

# Chlamydia Prevention: Prevention Opportunities and Challenges

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National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention

Division of STD Prevention



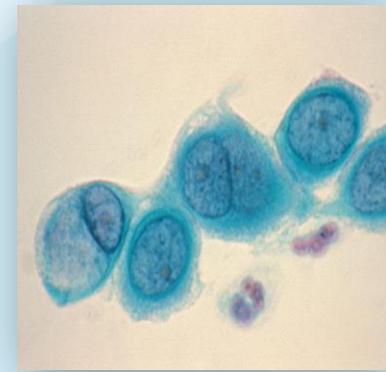
# Outline

- ❑ **Chlamydia basics**
  - Biology
  - Epidemiology
- ❑ **Chlamydia prevention and control**
  - Challenges
  - Opportunities

# **CHLAMYDIA BASICS: BIOLOGY**

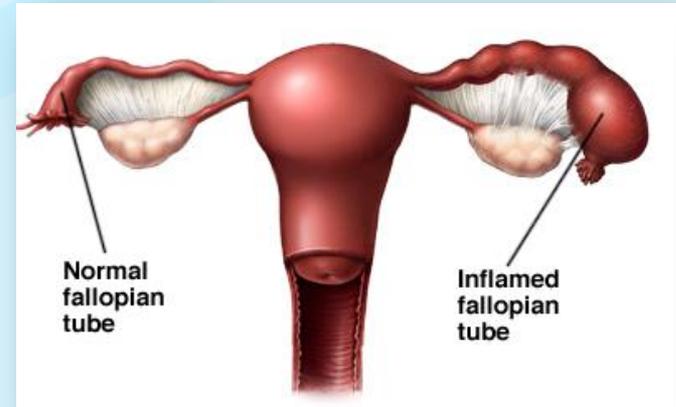
# *Chlamydia trachomatis*

- ❑ **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



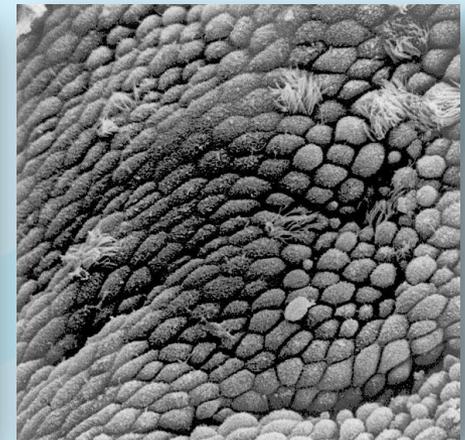
Mayo Foundation for Medical Evaluation and Research  
Mayo Foundation for Medical Evaluation and Research

# Long Term Reproductive Complications

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



Normal tubal tissue, 1200x



Post-PID, 1200x

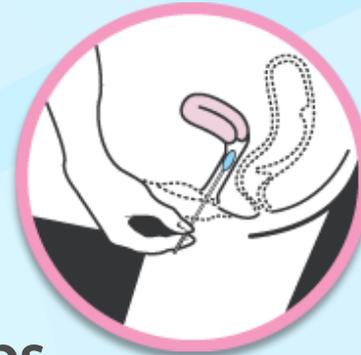
**Chlamydia is the leading preventable cause of tubal factor infertility**

# 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

# 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**



[www.nhs.org](http://www.nhs.org)

# 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

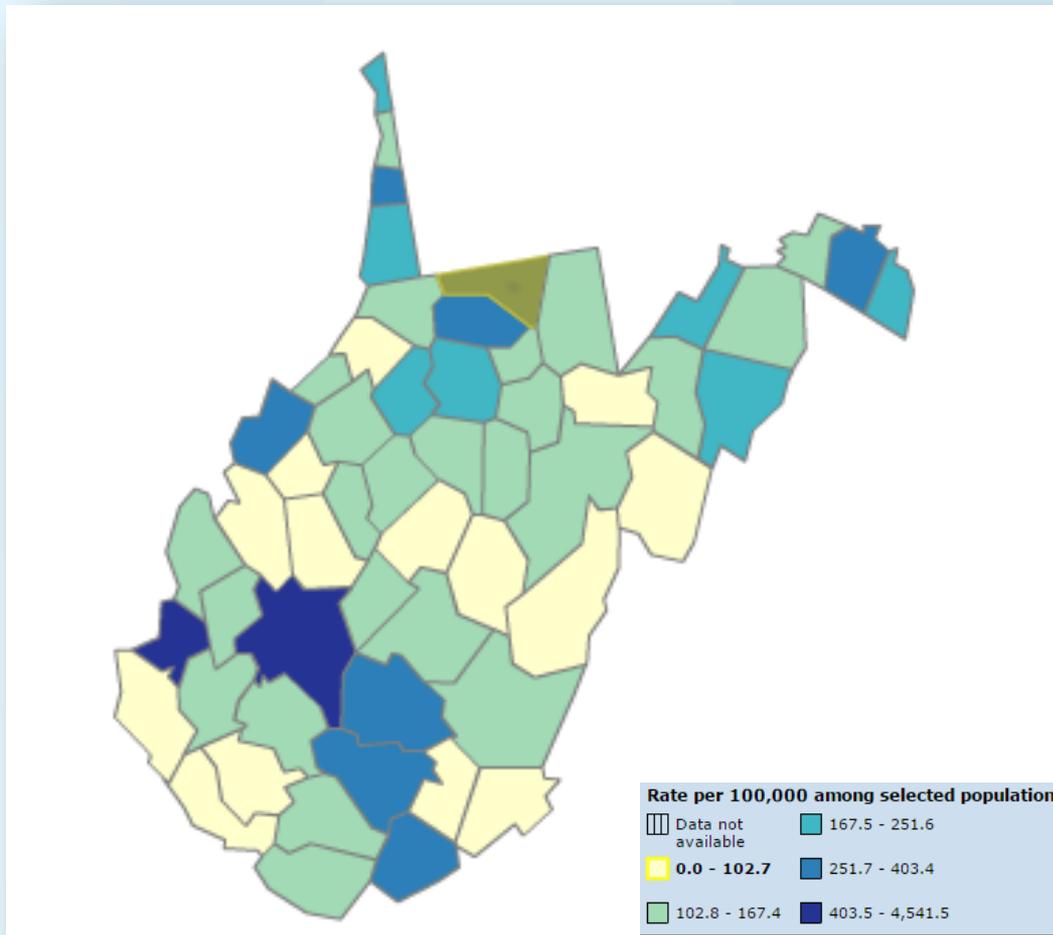
## Notifiable conditions in the US, 2012

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# Chlamydia in West Virginia, 2012

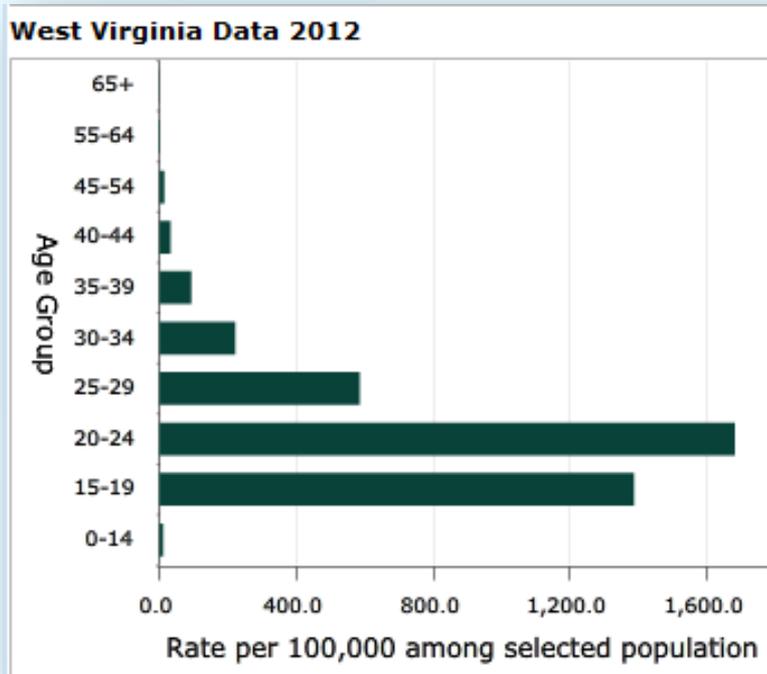
- ❑ **Most commonly reported condition**
  - 4,790 cases reported
  - 258 cases per 100,000 persons
- ❑ **Geographic, age, and race/ethnicity disparities**

# Chlamydia in West Virginia, 2012



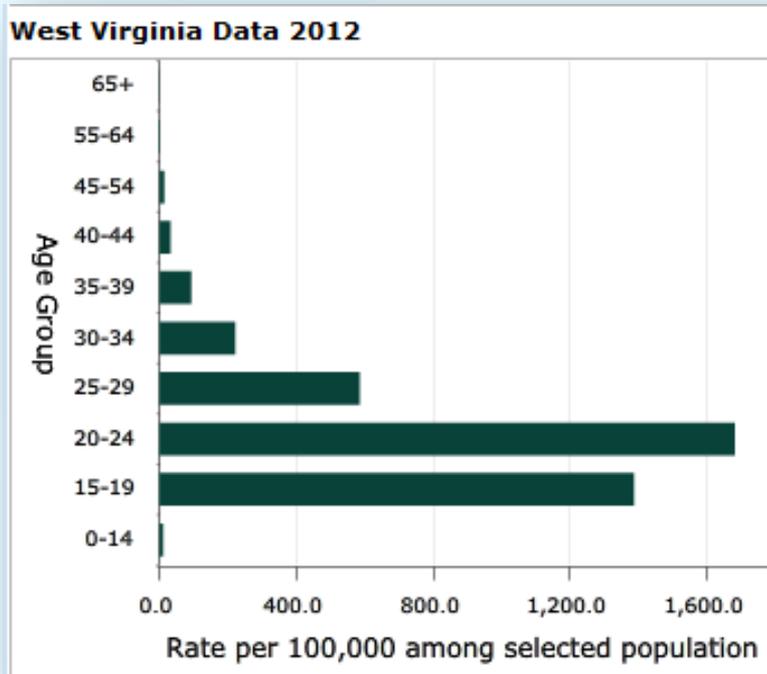
- Concentrated in urban areas
- Highest rates in Morgantown

# Chlamydia in West Virginia, 2012

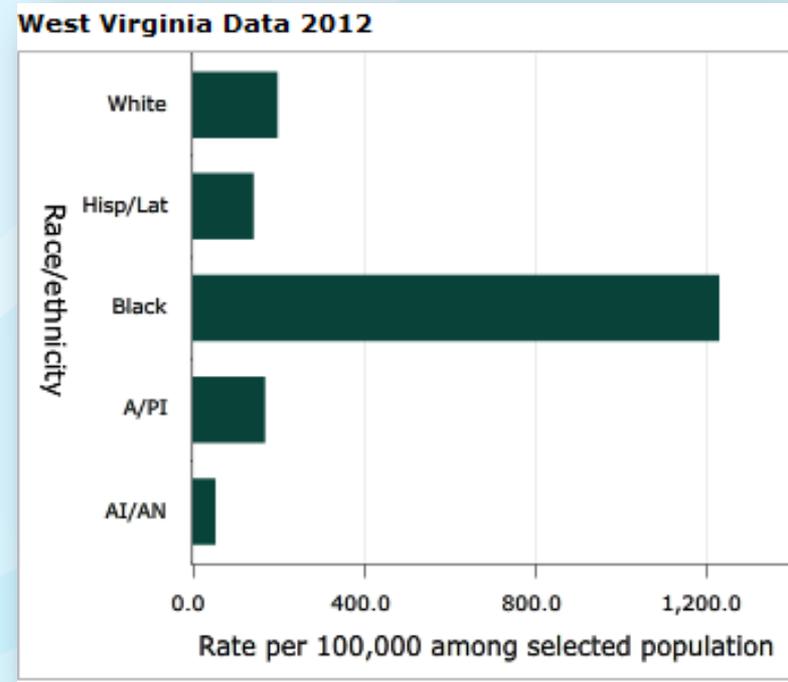


- ❑ Highest rates among young people

# Chlamydia in West Virginia, 2012



- Highest rates among young people



- Highest rates among blacks

# 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

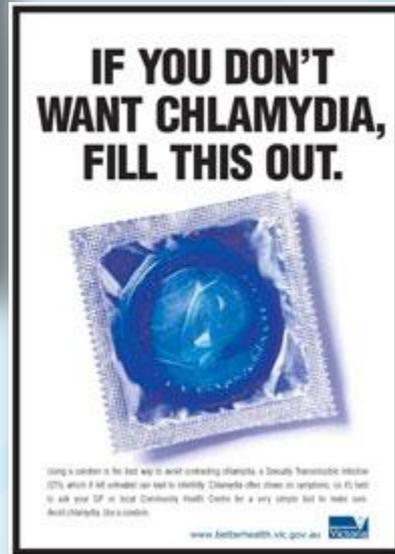
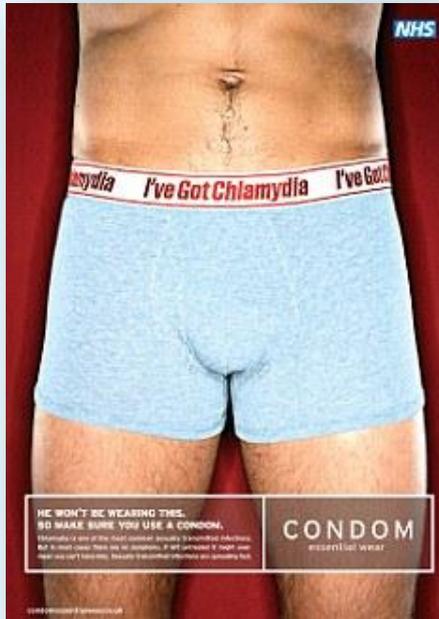
- Young age
- Multiple partners
- Partner who has other partners
- Inconsistent condom use with multiple partners
- High prevalence of disease in sexual network
- Re-infection from untreated partner

# 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

# Control Strategy for Chlamydia



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- **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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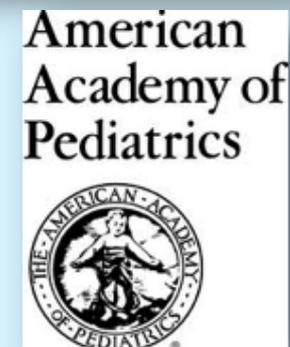
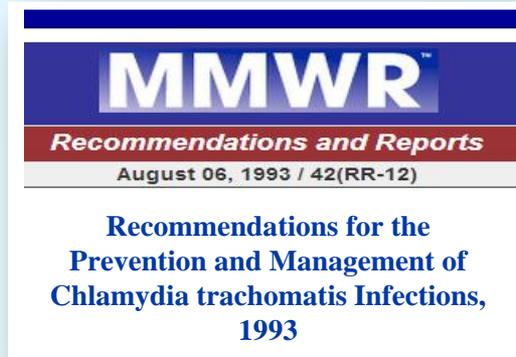


- ❑ **Identifying and treating infection before progression can reduce adverse outcomes (secondary prevention)**
  - Data from three randomized control trials suggest that screening young women can reduce PID
- ❑ **Treating infection at any stage prevents ongoing transmission (primary prevention)**

# Control Strategy for Chlamydia



## □ Screening recommendations



## CDC Screening Recommendations: Females

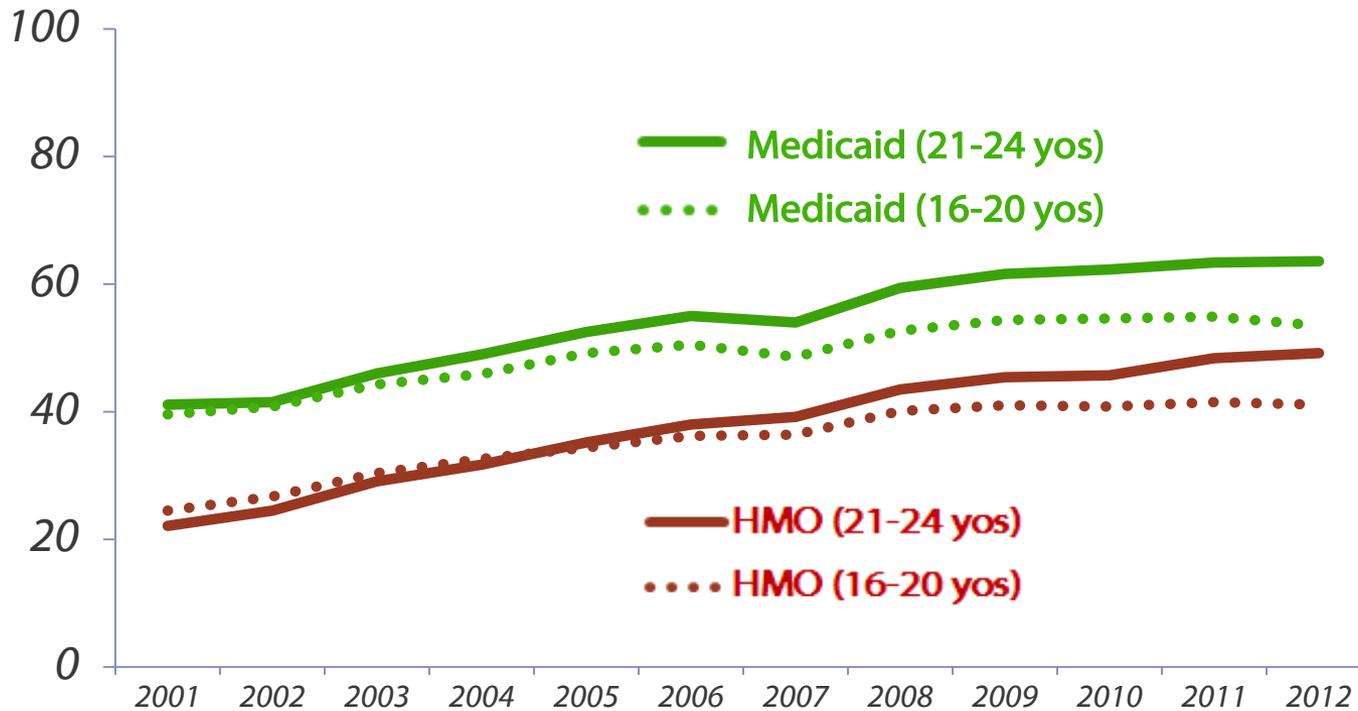
- ❑ All sexually-active females aged <25 years should be screened annually.
- ❑ All females 25 and older with risk factors should be screened.
  
- ❑ Additionally, recommended screening for
  - All pregnant women
  - Females entering juvenile detention facilities
  - Females <35 years entering correctional 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

Percentage

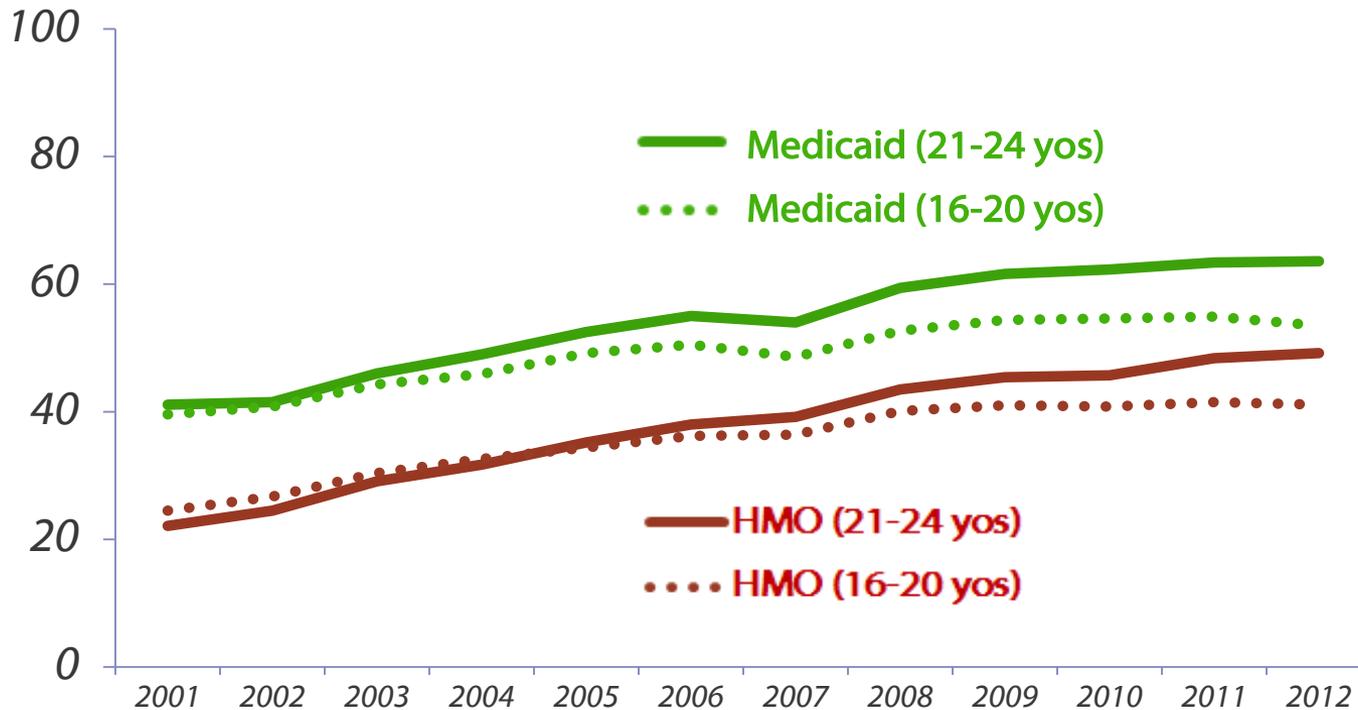


\*Among women enrolled in commercial or Medicaid plans who had a visit where they were determined to be sexually active

SOURCE: The State of Healthcare Quality, 2013

# Chlamydia — Screening Coverage Trends Among Sexually-Active Women,\* by Age and Plan, HEDIS, 2001–2012

Percentage



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

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

SOURCE: The State of Healthcare Quality, 2013

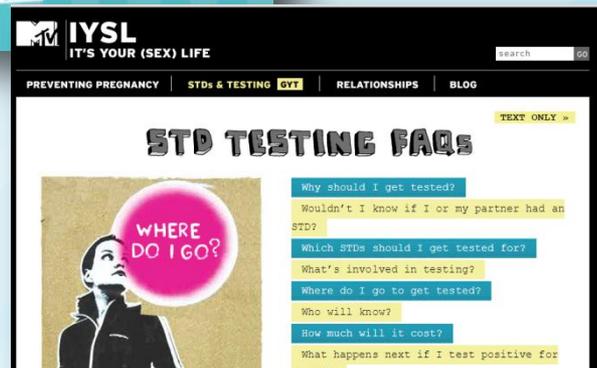
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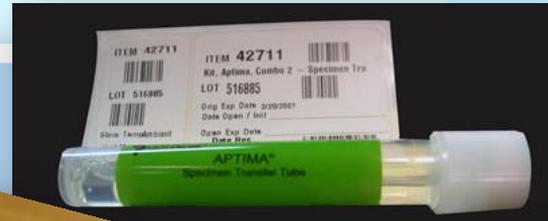
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**IWTK**  
I WANT THE KIT

Member Login    Are You at Risk? - Take the Quiz

ABOUT IWTK    WHAT ARE STIS?    RESOURCES  
CONTACT US



Get your test kit  
**HERE**

ALREADY A MEMBER?  
Login »

NEW TO  
Get Started

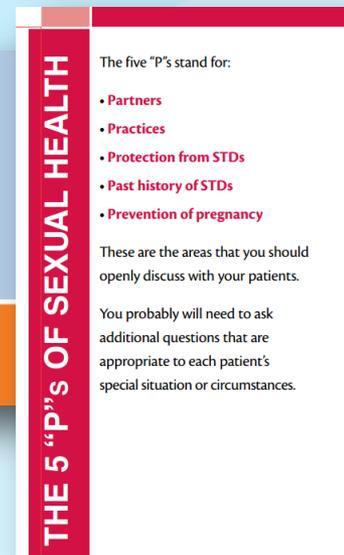
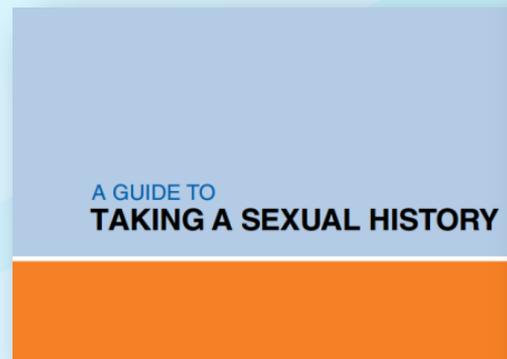


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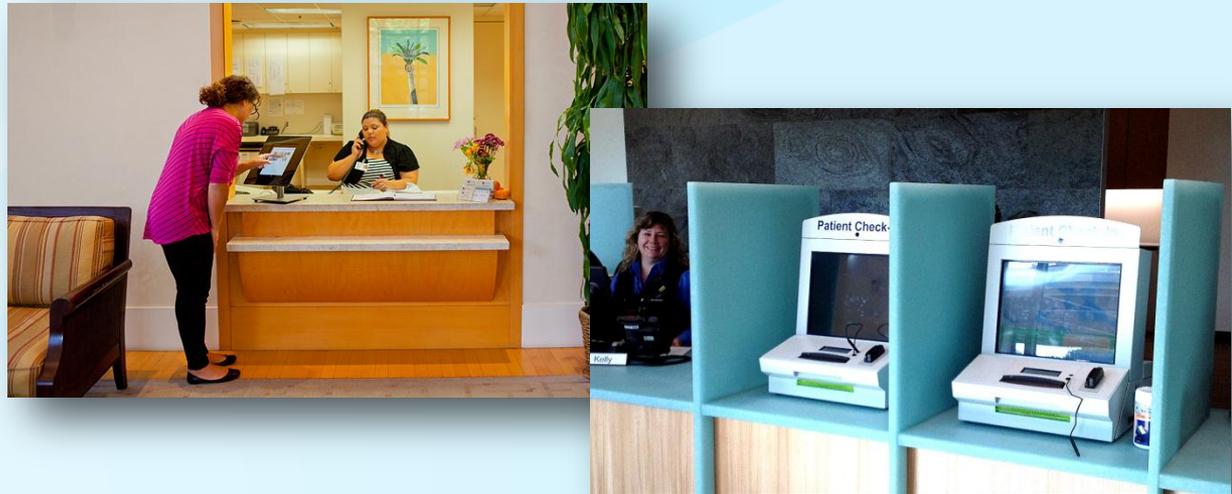
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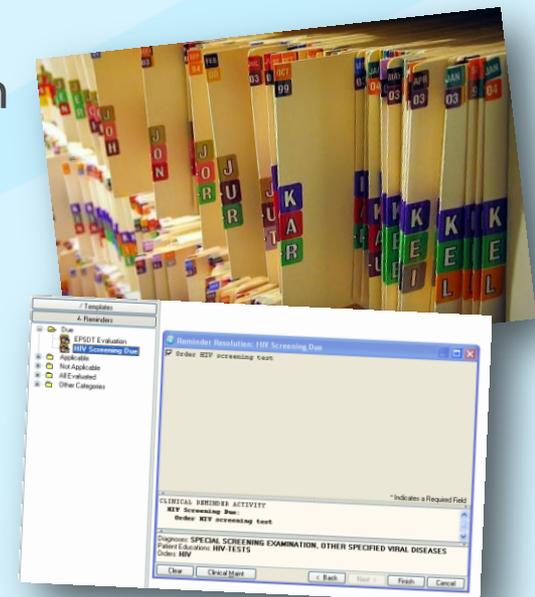


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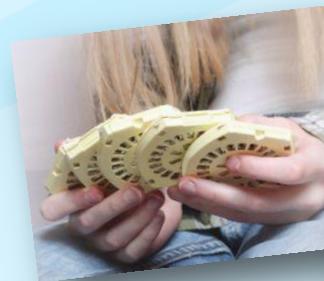
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  - Add medical record prompts
  - Allow any level of clinic staff to collect test specimens



# Control Strategy for Chlamydia



# Control Strategy for Chlamydia



- ❑ Single-dose oral azithromycin, 1g
- ❑ 7-day regime of doxycycline, 100 mg 2x day

## 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
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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

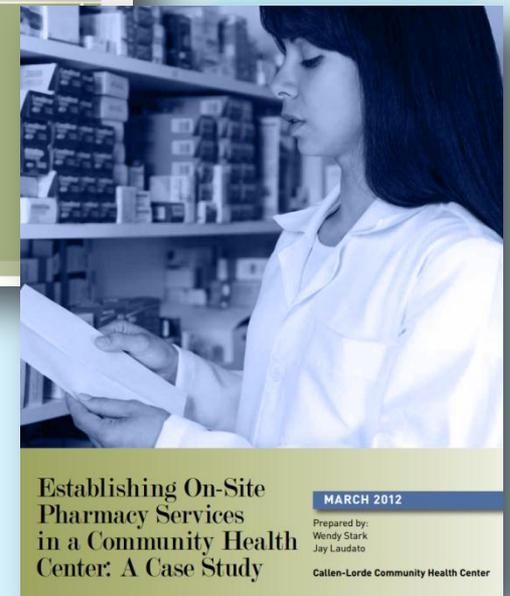
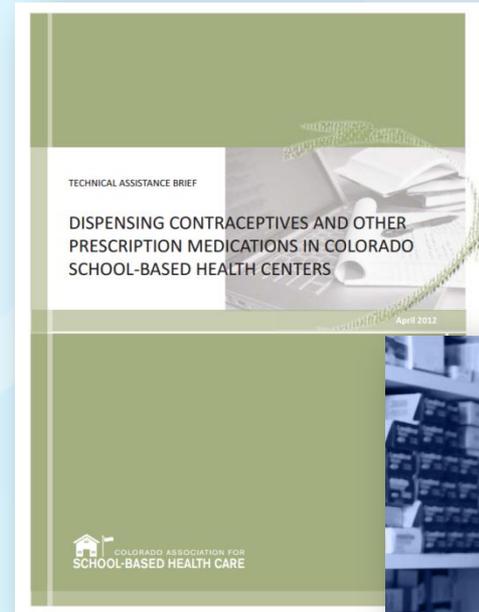
- ❑ **Patients may not fill prescription**
  - Cost
  - Transportation
  - Stigma
- ❑ **Patients may not complete treatment**
  - Forget to take pills
  - Side effects

# Opportunities to increase treatment of chlamydia

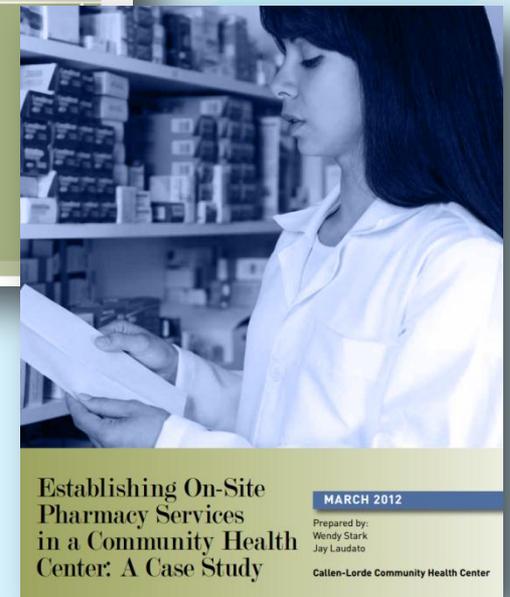
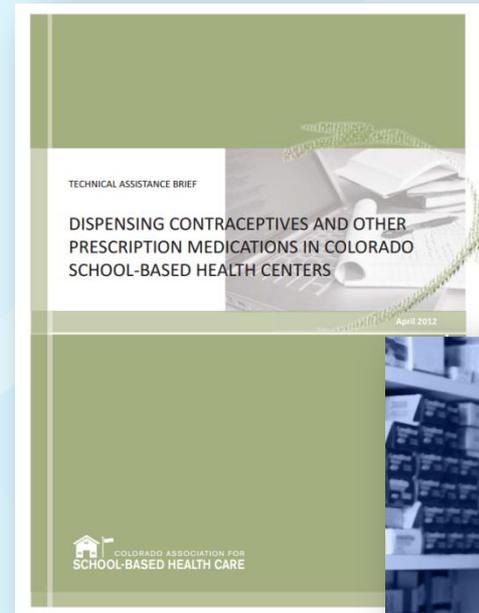
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  - Provider notifies sex partners
  - Partners go to clinic to get treated

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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)



"Sex Ed." The Office. NBC. October 2010. [http://www.nbc.com/The\\_Office/video/sex-ed/1254385/](http://www.nbc.com/The_Office/video/sex-ed/1254385/)

# 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



Denver  
"partner pack"

# Recommendations for EPT as a Partner Management Tool

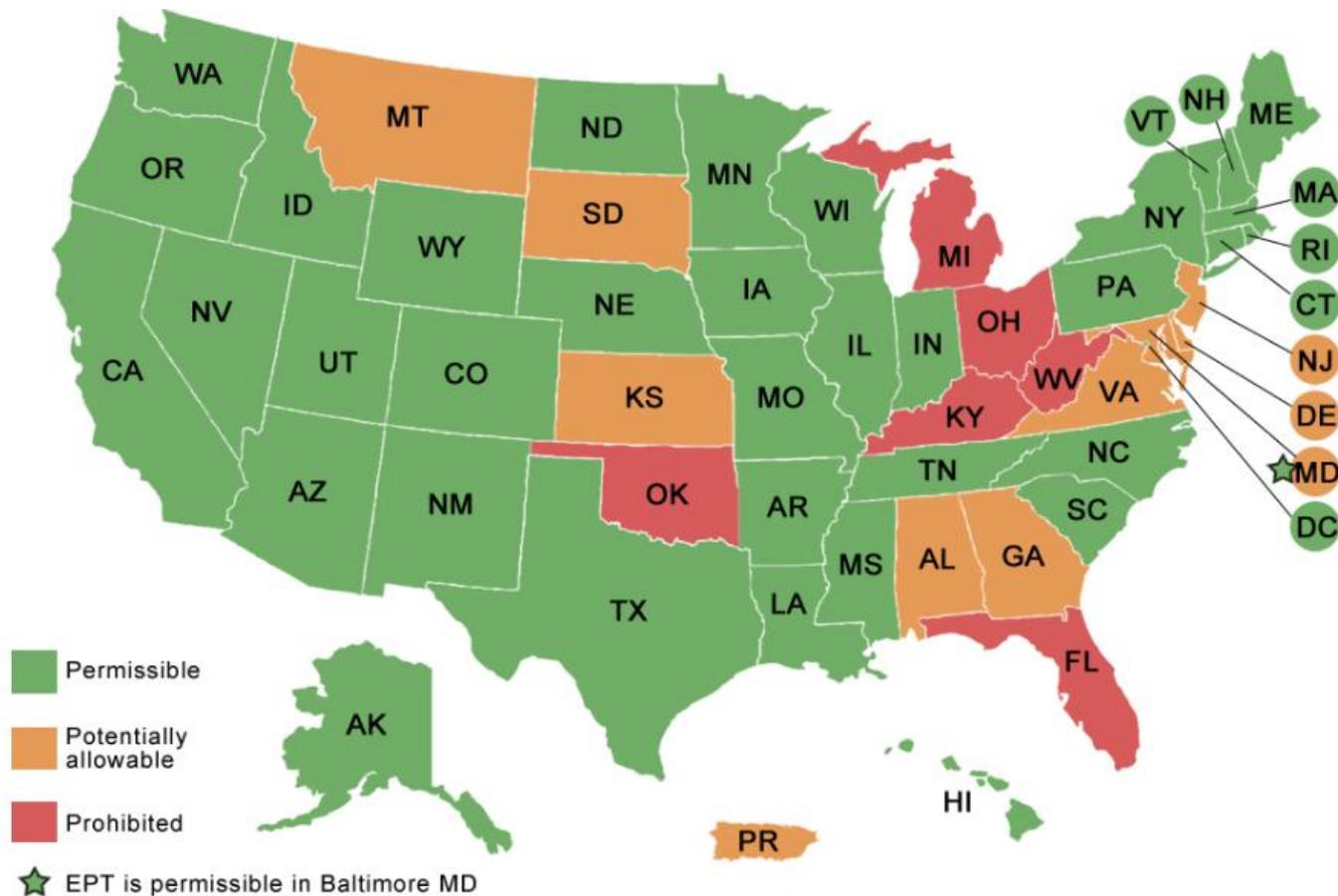
- ❑ **CDC**
  - EPT review and guidance (2006)
  - STD treatment guidelines (2006, 2010)
- ❑ **American Academy of Pediatrics**
- ❑ **American Bar Association**
- ❑ **American Congress of Obstetricians and Gynecologists**
- ❑ **American Medical Association**
- ❑ **Society for Adolescent Health and Medicine**

# Challenges to EPT Implementation

## □ At the clinic-level

- Administrative issues (e.g., funding)
- Providers attitudes and lack of training on EPT
- Legal barriers

# Legal status of EPT, September, 2014



Legal Status of EPT available at: <http://www.cdc.gov/std/ept/legal/default.htm>

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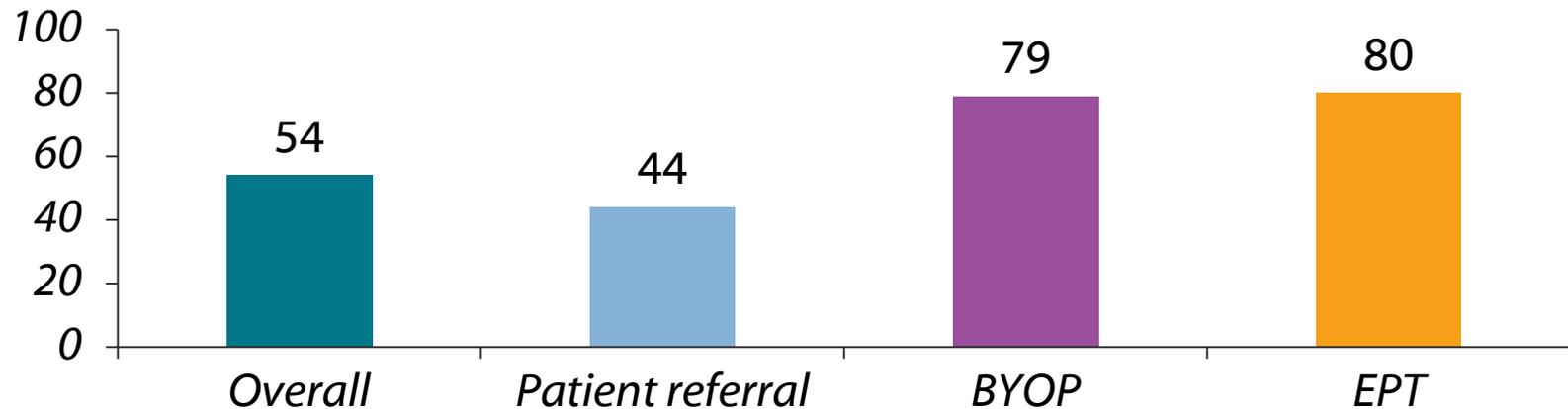
## ❑ At the patient-level

- 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)



# SUMMARY



**KEEP  
CALM  
AND  
USE A  
CONDOM.**

# Control Strategy for Chlamydia



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- ❑ Increase access to screening
- ❑ Train providers in sexual history
- ❑ Add reminder prompts

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- ❑ Directly observed therapy
- ❑ Patient education
- ❑ Pill reminders

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- ❑ 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](mailto: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.