Chlamydia: An Overview
Why, what, and how?

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Improving Chlamydia Screening Rates: Engaging Providers, Patients, and Payers
Washington DC
June 21, 2016
Outline

- Why do we care about chlamydia?
- Why do we screen young women for chlamydia?
- What proportion of young women are screened? (spoiler: not enough)
- How can we improve screening coverage?
Why do we care about chlamydia?
Chlamydia trachomatis

- Gram-negative bacteria
- Sexually transmitted genital, oropharyngeal, and rectal infections
- Limited data on natural history
  - Infections can 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
  - Men – epididymitis
  - Women – pelvic inflammatory disease (PID)
Pelvic Inflammatory Disease (PID)

- Infection/inflammation of uterus, fallopian tubes, ovaries
- Clinical diagnosis imprecise
- Multiple etiologies, including:
  - *Chlamydia trachomatis*
  - *Neisseria gonorrhoeae*
  - Bacterial vaginosis
- Symptoms can be mild; subclinical tubal infection and inflammation occur
Long Term Reproductive Complications

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

Scanning electron microscopy photos courtesy of Dorothy L Patton, University of Washington
Risk for Sequelae in Women

Untreated chlamydial infections → Clinical PID → Tubal factor infertility

10-15%

Subclinical tubal inflammation

Risk

Chlamydia is the leading preventable cause of tubal factor infertility.
Diagnosis

- Nucleic acid amplification tests (NAATs)
  - Sensitivity ~96%, specificity >98%
  - Vaginal swabs are the specimen of choice (self- or provider-collected)
  - Urine and cervical or urethral swabs
**Chlamydia Treatment**

- Simple and efficacious
  - 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
Risk Factors for Chlamydial Infection

- **Biological**
  - Cervical ectopy increases acquisition
    - Adolescence
    - Hormonal birth control (maybe!)

- **Epidemiological**
  - Young age
  - Partner who has other partners
  - Inconsistent condom use with multiple partners
  - High prevalence of disease in sexual network
  - Re-infection from untreated partner
Why do we care about chlamydia?
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Why do we screen young women for chlamydia?
Control Strategy for Chlamydia

- Treating infection at any stage prevents ongoing transmission (primary prevention)

- Identifying and treating infection before progression can reduce adverse outcomes (secondary prevention)
  - Data from three clinical trials suggest that screening can reduce PID
Evidence for Chlamydia Screening

- Screening was associated with reduced incidence of PID (RR: 0.44, 95% CI: 0.20-0.90).
- Study limitations
  - Differential follow-up
- “Good quality” evidence
Evidence for Chlamydia Screening

Home Sampling versus Conventional Swab Sampling for Screening of Chlamydia trachomatis in Women: A Cluster-Randomized 1-Year Follow-up Study

Lars Østergaard,¹ Berit Andersen,² Jens K. Møller,² and Frede Olesen¹

Departments of ¹Infectious Diseases and ²Clinical Microbiology, Aarhus University Hospital, and ³Research Unit and Department of General Practice, University of Aarhus, Aarhus, Denmark

We compared the efficacy of a screening program for urogenital Chlamydia trachomatis infections based on home sampling with that of a screening program based on conventional swab sampling performed at a physician’s office. Female subjects, comprising students at 17 high schools in the county of Aarhus, Denmark, were divided into a study group (tested by home sampling) and a control group (tested in a physician’s office). We assessed the number of new infections and the number of subjects who reported being treated for pelvic inflammatory disease (PID) at 1 year of follow-up: 443 (51.1%) of 867 women in the intervention group and 487 (58.5%) of 833 women in the control group were available for follow-up. Thirty-three (2.9%) and 32 (6.6%) new infections were identified in the intervention group and the control group, respectively (Wilcoxon exact value, P = .026). Nine (2.1%) women in the intervention group and 20 (4.2%) in the control group reported being treated for PID (P = .045), indicating that a screening strategy involving home sampling is associated with a lower prevalence of C. trachomatis and a lower proportion of reported cases of PID.

- Home-based screening associated with a reduction in PID (RR: 0.50, 95% CI: 0.23-1.08) compared with opportunistic screening
- Study limitations
  - Significant loss to follow-up
  - “Poor quality” evidence
Evidence for Chlamydia Screening

Among asymptomatic women, 0.6% in the screening group versus 1.6% in the deferred group developed PID during follow-up (RR: 0.39, 95% CI: 0.14-1.08).

Study limitations
- Underpowered
- “Good quality” evidence
**USPSTF screening recommendations for women**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Grade</th>
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<tr>
<td>Sexually active women age 24 and younger and older women who are at increased risk for infection</td>
<td>B</td>
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</table>

- **What does a B recommendation mean?**

  There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial. **Offer or provide this service.**

*LeFevre, Annals of Internal Medicine, 2014*
USPSTF screening recommendations for women

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- What about pregnant women?

  Recommendations apply to both pregnant and non-pregnant women.

What is “at increased risk”? 

Sexual risk for infection (e.g., previous STI; exchanging sex for money or drugs).

Clinicians should consider the communities they serve and consult local public health for guidance on identifying groups at increased risk.
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- What about gonorrhea?

  Recommendations apply to both chlamydia and gonorrhea.

CDC screening recommendations for women

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

- Additionally, recommend:
  - Screen females ≤35 years entering correctional facilities.
  - Re-screen pregnant women at increased risk in 3rd trimester.
  - Re-screen all persons diagnosed with chlamydia.

CDC. STD Treatment Guidelines, 2015
Why young women?

- Vulnerable population for adverse reproductive complications
- High prevalence

Chlamydia prevalence among sexually active women, 2007-2012

1 in 20 sexually active young women have a prevalent infection

Torrone et al. MMWR, 2014
What about heterosexual men?

- No documented substantial secondary prevention evidence
- Cost and feasibility challenges
- Focus on partners of chlamydia-infected females

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<td>Current evidence is insufficient to assess the balance of benefits and harms of screening</td>
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CDC screening recommendations for men

- Consider in venues with high prevalence: corrections, STD clinics, teen clinics, *when resources allow*

- For gay, bisexual, and other 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

_CDC. STD Treatment Guidelines, 2015_
Economic Burden of Chlamydia

- Untreated infection results in direct medical costs of over $1.5 million annually
- Chlamydia screening is ranked in the top beneficial and cost-effective prevention services
  - Among the most underutilized

Control Strategy for Chlamydia

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What proportion of young women are screened?
Measuring Chlamydia Screening

What we want to measure (screening coverage)

\[
\frac{\text{# of females tested}}{\text{# of sexually-active females}}
\]
Proportion of sexually-active young women who report having a chlamydia test in the past 12 months by age, 2006–08

Adapted from Tao et al, STD, 2012

37.9% among 15-25 year olds
Measuring Chlamydia Screening

What we usually measure (screening uptake)

# of females tested
# of sexually-active females
who saw a provider
Within states/plans, coverage varies...

Adapted from Goldenkranz et al, Region X IPP meeting, 2012
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What proportion of young women are screened?
Not enough.
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How can we improve screening coverage?
Examples of what CDC is doing...

- **Monitoring morbidity**
  - Comprehensive surveillance strategies
  - Modeling incidence
  - Biomarker research

- **Monitoring screening**
  - HP2020 objective
  - AAPPS measure

- **Preventing infection**
  - Program support
  - Clinical guidance and training
  - Modeling transmission dynamics

- **Improving screening coverage**
  - Evaluation projects
  - Clinical decision support
  - Partnerships with NPTCs, NCC, & NCQA
Evaluation Project: Improving screening among young women in primary care settings

- Competitive supplement to STD AAPPSS to support enhanced evaluation of high priority topics.
  - Funding awarded to four jurisdictions: CA, NY, Baltimore, Philadelphia

- Efforts focus on:
  - Providers who provide primary care services in primary care settings
  - Successful interventions
California

- Two pronged approach
  - Focus on one county with high-volume providers
    - QI resources, training, educational events, public health detailing
  - State-wide
    - QI approach targeting state-wide and regional health plans

- Outcomes
  - HEDIS rates
  - Cost-effectiveness evaluation
National Quality Improvement Center (NQIC)

- Collaboration with the California Prevention Training Center
- Improve access to preventive health services for adolescents, including chlamydia screening

Activities
- Establish QI capacity building program
- Establish QI fellowship program and curriculum
- Pursue policy issues related to ensuring quality of care for adolescent sexual health services
Mission
- Address the high burden of chlamydia in adolescents and young adults by promoting equal access to comprehensive and quality health services

Comprised of national non-profit organizations, health care professional associations, advocacy groups, health insurers, and local, state, and federal government representatives
ncc.prevent.org

- Provider resources
- Clinical education
- Research briefs

Answers to Providers' FAQs

Check out the NCC's new FAQ section

The coalition collaborated with experts to develop answers to providers' frequently asked questions. Visit our new FAQ page today.

Find Out More

SHRE: Sexual Health Resource Exchange

Search, view and download customizable public awareness and educational materials, and/or share your own resources.

Search the Database

News & Features

At Least 75% Of Patients Who Test Negative For Gonorrhea, Chlamydia Still Get Antibiotics For Symptoms

Know the Facts

Twenty percent of untreated chlamydia
4 Diagnosis and Treatment Path

UNCOMPPLICATED SYMPTOMATIC, NON-PREGNANT FEMALE OR MALE

Take sexual and medical history; Conduct genital/pelvic exam; Test for chlamydia

Repeat sexual history; Screen annually until 26th birthday

Test for other STDs; Follow CDC's STD

5 Teen Friendly Office Tips

- Report lab results
- Prescribe treatment
- Discontinue antibiotic within 48 hours

- Partner awaits sexual activity
- No sexual contact until treatment
- Partner notification

Early identification and treatment:
- Reduces pelvic inflammatory disease (PID)
- Reduces infertility, ectopic pregnancy, and chronic pelvic pain
- Prevents complications in newborns
### Case Study: Michigan Department of Community Health

**PROJECT OVERVIEW**

The Michigan Department of Community Health partnered with Molina Healthcare of Michigan, a Medicaid managed care provider in the state, to a culturally specific intervention to improve screening among female members age 16-24.

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<tr>
<td>Nucleic Acid Amplification Technology (NAATs) (Urine)</td>
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<td>Cell Culture</td>
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<td>Direct Fluorescent Antibody (DFA)</td>
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<td>Enzyme Immunoassay (EIA)</td>
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<tr>
<td>Nucleic Acid Probe (DNA Probe)</td>
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<td>Other (specify):</td>
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### RESOLUTION

On behalf of the National Chlamydia Coalition, **Dawn Custer, M.A., Morang-Chester Clinic, P.C.** is hereby recognized as the **Chlamydia Practice Improvement Project (CPIP)** Champion.

**Whereas**, Chlamydia is the most common reportable disease in Michigan with 47,146 cases reported in 2010; and,

**Whereas**, Screening and treatment of chlamydia prevent complications including pelvic inflammatory disease, ectopic pregnancy, and chronic pelvic pain; and,

**Whereas**, The National Commission on Prevention Priorities ranks chlamydia screening as one of the ten high value clinical preventive services; and,

**Whereas**, The health of Michigan citizens is enhanced by local health care providers’ efforts to implement the National Center on Quality Assurance (NCQA) standard to screen all females age 16-24 for chlamydia; and,

**Whereas**, **Dawn Custer, M.A.** showed exemplary commitment to improving chlamydia.
Partnership with NCQA:
Chlamydia screening webinar series

QI: Improving Chlamydia Screening - Session 2

Guide to Quality Improvement Using the Chlamydia Screening HEDIS Measure: Webinar Series

NCQA, in collaboration with Partnership for Prevention and the National Chlamydia Coalition, developed this three-part webinar series designed to provide participants with a guide to improve the quality of care and services using the chlamydia screening HEDIS measure. Experts provide information on the specifics of the HEDIS measure and also share practical information to include resources and tools to address common barriers experienced using this measure. Each session features case studies presented by colleagues in the field.
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How can we improve screening coverage?
   Together.
Thank you!

Etorrone@cdc.gov

For more information, contact CDC
1-800-CDC-INFO (232-4636)

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.