2003
Late HIV Testing is Common
Supplement to HIV/AIDS Surveillance, 2000-2003

- Among 4,127 persons with AIDS*, 45% were first diagnosed HIV-positive within 12 months of AIDS diagnosis (“late testers”)
- Late testers, compared to those tested early (>5 yrs before AIDS diagnosis) were more likely to be:
  - Younger (18-29 yrs)
  - Heterosexual
  - Less educated
  - African American or Hispanic

*16 states
Recommended Testing Algorithm


4th generation HIV-1/2 immunoassay

- (+) HIV-1/2 antibody differentiation immunoassay
  - HIV-1 (+)
  - HIV-2 (-) HIV-1 antibodies detected
  - HIV-1 (-) HIV-2 (+) HIV antibodies detected
  - HIV-1 (+) Negative for HIV-1 and HIV-2 antibodies and p24 Ag
  - HIV-1 (-) or indeterminate
    - HIV-2 (-) RNA
      - RNA(+) Acute HIV-1 infection
      - RNA (-) Negative for HIV-1

*Additonal testing required to rule out dual infection
HIV Screening Algorithm

Rapid HIV-1/2 ELISA +/- HIV-1 RNA NAT

- Reactive or RNA present: Confirmatory assay
- Reactive and RNA present: HIV-1 Infection
- Non reactive AND no RNA present: Monitor, may consider repeat testing
HIV Confirmatory Assays

- Western Blot
- Immunofluorescence
- p24 antigen detection
- NAT HIV-1 Genprobe Aptima (only for HIV-1)
Best Practices in HIV Prevention

• Make voluntary HIV testing a routine part of medical care
• Implement new models of HIV diagnosis outside medical testing
• Prevent new infections
• Further decrease perinatal transmissions
SUMMARY
HIV in 2013 and beyond

- Aging HIV population
- Current antiretroviral therapy is generally safe and well-tolerated
- HIV, antiretroviral therapy and aging post new challenges for medical management of HIV infected population
- Early detection and linkage to care are crucial
THANK YOU!