Chlamydia Prevention: Prevention Opportunities and Challenges

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Outline

- Chlamydia basics
  - Biology
  - Epidemiology

- Chlamydia prevention and control
  - Challenges
  - Opportunities
CHLAMYDIA BASICS: BIOLOGY
Chlamydia trachomatis

- Sexually transmitted infection
  - Gram negative intracellular bacteria
  - Highly transmissible
  - Genital, oropharyngeal, and rectal

- Congenital transmission

- Limited data on natural history of sexual infections
  - Infections clear on their own
  - Partial immunity after infection
  - Re-infection is common
Clinical Manifestations

- Vast majority of infections are asymptomatic
- Lower genital tract infection
  - Cervicitis – discharge, cervical friability
  - Urethritis – dysuria, discharge
- Can ascend to the upper genital tract
  - Women – pelvic inflammatory disease (PID)
    - ~10-15% of untreated chlamydia leads to PID

Oakeshott et al, 2010; Haggerty et al, 2010
Long Term Reproductive Complications

- Tubal inflammation can result in scarring, loss of function
- Long-term sequelae
  - Tubal factor infertility
  - Ectopic pregnancy
  - Chronic pelvic pain

Chlamydia is the leading preventable cause of tubal factor infertility

Scanning electron microscopy photos courtesy of Dorothy L. Patton, University of Washington, Seattle, WA
Chlamydial infections among men who have sex with men (MSM)

- Extra genital infections are common among screened MSM
  - 0.5% – 2% infected at pharynx
  - 3% – 10% infected at the rectum

- May increase risk of HIV transmission
  - Increase viral load among HIV-infected MSM
  - Increase susceptibility among HIV-uninfected MSM

- Marker of risk
  - Receptive anal or oral sex
  - Sexual network with STDs
  - Opportunity to for prevention intervention

Kent, 2005; Bernstein et al, 2009
Diagnosis

- **Nucleic acid amplification tests (NAATs)**
  - Sensitivity ~96%, specificity >98%

- **Vaginal swabs optimal specimen to screen females**
  - Perform at least as well as other approved specimens
  - Less invasive than endocervical swabs

- **Urine-based**
  - Alternative for females
  - Specimen of choice for males

- **Rectal and oropharyngeal swabs**

Schachter et al, 2005; Doshi et al, 2008; APHL Expert Meeting Consultation, 2009
Treatment

- **Simple and effective**
  - Single-dose oral azithromycin, 1g
  - 7-day regime of doxycycline, 100 mg 2x day
  - Few side effects

- **Lifecycle is about 72 hours**
  - Recommend that patients abstain from sex for 7 days after treatment
  - Patient counseling and education materials
CHLAMYDIA BASICS: EPIDEMIOLOGY
Notifiable conditions in the US, 2012

1. Chlamydia: 1,422,976
2. Gonorrhea: 334,836
3. Salmonellosis: 53,800
4. Syphilis: 49,903
5. Pertussis: 48,277
6. HIV: 35,361
7. Lyme disease: 30,831
8. Coccidioidomycosis: 17,802
9. Streptococcus pneumoniae invasive disease: 17,138
10. Invasive pneumococcal disease: 15,635
<table>
<thead>
<tr>
<th>Rank</th>
<th>Condition</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chlamydia</td>
<td>1,422,976</td>
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64% of all infections reported
Chlamydia in West Virginia, 2012

- Most commonly reported condition
  - 4,790 cases reported
  - 258 cases per 100,000 persons

- Geographic, age, and race/ethnicity disparities

http://www.cdc.gov/nchhstp/atlas/
Chlamydia in West Virginia, 2012

- Concentrated in urban areas
- Highest rates in Morganton

http://www.cdc.gov/nchhstp/atlas/
Chlamydia in West Virginia, 2012

- Highest rates among young people

http://www.cdc.gov/nchhstp/atlas/
Chlamydia in West Virginia, 2012

- Highest rates among young people
- Highest rates among blacks

http://www.cdc.gov/nchhstp/atlas/
Estimates of burden of disease

- **Case reports under-estimate burden**
  - Most infections are asymptomatic and are not diagnosed
  - Infections treated empirically are not reported

- **National estimates**
  - 1.8 million prevalent infections
    - 1 in 20 sexually-active young women
    - 1 in 7 sexually-active young black women
  - 2.8 million incident infections
Risk Factors for Chlamydial Infection

- **Biological**
  - Cervical ectopy increases acquisition

- **Epidemiological**
  - Young age
  - Multiple partners
  - Partner who has other partners
  - Inconsistent condom use with multiple partners
  - High prevalence of disease in sexual network
  - Re-infection from untreated partner
Chlamydia Basics: Summary

- Sexually transmitted infection
- Majority of infections are asymptomatic
- Non-invasive, sensitive diagnostic tests
- Safe and effective treatment
- Most common notifiable infection
- Young females at increased risk
CHLAMYDIA PREVENTION & CONTROL
Prevention of Chlamydia

- Abstinence
- Mutual monogamy
- Reduced number of sex partners
- Consistent and correct condom use

www.nhs.uk
Control Strategy for Chlamydia

1. Identify Infections
2. Treat patient
3. Treat partners
Identifying and treating infection before progression can reduce adverse outcomes (secondary prevention)

- Data from three randomized control trials suggest that screening young women can reduce PID
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Treating infection at any stage prevents ongoing transmission (primary prevention)
Control Strategy for Chlamydia

- **Screening recommendations**

  - Identify Infections
  - Treat patient
  - Treat partners

  **MMWR Recommendations and Reports**
  Recommendations for the Prevention and Management of Chlamydia trachomatis Infections, 1993

  **STD Treatment Guidelines 2010**

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

  **American Academy of Pediatrics**
CDC Screening Recommendations: Females

- All sexually-active females aged <25 years should be screened annually.
- All females 25 and older with risk factors should be screened.

- Additionally, recommended screening for
  - All pregnant women
  - Females entering juvenile detention facilities
  - Females <35 years entering correctional facilities
CDC Screening Recommendations: Males

- **Routine screening for males is not recommended.**
  - Considered in clinical settings with high prevalence (e.g., correctional facilities) when resources permit

- **Recommended screening for men who have sex with men (MSM)**
  - for urethral infection in MSM who had insertive intercourse
  - for rectal infection in MSM who had receptive anal intercourse
  - screening for pharyngeal infection is **not** recommended
Chlamydia — Screening Coverage Trends Among Sexually-Active Women,* by Age and Plan, HEDIS, 2001–2012

*Among women enrolled in commercial or Medicaid plans who had a visit where they were determined to be sexually active

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Less than 60% of sexually-active women are screened.

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Challenges and opportunities to increase routine chlamydia screening of young women
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- Patients may not disclose sexual activity
  - Train providers in sexual history taking

http://www.cdc.gov/std/treatment/sexualhistory.pdf
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- Providers may not offer a test
  - Add medical record prompts
  - Allow any level of clinic staff to collect test specimens
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- Single-dose oral azithromycin, 1g
- 7-day regime of doxycycline, 100 mg 2x day

Identify Infections → Treat patient → Treat partners
Are diagnosed infections treated?

- Of 795 women diagnosed with chlamydia in Title X family planning clinics in California
  - 2% had no documented treatment
  - 65% received directly observed treatment
  - 33% received prescription for treatment

Douglas et al. STD Prevention Conference, 2014
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98% treatment rate

Douglas et al. STD Prevention Conference, 2014
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  - 33% received prescription for treatment
    - 67% of prescriptions filled based on claims data
    - **Verified treatment rate: 87%**
Challenges to treatment following a chlamydia diagnosis

- Patients may not fill prescription
  - Cost
  - Transportation
  - Stigma

- Patients may not complete treatment
  - Forget to take pills
  - Side effects
Opportunities to increase treatment of chlamydia
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- **Provider-assisted referral**
  - Provider notifies sex partners
  - Partners go to clinic to get treated
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- **Patient-referral**
  - Patient notifies sex partners
  - Partners go to clinic to get treated
Patient Referral as Demonstrated on The Office (NBC)

Barriers to Patient-Assisted Referral

- Patients may not contact partners
  - “No way am I going to do that!” (Michael Scott)

- Patients may provide inaccurate or incomplete information

- Estimated 29–59% of partners are likely treated
Expedited Partner Therapy (EPT)

- Treating sex partners of patients diagnosed with an STD without an intervening medical evaluation
  - Patient-delivered partner therapy (PDPT)

- Three randomized control trials have evaluated EPT vs. traditional partner management for chlamydia or gonorrhea

EPT associated with
  - Increased frequency of patient-reported partner notification and treatment
  - Fewer sexual risk behaviors (e.g., unprotected sex with new partners)
  - Fewer re-infections

CDC, 2006; Trelle et al, 2007
Recommendations for EPT as a Partner Management Tool

- CDC
  - EPT review and guidance (2006)
- American Academy of Pediatrics
- American Bar Association
- American Congress of Obstetricians and Gynecologists
- American Medical Association
- Society for Adolescent Health and Medicine
Challenges to EPT Implementation

- At the clinic-level
  - Administrative issues (e.g., funding)
  - Providers' attitudes and lack of training on EPT
  - Legal barriers
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- **At the patient-level**
  - Partners want to see a provider
  - People may not wait 7 days after treatment to have sex!
Bring Your Own Partner (BYOP)

- Concurrent patient-partner treatment
- “When you come in for treatment, bring your partner”

Percent of male partners treated by strategy, California family planning clinics, 2005-06 (n=952)

- Overall: 54%
- Patient referral: 44%
- BYOP: 79%
- EPT: 80%
KEEP CALM AND USE A CONDOM.
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- Increase access to screening
- Train providers in sexual history
- Add reminder prompts
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- Treat patient
  - Directly observed therapy
  - Patient education
  - Pill reminders

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- Treat partners
  - EPT
  - BYOB
Thank you!
ETorrone@cdc.gov

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.