STD/HIV Update: The Ins and Outs of Screening and Prevention

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Disclosure Statement

I have no relevant financial relationships with commercial interests pertaining to the content presented in this program.

Objectives

• Articulate who is at greatest risk for chlamydia, gonorrhea, and HIV
• Implement the correct screening test in the correct anatomic site
• Effectively treat common uncomplicated STDs
• Describe HIV PEP and PrEP
• Identify local and national resources for clinical consultation on STDs
Why Bother Screening?
Approximate Percent of Persons with STD Who Are Asymptomatic

STD increase likelihood of HIV transmission

Cohen, JID 2005
2010 STD Guidelines

- Authoritative source for STD management
- Diagnostic evaluation, treatment regimens, prevention, and vaccination strategies
- Order hard copies www.cdc.gov/std
- Available as app
- Wall charts, pocket guides

2014 STD Guidelines

- Due any day now but delayed into early 2015 by Ebola efforts.
- (Ebola can be spread sexually, FYI.)

Josh

21 year old male with 2 week history of tingling with urination

Partners: 4 in past year, all women; total lifetime 8
Prevention of pregnancy: condoms but not consistent
Protection from STIs: condoms usually
Practices: vaginal and oral
Past history of STI's: Never been tested before
What type of preventive service should we offer today?

A. GC/CT NAAT Test
B. Immunization update: HPV and Hep B
C. HIV test
D. Syphilis screening
E. All of the above

STD Screening in Men:
CDC STD Treatment Guidelines

- HIV: at least once, annually if ongoing risk
- Gonorrhea and Chlamydia:
  - If high risk setting such as corrections
  - All appropriate anatomic settings

STD Screening for Women

Sexually active adolescents and young adults < 25
  - Routine chlamydia and gonorrhea screening
  - Others STDs and HIV based on risk

Women 25 years of age and over
  - STD/HIV testing based on risk
  - Corrections

Pregnant women
  - Chlamydia
  - Gonorrhea (< 25 years of age or risk)
  - HIV
  - Syphilis serology
  - Hep B surface antigen
  - Hep C (if high risk)
Josh

- Results: HIV rapid test negative, syphilis negative
- Results next day: GC negative, CT positive
- Call patient, treat him with Azithromycin 1 gm
- “I am so glad you came in and we found out you have chlamydia. We can treat that. Let’s discuss how to avoid it in the future.”

Urethritis

- Gonorrhea: 5-20%
- Nongonococcal urethritis (NGU)
  - Chlamydia: 15-40%
  - Mycoplasma genitalium: 5-25%
  - Ureaplasma: 0-20%; data inconsistent, biovars differ
  - Trichomonas vaginalis: 5-20% (age, geography)
  - HSV: 15-30%; urethritis in primary infection
  - Adenovirus, enterics, Candida, anaerobes

Chlamydia—Rates by Age and Sex, United States, 2010

<table>
<thead>
<tr>
<th>Age</th>
<th>Men</th>
<th>Rate (per 100,000 population)</th>
<th>Women</th>
<th>Rate (per 100,000 population)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-19</td>
<td></td>
<td>1,187.2</td>
<td></td>
<td>576.2</td>
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<tr>
<td>20-24</td>
<td>548.3</td>
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<tr>
<td>25-29</td>
<td>484.8</td>
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<td></td>
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<tr>
<td>30-34</td>
<td>515.9</td>
<td></td>
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<tr>
<td>35-39</td>
<td>91.3</td>
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<tr>
<td>40-44</td>
<td>39.3</td>
<td></td>
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<tr>
<td>45-49</td>
<td>10.9</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>50-54</td>
<td>1.1</td>
<td></td>
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<tr>
<td>55-59</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>60-64</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65+</td>
<td>233.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3,700</td>
<td>2,960</td>
<td></td>
<td>2,220</td>
</tr>
</tbody>
</table>
Risk Factors

CT

• New/Multiple sex partners
• Adolescents
• OCP users
• Pregnant women

GC

• New/Multiple sex partners
• Adolescents

Clinical Characteristics of Gonococcal and Non-Gonococcal Urethritis

<table>
<thead>
<tr>
<th></th>
<th>GC</th>
<th>NGU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incubation period</td>
<td>2-8 days</td>
<td>7-14 days</td>
</tr>
<tr>
<td>Onset</td>
<td>sudden</td>
<td>Gradual</td>
</tr>
<tr>
<td>Symptoms</td>
<td>++ dysuria</td>
<td>+/- dysuria</td>
</tr>
<tr>
<td></td>
<td>++ discharge</td>
<td>+/- discharge</td>
</tr>
<tr>
<td>Discharge color</td>
<td>74% purulent</td>
<td>11% purulent</td>
</tr>
<tr>
<td></td>
<td>22% white</td>
<td>56% white</td>
</tr>
<tr>
<td></td>
<td>4% clear</td>
<td>33% clear</td>
</tr>
<tr>
<td>Etiology</td>
<td>GC</td>
<td>CT (40%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M. genitalium, U. urealyticum, HSV, trichomonas (more likely if &gt;40)</td>
</tr>
</tbody>
</table>

Mucopurulent Cervicitis

• No validated diagnostic criteria
• Diagnosis made by seeing:
  – Yellow endocervical discharge
  – Cervical friability
• Causes: in one large series,
  – CT - 21%,
  – GC - 14%,
  – both - 12%,
  – Trichomonas - 9%,
  – HSV - 6%,
  – no identified infection - 38%
**Diagnostic Criteria for Urethritis**

- Mucopurulent or purulent discharge on examination
- Grams stain of urethral secretions demonstrating >2 WBCs per oil immersion field
- Positive leucocyte esterase test on first-voided urine
- Microscopic examination of first-voided urine sediment demonstrating >10 WBCs/OIF

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**Chlamydia and gonorrhea NAAT Testing**

- Most sensitive test
  - Urine is adequate
  - Urethral or cervical swab also fine, but not necessary

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**Chlamydia trachomatis Treatment**

Azithromycin 1 gm po as a single dose  
or  
Doxycycline 100 mg po bid x 7d

- No convincing change in MICs to tetracyclines, macrolides over past 25 years, in contrast to GC
- Treatment failure is most likely due to non-compliance or re-infection
- Test-of-cure not advised routinely (consider: pregnancy, atypical tx)
- Rescreen 12 to 16 weeks after infection due to high rates of re-infection

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www.cdc.gov; 2010 STD treatment guidelines
Persistent NGU: Trichomonas

- Up to 20% of NGU in men could be due to Trichomonas
- Wet prep inadequate; Need NAAT
- If adequate treatment and no re-exposure, add metronidazole (2 grams x 1) to re-treatment regimen

Schwebel, JG. 2003

M. genitalium

- Causes 15-20% of NGU cases and 30% of persistent/recurrent urethritis
- Pathogenic role in women is less clear:
  - Can be detected in 10%-30% of women with cervicitis
  - Appears to be more common in women with than women without cervicitis
  - May play a role in PID and infertility
  - Very little data on ectopic pregnancy

Source: M. genitalium

M. genitalium - Treatment

- 7-day doxycycline treatment is largely ineffective
- Azithromycin is more effective but resistance appears to be rapidly emerging (>50% in some settings)
- Moxifloxacin (400 mg x 7, 10 or 14 days) has been successfully used and may be indicated in patients who fail standard treatment for NGU or PID
Potential treatment protocol

- Recurrent NGU
- High risk for Trich: Azith or Doxy and add Metronidazole
- Low risk for Trich: Azith or Doxy and add Moxifloxacin

Chlamydia and NGU

- Screen for asymptomatic disease
- Treat CT with Azith or Doxy
- Recurrent NGU consider trich or Mycoplasma — i.e., Consider adding Flagyl or Moxifloxacin

Justine

- 22 year old women who tests positive by NAAT for gonorrhea, but is negative by NAAT for Chlamydia. How to you treat?
  1. Ceftriaxone 125 mg x 1
  2. Ceftriaxone 250 mg x 1
  3. Ceftriaxone 250 mg x 1 plus Azithromycin 1 gr x 1
  4. Cefixime 400 mg x 1 plus Doxycycline 100 mg bid x 7 days
### Gonorrhea—Rates by Age and Sex, United States, 2010

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Rate (per 100,000 population)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15–19</td>
<td>253.4</td>
</tr>
<tr>
<td>20–24</td>
<td>570.9</td>
</tr>
<tr>
<td>25–29</td>
<td>421.0</td>
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<tr>
<td>30–34</td>
<td>241.3</td>
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<tr>
<td>35–39</td>
<td>146.5</td>
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<tr>
<td>40–44</td>
<td>85.1</td>
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<tr>
<td>45–49</td>
<td>64.2</td>
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<td>50–54</td>
<td>34.1</td>
</tr>
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<td>55–59</td>
<td>9.0</td>
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<tr>
<td>60–64</td>
<td>11.0</td>
</tr>
<tr>
<td>65+</td>
<td>2.4</td>
</tr>
<tr>
<td>Total</td>
<td>156.6</td>
</tr>
</tbody>
</table>

Data Source: CDC, 2011

### Proportion of isolates with Elevated MICs to Cefixime (≥ 0.25 µg/ml) by Region

- **Northwest & South West**: n=52,785, 3.3% (n=68)
- **Midwest**: n=50,873, 3.9% (n=64)

*p trend < 0.05

Source: Gonococcal Isolate Surveillance Project (GISP)

### Proportion of isolates with Elevated MICs to Cefixime (≥ 0.25 µg/ml) by Sex of Sex Partner

- **MSM**: n=60,873, 3.9% (n=64)

*p trend < 0.05

Notes: MSM = Men who have sex with men; MSW = Men who exclusively have sex with women

Source: Gonococcal Isolate Surveillance Project (GISP)
2010 Gonorrhea Treatment
Uncomplicated Genital/Rectal Infections:

**Ceftriaxone 250mg IM**

**Azithromycin 1g po once**

OR

**Doxycycline 100mg po bid x 7 days**

IM much preferred if possible

- Can treat with Cefixime 400mg + Azithromycin or doxycycline if ceftriaxone not available
- Azithromycin 2 gm po once (if allergy to cephalosporin)
- Need to do test of cure if alternative regimen used (preferably with culture)

Dual treatment seems to be working

Source: Kirkcaldy et al. 2014 STD Prevention Conference

Gonorrhea Treatment
Uncomplicated Genital, Rectal, or Pharyngeal Infections

**Ceftriaxone 250 mg IM in a single dose**

**Azithromycin 1 g orally (preferred) or Doxycycline 100 mg BID x 7 days**

* Regardless of CT test result

**PLUS**

Proposed: Doxycycline may be removed from recommended to alternative

CDC 2010 STD Treatment Guidelines
www.cdc.gov/std/treatment
Gonorrhea

- Dual treatment with Ceftriaxone and Azithromycin

Javier

19 year old male

- Presents asking for an HIV test

What to do next?

Javier

19 year old male

- Partners: Lifetime 5 male partners
- Prevention of pregnancy:
- Protection from STIs: uses condoms but not 100%
- Practices: Usually insertive anal (top) and oral
- Past history of STI's: Gonorrhea 2 years ago. No testing since.
STD Screening in MSM: CDC STD Treatment Guidelines

- **HIV**: HIV serology, if negative or not tested in past year
- **Syphilis**: Syphilis serology
- **Gonorrhea and Chlamydia**:
  - Urethral GC/CT if insertive intercourse in past year (urine NAAT preferred)*
  - Rectal GC/CT if receptive intercourse in past year (NAAT on rectal swab preferred)*
  - Pharyngeal GC if receptive oral sex in past year (NAAT on pharyngeal swab-preferred)
- **Hepatitis B**: HBsAg to detect current infection
- **Hepatitis C**: HCV testing if HIV+ or IDU

*consider type-specific serologic testing and anal/Pap for HPV regardless of reported condom use

STD Screen Frequency for MSM: CDC STD Treatment Guidelines

- At least annually for all sexually active MSM
- More frequent STD screening (i.e., at 3-6 month) for MSM
  - Who have multiple or anonymous partners
  - Who have sex in conjunction with illicit drug use (particularly methamphetamine use)
  - Whose sex partners participate in these activities

Many cases of GC and CT not identified if screening MSM only at urine/urethral sites
Rectal Swab Collection Instructions

Step 1
Open Unisex APTIMA Collection kit and remove tube. Tube may be placed in holding rack. Remove the swab with the BLUE shaft. USE BLUE SHAFT SWAB ONLY.

Step 2
Using the BLUE shaft swab, insert swab 1 inch into the anus and gently turn, making contact with rectal wall, for 5-10 seconds.

Step 3
Remove the cap from the test tube. Place the swab in the test tube. Do not puncture the foil cap. Break swab shaft at the score mark.

Step 4
Put cap back tightly on test tube to prevent any leaking. Try not to splash liquid out of the tube.

Step 5
Discard wrapper and wash your hands.

Adapted from San Francisco City Clinic: http://www.sfcityclinic.org/providers/RectalSwab_ENG.pdf

Self-Collection of Rectal Swabs for STD Screening

- Among ~900 MSM asked to self-collect samples for performance of BD ProbeTec (SDA) assays and APTIMA COMBO-2 (AC2)
  - Prevalence of CT = 7.3%
  - Prevalence of GC = 9.4%
- Sensitivities comparable to clinician-collected swabs
  - CT: 41% vs. 44% by SDA; 71% vs. 82% by AC2
  - GC: 77% vs. 68% by SDA; 84% vs. 78% by AC2
- Both assays far superior to culture for both organisms
- Acceptable to most MSM studied (82%)

Moncada Sex Transm Infect 2009; Wayal Sex Transm Infect 2009;

Primary and Secondary Syphilis—Rates by Sex and Male-to-Female Rate Ratios, United States, 1990–2009

<table>
<thead>
<tr>
<th>Year</th>
<th>Male Rate</th>
<th>Female Rate</th>
<th>Male-to-Female Rate Ratio</th>
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<td></td>
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<td></td>
</tr>
<tr>
<td>2006</td>
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<td>2004</td>
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<tr>
<td>1990</td>
<td></td>
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</table>
Primary and Secondary Syphilis—Rates by Age and Sex, United States, 2009

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Men</th>
<th>Rate (per 100,000 population)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-19</td>
<td>26.7</td>
<td>0.7</td>
</tr>
<tr>
<td>20-24</td>
<td>32.5</td>
<td>0.8</td>
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<td>25-29</td>
<td>20.7</td>
<td>0.6</td>
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<td>30-34</td>
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<td>0.3</td>
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<td>35-39</td>
<td>21.3</td>
<td>0.2</td>
</tr>
<tr>
<td>40-44</td>
<td>15.8</td>
<td>0.2</td>
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<td>45-54</td>
<td>13.6</td>
<td>0.2</td>
</tr>
<tr>
<td>55-64</td>
<td>12.5</td>
<td>0.1</td>
</tr>
<tr>
<td>65+</td>
<td>11.9</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Primary and Secondary Syphilis—Reported Cases* by Stage, Sex, and Sexual Behavior, United States, 2010

- Of the reported male cases of primary and secondary syphilis, 18.3% were missing sex partner information.
- MSM = men who have sex with men; MSW = men who have sex with women only.

Confirm positives with standard nontreponemal test titer (RPR/VDRL) to guide management.
- If this is negative, perform a different treponemal test (TPPA).
- EIA+, RPR-, TPPA+: Early untreated, false-positive EIA, or previously treated syphilis.
Syphilis Treatment

- Penicillin preferred for all stages
- Early syphilis (primary, secondary, early latent)
  - B2N PCN (L-A) single dose IM 2.4 million units
  - Do not use other injectable PCN formulations
  - Do not use azithromycin (resistance; treatment failure)
- Late latent
  - B2N PCN (L-A) IM 2.4 million units weekly x 3 doses (7.2 million u total)
- Alternatives: doxycycline, ceftriaxone

CDC 2010 STD Treatment Guidelines
www.cdc.gov/std

Estimated Rate of New HIV Infections, 2010


Estimated New HIV Infections, 2010, by Transmission Category

Estimated New HIV Infections, 2010, for the Most-affected Sub-populations

Prevalence of HIV in at-risk populations in Metro Denver

<table>
<thead>
<tr>
<th>Risk group</th>
<th>HIV Prevalence</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men who have sex with men</td>
<td>16.7%</td>
<td>2011</td>
</tr>
<tr>
<td>Injection Drug Users</td>
<td>6%</td>
<td>2012</td>
</tr>
<tr>
<td>Heterosexuals (Income &lt;$20,000; Education &lt; HS)</td>
<td>1.2%</td>
<td>2013</td>
</tr>
</tbody>
</table>

Al Tayib, National HIV Behavioral Surveillance, Denver Public Health

What percent of the time is HIV transmitted during sex?

Insertive anal intercourse

1. 90% (9 out of 10 times)
2. 50% (5 out of 10 times)
3. 5% (1 out of 20 times)
4. 1% (1 out of 100 times)
5. 0.1% (1 out of 1000 times)
Estimated per act risk for acquisition of HIV-1 by exposure route

<table>
<thead>
<tr>
<th>Exposure Route</th>
<th>Infections per 10,000 exposures to HIV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Transfusion</td>
<td>9,250 (93%)</td>
</tr>
<tr>
<td>Childbirth</td>
<td>2,255 (23%)</td>
</tr>
<tr>
<td>Needle-sharing IDU</td>
<td>63 (0.63%)</td>
</tr>
<tr>
<td>Percutaneous Needle Stick</td>
<td>23 (0.2%)</td>
</tr>
</tbody>
</table>

**Sexual risk**

<table>
<thead>
<tr>
<th></th>
<th>Infections per 10,000 exposures to HIV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receptive Anal Intercourse *</td>
<td>138 (1.4%)</td>
</tr>
<tr>
<td>Insertive Anal Intercourse *</td>
<td>11 (0.11%)</td>
</tr>
<tr>
<td>Receptive Vaginal Intercourse *</td>
<td>8 (0.08%)</td>
</tr>
<tr>
<td>Insertive Vaginal Intercourse *</td>
<td>4 (0.04%)</td>
</tr>
<tr>
<td>Receptive fellatio *</td>
<td>Low</td>
</tr>
<tr>
<td>Insertive fellatio *</td>
<td>Low</td>
</tr>
</tbody>
</table>

* Assuming no condom use

Newer tests miss fewer infections

PEP: Isolated HIV Exposure

![PEP Diagram]

HIV Expose → HIV Infection
PEP: Prevents Infection After Isolated Exposure

PrEP: Multiple Exposures

PrEP: Prevents Infection Before Exposure
Increased Adherence Associated with Increased Efficacy

Efficacy

84%
100%

Prevention Science Overview: Biomedical Intervention Efficacy

Summary of Guidance for PrEP Use
Screen for:
- HIV
- Syphilis
- Gonorrhea in all appropriate anatomic sites
- Chlamydia in all appropriate anatomic sites
- Discuss the potential need for PrEP
- Consider screening for Hep C

Men who have sex with men
- Must ask about sexual behaviors/sexual orientation
- Screen liberally for HIV and syphilis
- Screen all appropriate anatomic sites for gonorrhea and chlamydia
- Think about PrEP

THINK INSIDE THE BOX
FOR THE LATEST STD INFORMATION, COURSES, CONFERENCES, WEBINARS AND MORE
Access all the latest STD news, courses, webinars and much more by downloading the free app from the iTunes App Store.
Summary

- Consider GC and CT in all at-risk
- Screen appropriate anatomic sites
- Persistent NGU: Consider mycoplasma or trich
- Dual treatment for gonorrhea, regardless of CT

- Syphilis is up: Ask about sexual orientation and screen if MSM
- HIV screening: Everyone once; those at risk such as MSM annually