ACTHIV 2010

• Welcome to Denver*

• Schedule:
  – Friday: HIV Treatment and Comorbidities
    • Posters 12:30 – 2:00, Reception 5:00 – 7:00
  – Saturday: Special Challenges and Populations
    • Closing Plenary: HIV and Aging
  – Sunday: Breakfast with the Experts
    • Submit cases!

• Additional details

* get rest, stay hydrated
Who Are We?
N = 234

- Nurses: 24%
- Pharmacists: 9%
- Physicians: 31%
- Social Workers: 4%
- Physicians Assistants: 3%
Epidemiology of HIV Disease in the United States

CDC Update - U.S. 2010

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Epidemiology Branch
Division of HIV/AIDS Prevention, CDC

The findings and conclusions in this presentation are those of the author and do not necessarily represent the official position of the Centers for Disease Control or the National Institutes of Health.
Estimated Numbers of AIDS Cases, Deaths, and Persons Living with AIDS, 1985–2007—United States and Dependent Areas

Note. Data have been adjusted for reporting delays.
Estimated Numbers of Adults and Adolescents Living with HIV/AIDS, by Sex, 2004–2007—34 States

Note. Data include persons with a diagnosis of HIV infection regardless of their AIDS status at diagnosis. Data from 34 states with confidential name-based HIV infection reporting since at least 2003. Data have been adjusted for reporting delays. Age as of end of year.
Estimated Numbers of Persons Living with HIV/AIDS, by Race/Ethnicity, 2004–2007—34 States

Note. Data include persons with a diagnosis of HIV infection regardless of their AIDS status at diagnosis.
Data from 34 states with confidential name-based HIV infection reporting since at least 2003.
Data have been adjusted for reporting delays.
*Hispanics/Latinos can be of any race
†Includes Asian and Pacific Islander legacy cases.

- Male-to-male sexual contact*
- High-risk heterosexual contact†
- Injection drug use
- Male-to-male sexual contact and injection drug use
- Other/not identified‡

Note. Data include persons with a diagnosis of HIV infection regardless of their AIDS status at diagnosis. Data from 25 states with confidential name-based HIV infection reporting since at least 1994. Data have been adjusted for reporting delays and missing risk-factor information.

*Data on male-to-male sexual contact exclude cases among men who reported sexual contact with other men and injection drug use.
†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.

Note. Data include persons with a diagnosis of HIV infection regardless of their AIDS status at diagnosis. Data from 25 states with confidential name-based HIV infection reporting since at least 1994. Data have been adjusted for reporting delays and missing risk-factor information. Data exclude cases among men who had sex with other men and injected drugs.

*Hispanics/Latinos can be of any race.
†Includes Asian and Pacific Islander legacy cases.
Estimated Numbers of HIV/AIDS Cases among Men Who Have Sex with Men, Aged 13–24 Years, by Race/Ethnicity 2004–2007—34 States

- **Black/African American**
- **White**
- **Hispanic/Latino**
- **American Indian/Alaska Native**
- **Native Hawaiian/Other Pacific Islander**
- **Asian†**

**Note:** Data include persons with a diagnosis of HIV infection regardless of their AIDS status at diagnosis. Data from 34 states with confidential name-based HIV infection reporting since at least 2003. Data have been adjusted for reporting delays and missing risk-factor information. Data exclude cases among men who had sex with other men and injected drugs.

†Includes Asian and Pacific Islander legacy cases.
*Hispanics/Latinos can be of any race.
Estimated Prevalence Rates for Adults and Adolescents Living with HIV Infection (not AIDS), 2007—34 States and 5 U.S. Dependent Areas

Total rate = 154.2

Rate (per 100,000 population)
- <100.0
- 100.0–150.0
- >150.0

American Samoa: 2.2
Guam: 46.6
Northern Mariana Islands: 9.9
Puerto Rico: 223.0
U.S. Virgin Islands: 268.2

Note: Data from 34 states and 5 U.S. dependent areas with confidential name-based HIV infection reporting since at least 2003. Data have been adjusted for reporting delays.
HIV Incidence

- Incidence = “holy grail” → front of the wave
  - Who is being infected now?
- Informs targeted prevention to high-risk groups
- New laboratory and statistical methods have afforded improved estimations
- Published August 2008


Source: Centers for Disease Control and Prevention

Sources: I. Hall et al., JAMA 2008 300(5): 520 and http://www.cdc.gov/hiv/topics/surveillance/incidence.htm
Trends in HIV Incidence, 2006

Estimated New HIV Infections, 2006, by Transmission Category

- 53% MSM
- 31% Heterosexual
- 4% MSM-IDU
- 12% IDU

Source: Centers for Disease Control and Prevention

Estimated New HIV Infections, 2006, by Age

- 31% 30–39
- 34% 13–29
- 25% 40–49
- 10% 50+

Source: Centers for Disease Control and Prevention

Predominately MSM

> 30% under age 30 years
> 60% under age 40 years
Estimated Rates of New HIV Infections, 2006, by Race/Ethnicity

- Black: ~88.3 cases per 100,000 population
- Hispanic: ~29.3 cases per 100,000 population
- White: ~11.5 cases per 100,000 population
- American Indian/Alaska Native: ~12.0 cases per 100,000 population
- Asian/Pacific Islander: ~6.0 cases per 100,000 population

Source: Centers for Disease Control and Prevention

Rate among blacks (88.3):
~ 3.0 x Hispanics (29.3)
~ 7.5 x whites (11.5)
Trends in HIV Incidence, 2006

- Black Men: 115.7 rate per 100,000 population
- Hispanic/Latino Men: 43.1 rate per 100,000 population
- White Men: 19.6 rate per 100,000 population
- Black Women: 55.7 rate per 100,000 population
- Hispanic/Latino Women: 14.4 rate per 100,000 population
- White Women: 3.8 rate per 100,000 population

Rate per 100,000 population:

- Black Men: 5.9x increase
- Hispanic/Latino Men: 2.2x increase
- White Men: 3.8x increase
- White Women: 14.6x increase

Source: http://www.cdc.gov/hiv/topics/surveillance/resources/factsheets/images/mmwr-incidence-2-large.gif
Importance of HIV Testing

- Informs epidemiology
- Identification of infection at earlier stage
- Earlier treatment
  - Reduces mortality
  - Reduces risk for AIDS and non-AIDS conditions
- Knowing status reduces risk taking behavior
Most New Infections Transmitted by Persons who Do Not Know Their Status

~25% Unaware of Infection account for...

~75% Aware of Infection

~54% New Infections

~46% of New Infections

Source: G. Marks et al. AIDS 2006
HIV Testing – United States 1987-2005
How well are we doing?

FIGURE. Percentage of persons aged 18–64 years who reported ever being tested for HIV* (excluding blood donations) and those persons who were tested for HIV in the preceding 12 months — National Heath Interview Survey, United States, 1987–2006

<table>
<thead>
<tr>
<th>Characteristic, 2006</th>
<th>Tested in the past 12 months (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 18-24 years</td>
<td>15.7</td>
</tr>
<tr>
<td>Age 25-35 years</td>
<td>15.4</td>
</tr>
<tr>
<td>Black, non-Hispanic</td>
<td>21.7</td>
</tr>
<tr>
<td>Southern U.S.</td>
<td>12.1</td>
</tr>
<tr>
<td>Has HIV risk factors</td>
<td>23.0</td>
</tr>
<tr>
<td>Pregnant</td>
<td><strong>60.7</strong></td>
</tr>
</tbody>
</table>

* Human immunodeficiency virus.
† Confidence interval.
§ Questions regarding HIV testing were not included in the 1996 National Health Interview Survey.

Opt-out testing

Source: MMWR 57(31); 845-49, 2008
Table 3. Median results of the first CD4 test performed within 12 months after HIV diagnosis among adults and adolescents with HIV/AIDS, by year of diagnosis and selected characteristics, 2001–2003—33 states with confidential name-based HIV infection reporting

<table>
<thead>
<tr>
<th>Race/ethnicity</th>
<th>Median CD4 count³</th>
<th>25%–75%</th>
<th>Total No.</th>
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<th>Median CD4 count³</th>
<th>25%–75%</th>
<th>Total No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>White, not Hispanic</td>
<td>217</td>
<td>74–468</td>
<td>6,695</td>
<td>218</td>
<td>78–478</td>
<td>6,939</td>
<td>199</td>
<td>72–444</td>
<td>7,042</td>
</tr>
<tr>
<td>Black, not Hispanic</td>
<td>164</td>
<td>40–362</td>
<td>10,937</td>
<td>156</td>
<td>41–348</td>
<td>10,514</td>
<td>154</td>
<td>38–347</td>
<td>10,665</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>167</td>
<td>46–337</td>
<td>142</td>
<td>170</td>
<td>48–360</td>
<td>162</td>
<td>179</td>
<td>69–389</td>
<td>223</td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>198</td>
<td>72–434</td>
<td>114</td>
<td>299</td>
<td>90–467</td>
<td>127</td>
<td>186</td>
<td>48–385</td>
<td>109</td>
</tr>
<tr>
<td>Unknown</td>
<td>272</td>
<td>86–514</td>
<td>120</td>
<td>171</td>
<td>39–362</td>
<td>109</td>
<td>189</td>
<td>68–440</td>
<td>91</td>
</tr>
<tr>
<td><strong>Total</strong>³</td>
<td><strong>175</strong></td>
<td><strong>50–389</strong></td>
<td><strong>21,820</strong></td>
<td><strong>170</strong></td>
<td><strong>50–393</strong></td>
<td><strong>21,642</strong></td>
<td><strong>167</strong></td>
<td><strong>50–374</strong></td>
<td><strong>21,932</strong></td>
</tr>
</tbody>
</table>

*Note.* These numbers do not represent actual cases in persons with a diagnosis of HIV infection or AIDS. Rather, these numbers are point estimates of case counts that have been adjusted for reporting delays and for redistribution of cases in persons initially reported without an identified risk factor. The estimates have not been adjusted for incomplete reporting.

Since 2000, the following states have had laws or regulations requiring confidential name-based HIV infection reporting: Alabama, Alaska, Arizona, Arkansas, Colorado, Florida, Idaho, Indiana, Iowa, Kansas, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, West Virginia, Wisconsin, and Wyoming. Since July 1997, Florida has had confidential name-based HIV infection reporting for new diagnoses only.

³ When only CD4 percentage was available, a CD4 count was interpreted.

Treatment
Epidemiology of HIV Infection as a Chronic Disease

HAART Use Over Time, HOPS, 1994-2006

% Patients on HAART

Deaths per 100 Person-years

Year


0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

0 2 4 6 8 10 12 14

Deaths per 100 Person-years

Deaths per 100 Person-years

% of Patients on HAART

% of Patients on HAART
Changing Epidemiology of Chronic HIV Infection in the HAART Era

• Significantly prolonged survival, often disease-free:
  – 10.5 years (1996) → 22.5 years (2005) after diagnosis
    (Harrison et al., *J Acquir Immune Defic Syndr* 2010, using CDC HIV surveillance data)

• “The *life expectancy* of asymptomatic HIV-infected patients who are still treatment-naive and have not experienced a CDC-B or C event at 24 weeks after diagnosis approaches that of non-infected individuals.”
  
    van Sighem et al., *AIDS* 2010, ATHENA cohort)
Changing Epidemiology of Chronic HIV Infection in the HAART Era

• Increasing pool of persons living with and capable of transmitting HIV infection
  – On-going need for primary HIV prevention

• Increasing burden of non-AIDS-defining illness (from infectious disease back to internal medicine)
  – Metabolic disease (e.g., metabolic syndrome, osteopenia, lipodystrophy)
  – End-organ disease (e.g., cardiovascular, renal, hepatic)
  – Malignancy
  – Neurocognitive dysfunction
Causes of Mortality - HOPS

F Palella et al., JAIDS 2006;43: 27-34
Non-AIDS-Defining Morbidity and Mortality in Chronic HIV Infection

1) Host and Social Context
- Coinfections (HCV, HBV, HPV, HSV)
- Socioeconomic status and access to care
- Tobacco, alcohol and drug use
- “Return to health” → obesity, inactivity

2) Virus
- HIV damage to other target cells
- Chronic inflammation

3) Therapy
- Antiretroviral toxicity
- Chemotherapy
- Steroids
- Hormonal therapy (TSH, HGH)
See the blinking red light, stupid?
Your time is up.

Have Dr. Squires introduce Dr. Horberg, already!