Let’s Talk About Sex: What You Can Do About Preventing Sexually Transmitted Infections Among Youth

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April is STD Awareness Month
www.itsyoursexlife.com

Faculty Disclosure
Commercial, Financial, or Organizational Conflicts of Interest:
None
Objectives

1. Describe recent epidemiological trends of STI among youth and adolescents
2. Identify adolescents at highest risk for infection with chlamydia, gonorrhea and HIV
3. Discuss the role of individual and structural factors on racial disparities in sexually transmitted infections
4. Identify strategies that health care providers can use to address STIs among youth

Public Health Importance of Sexually Transmitted Infections

• The most common reportable communicable infections in the United States
• Cause significant health consequences
  – Most common cause of preventable infertility
  – Facilitates sexual transmission of HIV
• Large cost burden for society, particularly affecting women, youth, & communities of color
• Readily identifiable, preventable, and treatable

Estimated Annual Incidence of Leading STDs 12 Million Cases Per year

Source: CDC 2002
Majority of Reported Communicable Diseases in Illinois are Sexually Transmitted Infections - 2007

Source: Illinois Department of Public Health

Number of Cases
- Chlamydia: 58,470
- Gonorrhea: 20,813
- Early Syphilis: 688
- Other Reportable Communicable Diseases: 10,585

Prevalence of Sexually Transmitted Infections and Bacterial Vaginosis among Female Adolescents in the United States: Data from the National Health and Nutrition Examination Survey (NHANES) 2003-2004

Sara E. Forhan, MD, MPH
Division of STD Prevention
Centers for Disease Control and Prevention

Most common STIs in adolescents and their sequelae

- Human papillomavirus (HPV)
  - Can lead to cervical cancer and genital warts
- Chlamydia trachomatis (chlamydia)
  - Can lead to pelvic inflammatory disease (PID), infertility, chronic pelvic pain, ectopic pregnancy
- Trichomonas vaginalis (trichomonas)
- Herpes simplex virus, type 2 (HSV-2)
- Bacterial vaginosis (BV)

Credit: Sara E. Forhan, MD, MPH
Summary of the STI Prevalence Study among Adolescent Females

- High STI burden in female adolescents: 1 in 4 infected
  - Estimated 3.2 million young women with STIs
- Substantial racial disparity
  - 1 in 2 African-American female adolescents infected
- High STI prevalence soon after sexual debut, even with few partners
- Predominant HPV

Credit: Sara E. Forhan, MD, MPH

Chlamydia — Age- and Sex-Specific Rates: United States, 2008

<table>
<thead>
<tr>
<th>Age</th>
<th>Rate per 100,000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-14</td>
<td>129.9</td>
</tr>
<tr>
<td>15-19</td>
<td>701.6</td>
</tr>
<tr>
<td>20-24</td>
<td>565.9</td>
</tr>
<tr>
<td>25-29</td>
<td>271.7</td>
</tr>
<tr>
<td>30-34</td>
<td>140.8</td>
</tr>
<tr>
<td>35-39</td>
<td>78.3</td>
</tr>
<tr>
<td>40-44</td>
<td>34.4</td>
</tr>
<tr>
<td>45-54</td>
<td>10.4</td>
</tr>
<tr>
<td>55-64</td>
<td>2.7</td>
</tr>
<tr>
<td>65+</td>
<td>0.5</td>
</tr>
<tr>
<td>Total</td>
<td>1,779.6</td>
</tr>
</tbody>
</table>

Gonorrhea — Age- and Sex-Specific Rates: United States, 2008

<table>
<thead>
<tr>
<th>Age</th>
<th>Rate per 100,000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-14</td>
<td>31.0</td>
</tr>
<tr>
<td>15-19</td>
<td>327.5</td>
</tr>
<tr>
<td>20-24</td>
<td>636.8</td>
</tr>
<tr>
<td>25-29</td>
<td>269.9</td>
</tr>
<tr>
<td>30-34</td>
<td>119.0</td>
</tr>
<tr>
<td>35-39</td>
<td>55.2</td>
</tr>
<tr>
<td>40-44</td>
<td>28.9</td>
</tr>
<tr>
<td>45-54</td>
<td>11.2</td>
</tr>
<tr>
<td>55-64</td>
<td>2.5</td>
</tr>
<tr>
<td>65+</td>
<td>0.5</td>
</tr>
<tr>
<td>Total</td>
<td>1,198.6</td>
</tr>
</tbody>
</table>
**Reported Chlamydia & Gonorrhea Cases by Age Group* - Illinois, 2008**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Chlamydia</th>
<th>Gonorrhea</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-14</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>15-19</td>
<td>18%</td>
<td></td>
</tr>
<tr>
<td>20-24</td>
<td>32%</td>
<td></td>
</tr>
<tr>
<td>25-29</td>
<td>18%</td>
<td>25%</td>
</tr>
<tr>
<td>30-34</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>35-39</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>40-44</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>45+</td>
<td>4%</td>
<td></td>
</tr>
</tbody>
</table>

*Where age was known

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**High Economic Burden of STIs in U.S. and in Illinois**

- Direct medical costs for STD treatment in the U.S. are estimated at $8.4 billion (1997).*
- Total estimated burden for 9 million new cases for 8 major STDs among youth aged 15-24 was $6.2 billion (2000).**
- Direct medical costs of chlamydia, gonorrhea and P&S syphilis in Illinois in adolescents 15-24 were estimated at $71,727,328 (2006)***

* Source: American Social Health Association/Kaiser Family Foundation
** Source: Chesson et.al., Perspectives on Sexual and Reproductive Health, 2006
*** Source: Pultorak, Wong, Rabins, Mehta. Sexually Transmitted Diseases 2009:36(10);629-636

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**Chlamydia Complications**

- **Untreated Genital Chlamydial Infection**
  - 70-80% Asymptomatic
  - Female Urethritis: 20-30%
  - Male Urethritis: 15%
  - Neonatal Infection: 15%
  - PID (Acute & Silent): 10%
  - Chronic Pelvic Pain: 5%
  - Infertility: 4%
  - Ectopic Pregnancy: 3%
  - Epididymitis
  - Orchitis

Source: CDC Chlamydia in the United States. April 2001
Why are Adolescents at Higher Risk for Sexually Transmitted Infections?

High STI Rates among Teenagers

- Sex at Early Age
- Drug and Alcohol Usage
- Biologic Factors
- Denial, Risk Taking, Multiple Partners
- STD Education
- Environmental Influences - Media Messages, Peers, Clubs, etc.

Source: Journal of Adolescent Health 1991; 12; 91

Cervical Ectopy

Normal Adult Female Cervix
Normal Adolescent Female Cervix with ectopy
Sexual Activity among Teenagers is Common

Percentage of students who had sexual intercourse during their lifetime - Chicago Public Schools, 2003

Overall, 55.1% of CPS HS students had engaged in sexual intercourse

Grade | 9th | 10th | 11th | 12th |
--- | --- | --- | --- | --- |
% | 24.2 | 45.6 | 72.2 | 74.9 |

Youth Risk Behavior Survey – Chicago, 2005

• 13.2% of Chicago high school students had sexual intercourse for the first time before age 13
• 19.6% of students had sexual intercourse with 4 or more people during their lifetime
• Among recently sexually active* students...
  – 20.7% of students drank alcohol or used drugs before the last sexual encounter
  – 66.6% used a condom during the last sexual encounter
  – 8.6% used birth control pills to prevent pregnancy
  – 8.9% reported that they had been pregnant or gotten someone pregnant

* During the 3 months preceding the survey

High Teen Pregnancy Rates in the United States

• Among all industrialized nations, the United States has the highest rate of teen pregnancy (44.4/1,000)
• When teens give birth, future prospects and those of their children decline
• Teen mothers are...
  – Less likely to complete high school
  – More likely to live in poverty
  – Less likely to receive prenatal care and gain appropriate weight
  – More likely to smoke than pregnant women aged 20 years or older
### Chlamydia, Gonorrhea, and Primary & Secondary Syphilis - Counties and Independent Cities Ranked by Number of Reported Cases: United States, 2008

<table>
<thead>
<tr>
<th>Rank</th>
<th>Chlamydia</th>
<th>Gonorrhea</th>
<th>Primary and Secondary Syphilis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Los Angeles Co., CA</td>
<td>Cook County, IL</td>
<td>Los Angeles Co., CA</td>
</tr>
<tr>
<td></td>
<td>46,707 cases</td>
<td>250,910,000</td>
<td>6,570,000</td>
</tr>
<tr>
<td>2</td>
<td>Cook County, IL</td>
<td>Wayne County, MI</td>
<td>New York County, NY</td>
</tr>
<tr>
<td></td>
<td>34,252 cases</td>
<td>648,624,000</td>
<td>6,401,000</td>
</tr>
<tr>
<td>3</td>
<td>Wayne County, MI</td>
<td>Los Angeles Co., CA</td>
<td>Cook County, IL</td>
</tr>
<tr>
<td></td>
<td>192,276 cases</td>
<td>90,710,000</td>
<td>9,210,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>U.S. Rate</th>
<th>HP2010 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>401.3/100,000</td>
<td>138.0/100,000</td>
</tr>
<tr>
<td>111.6/100,000</td>
<td>19.0/100,000</td>
</tr>
<tr>
<td>4.5/100,000</td>
<td>0.2/100,000</td>
</tr>
</tbody>
</table>

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### Reported Sexually Transmitted Infections – Chicago, 2007-2008

<table>
<thead>
<tr>
<th></th>
<th>Chlamydia</th>
<th>Gonorrhea</th>
<th>P&amp;S Syphilis</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Cases 2007</td>
<td>22,181</td>
<td>9,388</td>
<td>331</td>
</tr>
<tr>
<td>No. of Cases 2006</td>
<td>25,465</td>
<td>10,509</td>
<td>425</td>
</tr>
<tr>
<td>% Change from 2007</td>
<td>+14.8%</td>
<td>+11.9%</td>
<td>+28.3%</td>
</tr>
<tr>
<td>Case Rate per 100,000</td>
<td>879.3</td>
<td>362.9</td>
<td>14.7</td>
</tr>
<tr>
<td>U.S. Case Rate per 100,000*</td>
<td>370.2</td>
<td>118.9</td>
<td>3.8</td>
</tr>
</tbody>
</table>

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### Chlamydia Positivity Rates by Sex and School-Based Provider: Top 10 Sites for Number of Chlamydia Tests, 2007

<table>
<thead>
<tr>
<th>Provider</th>
<th>Total Tests</th>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>H. Crane Technical Prep School</td>
<td>356</td>
<td>266</td>
<td>90</td>
</tr>
<tr>
<td>Dunbar Vocational High School</td>
<td>466</td>
<td>277</td>
<td>88</td>
</tr>
<tr>
<td>Mercy Phillips</td>
<td>419</td>
<td>283</td>
<td>136</td>
</tr>
<tr>
<td>Clemente Academy High School</td>
<td>392</td>
<td>319</td>
<td>73</td>
</tr>
<tr>
<td>Senn High School</td>
<td>344</td>
<td>249</td>
<td>95</td>
</tr>
<tr>
<td>Orr-Rezin Academy</td>
<td>338</td>
<td>210</td>
<td>128</td>
</tr>
<tr>
<td>Kannakalee High School</td>
<td>292</td>
<td>177</td>
<td>115</td>
</tr>
<tr>
<td>Carondelet Senior High School</td>
<td>266</td>
<td>192</td>
<td>74</td>
</tr>
<tr>
<td>Roosevelt High School</td>
<td>266</td>
<td>192</td>
<td>74</td>
</tr>
<tr>
<td>Amundsen High School</td>
<td>262</td>
<td>239</td>
<td>23</td>
</tr>
</tbody>
</table>

*Illinois Chlamydia and Gonorrhea Screening Program
Comparison of Two Epidemics: Rates of Chlamydia and Gonorrhea – Chicago, 2007
Proportion of Gonorrhea Cases by Race/Ethnicity – Chicago 2007

- **Gonorrhea Cases**: n = 9,388
- **Chicago Population**: n = 2,836,658
- **Rate / 100,000**
  - Black: 742.2 / 100,000
  - White: 36.2 / 100,000
- **B:W Ratio**: 20.5 : 1

Sexually Transmitted Disease (STD)

African Americans vs. White

<table>
<thead>
<tr>
<th>Sexually Transmitted Disease (STD)</th>
<th>African Americans</th>
<th>Whites</th>
<th>Disparity African American vs. White</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Rate</td>
<td>IL Rate</td>
<td>U.S. Rate</td>
<td>IL Rate</td>
</tr>
<tr>
<td>Gonorrhea</td>
<td>618</td>
<td>766</td>
<td>44</td>
</tr>
<tr>
<td>Chlamydia</td>
<td>1,761</td>
<td>1,547</td>
<td>237</td>
</tr>
<tr>
<td>P/S Syphilis</td>
<td>4.9</td>
<td>10</td>
<td>0.3</td>
</tr>
</tbody>
</table>

**Health Disparities in Reported STDs in the US (2000-2008)**

<table>
<thead>
<tr>
<th>BW Rate Ratios</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>P &amp; S Syphilis</td>
<td>24:1</td>
<td>15:1</td>
<td>8:1</td>
<td>5:1</td>
<td>6:1</td>
<td>9:1</td>
<td>6:1</td>
<td>7:1</td>
<td>8:1</td>
</tr>
<tr>
<td>Gonorrhea</td>
<td>28:1</td>
<td>26:1</td>
<td>23:1</td>
<td>20:1</td>
<td>19:1</td>
<td>18:1</td>
<td>18:1</td>
<td>19:1</td>
<td>20:1</td>
</tr>
<tr>
<td>Chlamydia</td>
<td>9:1</td>
<td>9:1</td>
<td>9:1</td>
<td>8:1</td>
<td>8:1</td>
<td>8:1</td>
<td>9:1</td>
<td>9:1</td>
<td>9:1</td>
</tr>
</tbody>
</table>

**B/W = Black White Case Rate Ratio**

Percentages are calculated from numbers rounded to one-tenth.

*Rate per 100,000 population*
Reducing STD Health Disparities

- Initial focus African-Americans & bacterial STD, with large B:W rate ratios
  - GC 18:1
  - CT 8:1
  - Syphilis 7:1
- Other groups with disparate STD issues
  - MSM
  - Native Americans/Alaska Natives
- Disparities also exist for other STD
  - HSV-2
  - Trichomoniasis

What are the contributing factors that result in racial disparities in STDs?

- Individual Factors
- Structural Factors

What are some of the individual behaviors that can lead to STDs?

- Number of sex partners
- Concurrency of sex partners
- No/ inconsistent condom use
- Not getting tested/screened
- Substance use and abuse
**Individual Risk Behavior**

- Do differences in individual risk behavior account entirely for STI health disparities?
  
  - Hallfours et al: when comparing “low risk” youth, African-American youth had 8-fold greater risk of STD & HIV than white youth

**HSV-2 Seroprevalence by Number of Lifetime Sex Partners and Race/Ethnicity, NHANES in 2005-2008**

**What is the Role of Sexual Networks in STI Transmission?**

What are some of the structural factors that contribute to the STI epidemic in the United States?

- Racism
- Poverty
- Policies and laws
- Educational & employment opportunities
- Access to quality health care
- Community prevalence of disease
- Differential treatment by health care providers

Published in 2002 by the Institute of Medicine

Compilation of research demonstrating substantial racial and ethnic variation in quality of health care

The Need for Cultural Competence in Health Care

- The perception of illness and disease and their causes varies by culture
- Diverse belief systems exist related to health, healing, and wellness
- Culture influences help-seeking behaviors and attitudes toward health care providers
Taking Action in Your Medical Career

- Promoting sexual health
  - Moving discussion towards sexual and reproductive health, normalizing healthy sexual behaviors
- Taking a good sexual history
  - Opening communications about sex among partners
  - Routinizing STI and HIV testing
- Raising awareness
  - Educating peers and patients about STIs and HIV
- Developing cultural competency
- Career development, role models

Adolescent Sexual Health Care

- Adolescents have the right to receive reproductive health care, and can provide consent to STI / HIV testing and reproductive health services.
- Three important issues for health providers when caring for adolescents:
  - Non-judgmental Attitude
  - Confidentiality
  - “De-medicalization” of Care

Chlamydia trachomatis Screening and Re-screening

- Annual screening of all sexually active women ≤25 yrs
- Annual screening of sexually active women >25 yrs with risk factors (e.g. new or multiple sex partners, inconsistent condom use)
- Re-screen women 3-4 months after treatment due to high prevalence of repeat infection
Urine-Based Chlamydia Tests

- Nucleic Acid Amplification Tests (NAATs)
- Highly accurate
- Non-invasive collection
  - High patient acceptability
  - Appropriate for screening asymptomatic persons
- Allows screening in non-traditional settings
  - Community settings
  - Correctional settings
  - Schools

Illinois HIV Testing Law Change
Effective 6/01/08

- Allows for routine opt-out HIV testing
- Eliminates written informed consent
- Requires pre-test information instead of counseling

Expedited Partner Therapy

- Approach whereby partners are treated without an intervening clinical assessment
  - Patients delivering medications to partners
  - Patients delivering prescriptions to partners
- EPT is second-line therapy for the treatment of sexual partners of patients with STDs
  - First-line therapy is to have the partners be evaluated in-person, however this is not always feasible and frequently does not occur
**EPT in Illinois**

- “This is an epidemic, and we have to begin to take this seriously and do everything we can to stem it...We can’t just continue to bury our head in the sand on this.”
  ~ Sen. David Koehler (D-Peoria)

**Abstinence-Only Education Programs Are Ineffective**

- Systematic reviews of Abstinence-Only programs demonstrate:
  - No reductions in teen pregnancy rates
  - No reductions in teen sexual activity
  - No effect on the risk of HIV and STD acquisition
  - Inaccurate medical information

**Comprehensive Sexual Health Education is Recommended**

- Comprehensive sexual education programs that encourage abstinence while also providing adolescents with information on how to protect themselves against sexually transmitted diseases is supported by:
  - American Medical Association
  - American Academy of Pediatrics
  - American Public Health Association
  - American College of Obstetricians & Gynecologists
Contact Information

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