STDs and Hepatitis C

Catherine S. O’Neal, MD
Assistant Professor of Clinical Medicine, Infectious Diseases
Louisiana State University Health Sciences Center
March 3, 2018

NOTICE
There is currently a national shortage of:

- Bicillin-LA (benzathine penicillin G)
- Gemifloxacin
- Procaine Penicillin G
Objectives

• Review patient risk assessment and prevention
• STDs
  – Genital ulcers
  – Gonococcal infections
  – Mycoplasma genitalium
• Syphilis
• Hepatitis C
55 year old man with progressive dementia for 3 years is admitted with new onset seizures and hyponatremia as well as numbness in his right hand and leg. Parents complain of excessive thirst and obsession with water bottles.

His dementia began with difficulty with higher functioning then ultimately an inpatient psych admission in for delusions resulting in a bipolar diagnosis.

**PMHx:**
Vocal cord papilloma (2009)
Asthma

**Social hx:**
Business executive
Extensive overseas travel

**Labs:**
Na 123  
MRIm w and w/o: Bilateral maxillary sinus opacification.
WBC 15K
Labs:

<table>
<thead>
<tr>
<th>SPINAL FLUID</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>WBC, CSF</td>
<td>86</td>
</tr>
<tr>
<td>RBC, CSF</td>
<td>2</td>
</tr>
<tr>
<td>SEGS CSF</td>
<td>1</td>
</tr>
<tr>
<td>Lymphs, CSF</td>
<td>87</td>
</tr>
<tr>
<td>MONOS CSF</td>
<td>12</td>
</tr>
<tr>
<td>Eosinophils, CSF</td>
<td>0</td>
</tr>
<tr>
<td>XANTHOCHROMIA CSF</td>
<td>Absent</td>
</tr>
<tr>
<td>Volume Fluid</td>
<td>14.0</td>
</tr>
<tr>
<td>TUBES RECEIVED</td>
<td>4</td>
</tr>
<tr>
<td>TUBE USED</td>
<td>3</td>
</tr>
<tr>
<td>Spinal Fluid Glucose</td>
<td>57 *</td>
</tr>
<tr>
<td>Spinal Fluid Protein</td>
<td>68.8*</td>
</tr>
</tbody>
</table>
New or follow-up patient visit

Screening tool and high suspicion
Louisiana STD statistics
Louisiana AIDS statistics

AIDS diagnoses | 2016 | All races/ethnicities | Both sexes | Ages 13 years and older | All transmission categories
Rate per 100,000 population

<table>
<thead>
<tr>
<th>State</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>District of Columbia</td>
<td>30.0</td>
</tr>
<tr>
<td>Louisiana</td>
<td>25.0</td>
</tr>
<tr>
<td>Georgia</td>
<td>20.0</td>
</tr>
<tr>
<td>Florida</td>
<td>15.0</td>
</tr>
<tr>
<td>Maryland</td>
<td>10.0</td>
</tr>
<tr>
<td>Mississippi</td>
<td>10.0</td>
</tr>
<tr>
<td>Nevada</td>
<td>10.0</td>
</tr>
<tr>
<td>New York</td>
<td>10.0</td>
</tr>
<tr>
<td>Texas</td>
<td>10.0</td>
</tr>
<tr>
<td>South Carolina</td>
<td>10.0</td>
</tr>
<tr>
<td>Delaware</td>
<td>10.0</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>10.0</td>
</tr>
<tr>
<td>New Jersey</td>
<td>10.0</td>
</tr>
<tr>
<td>North Carolina</td>
<td>10.0</td>
</tr>
<tr>
<td>U.S. Virgin Islands</td>
<td>10.0</td>
</tr>
</tbody>
</table>

Footnotes: HIV data for the year 2016 are preliminary and based on 6 months reporting delay.
Chlamydia

Chlamydia | All races/ethnicities | Both sexes | Ages 13 years and older | Rate per 100,000 population | Louisiana

![Bar chart showing the rate of Chlamydia from 2002 to 2015 in Louisiana. The rate has been increasing over time.]
Syphilis

Early Latent Syphilis | All races/ethnicities | Both sexes | Ages 13 years and older | Rate per 100,000 population | Louisiana

Rate

Year

Data not available
Data not available
Data not available

0.0 2.0 4.0 6.0 8.0 10.0 12.0 14.0 16.0 18.0 20.0 22.0 24.0

Atlas Plus
Explore CDC's HIV • Hepatitis • STD • TB Data
New or follow-up patient visit

Screening tool and high suspicion

Screening

Symptoms

Making STDs Part of the Dating Conversation
“Have you been sexually active in the last year?”

- **YES**
  - “Do you have sex with men, women, or both?”
    - **YES**
      - “In the past 12 months, how many sexual partners have you had?”
        - (Ask twice if patient answered “Both” to the)
    - **NO**
      - “Continue with medical history”

- **NO**
  - “Have you ever been sexually active?”
    - **YES**
      - “Have you had sex with men, women, or both?”
    - **NO**
      - “How many sexual partners have you had?”
        - (Ask twice if patient answered “Both” to the)
Prevention

- Assessment of risk
  - Counseling on avoidance of risk
  - Pre-exposure vaccination
  - Identification of asymptomatic carriers

- Effective diagnosis and treatment
  - Retesting for chlamydia, gonorrhea and women with trichomonas 3 months after therapy for cure.

- Evaluation and treatment of sex partners
  - PrEP
The Five P’s

- Partners
- Practices
- Prevention of Pregnancy
- Protection of STDs
- Past History of STDs
Condom Efficacy

Latex = Polyurethane ≠ Natural membrane condoms

Are all condoms equally efficacious in preventing pregnancy?

Are all condoms equally efficacious in preventing STDs?
Screening: Pregnancy

• Prenatal:
  – HIV
  – Syphilis
  – HBsAg (even if previously vaccinated)
  – At Risk:
    • Chlamydia with retest in third trimester
    • Gonorrhea
    • HCV
    • Pap

• Symptomatic
  – BV, trichomonas and HSV-2
Screening special populations: MSM

• Screen annually
  – HIV
  – Syphilis
  – Urethral NAAT test for *N. gonorrhoeae* and *C. trachomatis* (insertive sex in the previous year)
  – Rectal NAAT test for *N. gonorrhoeae* and *C. trachomatis* (receptive sex in the previous year)
  – Pharyngeal NAAT test for *N. gonorrhoeae* (oral sex)
• HBsAg
Special populations: WSW

Certain sexual practices increase the incidence of:

- Trichomonas
- HPV
- BV
- HIV

Include in the differential of dysuria and chronic pelvic pain.
Objectives

• Review patient risk assessment and prevention
• STDs
  – Mycoplasma genitalium
  – Genital ulcers
  – Gonococcal infections
• Syphilis
• Hepatitis C

2015 Sexually Transmitted Diseases Treatment Guidelines
Mycoplasma genitalium

- Leading cause of chlamydia-negative, nongonococcal urethritis in men.
Male urethritis

*C. trachomatis*  >  *M. genitalium*  >  *N. gonorrhoeae*
Mycoplasma genitalium

- Urethritis
- Epididymitis

- Cervicitis
- PID (10%)
- Preterm birth

- Culture can take up to 6 months
- NAAT is preferred
- Available through Mayo labs
- 7-day course of doxycycline (cure rate of 31%)
  - 1 gram dose of azithromycin (resistance is common)
Genital Ulcers

- Syphilis
- HSV-2
- HSV-1
- Chancroid (*Haemophilus ducreyi*)
- Lymphogranuloma venereum (LGV) (*Chlamydia trachomatis*)
- Granuloma Inguinale (Donovanosis) (*Klebsiella granulomatis*)
HSV

- Both HSV-1 and 2 cause genital infections
- 70% of infected persons are asymptomatic
- Asymptomatic shedding leads to transmission
- Decrease risk with:
  - Condoms (30%) and antiviral suppressive therapy (55%)

Google your own pictures.
HSV

Patient presents with a genital ulcer
- Tzanck smear (only 40% sensitive)
- Culture (sensitivity 30-80%)
- Antigen detection (~70% sensitive)
- PCR (FDA cleared, >90% sensitive)

Asymptomatic patient
Use Glycoprotein IgG-based type-specific assays (gG1 & gG2)
- If gG2 is positive, patient has genital herpes
- If gG1 is positive, patient either has oral herpes or genital herpes
  - Positive predictive value is low in low prevalence settings

Never order IgM serologies!!
Initial HSV Treatment

• **Recommended Regimens**

  ➢ Acyclovir 400 mg orally three times a day for 7–10 days 
    OR
  ➢ Acyclovir 200 mg orally five times a day for 7–10 days 
    OR
  ➢ Valacyclovir 1 g orally twice a day for 7–10 days 
    OR
  ➢ Famciclovir 250 mg orally three times a day for 7–10 days
Recurrent HSV Treatment

• Recommended Regimens
  ➢ Acyclovir 400 mg orally twice a day
    OR
  ➢ Valacyclovir 500 mg orally once to twice a day*
    OR
  ➢ Valacyclovir 1 g orally once a day
    OR
  ➢ Famiciclovir 250 mg orally twice a day

Doses are higher for HIV infected patients.
Rebound affect may be seen after cessation

Chancroid

- *Haemophilus ducreyi*
  - Endemic in parts of south US
  - HIV infection and commercial sex workers
  - Associated with outbreaks

Symptoms:
- Painful, 'ragged' genital ulcer.
- Tender suppurative inguinal adenopathy (50%)

Diagnosis:
- Culture (80% sensitive).
- Antigen detection and PCR are not widely available

Treatment:
- Azithromycin 1 gram PO X 1
  OR
- Ceftriaxone 250 mg IM X 1

Treat all partners in the preceding 10 days before symptoms
Granuloma Inguinale (Donovanosis)

- *Klebsiella granulomatis*
- Painless, progressive (destructive), “serpiginous” ulcerative lesions, beefy red with white border & highly vascular
- Diagnosis:
  - Tissue biopsy (no culture test; PCR not FDA cleared) demonstrating the organisms in macrophages, called Donovan bodies
- Treatment:
  - Azithromycin 1g PO q week X3
  - Doxycycline 100mg po BID X 3 weeks (at least)
C. trachomatis

- Lymphogranuloma Venereum (LGV)
- Serotype L1-L3
- Painless ulcer with painful lymphadenopathy
- **Routine** NAATs do not distinguish between serotypes D-K and L1-L3 (LGV).
- NAATs perform well on rectal specimens
- RX:
  - Doxycycline 100mg BID for 3 weeks
<table>
<thead>
<tr>
<th></th>
<th>Pain</th>
<th>Characteristics</th>
<th>Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSV</td>
<td>Pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Syphilis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LGV</td>
<td></td>
<td>Lymphadenopathy</td>
<td></td>
</tr>
<tr>
<td>H. ducrayi</td>
<td>Pain</td>
<td>Lymphadenopathy</td>
<td>Yes</td>
</tr>
<tr>
<td>Donovanosis</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Management:**
Biopsy, culture or PCR based testing.
Treat empirically until results return.
Gonococcal Infections

• Annual screening (age <25) for at risk women.

• Diagnosis
  – Culture or NAAT
    • Culture: endocervical or urethral swab, rectal, oropharyngeal
    • NAAT: swabs and urine

• Treatment
  – Fluoroquinolone and cefixime (800mg) are no longer recommended
  
**Ceftriaxone 250mg IM and azithromycin 1 gram PO combination

Test of cure is only needed in patient who receive alternative regimens (single therapy) and if NAAT is repeated, an attempt at culture should be made before retreatment.
Who regional estimates of new cases of four curable sexually transmitted infection: 2012
Syndromic management

- Urethritis/Cervicitis/Proctitis

Failure of Dual Antimicrobial Therapy in Treatment of Gonorrhea

TO THE EDITOR:

Resistance to all antimicrobial agents has developed in some Neisseria gonorrhoeae strains. Dual antimicrobial therapy (ceftriaxone plus azithromycin) is a recommended first-line empirical treatment in many countries. We describe treatment failure with dual therapy in a patient with gonorrhea.

In December 2014, a heterosexual man presented to
Syphilis
Rates of Reported cases by county, 2015
Syphilis

- Incubation: 3 weeks
- Primary:
  - Chancre
  - Last 2-8 weeks, longer HIV
- Secondary:
  - Dissemination
  - 2-12 weeks after contact
  - 40% with CNS involvement
- Tertiary (late): cardiac, opthalmologic, auditory, or gummatous
- Latent: asymptomatic infection
  - Early
  - Late
Syphilis Diagnosis

• Darkfield microscopy
• Nontreponemal antibody tests
  – VDRL or RPR
    • Non-specific antibody production
    • Provide a titer to follow
    • Negative after treatment or “serofast”
    • A 4 fold change (1:4-1:16) is clinically significant
    • Reexamine at 6 months and 1 year
Syphilis Diagnosis

• Treponemal tests
  – FTA-ABS
  – Remain positive lifelong
    • Except in those treated early

• Serology can be negative for up to 90 days after exposure
“Reverse” testing

Treponemal assay

+  

Nontreponemal assay

+  

-  

Retest with different treponemal assay

Treat

• Prior treatment
• Repeat in 2-4 wks for early infection r/o
<table>
<thead>
<tr>
<th>Nontreponemal tests</th>
<th>Treponemal tests</th>
<th>Likely interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>+</td>
<td>Syphilis, yaws or pinta</td>
</tr>
<tr>
<td>+</td>
<td>−</td>
<td>False positive – No syphilis</td>
</tr>
<tr>
<td>−</td>
<td>+</td>
<td>Primary or latent syphilis; previously treated or untreated syphilis; yaws or pinta</td>
</tr>
<tr>
<td>−</td>
<td>−</td>
<td>No syphilis; incubating syphilis</td>
</tr>
</tbody>
</table>
Follow-up

• Repeat serology at 6 and 12 month
• If a 4-fold decrease is not seen, examine CSF
Neurosyphilis Diagnosis

• CSF analysis:
  – CD4 <350 and symptomatic patients
• + VDRL- very specific
• +FTA-ABS- very sensitive
• Clinical presentation, CSF leukocytosis (>20WBC/mm³) and + serum serology
Treatment of syphilis

• Primary, Secondary and Early Latent:
  – 2.4 million units IM Benzathine pen G X 1

• Late Latent:
  – 2.4 million units IM pen G X 3

• Tertiary:
  – Examine CSF
  – 2.4 million units IM Benzathine pen G X 3
Treatment of syphilis

• Penicillin allergy
  – Doxycycline for 14 days
  – Ceftriaxone for 10-14 days
New or follow-up patient visit

Screening tool and high suspicion

Screening

Symptoms
Hepatitis C

Acute Viral Hepatitis C | All races/ethnicities | Both sexes | Ages 13 years and older | Rate per 100,000 population | United States

Rate

Year

**Summary of Recommendations**

<table>
<thead>
<tr>
<th>Population</th>
<th>Recommendation</th>
<th>Grade (What's This?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults at High Risk</td>
<td>The USPSTF recommends screening for hepatitis C virus (HCV) infection in persons at high risk for infection. The USPSTF also recommends offering 1-time screening for HCV infection to adults born between 1945 and 1965.</td>
<td>B</td>
</tr>
</tbody>
</table>

**New or follow-up patient visit**

**Screening tool and high suspicion**

**Screening**

**Symptoms**

**U.S. Preventive Services Task Force**
Hepatitis C

• Most common bloodborne infection in the US
  – 10-40% of patients have no identifiable parenteral source
• AIDS Clinical Trial Group data
  – Annualized incidence of 0.5 infections/100 person-years
    • 75% of converters reported no history of IDU
• Fenway clinic data
Hepatitis C

• Most common bloodborne infection in the US
  – 10-40% of patients have no identifiable parenteral source

• AIDS Clinical Trial Group data
  – Annualized incidence of 0.5 infections/100 person-years
    • 75% of converters reported no history of IDU

• Fenway clinic data
87 total patients with HCV

33% reported a history of IVDU

46% of noninjection drug use

70% had hx of STDs

Annualized incidence of 1.63/100 person years

1169* HIV+ men seen ≥2 times from 1/2008-6/2009

9 men excluded not MSM

101 (9%) men no HCV Ab test

87 total patients with HCV

70% had hx of STDs

38 (4%) HCV Ab+ on first test at Fenway

HCV Ab+ prior to first Fenway visit

HCV Ab– on first test at Fenway

379 (38%) ≥1 additional HCV Ab test

616 (62%) no additional HCV Ab tests

23 (6%) incident HCV Ab+

356 (94%) HCV Ab–
Conclusions