HIV and STD Trends, Diagnosis, and Prevention Updates

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Objectives

• Epidemiology overview of reportable STDs:
  – Syphilis
  – Gonorrhea
  – Chlamydia
  – HIV

• Review current STD and HIV testing and diagnosis paradigms

• Case Presentations

• Prevention interventions
Figure S1. Reported Primary and Secondary Syphilis Case Rate
United States and Arizona 2004 - 2013

Arizona Cases  Arizona Rate  United States Rate


Cases 160 178 210 346 327 236 230 274 204 290

Rate (per 100,000) 2.7 2.9 3.4 5.4 5.0 3.6 3.6 4.3 3.1 4.4

Rate (per 100,000) 0 1.0 2.0 3.0 4.0 5.0 6.0

Cases 0 50 100 150 200 250 300 350 400 450 500
Figure S5. Reported Primary and Secondary Syphilis Case Rates by Race/ Ethnicity, Arizona 2009 - 2013

- Black
- American Indian/Alaskan Native
- Hispanic
- Non-Hispanic White
- Asian/Native Hawaiian/Pacific Islander
- Arizona
Figure S7. Reported Primary and Secondary Syphilis Cases by Gender and Sexual Preference, Maricopa County 2009-2013

Arizona Department of Health Services, STD Control Program
Figure CT 2: Comparison of 10 Year Reported Chlamydia Rates for Arizona and the United States, 2003-2012

Arizona Department of Health Services, STD Control Program
Figure CT 8: Chlamydia Rates by Age group and Gender, Arizona 2013

Arizona Department of Health Services, STD Control Program
Figure GC 2. Comparison of 10 Year Reported Gonorrhea Rates for Arizona and the United States, 2003-2012

Arizona Department of Health Services, STD Control Program
Figure GC 3. Gonorrhea Rates by Age Group and Gender, Arizona 2013

Arizona Department of Health Services, STD Control Program
Figure GC7: Reported Gonorrhea Case Rates by Race/Ethnicity, Arizona 2009-2013

- American Indian/Alaskan Native
- Asian/Native Hawaiian/Pacific Islander
- Black
- Hispanic
- Non-Hispanic White
- Arizona

Data is provisional and subject to changes. *2012 CDC bridged data used for 2013 case rate population denominators.
Arizona Newly Diagnosed HIV/AIDS Cases by Year

Arizona Newly Diagnosed Cases by Reported Risk Behaviors

Arizona HIV/AIDS Rates by Race/Ethnicity

Year of diagnosis

- White*
- Black*
- Hispanic
- A/PI/H
- AI/AN

Spectrum of Care Engagement – Arizona Prevalent Cases 2012

2013 Spectrum of Care Cascade

N=15,798

- HIV Diagnosed
- Linked to HIV care
- Retained in HIV Care
- Need Antiretroviral Therapy
- On Antiretroviral Therapy
- Adherent/Undetectable

STD Screening for MSM

- HIV
- Syphilis
- Urethral GC and CT
- Rectal GC and CT (if RAI)
- Pharyngeal GC (if oral sex)
- HSV-2 serology (consider)
- Hepatitis B (HBsAg)
- Anal Pap (consider for HIV+)

* At least annually, more frequent (3-6 months) if at high risk (multiple/anonymous partners, drug use, high risk partners)

CDC 2010 STD Tx Guidelines  www.cdc.gov/std/treatment
Nucleic Acid Amplification Tests

- Highest sensitivity for Chlamydia/Gonorrhea
  - Able to detect 30-40% more infections
- Less dependent on specimen collection and handling
  - Self-collected vaginal swabs
  - Urine
  - Rectal

CDC. MMWR October 18, 2002 / Vol. 51 / No. RR-15
Case 1: Jonathan, 20yo

• Presents with complaints of burning with urination and urethral discharge x 1 day
• 10 male sex partners during the 90 days—did not use condoms with these partners
• No known prior STDs, but last check up over 1 year ago
• Exam: yellow pus noted at urethral meatus, but no epididymitis, no inguinal adenopathy, and no systemic symptoms
Gonorrhea

- **Diagnostic issues:** Extra-genital NAAT testing
- **Treatment issues:**
  - Dual treatment regardless of chlamydia test result
- **Partner treatment:** EPT option, BYOP
- **Repeat testing** 3 months after treatment: women and men infected with chlamydia or gonorrhea
Gonorrhea Treatment
Uncomplicated Genital/Rectal Infections

Ceftriaxone 250 mg IM in a single dose

ALTERNATIVE
if injection not an option:

Cefixime 400 mg orally in a single dose

PLUS*
Azithromycin 1 g orally
or
Doxycycline 100 mg BID x 7 days

CDC 2010 STD Treatment Guidelines
www.cdc.gov/std/treatment
Case 2: Erica

- Erica is a 18-year-old female who presents with dysuria.
- Reports sharing sex toys with one new female partner in previous 60 days
- Denies male partners
- What might be the cause of her symptoms?
Differential Diagnosis

Dysuria

- Urinary Tract Infection
- Genital Tract Infection
  - Cervicitis
  - Vaginitis
- Skin Related Abnormalities/Mucosal Perineal
  - Herpes
  - Trauma
After doing a genital exam, you observe discharge in the cervical os but not in the vault.

How does this affect your differential?
Differential Diagnosis

Genital Tract Infection

Cervicitis

Chlamydia

Gonorrhea
Chlamydia Treatment

Azithromycin
1 g orally x 1

Doxycycline
100 mg twice daily x 7 days

When available, single-dose treatment preferable

http://www.cdc.gov/std/treatment/
Case 3: Jeff

- Malaise, truncal and palmar rash for two weeks
- 5-10 partners in last 90 days
- Meth 3X/week
- On exam, maculopapular rash on abdomen chest, palms and soles of feet.
- What diagnostic tests should be performed?
- What treatment should he receive?
Diagnosis of Syphilis

- **Serology**
  - Non-treponemal (non-specific, cardiolipin-based)
    - RPR or VDRL
  - Treponemal (specific to *Treponema pallidum*)
    - TP-PA, FTA-abs, EIA, CIA

- **Darkfield microscopy**

- **Polymerase Chain Reaction**
Primary Syphilis

• Primary lesion or "chancre" develops at the site of inoculation

• **Chancre:**
  – Progresses from macule to papule to ulcer
  – Typically painless, indurated, and has a clean base
  – Highly infectious
  – Heals spontaneously within 1 to 6 weeks
  – 25% present with multiple lesions

• Regional lymphadenopathy: classically rubbery, painless, bilateral

• **Seroologic tests for syphilis may not be positive during early primary syphilis**
Primary Chancre of the Lip
Primary Chancre of the Buttocks
Primary Chancre of the Eyelid
Secondary Syphilis

- Secondary lesions occur 3 to 6 weeks after the primary chancre appears; may persist for weeks to months
- Primary and secondary stages may overlap
- Mucocutaneous lesions most common
- Manifestations:
  - Rash (75%-100%)
  - Lymphadenopathy (50%-86%)
  - Malaise
  - Mucous patches (6%-30%)
  - Condylomata lata (10%-20%)
  - Alopecia (5%)
- Serologic tests are usually highest in titer during this stage
Secondary Skin Lesions
Condylomata Lata

Patchy Alopecia

Mucous Patches

Patchy Alopecia
Latent Syphilis

• Host suppresses infection-no lesions are clinically apparent
• Only evidence is positive serologic test
• May occur between primary and secondary stages, between secondary relapses, and after secondary stage
• Categories:
  – Early latent: <1 year duration
  – Late latent: ≥1 year duration
Treatment of Primary, Secondary and Early Latent

Benzathine penicillin G:
2.4 million units IM x 1 dose

• Alternatives:
  • Doxycycline 100mg PO BID x 2 weeks OR
  • Tetracycline 500 mg PO QID x 2 weeks OR
  • Ceftriaxone 1 gm IM/IV QD x 8-10 days OR

(2006 CDC Treatment Guidelines)
Treatment of Late Latent and Unknown Duration

Benzathine Penicillin G:
• 2.4 million units IM x 3 doses spaced one week apart (Total 7.2 million units)
• Alternatives:
  • Doxycycline 100mg PO BID x 4 weeks OR (2006 CDC Treatment Guidelines)
Case: 33yo male with fever and rash

- Seen in ER 2 days ago given NSAIDS
- Seen in primary care 3 days later, history revealed:
  - Meth use
  - Unprotected sex with multiple male partners in previous 60 days
- What is the current HIV testing paradigm for diagnosis?
4th Generation: Ag/Ab HIV Test

- Intended to be used as an aid in the diagnosis of HIV-1/HIV-2 infection, including acute or primary infection
- Simultaneous qualitative detection of HIV p24 antigen and antibodies to HIV-1 group M and group O and/or HIV-2 in human serum and plasma
- An HIV Ag/Ab reactive result does not distinguish between the detection of HIV-1 p24 antigen, HIV-1 antibody, or HIV-2 antibody
4th Generation: Ag/Ab HIV Test

- Overall specificity:
  - 99.77% (95% CI: 99.62-99.88%)

- HIV antibody sensitivity:
  - 100% (95% CI: 99.63-100.00%)

- Specificity and sensitivity in low and high risk populations, pregnant females, and pediatrics

ARCHITECT HIV Ag/Ab Combo Package Insert
4th Gen: Ag/Ab HIV test

- Antigen (Ag)
  - Viral component
- Antibody (Ab)
  - Host response
New HIV Testing Algorithm

1. Sensitive HIV-1/2 immunoassay (3rd or 4th generation)
   - (+) HIV-1/2 antibodies detected
     - HIV-1 (+): Initiate care
     - HIV-2 (+): Initiate care
   - (-) Negative for HIV-1 and HIV-2 antibodies (and p24 Ag*)

2. HIV-1/HIV-2 discriminatory immunoassay
   - HIV-1 (+): Initiate care
   - HIV-2 (+): Initiate care
   - HIV-1&2 (-) RNA
     - RNA (+): Acute HIV-1 infection, Initiate care
     - RNA (-): Negative for HIV-1, Follow-up for HIV-2
HIV Screening Recommendation

• Routine HIV screening for
  – All patients aged 13-64
  – Patients seeking treatment for STDs
  – Patients initiating TB treatment

• Repeat HIV screening for
  – Persons at high risk
  – Persons starting a new sexual relationship
  – Others based on clinical judgment

- IV drug users & their sex partners
- Persons exchanging sex for money
- Sex partners of HIV infected persons
- Persons who had more than one sex partner since their last HIV test
HIV Prevention
What is PrEP?

- Strategy for reducing HIV acquisition
- Utilizes tenofovir/emtricitabine orally
  - FDA approved indication in July 2012
  - Once daily and generally well tolerated
Indications for PrEP

• High risk of HIV acquisition
  – MSM
  – Regular partner with HIV
• Serodiscordant couples
  – No data on additional protective benefit above treating the source patient
• Will have regular medical follow-up
• Will adhere to daily treatment
PrEP Eligibility

- Document HIV antibody negative
- Test for acute HIV infection if patient has symptoms consistent with acute HIV infection or reports unprotected sex with and HIV positive person in preceding month
- Patient that patient is at ongoing high risk of HIV acquisition
- Confirm calculated creatinine clearance of >60 ml/min
Why isn’t PrEP more widely utilized?

• Need provider able to perform baseline screening
• Need provider to perform every 2-3 month appropriate follow-up
• Estimated annual cost of $11,740
  – Excluded from most insurance coverage
# PrEP Providers

## Prevention Referrals (PEP and PrEP)

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<th>Provider Name</th>
<th>Address</th>
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<tr>
<td>Arizona Pulmonary Specialists</td>
<td>3330 North 2nd Street, Suite 300</td>
<td>602-443-0184</td>
<td><a href="http://www.azpulm.com">http://www.azpulm.com</a></td>
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<tr>
<td>Omar Gonzalez, MD</td>
<td>Phoenix, AZ 85012</td>
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<tr>
<td>Camelback Mountain Medical Assoc.</td>
<td>120 East Monterey Way</td>
<td>602-266-4383</td>
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<tr>
<td>Griffin Cipolla, DO</td>
<td>Phoenix, AZ 85012</td>
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<tr>
<td>First Family Medical Group</td>
<td>1444 West Bethany Home Road</td>
<td>602-242-4843</td>
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<tr>
<td>Ken Fisher, MD</td>
<td>Phoenix, AZ 85013</td>
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<tr>
<td>Thanes Vanig, MD</td>
<td>Phoenix, AZ 85012</td>
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<tr>
<td>Pueblo Family Physicians</td>
<td>4350 North 19th Avenue #6</td>
<td>602-264-9191</td>
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<tr>
<td>Doug Cunningham, MD</td>
<td>Phoenix, AZ 85015</td>
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Percentage of Persons with Primary, Secondary, or Early Latent Syphilis Diagnosis with Prior HIV Diagnosis, Arizona 1998-2012

- Males
- Females
Three Local Analyses

• HIV viral loads of young men with early syphilis in Maricopa County
• Viral loads of men with P&S syphilis in Phoenix, Philadelphia, Washington DC, and New York City
• Viral loads of men undergoing rectal testing at Maricopa County STD clinic
(1) Viral loads of young men with early syphilis in Maricopa County

- 2009-2012
- 1,215 ES cases diagnosed in MC
- 1,098 (90%) male, 798 (73%) MSM
- 509 ES cases with HIV
- 248 ES cases ages 15-24
- 56 HIV infected men with early syphilis ages ≤24
  - 41% Hispanic, 14 (25%) African American
  - 5 (9%) primary, 23 (41%) secondary, 28 (50%) EL
  - 53/54 reported as MSM
  - 22 (39%) diagnosed with HIV within 30 days of ES
Viral loads of young men with early syphilis in Maricopa County

- 32 (57%) had a detectable viral load within one year of syphilis diagnosis
- Median VL (21,000, range 130-302,844)
- Only four had an undetectable VL
- 20 (36%) had no reported viral load or a viral load collected greater than one year from syphilis diagnosis

(2) Viral loads among HIV-Infected Persons with P&S Syphilis, 4 Cities

- 2009-2010
- 1,675 P&S/HIV co-infected cases
- Phoenix (9.8%), Philadelphia (11.3%), NYC (71.3%), Washington DC (7.5%)
- 41.1% African American, 24.5% Hispanic
- 79.9% diagnosed with HIV >365 days before syphilis
Viral loads among HIV-Infected Persons with P&S Syphilis, 4 Cities

• N = 1,675
• 188 (11.2%) had no viral load result
• 1,487 had a viral load collected within 6 months of syphilis diagnosis
  – 45.6% had an undetectable viral load
  – 54.4% had a detectable viral load
• Median VL 25,101 copies/ml (range 206-3,590,000 copies/ml)
Viral loads among HIV-Infected Persons with P&S Syphilis, 4 Cities

- 220 cases (13.1%) were diagnosed in STD Clinics
- 172 cases (10.3%) were diagnosed with syphilis within 30 days of HIV diagnosis
- Median days between syphilis diagnosis and VL = 8d
- Correlates of having a detectable viral load
  - Younger age at syphilis diagnosis
  - Syphilis diagnosis in an STD clinic
  - Shorter interval (<1 year) between HIV and syphilis diagnosis

(3) HIV Status and Viral loads among Men Testing positive for Rectal Gonorrhea and Chlamydia, Maricopa County

• 2011-2013
• 26,538 men seen at Maricopa County STD Clinic
• 1,591 men tested for rectal GC and CT
• 506 (31.8%) positive for rectal GC, CT, or both
Men Undergoing Rectal Testing (N = 1,591)

- 68.2% Negative
- 31.8% Positive (N = 506)
  - 13.2% Gonorrhea
  - 12.2% Chlamydia
  - 6.4% Both
HIV Status of Men with Rectal CT or GC Infection
N = 506

- Prior HIV: 17.8%
- New HIV Dx: 5.7%
- HIV Negative: 75.1%

N = 119
Viral Loads Among HIV-Infected Men with Rectal CT or GC Infection
N = 119

- No Reported VL: 59.7%
- Undetectable VL (<20 copies/ml): 28.6%
- Detectable VL: 0.5%
Of the 506 men with rectal infection, 119 (23.5%) were previously or newly diagnosed with HIV (Figure 2).

Of these, 71 (59.7%) had a detectable viral load collected within one year of rectal testing (Mean 174,316 copies/ml, Range 26-2,968,091).

Among men who had a reported viral load within one year of rectal testing, men co-infected with rectal GC/CT and HIV had higher mean viral loads than men who had HIV infection alone \( (174,316 \text{ copies/ml vs. } 57,717 \text{ copies/ml}, p = 0.04) \).
That rash or sore might be SYPHILIS
Syphilis is on the rise in Pima County
GET FACTS. GET TESTED. GET CURED.
Free & confidential testing & information: 520-724-7808 - www.pima.gov/health

Esa erupción o lesión puede ser SÍFILIS
Los casos de Sífilis van en aumento
HÁZTE LA PRUEBA GRATIS HOY
Pruebas e información son confidenciales. 520-724-7800 - www.pima.gov/health
For more information please contact Centers for Disease Control and Prevention

1600 Clifton Road NE, Atlanta, GA  30333
Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov    Web: http://www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.
Where do I go for clinical advice on HIV patient care?

• **Warmline 6am-5pm PST**
  – 1-800-933-3413

• **Available 24 hours/7 days a week**
  – Perinatal Line 1-888-448-8765
  – Pepline 1-888-448-4911