The Rise of Sexually Transmitted Infections: An Alarming Trend of a Familiar Foe

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Disclosures

All planners, presenters, reviewers, and ASHP staff of this session report no financial relationships relevant to this activity.
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Session Learning Objectives:

• Explain recent updates to the sexually transmitted infection (STI) treatment guidelines.
• Identify reasons behind the increase in STIs in the United States over the last three years.
• Given a patient case, develop an appropriate treatment strategy for a patient with an STI.
CJ is a 25 year old bisexual black male living with HIV who presents to clinic for a 6 month follow up appointment. He reports several casual sex partners for oral, receptive, and insertive anal sex since last visit. States he/his partners wear condoms “when we can remember.” He tolerates his medication well, reports 100% adherence, and has no complaints today.

Allergies: NKDA

Current medications:
Bictegravir/emtricitabine/tenofovir alafenamide 50/200/25 mg PO daily
Patient Case

Pertinent PMH:
HIV – diagnosed 1/2017; risk factor = bisexual; CD4 nadir = 532 cells/mm³
Chlamydia – 1/2017, treated
Gonorrhea – 1/2017, treated
Syphilis – 1/2017 (RPR 1:256), treated; most recent RPR = 1:2 on 4/2018

Pertinent Labs from 11/20/18 (2 weeks prior to appointment date):
HIV-RNA = <20 copies/mL        CD4/% = 711/35 cells/mm³        RPR = 1:64
GC/Chlam (rectal, throat, oral) = POS/POS; neg/neg; POS/neg
Comprehensive metabolic panel = WNL
Pre-Test Question 1

Based on CJ’s labs from 11/2018, what treatments, if any, are recommended?

A. Amoxicillin + benzathine penicillin G + doxycycline
B. Azithromycin + benzathine penicillin G + ceftriaxone
C. Azithromycin + ceftriaxone
D. Benzathine penicillin G + ceftriaxone
E. None, as he was treated previously 1/2017
Pre-Test Question 2

Due to increased resistance concerns, which is the most appropriate treatment for gonococcal infections based on the most recent STI guidelines?

A. Amoxicillin + cefixime
B. Azithromycin
C. Azithromycin + ceftriaxone
D. Cefixime
E. Ceftriaxone
“Nearly 2.3 million cases of chlamydia, gonorrhea, and syphilis were diagnosed in the United States in 2017, according to preliminary data... This surpassed the previous record set in 2016 by more than 200,000 cases and marked the fourth consecutive year of sharp increases in these sexually transmitted diseases.”

# STD Diagnoses Among Key U.S. Populations, 5-Year Trends

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chlamydia</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Among young women</td>
<td>1,401,906</td>
<td>1,441,789</td>
<td>1,526,658</td>
<td>1,598,354</td>
<td>1,708,569</td>
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<tr>
<td>(aged 15 to 24)</td>
<td>715,983</td>
<td>709,170</td>
<td>724,709</td>
<td>735,027</td>
<td>771,340</td>
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<tr>
<td><strong>Gonorrhea</strong></td>
<td>333,004</td>
<td>350,062</td>
<td>395,216</td>
<td>468,514</td>
<td>555,608</td>
</tr>
<tr>
<td>Among women</td>
<td>163,208</td>
<td>162,608</td>
<td>173,514</td>
<td>197,499</td>
<td>232,587</td>
</tr>
<tr>
<td>Among men</td>
<td>169,130</td>
<td>186,943</td>
<td>221,070</td>
<td>270,033</td>
<td>322,169</td>
</tr>
<tr>
<td><strong>Primary &amp; secondary syphilis</strong></td>
<td>17,375</td>
<td>19,999</td>
<td>23,872</td>
<td>27,814</td>
<td>30,644</td>
</tr>
<tr>
<td>Among MSM**</td>
<td>10,451</td>
<td>12,226</td>
<td>14,229</td>
<td>16,149</td>
<td>17,736</td>
</tr>
<tr>
<td><strong>Combined cases</strong></td>
<td>1,752,285</td>
<td>1,811,850</td>
<td>1,945,746</td>
<td>2,094,682</td>
<td>2,294,821</td>
</tr>
</tbody>
</table>

*Preliminary data

**Men who have sex with men

Chlamydia — Rates of Reported Cases by State, United States and Outlying Areas, 2016

NOTE: The total rate of reported cases of chlamydia for the United States and outlying areas (Guam, Puerto Rico, and Virgin Islands) was 494.2 per 100,000 population.

Chlamydia — Rates of Reported Cases by Sex, United States, 2000–2016

NOTE: Data collection for chlamydia began in 1984 and chlamydia was made nationally notifiable in 1995; however, chlamydia was not reportable in all 50 states and the District of Columbia until 2000. Refer to the National Notifiable Disease Surveillance System (NNDSS) website for more information: https://wwwn.cdc.gov/nndss/conditions/chlamydia-trachomatis-infection/.

Chlamydia trachomatis Recommended Treatments

Adults and Adolescents

- Azithromycin 1 g PO as a single dose
- OR
- Doxycycline 100 mg PO twice daily for 7 days

Pregnancy

- Azithromycin 1 g PO as a single dose

g = gram; mg = milligram; PO = by mouth

2015 Sexually Transmitted Diseases Treatment Guidelines - Gonococcal Infections. Centers for Disease Control and Prevention website.
Chlamydia trachomatis Treatment Updates

Updates from the Guidelines from 2010-2015

• Amoxicillin 500 mg PO three times daily for 7 days acceptable alternative in pregnancy

• Data are limited on the effectiveness and optimal dose of azithromycin for chlamydial infection in infants and children < 45 kg (urogenital, rectal)

• Azithromycin 20 mg/kg/day PO daily for 3 days (neonates: ophthalmia, neonatorum, pneumonia)

kg = kilogram; mg = milligram; PO = by mouth

Goal of therapy = CURE INFECTION!

Test of cure (3-4 weeks s/p treatment):
• Adults and adolescents **not advised** unless adherence is in question, symptoms persist, or re-infection suspected
• Repeat testing should occur about 3 months s/p treatment
• Pregnant, infants, and children **is recommended**

Gonorrhea — Rates of Reported Cases by State, United States and Outlying Areas, 2016

NOTE: The total rate of reported cases of gonorrhea for the United States and outlying areas (Guam, Puerto Rico, and Virgin Islands) was 144.4 per 100,000 population.

Gonorrhea — Rates of Reported Cases by Sex, United States, 2007–2016
Neisseria Gonorrhea Treatments and Updates

Adults, adolescents, and children >45 kg; uncomplicated gonococcal infections of the cervix, urethra, and rectum

- Ceftriaxone 250 mg IM as a single dose PLUS one dose of azithromycin 1 g PO

Alternative Regimens (also updates in treatment guidelines from 2010-2015)

- Ceftriaxone is unavailable:
  - One dose each of cefixime 400 mg PO PLUS azithromycin 1 g PO
- Cephalosporin allergy:
  - One dose each of gemifloxacin 320 mg PO PLUS azithromycin 2 g PO
  - One dose each of gentamicin 240 mg IM PLUS azithromycin 2 g PO

*g= gram; IM = intramuscular; mg = milligram; PO = by mouth*
Neisseria Gonorrhea Goals of Therapy

Goal of therapy = CURE INFECTION!

Test of cure (14 days s/p treatment):

• Adults and adolescents **not needed** unless treated with alternative regimen for pharyngeal gonorrhea
  -- If positive, susceptibility testing should be performed
  -- Should retest about 3 months s/p treatment

• Pregnant, infants, and children test-of-cure **is recommended**

• If symptoms persist s/p treatment → susceptibility testing
Primary and Secondary Syphilis — Rates of Reported Cases by State, United States and Outlying Areas, 2016

**NOTE:** The total rate of reported cases of primary and secondary syphilis for the United States and outlying areas (Guam, Puerto Rico, and Virgin Islands) was 8.7 per 100,000 population.

Primary and Secondary Syphilis — Reported Cases by Sex, Sexual Behavior, and HIV Status, United States, 2016

* MSM = Gay, bisexual, and other men who have sex with men (collectively referred to as MSM); MSW = Men who have sex with women only.

Syphilis *Treponema pallidum* Recommended Treatments

**Primary, secondary, or early latent <1 year**

- Benzathine penicillin G 2.4 million units IM as a single dose

**Latent >1 year, latent of unknown duration**

- Benzathine penicillin G 2.4 million units IM for 3 doses given 1 week apart

IM = intramuscular
### Syphilis Treponema pallidum Alternative Treatments

<table>
<thead>
<tr>
<th>Condition</th>
<th>Treatment Options</th>
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</thead>
<tbody>
<tr>
<td><strong>Primary, secondary, or early latent &lt;1 year</strong></td>
<td>- Doxycycline 100 mg PO twice daily for 14 days</td>
</tr>
<tr>
<td></td>
<td>- Tetracycline 500 mg PO four times daily for 14 days</td>
</tr>
<tr>
<td><strong>Latent &gt;1 year, latent of unknown duration</strong></td>
<td>- Doxycycline 100 mg PO twice daily for 28 days</td>
</tr>
<tr>
<td></td>
<td>- Tetracycline 500 mg PO four times daily for 28 days</td>
</tr>
</tbody>
</table>

*mg = milligram; PO = by mouth*

Syphilis *Treponema pallidum* Goals of Therapy

Goal of therapy = at least a 4-fold (2 dilution) decline within 6-12 months after therapy for primary or secondary (e.g. 1:256 $\rightarrow$ 1:64 or 1:32 $\rightarrow$ 1:8)

- 15-20% may not achieve the 4-fold/2 dilution decrease within 1 year

- Factors associating: person’s stage of syphilis (earlier more likely to decline 4-fold) and initial lower titer

- Clinical Pearl: 1 dilution variation may be lab variation, therefore, typically want to see at least 2 dilution positive change to alter or re-treat

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Congenital Syphilis — Reported Cases by Year of Birth and Rates of Reported Cases of Primary and Secondary Syphilis Among Women, United States, 2007–2016

- CS = Congenital syphilis; P&S = Primary and secondary syphilis.
Updates in STI Treatment Guidelines From 2010 to 2015
Congenital Syphilis

Proven or highly probable (1 of 2 treatment options)

- Aqueous crystalline penicillin G 100,000 – 150,000 units/kg/day, administered as 50,000 units/kg/dose IV every 12 hours during the first 7 days of life and every 8 hours thereafter for a total of 10 days
- Procaine penicillin G 50,000 units/kg/dose IM in a single daily dose for 10 days

Probable (1 of 3 treatment options)

- Above 2 treatment options
- Benzathine penicillin G 50,000 units/kg/dose IM in a single dose

IM = intramuscular; IV = intravenous; kg = kilogram

Updates in STI Treatment Guidelines From 2010 to 2015

Congenital Syphilis

Less Likely

- Benzathine penicillin G 50,000 units/kg/dose IM x 1 dose
- If mother’s titer decreased 4-fold after appropriate treatment for early syphilis, or remained low/stable for latent syphilis may also NOT treat, and provide close serologic follow-up every 2-3 months for 6 months

Unlikely

- No treatment required
- If needed, benzathine penicillin G 50,000 units/kg as a single IM dose might be considered, particularly if follow-up is uncertain

KEY TAKEAWAYS

1) PREVENTABLE STIS CONTINUE TO RISE ACROSS THE USA
Some regions and patients are being impacted more aggressively than others.

2) CONCERNS FOR RESISTANCE
Treating gonorrhea should include BOTH ceftriaxone 250 mg intramuscularly as well as azithromycin 1 g by mouth.

3) THESE STIS ARE CURRENTLY PREVENTABLE AND CURABLE!!!
This cannot be emphasized enough.
The Rise of Sexually Transmitted Infections: An Alarming Trend of a Familiar Foe

Danielle Colayco, Pharm.D., M.S.
Director, Health Outcomes & Value Strategy
Komoto Healthcare
Why is this Happening?!

- Low condom use
- Increased numbers in populations/demographics with usually lower incidence (i.e. newborns)
- Dating apps
- More people are getting tested
- Cuts to public health funds
- Antibiotic resistance
  - Concerns with gonorrhea
What can be done?

CDC
• Train frontline health workers, provide STI prevention resources to state and local health departments

State and local health departments
• Direct resources to STI investigation and clinical service infrastructure for rapid detection and treatment for people living in areas with high epidemic
What can be done?

Providers
• STI screening and timely treatment standard part of practice, especially for pregnant women and MSM
  – Integrate STI screening and treatment into prenatal care in addition to HIV prevention and PrEP when necessary

Everyone
• Talk openly about sexual health, use condoms, get tested regularly (Q3-12 months, depending on risk factors)

New App Lets Consumers Order STI Tests and Get Treatment via Telemedicine

A Community Pharmacy Perspective

• Opportunities for involvement
  – Sexual health services
  – Community-wide coalitions
  – Public health initiatives
How can community pharmacists make a difference?

- Condom and medication distribution
- Local data collection
- Counseling and referral
- Collaborative practice: testing & prescribing
- Community partnerships
How can community pharmacists make a difference?

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Komoto Healthcare, 1981
# Demographics: Delano, CA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Delano</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population size, n</td>
<td>55,659</td>
<td>325,719,178</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>72.2%</td>
<td>17.3%</td>
</tr>
<tr>
<td>Median household income</td>
<td>$36,949</td>
<td>$55,322</td>
</tr>
<tr>
<td>Below poverty level</td>
<td>29.0%</td>
<td>15.1%</td>
</tr>
<tr>
<td>High school graduate or higher</td>
<td>54.5%</td>
<td>87.0%</td>
</tr>
</tbody>
</table>

([Factfinder.census.gov](http://Factfinder.census.gov) & [Facebook.com/JasmineVineyards](http://Facebook.com/JasmineVineyards))
Komoto Healthcare, 2018

Komoto Pharmacy

Komoto Medical Pharmacy

Integrated Care Systems

Synergy Pharmacy Solutions

Komoto Family Foundation

Condom and medication distribution
Risk behaviors and perceptions

- At a local community college, 63% rarely or never used a condom during vaginal intercourse during last 30 days (n=676)

- Community pharmacy survey (n=97)
  - 44% had first intercourse < age 17
  - At first intercourse, 53% used no method of contraception
  - 55% had first pregnancy < age 20
  - 60% had at least one unplanned pregnancy
  - 47% of those who do not desire pregnancy used contraception inconsistently

Data on file; publications in progress
Contraceptive Prescribing: an opportunity to discuss STI prevention
STI Counseling and Referral

• Referral to local clinics
  – Primary care/gynecologists
  – Publicly funded
    • Planned Parenthood
    • Federally Qualified Health Clinics
    • Public Health Departments

• Counseling on risk reduction
  – Condom use
  – Testing with each new partner

• Cultural humility
  – Avoid making assumptions (monogamy, gender identify, sexual orientation, etc)
  – Reserve judgments
Community Partnerships

- Kern County STI Action Team
  - Phase 1: Know your risk
  - Phase 2: Parents, talk to kids.
    - “Be the first voice”
  - Phase 3: Get tested
- Delano Sexual Health Task Force
  - Farmworker outreach
  - Peer health educators
Local STI prevalence

Kernpublichealth.com.
Re-imagining the “Sexual Health” Aisle

Accessibility

Variety

Inclusivity: “I am a gay man. The sex I have is non-reproductive by definition.”

–Jamie Lawson
Patient-friendly Resources

www.teensource.org

www.talkwithyourkids.org

www.bedsider.org

Children’s books: It’s NOT the Stork, It’s So Amazing, It’s Perfectly Normal

www.ashpmidyear.org
KEY TAKEAWAYS

1) THE ROLE OF COMMUNITY PHARMACISTS
Community pharmacists can reduce the burden of STIs through various means, including condom and medication distribution, counseling and referral for STI testing and treatment, local data collection, community partnerships, and collaborative practice arrangements.

2) OPPORTUNITIES TO ENGAGE PATIENTS IN STI CONVERSATIONS
Pharmacists can counsel patients on STI prevention, testing, and treatment through various encounters, including medication dispensing and contraception prescribing.

3) COMMUNITY PARTNERSHIPS
Pharmacists can participate in community-wide coalitions as part of a cross-functional collaboration to prevent and reduce the incidence of STIs.
Patient Case Revisited

CJ is a 25 year old bisexual black male living with HIV who presents to clinic for a 6 month follow up appointment. He reports several casual sex partners for oral, receptive, and insertive anal sex since last visit. States he/his partners wear condoms “when we can remember.” He tolerates his medication well, reports 100% adherence, and has no complaints today.

Allergies: NKDA

Current medications:
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Pertinent PMH:
HIV – diagnosed 1/2017; risk factor = bisexual; CD4 nadir = 532 cells/mm³
Chlamydia – 1/2017, treated
Gonorrhea – 1/2017, treated
Syphilis – 1/2017 (RPR 1:256), treated; most recent RPR = 1:2 on 4/2018

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Post-Test Question 1

Based on CJ’s labs from 11/2018, what treatments, if any, are recommended?

A. Amoxicillin + benzathine penicillin G + doxycycline
B. Azithromycin + benzathine penicillin G + ceftriaxone
C. Azithromycin + ceftriaxone
D. Benzathine penicillin G + ceftriaxone
E. None, as he was treated previously 1/2017
Assessment/Plan:

   Pt is asymptomatic, no chancre, no rash; > 2 fold positive change in RPR
   1. Plan = benzathine penicillin G  2.4 million units IM x 1 dose.
   2. F/up RPR ~6-12 months; minimal acceptable response, RPR = ≤ 1:16
2. **Gonorrhea** – positive rectal and oral. Pt asymptomatic.
   3. Plan = ceftriaxone 250 mg IM x 1 dose PLUS azithromycin 1 gm PO x 1 dose.
   4. F/up test unnecessary unless symptoms present.
3. **Chlamydia** – positive rectal on lab. Pt asymptomatic.
   5. Plan = azithromycin 1 gm PO x 1 dose.
   6. F/up test of cure ~3 months.
4. **HIV** – undetectable with good immunologic function
   7. Plan = continue present management with BIC/FTC/TAF PO daily
   8. F/up HIV labs ~6 months
5. **Sexual Health**
   9. Condoms!! Encourage partner(s) get tested/treated.
Post-Test Question 2

Due to increased resistance concerns, which is the most appropriate treatment for gonococcal infections based on the most recent STI guidelines?

A. Amoxicillin + cefixime
B. Azithromycin
C. Azithromycin + ceftriaxone
D. Cefixime
E. Ceftriaxone