Risky Behavior: Soaring STI Rates in Adolescents

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STDs in New Jersey

DIVISION OF HIV, STD, AND TB SERVICES
NEW JERSEY DEPARTMENT OF HEALTH

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### STDs Are on the Rise!

<table>
<thead>
<tr>
<th>Disease</th>
<th>United States 2017</th>
<th>New Jersey 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of Cases</td>
<td>Rate Increase since 2013</td>
</tr>
<tr>
<td>Chlamydia</td>
<td>1.7 million</td>
<td>22%</td>
</tr>
<tr>
<td>Gonorrhea</td>
<td>555,608</td>
<td>67%</td>
</tr>
<tr>
<td>CT/GC 19 and Under</td>
<td>544,957</td>
<td>13%</td>
</tr>
<tr>
<td>Primary &amp; Secondary Syphilis</td>
<td>30,644</td>
<td>76%</td>
</tr>
<tr>
<td>Congenital Syphilis</td>
<td>918</td>
<td>154%</td>
</tr>
</tbody>
</table>
## Preliminary New Jersey 2018 Data

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chlamydia</strong></td>
<td>35,363</td>
<td>36,498</td>
<td>3.2%</td>
</tr>
<tr>
<td><strong>Gonorrhea</strong></td>
<td>9,484</td>
<td>9,068</td>
<td>-4.4%</td>
</tr>
<tr>
<td><strong>CT/GC 19 and under</strong></td>
<td>10,954</td>
<td>11,195</td>
<td>2.2%</td>
</tr>
<tr>
<td><strong>Primary and Secondary</strong></td>
<td>502</td>
<td>562</td>
<td>12%</td>
</tr>
<tr>
<td><strong>Syphilis</strong></td>
<td>13</td>
<td>13</td>
<td>0</td>
</tr>
<tr>
<td><strong>Congenital Syphilis</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
NJ Preliminary Trends: 2017 to 2018

Data are expected to be finalized in the next 2 months
  ◦ Final data will be posted to NJ SHAD

Primary and Secondary Syphilis (P&S) is up 71% among females: 34 cases in 2017 compared to 58 cases in 2018
  ◦ Congenital syphilis is steady at the moment: ~13 cases among 101,000+ live births!

30% of our P&S syphilis cases are co-infected with HIV

Early syphilis (P&S and Early Latent) are slightly down compared to last year
  ◦ Not sure if we are just better at documenting data and finding cases sooner
Young people account for a substantial proportion of new STIs

NATIONALLY - 2017

- **Gonorrhea**: 70% (820,000 total infections)
- **Chlamydia**: 63% (2.9 million total infections)
- **HPV**: 49% (14.1 million total infections)
- **Genital Herpes**: 45% (776,000 total infections)
- **HIV**: 26%* (47,500 total infections, Ages 13-24)
- **Syphilis**: 20% (55,400 total infections)

NEW JERSEY

- **Gonorrhea**: 47% (9,454 total infections)
- **Chlamydia**: 64% (35,304 total infections)
- **HPV**: ?
- **Genital Herpes**: ?
- **HIV**: 17% (1,148 total infections)
- **Syphilis**: 24% (1,364 total infections)
Why are STDs going up?

Increase in condom-less sex?
- Era of Pre-exposure prophylaxis (PrEP) → more routine testing for men who have sex with men (MSM)

Finding new populations to impact?
- Women and babies

Increase in anonymous sex?
- Dating apps on phones make finding sex partners easier

Better reporting/testing/following of screening guidelines?

Loss of public health funding forcing STD Clinics to reduce hours/close?

Chlamydia and Gonorrhea
Reported Chlamydia Trend in New Jersey, 2012-2018

<table>
<thead>
<tr>
<th>Year of Report</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>27,271</td>
</tr>
<tr>
<td>2013</td>
<td>28,327</td>
</tr>
<tr>
<td>2014</td>
<td>29,950</td>
</tr>
<tr>
<td>2015</td>
<td>31,377</td>
</tr>
<tr>
<td>2016</td>
<td>34,565</td>
</tr>
<tr>
<td>2017</td>
<td>35,304</td>
</tr>
<tr>
<td>2018</td>
<td>36,498</td>
</tr>
</tbody>
</table>
Reported Chlamydia Trends by Age Group, New Jersey, 2012-2018
Reported Gonorrhea Trend in New Jersey, 2012-2018

<table>
<thead>
<tr>
<th>Year of Report</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>7,486</td>
</tr>
<tr>
<td>2013</td>
<td>7,015</td>
</tr>
<tr>
<td>2014</td>
<td>6,648</td>
</tr>
<tr>
<td>2015</td>
<td>7,236</td>
</tr>
<tr>
<td>2016</td>
<td>8,171</td>
</tr>
<tr>
<td>2017</td>
<td>9,454</td>
</tr>
<tr>
<td>2018</td>
<td>9,072</td>
</tr>
</tbody>
</table>
Reported Gonorrhea Trends by Age Group, New Jersey, 2012-2018

![Graph showing gonorrhea trends by age group in New Jersey from 2012 to 2018. The graph illustrates the number of cases reported each year for different age groups, with line graphs for each age group showing trends over the years.]
Prevalence of Penicillin Resistance, Elevated Cefixime, Ceftriaxone or Azithromycin MIC, by Year — GISP, 2006–2017*

* 2017 data are preliminary
Prevalence of Isolates with Elevated Azithromycin MICs (> 2.00 μg/ml), GISP, 2006-2017*

* 2017 data are preliminary
Early Syphilis
Early Syphilis Trend in New Jersey, 2012-2018
Syphilis Trends in New Jersey, 2012-2018

* P&S: Primary and Secondary Syphilis
Percent of Reported Early Syphilis Among Men by Gender of Sex Partner

<table>
<thead>
<tr>
<th>Year</th>
<th>MSM</th>
<th>Hetero</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>62.3%</td>
<td>22.5%</td>
<td>15.2%</td>
</tr>
<tr>
<td>2013</td>
<td>58.9%</td>
<td>22.8%</td>
<td>18.3%</td>
</tr>
<tr>
<td>2014</td>
<td>56.9%</td>
<td>24.7%</td>
<td>18.5%</td>
</tr>
<tr>
<td>2015</td>
<td>58.7%</td>
<td>21.3%</td>
<td>19.9%</td>
</tr>
<tr>
<td>2016</td>
<td>56.7%</td>
<td>22.8%</td>
<td>20.5%</td>
</tr>
<tr>
<td>2017</td>
<td>54.6%</td>
<td>22.2%</td>
<td>23.2%</td>
</tr>
<tr>
<td>2018</td>
<td>60.3%</td>
<td>22.7%</td>
<td>16.9%</td>
</tr>
</tbody>
</table>
Protect Your Baby from SYPHILIS

Know The Dangers...

Your baby could be
- Blind
- Deaf
- Premature

Prevent
- Death
- Meningitis
- Anemia
- Low birth weight

Protect Your Family...

Talk to your doctor
2017 Congenital Syphilis rates per 100,000 live births
Reported Congenital Syphilis Cases New Jersey, 2012-2018
Thank you!

Amelia.hamarman@doh.nj.gov
Epidemiology of STI Screening

STEPHEN MARCELLA, MD, MPH, FAAP
Screening Adolescents and Young Adults for STIs

Screening appropriateness
Interpretation of screening tests
Performance characteristics of current assays
Self-collection vs. clinician collection
Conclusions
Screening Appropriateness

In order for a screening program to be effective the following considerations need to be taken into account:

- Can the disease that is being screened be identified at a stage that will benefit the person being screened and the population?
- What is the cost of early detection vs. benefits?
- How serious is the problem of false positive results for an individual?
- What are the performance characteristics: sensitivity, specificity?
- What is the prevalence of the population being screened?
- Finally, what is the overall costs and benefits to the population being screened?
Interpretation of a screening test

**Sensitivity/Specificity**

<table>
<thead>
<tr>
<th></th>
<th>Disease Present</th>
<th>No Disease Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEST POSITIVE</td>
<td>TP</td>
<td>FP</td>
</tr>
<tr>
<td>TEST NEGATIVE</td>
<td>FN</td>
<td>TN</td>
</tr>
<tr>
<td>TP+FN</td>
<td>FP+TN</td>
<td>Total Screened= TP +FN+FP+TN</td>
</tr>
</tbody>
</table>

Sensitivity = TP/(TP+FN)
Specificity = TN/(TN+FP)

What is the prevalence here?

TP +FN/(TP+FN+FP+FN) = Disease present/ total population screened
Interpretation of a screening test: positive and negative predictive value

First let’s look at how performance characteristics affect the predictive values in a low prevalence population........

<table>
<thead>
<tr>
<th></th>
<th>Disease Present</th>
<th>No Disease Present</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TEST POSITIVE</strong></td>
<td>450</td>
<td>1,990</td>
<td>2,440</td>
</tr>
<tr>
<td><strong>TEST NEGATIVE</strong></td>
<td>50</td>
<td>97,510</td>
<td>97,560</td>
</tr>
<tr>
<td></td>
<td>500</td>
<td>99,500</td>
<td>100,000</td>
</tr>
</tbody>
</table>

Sensitivity = TP/(TP+FN) = 90% = 0.9
Specificity = TN/(TN+FP)= 98% = 0.98
Prevalence = 0.5% = 0.005

Positive Predictive Value (PPV) = Test positive with disease/ all test positive = 450/2,440 = 18.4%

Negative Predictive Value (NPV) = Test negative without disease /all test negative = 97,510/ 97,560 = 99.9%
Interpretation of a screening test: positive and negative predictive value

Keeping prevalence the same, let’s vary the sensitivity to 100% (no false negatives) in this testing assay and keep specificity at 98% .......

<table>
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<tbody>
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<td>0</td>
<td>97,510</td>
</tr>
<tr>
<td></td>
<td>500</td>
<td>99,500</td>
</tr>
</tbody>
</table>

**Sensitivity** = 01.0 or 100%
Specificity = 0.98
Prevalence = 0.5% = 0.005

**Positive Predictive Value (PPV)** = Test positive with disease / all test positive = 500 / 2,490 = 20%

**Negative Predictive Value (NPV)** = Test negative without disease / all test negative = 97,510 / 97,510 = 100 %
Interpretation of a screening test: positive and negative predictive value

Now let’s vary the specificity to 100% (no false positives) and leave sensitivity at 90%.... The prevalence is kept the same at 0.5%

<table>
<thead>
<tr>
<th></th>
<th>Disease Present</th>
<th>No Disease Present</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TEST POSITIVE</strong></td>
<td>450</td>
<td>0</td>
<td>450</td>
</tr>
<tr>
<td><strong>TEST NEGATIVE</strong></td>
<td>50</td>
<td>99,500</td>
<td>99,550</td>
</tr>
<tr>
<td></td>
<td>500</td>
<td>99,500</td>
<td>100,000</td>
</tr>
</tbody>
</table>

**Sensitivity = 0.9 or 90%**
**Specificity = 1.0 or 100%**

**Prevalence = 0.5% = 0.005**

**Positive Predictive Value (PPV) =**
Test positive with disease/ all test positive = 450/450 = 100%

**Negative Predictive Value (NPV) =**
Test negative without disease /all test negative 99,500/ 99,550 = 99.9 %
Interpretation of a screening test: positive and negative predictive value

Last, let’s **vary the prevalence to 10%** from 0.5 % and keep the original sensitivity of 90% and specificity of 98% .......

<table>
<thead>
<tr>
<th></th>
<th>Disease Present</th>
<th>No Disease Present</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TEST POSITIVE</strong></td>
<td>9000</td>
<td>1,800</td>
<td>10,800</td>
</tr>
<tr>
<td><strong>TEST NEGATIVE</strong></td>
<td>1,000</td>
<td>88,200</td>
<td>89,200</td>
</tr>
<tr>
<td></td>
<td>10,000</td>
<td>90,000</td>
<td>100,000</td>
</tr>
</tbody>
</table>

Sensitivity = 0.9 or 90%
Specificity = 0.98 or 98%
Prevalence = 10% = 0.1

Positive Predictive Value (PPV) =
\[
\frac{9,000}{10,800} = 83\%
\]

Negative Predictive Value (NPV) =
\[
\frac{88,200}{89,200} = 99\%
\]
Number needed to screen (NNS) to prevent one symptomatic STI

- Screen 100,000 persons and find 9,000 (true positives), falsely identify 1,800 as having an STI, and miss 1,000 persons with disease
- More simply: screen 110 persons to find 10 asymptomatic cases, falsely identify 2 as having disease who do not, and miss 1 person with asymptomatic person
- By increasing specificity from 98 to 99%, the false positive rate is halved! This will decrease the above to 1 false positive for screening 110 persons
“All diagnostic tests including NAATs can generate inaccurate results, and it is important for laboratorians and clinicians to understand test limitations. Certain false positives and false negatives can occur as a consequence of specimen collection, test operation, and laboratory environment. However, **NAATs are far superior in overall performance compared with other C. trachomatis and N. gonorrhoeae culture and nonculture diagnostic methods. NAATs offer greatly expanded sensitivities of detection, usually well above 90%, while maintaining very high specificity, usually ≥99%. NAATs typically detect 20%–50% more chlamydial infections than could be detected by culture or earlier nonculture tests. The increment for detection of gonococcal infections is somewhat less.” ......
Performance of current assays in use (all NAAT)

What is the gold standard for the “gold standard” for the NAAT assays?
   ◦ There are none!

What are sources of false positives?
   ◦ Environmental contamination
   ◦ Misinterpretation of the assay
   ◦ Recent treatment and presence of nonviable organisms’ DNA or RNA

What are sources of false negatives?
   ◦ Improper sampling, storage, handling, test procedure
Performance characteristics in practice with self-collection

Lunny, et al. performed a systemic meta-analysis on 21 studies comparing self-collected vs. clinician-collected specimens (Lunny, et al. 2015).

Reference or “gold-standard” was the clinician sampling in calculations of sensitivity and specificity.

Specificity: in almost all studies, the specificity of self-collection was 0.97 – 1.00.

Sensitivity: more variable due to more false negatives.
- Female urine vs. cervical clinician sampling, sensitivity varied from 0.78 to 1.00.
- Female vaginal (self) vs. cervical clinician sampling, sensitivity varied from 0.80 to 1.00.
- Male urine vs. urethra clinician sampling, sensitivity varied from 0.83 to 0.96.
Example using parameters from a self-collection screening program

“Low” prevalence population = 5%
Sensitivity ~ .8
Specificity ~ .99

<table>
<thead>
<tr>
<th></th>
<th>Disease Present</th>
<th>No Disease Present</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEST POSITIVE</td>
<td>4,000</td>
<td>950</td>
<td>4,950</td>
</tr>
<tr>
<td>TEST NEGATIVE</td>
<td>1,000</td>
<td>94,050</td>
<td>95,050</td>
</tr>
<tr>
<td></td>
<td>5,000</td>
<td>95,000</td>
<td>100,000</td>
</tr>
</tbody>
</table>

PPV = 81%
NPV = 98.9%

“High” prevalence population = 10%
Sensitivity ~ .8
Specificity ~ .99

<table>
<thead>
<tr>
<th></th>
<th>Disease Present</th>
<th>No Disease Present</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEST POSITIVE</td>
<td>8,000</td>
<td>900</td>
<td>8,900</td>
</tr>
<tr>
<td>TEST NEGATIVE</td>
<td>2,000</td>
<td>89,100</td>
<td>91,100</td>
</tr>
<tr>
<td></td>
<td>10,000</td>
<td>90,000</td>
<td>100,000</td>
</tr>
</tbody>
</table>

PPV = 90%
NPV = 98%
Conclusions

- Screening asymptomatic adolescents and young adults for STIs is appropriate: prevalence of asymptomatic patients, performance characteristics of the assays, the ability to treat and prevent significant disease when identified before symptom onset, and cost/benefits both at an individual and population level.

- Proper interpretation of screening results and implications includes understanding the performance characteristics of the test and the prevalence of the population being screened.

- In low prevalence populations, maximizing specificity has the most influence on optimizing results.

- Current assays all use NAAT technology and have sensitivities > 90% and specificities approaching or exceeding 99%.

- Self-collection is one option for screening that gives results only somewhat reduced in sensitivity as compared to those collected by a clinician with favorable PPV and NPV.
References


Disease Identification and Management

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Department of Pediatrics, Hackensack University Medical Center
Jennifer.Northridge@hackensackmeridian.org
Learning Objections

- Chlamydia
  - Presenting symptoms
  - Complications
  - Screening Guidelines
  - Treatment

- Gonorrhea
  - Presenting symptoms
  - Complications
  - Screening Guidelines
  - Treatment in setting of emerging resistance
Presentation of Chlamydia

- *Chlamydia trachomatis* (*C. trachomatis*) is a gram-negative, intracellular bacterium which causes infections that are **asymptomatic in 80% of women and 75% of men**

- The incubation period of symptomatic chlamydial disease usually ranges from **7-14 days**.

- In a previous study, male-female and female-male transmission frequencies were both **68%** using DNA sequences to examine *C. trachomatis* genotypes
Symptomatic Chlamydia in Females

- Clinical symptoms of cervicitis include **vaginal discharge**, **intermenstrual bleeding**, and **post-coital bleeding**
  - In adolescent girls, the cervix is the most common anatomic site of infection. **Immature ectocervix** of the adolescent genitalia is largely populated with **columnar epithelium**, which facilitates the attachment of microorganisms, as compared to the squamous cell epithelium of the adult cervix.

- Clinical symptoms of urethritis including **dysuria** and **increased urinary frequency**
Symptomatic Chlamydia in Males

- Symptomatic males usually present with **mucoid or watery urethral discharge** and dysuria due to infection in their urethras. **Discharge is usually minimal** and only noted with milking of the urethra or seen in undergarments in the morning.
- Other clinical presentations in males include **epididymitis** (testicular pain and tenderness, and scrotal edema), **prostatitis** (pain with ejaculation and pelvic pain), and **proctitis** (rectal pain, diarrhea, rectal bleeding or mucus).
- While less common, both men and women can also present with conjunctivitis and reactive arthritis.
Complications of Chlamydia Infection

- Pelvic inflammatory disease (PID) occurs in **10-15% of untreated adolescent girls**
  - Infection ascends to the upper reproductive tract causing **inflammation of the uterus and fallopian tubes**
  - Infection can then spread further to the capsule of the liver, causing **perihepatitis**, also known as Fitz-Hugh-Curtis Syndrome.
  - Complications of untreated PID include risk of **future infertility, chronic pelvic pain and ectopic pregnancies**. Also an association of PID with ovarian cancer
Importance of Screening

• The efficient transmission between sexual partners in combination with the fact that the majority of infections are asymptomatic and the potential complications highlight the importance of routine screening for chlamydia in both men and women.
Presentation of Gonorrhea

- *Neisseria gonorrhoea* (*N. gonorrhea*) is a gram-negative diplococcus which causes infections that are **asymptomatic in the majority of men and women**
- Clinical symptoms of *cervicitis, urethritis, and prostatitis* are similar to *C. trachomatis* infections, with urethral **discharge that is typically more copious and purulent**.
- If symptoms do occur, they usually appear more rapidly, as the organism has a shorter incubation period of 2-8 days
- **Pharyngitis** secondary to oral sex
Complications of Gonorrhea

- **PID** with associated risks of infertility, chronic pelvic pain and ectopic pregnancies.
- Other rare clinical manifestations include **disseminated gonococcal infections** such as purulent arthritis, acute endocarditis, meningitis, and osteomyelitis.
- Men and women infected with *N. gonorrhoea* and *C. trachomatis* also have **increased risk of acquiring** Human immunodeficiency virus (HIV) due increased permeability of inflamed mucous membranes and the migratory immune response to inflammation.
Screening Guidelines for Chlamydia and Gonorrhea

• Both the USPSTF and CDC recommend that all sexually active females less than age 25 years be annually screened for chlamydia and gonorrhea.

• Routine screening for young asymptomatic males is not recommended by the USPSTF, although the CDC recommends that screening be considered in groups at high risk for STIs (e.g., men who have sex with men, those with a history of previous STIs, intravenous drug use, or exposure to high STI prevalence settings, such as jails, juvenile correction facilities, national job training programs, or adolescent or STI clinics).
# Chlamydia and Gonorrhea Screening Guidelines for Sexually Active Adolescents and Young Adults

<table>
<thead>
<tr>
<th></th>
<th>USPSTF\textsuperscript{21}</th>
<th>CDC\textsuperscript{20}</th>
<th>AAP\textsuperscript{23}</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Female</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age ≤24 years</td>
<td></td>
<td>Age ≤25 years</td>
<td></td>
</tr>
<tr>
<td><strong>Male</strong></td>
<td></td>
<td>High risk factors\textsuperscript{b} OR MSM</td>
<td></td>
</tr>
<tr>
<td>No routine screening\textsuperscript{a}</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Screening Interval</strong></td>
<td>New or persistent risk factors</td>
<td>Annually\textsuperscript{c}</td>
<td></td>
</tr>
<tr>
<td><strong>Rescreening Interval</strong></td>
<td>CDC recommends all adolescents who tested positive be rescreened 3 months after treatment, regardless of symptoms or if partner has been treated. If rescreening at 3 months is not possible, it should be done at any point within the next 12 month period</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Screening Test\textsuperscript{20}</strong></td>
<td>Female: Vaginal, endocervical NAAT preferred. Alternative first catch urine NAAT</td>
<td>Male: First-catch urine or urethral swab NAAT</td>
<td>MSM: First-catch urine or urethral swab NAAT, Rectal NAAT (if exposed), Pharyngeal NAAT GC only (if exposed)</td>
</tr>
</tbody>
</table>

\textsuperscript{a} Special consideration to males age 20-24 with history of previous gonorrhea infection, other STIs, new or multiple sex partners, inconsistent condom use, or who engage in sex work or drug use\textsuperscript{21}

\textsuperscript{b} Settings with high prevalence rates, such as jails or juvenile corrections facilities, national job training programs, STD clinics, high school clinics, and adolescent clinics for patients who have a history of multiple partners\textsuperscript{20}

\textsuperscript{c} MSM: Screen every 3 to 6 months if high risk due to multiple or anonymous partners, sex in conjunction with illicit drug use, or having sex partners who participate in these activities\textsuperscript{23}
Special Populations who require Screening

- Both the AAP and ACOG recommend that all pregnant females under age 25 years be screened during their first trimesters, and rescreened during their third trimesters.
- The AAP recommends screening individuals who have been exposed to gonorrhea or chlamydia in the past 60 days.
  - Based upon the ability of partners to be linked to care, providers may provide expedited partner treatment.
  - Abstain from sexual intercourse until after they and their sexual partners have completed treatment and no longer are symptomatic.
Type of Screening Test

- Females
  - NAATs obtained with a *vaginal swab* are preferred per the CDC, and an endocervical swab can be obtained if a pelvic examination is being performed
  - Vaginal swabs collected by *physicians or self-collected* by patients have been shown to be equally efficacious
  - **Alternatives include first catch urine**, although it is not the preferred method since it identifies *10% fewer infections* in woman
Type of Screening Test

• Males
  – **First-catch urine** is recommended, given that it is equivalent to a **urethral swab** in detecting infection, and a more acceptable method of screening.
  – For **MSM**, annual screening with **urine** is recommended, along with a **rectal swab and/or oropharynx swab** if they engage in receptive anal sex or oral sex.
<table>
<thead>
<tr>
<th>Source</th>
<th>Neisseria Gonorrhea</th>
<th>Chlamydia Trachomatis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sensitivity</td>
<td>Specificity</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First- Catch Urine</td>
<td>78.6 - 100</td>
<td>99.5 - 100</td>
</tr>
<tr>
<td>Endocervical Swab</td>
<td>90 - 100</td>
<td>99.5 - 100</td>
</tr>
<tr>
<td>Self-collected Vaginal Swab</td>
<td>98 - 100</td>
<td>99.9 - 100</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First- Catch Urine</td>
<td>90.9 - 100</td>
<td>99.2 - 100</td>
</tr>
<tr>
<td>Urethral Swab</td>
<td>100</td>
<td>97.1 - 100</td>
</tr>
</tbody>
</table>
Treatment of chlamydia

- **CDC Recommended Regimens**
  - **Azithromycin** 1 g orally in a single dose
  - **Doxycycline** 100 mg orally twice a day for 7 days
  - Of note pregnant women should be treated with azithromycin
  - A meta-analysis of azithromycin versus doxycycline for the treatment of urogenital chlamydial infection demonstrated that treatments were equally efficacious, with microbial cure rates of 97% and 98%, respectively
Test of cure

- Not recommended routinely given high efficacy rates unless therapeutic adherence in questions, symptoms persist or reinfection is suspected
- Repeat chlamydial NAATs at <3 weeks after completion of therapy is not recommended because the continued presence of nonviable organisms
- Pregnant woman recommended repeat treat 3-4 weeks after completing therapy given risks to neonates
Emerging resistance to Gonorrhea

- In 2007, emergence of fluoroquinolone-resistant *N. gonorrhoeae* in the United States
- Additionally decreased effectiveness of cefixime
- CDC’s 2010 STD treatment guidelines recommended dual therapy for gonorrhea with a cephalosporin plus azithromycin, even if NAAT for *C. trachomatis* was negative at the time of treatment
- Emerging resistance to tetracyclines therefore currently CDC recommends dual therapy with azithromycin unless allergy to azithromycin can treat with doxycycline
Treatment of Uncomplicated Gonococcal Infections of the Cervix, Urethra, and Rectum

- **CDC Recommended Regimen: same day treatment**
  - **Ceftriaxone** 250 mg IM in a single dose
    PLUS
  - **Azithromycin** 1g orally in a single dose
  - Curing 99.2% of uncomplicated urogenital and anorectal and 98.9% of pharyngeal infections
  - If cephalosporin allergy: single doses of oral gemifloxacin 320 mg plus oral azithromycin 2 g or dual treatment with single doses of intramuscular gentamicin 240 mg plus oral azithromycin 2 g
Suspected cephalosporin treatment failure:

- Suspected treatment failure if partners were adequately treated and risk for reinfection is low.
- Treatment failure should be considered in persons whose symptoms do not resolve within 3–5 days after appropriate treatment and report no sexual contact during the post-treatment follow-up period.
- Before retreatment, relevant clinical specimens should be obtained for culture (preferably with simultaneous NAAT) and phenotypic antimicrobial susceptibility testing if *N. gonorrhoeae* is isolated.
Suspected Ceftriaxone Treatment Failure

- Reinfections more common than actual treatment failures and should be treated with recommended regimen (ceftriaxone 250 mg IM plus azithromycin 1 g orally),
- If high likelihood of cephalosporin treatment failure:
  - 1) dual treatment with single doses of oral gemifloxacin 320 mg plus oral azithromycin 2 g
    OR
  - 2) dual treatment with single doses of intramuscular gentamicin 240 mg plus oral azithromycin 2 g
References

References


References

QUESTIONS?

Please type questions in the Q&A function located on the control bar at the bottom left of your screen.
Your Adolescent Patients are at Risk! What Can You Do?

- Join the MOC part 4 approved QI program to improve STI screening.
- Contact Regina Grazel at rgrazel@njaap.org or Sharleen van Vlijmen at svanvlijmen@njaap.org
Join us for our next webinar!

Wednesday, July 24th, 2019 at 12:00 pm–1:00 pm

Part 2: Let’s Talk About Sex: Removing barriers to screening adolescents for STIs

Presented by Harold Wiesenfeld, MD, and Susan Brill, MD. Do parents want their adolescent child screened for STDs during a pediatric office visit? Learn about chlamydia and gonorrhea screening tools, as well as how to overcome barriers to testing.

To register, visit www.njaap.org