Overview

- Adolescents and STDs-Special Considerations
- Chlamydia and Gonorrhea infections: Review
- STD Syndromes:
  - Cervicitis
  - Pelvic Inflammatory Disease
  - Urethritis
  - Epididymitis
  - Proctitis

NYS High School Students Who Ever Had Sexual Intercourse, 2011 (YRBS 2011)

<table>
<thead>
<tr>
<th>Grade</th>
<th>9th</th>
<th>10th</th>
<th>11th</th>
<th>12th</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>27%</td>
<td>35%</td>
<td>46%</td>
<td>61%</td>
<td>42%</td>
</tr>
</tbody>
</table>

State Youth Risk Behavior Surveys, 2011

Adolescent Sexual Health Trends

- National Youth Risk Behavior Surveillance System
  - ↓ in high school students who have ever had sex
    - 1991-2009: ↓54% to ↑46%
  - ↓ in high school students reporting sex with ≥4 persons
    - 1991-2009: ↓19% to ↑14%
  - Used condom during last sexual intercourse
    - 1991-2003: 146% to 63%
    - 2003-09: no significant change, still ~61%

www.cdc.gov/HealthyYouth/yrbs

Adolescent Susceptibility to STDs

- Physical
  - Cervical ectopy
  - Asymptomatic nature of infection
  - No prior immunity

- Cognitive
  - Concrete thinking
  - Not planning ahead
  - Unable to judge risk for STI
  - Invincibility
Cervical Ectopy

Normal cervix with ectopy. Courtesy of California NNPTC

Adolescent Susceptibility to STDs

- Behavioral
  - Early sexual initiation
  - Sexual activity with a new partner
  - Multiple partners
  - Substance use at last sex

- Social
  - Lack of insurance/ability to pay
  - Lack of “medical home”
  - Confidential services

What Makes a Patient High Risk for STD?

- 2 biggest risk factors
  - Young age
  - Previous STI
  - Previous Pregnancy
- Other factors to consider
  - New partner since last test
  - Multiple partners
  - Erratic/improper condom use

Epidemiology of STIs in Adolescents

Aprox. 19 million new cases per year:
- Half occur in people ages 15–24
- Most asymptomatic and undiagnosed

1 in 4 teen girls have an STI (CDC 2008)

Economic costs ~$17 billion/year

Potential Barriers to STD Risk Assessment

- Belief that prevalence of STI in patients low
- Lack of:
  - Time
  - Reimbursement
  - Provider training
  - Patient and provider comfort
- In commercial health plans, billing statements may break confidentiality

Prevalence of 5 STDs Among Females Aged 14 to 19 yrs: United States, 2003-2004
Approach to the Adolescent

Key Strategies

- Assess developmental level
- Discuss confidentiality with adolescent/parent
- Appropriately ensure confidentiality, time alone
- Brief risk assessment at most visits
- STI screening annually if sexually active
- Systems for follow-up of confidential results

Involving Parents/Guardians

- Lay groundwork for confidential relationship when child is pre-teen
- Introduce concept of time alone at 11 year old visit
- Encourage parental participation in care & support of confidentiality
- Have materials such as posters/brochures available

Development of Adolescent as Health Consumer

- Respect adolescent’s evolving autonomy
- Facilitate collaborative decision-making

Confidentiality

- Information about teen’s treatment not disclosed without his/her permission
- Supported by national organizations
  - Expert consensus- (ACOG ’88, AAFP ’89, AAP ’89 SAHM ’92, AMA’92)
  - Determined by age/developmental level
  - Need to establish caveats when presenting to teens and parent/guardian

Confidentiality and STD*

- All 50 states and the District of Columbia allow minors to consent to STI services
- 11 states require that a minor be a certain age (12 or 14) to consent.
- 31 states include HIV in package of STI services to which minors may consent
- 18 states allow physicians to inform parents that a minor is seeking or receiving STI services

Exceptions to the Provision of Confidential Health Services

- Suspected physical, sexual or emotional abuse
- At risk for harm to self or others
- May confidentially report STIs to health department

*www.guttmacher.org/statecenter/adolescents.html
How Can I Perform STD Screening Confidentially?

Confidentiality and Billing

- Cannot guarantee confidentiality in many cases
- Explanation of benefits (EOBS) may be sent by insurance company
- Need to know the “paper trail issues” in your health system

Explanation of Benefits

Medicaid vs. Private Insurance

- EOBs sent to policyholder or insured in most private plans
- Medicaid does not routinely send EOBs for confidential services in NYS
- Some claim statements/EOBs are general and do not disclose service/diagnosis

Potential Solutions

- CPT Modifier 33 aids in correctly coding for preventive services falling under the Affordable Care Act with no cost sharing
- Develop system for low cost visits
- NY State Medicaid Family Planning Benefit

New York State Family Planning Benefit* (NYSFPB)

- Public health insurance program for New Yorkers needing family planning services but not able to pay
- Intended to increase access to confidential family planning services
- Enable teens, women and men of childbearing age to prevent and/or reduce unintentional pregnancies
- Patient can be dually insured with parents’ commercial health plan and with NYSFPB

Eligibility:
- Female or male of childbearing age
- New York State resident
- U.S. citizen, national, Native American, or satisfactory immigration status
- Meet certain income requirements (currently under 200% of the Federal Poverty Level) and
- Not already enrolled in Medicaid or Family Health Plus
- Presumptive enrollment coming very soon!

*http://www.health.ny.gov/health_care/medicaid/program/longterm/familyplanbenprog.htm
New York State Family Planning Benefit

Services Covered

- Most FDA approved birth control methods, devices, and supplies (e.g., birth control pills, injectables, patches, condoms, diaphragms, IUDs)
- Emergency contraception services and follow-up care
- Male and female sterilization
- Preconception counseling and preventive screening
- Family planning options before pregnancy

NYSFPB Services Considered Family Planning Must Be Provided Within FP Visit/Directly Related to FP

- Pregnancy testing and counseling
- Comprehensive health history and physical examination (inc. breast exam & referrals to PCP) NOT Mammograms
- Screening/STI
- Screening for cervical cancer, urinary tract & female-related infections
- Screening & related diagnostic laboratory testing for medical conditions affecting choice of birth control
- HIV counseling/testing
- Counseling services related to pregnancy, informed consent, & STD/HIV risk counseling
- Bone density scan if plan to use or using Depo-Provera
- Ultrasound to assess placement of an intrauterine device

Confidentiality and Meaningful Use

- Patient Instructions-Need to do in 50% of visits
  - May contain confidential information
  - Can give to patients 18 or older directly
  - May need to give to adolescent, themselves
  - MAPCI working with Pediatric EMR group working on ways to delete confidential information

Follow-up Issues

- Always get alternative phone numbers
  - Confidential number in EMR
- Possibly alternative address
- Email
  - Must consider lack of confidentiality over Internet
  - Patient portals helpful if patient 18 years or older
    - Meaningful Use 2
- Caveats when establishing confidentiality

Develop Referral Network For Confidential Care

- School Health
- College Health
- NYC App from NYC DOH
- STD Clinics
- Planned Parenthood
- Mental Health Professionals
- Hospital based Clinics
- Prenatal care services
- Abortion services
- Adoption services

Office Clinical Staff & Confidentiality

- Educate staff:
  - Adolescent development and need for confidentiality
  - State laws
  - Office policies
  - Adolescent health guidelines
  - Alternative community resources (public health clinics, school health clinics, Planned Parenthood)
Changes You May Wish to Make Your Practice Adolescent Friendly

- Don’t miss primary care opportunities at sick visits
  - Urine STI screening
  - Immunizations
- Adolescent template in EMR
- Universal urine collection
- Patient walk through – with cycle time
- Nurses/medical assistants review chief complaints/immunization records
- Handling messages/interruptions

Changes You May Wish to Make Your Practice Adolescent Friendly

- Adolescent-only office hours
- Prompt on EMR/visit note for confidential contact number
- Compile list of community resources for confidential reproductive health services/mental health services
- Develop list of primary care providers that patients can be transitioned to

Case 1: “I Need a Physical to Play High School Tennis”

- Ashley is a 16-year-old girl who comes to your office for a sports physical. She recently became sexually active with her 16-year-old boyfriend of a year. They use condoms “all the time.” No oral or anal sex. He had one prior sexual partner, a female who is in the same grade. Ashley is asymptomatic. She does not want her parents to know she is sexually active.

Why Screen for STDs?

- Standard of care
- Cost effective
- Reduces transmission/prevents complications (PID, infertility)
- HEDIS Measure-Chlamydia screening females <25 years

Chlamydia

Females

- Screen all sexually active women ≤25\* at least annually
- Screen all pregnant women during first trimester of pregnancy; consider re-screening during 3\textsuperscript{rd} trimester for women ≤25 and those at increased risk

*USPSTF Grade A Recommendation

Males

- Chlamydia screening among sexually active young men should be considered in clinical settings with high prevalence of chlamydia:
  - Adolescent clinics
  - STD clinics
  - Correctional facilities
  - Among MSM\*
- USPSTF: Evidence insufficient to recommend routine screening among males
**Chlamydia**

**MSM**
- Screen all sexually active men who have sex with men (MSM) for *C. trachomatis* infection at least annually
- Screen at sites of exposure:
  - Urethral (urine NAAT)
  - Rectal (rectal NAAT*)
- Pharyngeal testing not recommended

*Not FDA-approved; require local lab validation

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**Adolescent STD Screening**

**CDC/NYS Recommendations**
- Annual *C. trachomatis* (CT) screen all sexually active females aged ≤25 yrs
- Annual *N. gonorrhoeae* (GC) screen all at-risk sexually active females
  - Females aged <25 years are highest risk for gonorrhea infection
- Offer HIV screening to all adolescents and encourage testing for those at risk
- Begin cervical cancer screening at age 21 in most cases

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**HIV**

**NYS Law as of July 30, 2010:**
An HIV test must be offered to all patients between the ages of 13 and 64 when they receive health-related services in a primary care setting or a hospital, either as inpatients or as emergency-room patients.

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**What else?**
- Routine screening of adolescents who are asymptomatic for certain STDs is not recommended:
  - Syphilis
  - Herpes
  - Trichomoniasis
  - HPV
  - Bacterial vaginosis
  - Hepatitis A and B
- However, young MSM and pregnant adolescent females might require more thorough evaluation

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**Chlamydia Screening**
- Most common treatable STI in 15-19 year olds 2761/100,000
- Usually asymptomatic
- Associated with significant pathology
- Screening “high risk” only females misses significant number of infections
- Should be done every 6 months in high females
- Cost effective at population level
- Decreases PID by 60%

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**Which of the following types of tests is most sensitive for diagnosing Chlamydia?**

A) Culture
B) Nucleic acid amplification tests (NAATs) (PCR, TMA)
C) Antigen detection tests (ELISA, EIA, DFA)
D) Non-amplified DNA probe
Which of the following types of tests is most sensitive for diagnosing Chlamydia?

A) Culture  
B) Nucleic acid amplification tests (NAATs) (PCR, TMA)  
C) Antigen detection tests (ELISA, EIA, DFA)  
D) Non-amplified DNA probe

Chlamydia: Diagnosis

- **NAATs**  
  Male urethral/urine  
  Female vaginal/endocervical/urine/liquid cytology  
  Rectal and pharyngeal with local validation studies only

- **Non-Amplified Tests**  
  EIA: urethral/cervical/conjunctival  
  DFA: urethral/cervical/rectal/conjunctival

- **Culture**  
  Endocervical, urethral, pharyngeal or rectal specimens

Chlamydia Diagnosis: Testing

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Sensitivity</th>
<th>Specificity</th>
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</thead>
<tbody>
<tr>
<td>Culture</td>
<td>70%</td>
<td>85-95%</td>
</tr>
<tr>
<td>NAAT (PCR, TMA)</td>
<td>85-90%</td>
<td>98%</td>
</tr>
<tr>
<td>EIA</td>
<td>50-65%</td>
<td>95%</td>
</tr>
<tr>
<td>DFA</td>
<td>65-70%</td>
<td>95%</td>
</tr>
<tr>
<td>DNA Probe</td>
<td>65-70%</td>
<td>95%</td>
</tr>
</tbody>
</table>

*Chlamydia Coalition*

Tests: Nucleic Acid Amplification Test (NAAT)

- Amplified nucleic acid sequences specific to organism being detected  
- Do not require viable organisms  
- Most sensitive chlamydia tests - 90-95%  
- Endocervical, urethral, urine, and self collected vaginal swab specimens

NAATs

- Recommended by Bright Futures/CDC  
- Can detect GC and CT in single specimen  
- Expensive  
- Vaginal swabs is preferred female specimen  
- Urine is preferred male specimen

Urine Testing

- “First void” urine used for testing for chlamydia and gonorrhea  
- Best for asymptomatic or symptomatic boys  
- Best for asymptomatic screening in girls  
  - Convenience  
  - Sensitivity approaches endocervical testing for chlamydia but somewhat lower for gonorrhea
“First Void” Urine Collection

- Consider universal urine collection at all adolescent visits
- At least one hour since last void
- Do NOT clean with antiseptic wipes
- Collect first 10cc of urine in sterile cup
- Void the rest in toilet
- If need urine culture:
  - Wipe after first 10cc void

Case 1: Sports Physical-Follow Up

- Ashley screens positive for chlamydia and is not infected with gonorrhea or HIV
- How do you proceed?

Chlamydia

- *Chlamydia trachomatis*:
  - Gram-negative, obligate intracellular organism

<table>
<thead>
<tr>
<th>Serovar</th>
<th>Clinical Syndrome</th>
</tr>
</thead>
<tbody>
<tr>
<td>A, B, Ba, C</td>
<td>Trachoma</td>
</tr>
<tr>
<td>D → K</td>
<td>Urogenital, rectal, conjunctival infections</td>
</tr>
<tr>
<td></td>
<td>Neonatal pneumonia</td>
</tr>
<tr>
<td>L1, L2, L3</td>
<td>Lymphogranuloma venereum</td>
</tr>
</tbody>
</table>

Transmission:
- Anal, vaginal, oral sex
- Mother-to-child
- Efficient: 65-70% of exposed sex partners concurrently infected

Risk Factors:
- Young age (<25)
- Female
- Previous Ct infection

Clinical manifestations:
- Conjunctivitis
- Urethritis
- Cervicitis
- Proctitis

Complications: Reiter’s Syndrome, PID, epididymitis

**The majority of infections are asymptomatic**

 (~70-80% in females, 50% in males)
Reiter's Syndrome

- Aseptic inflammatory arthritis that follows urethritis or infectious dysentery
- Linked to HLA-B27; male predominance (2:1)
- Triad: Urethritis (cervicitis) Asymmetric polyarthritis Conjunctivitis/Uveitis
- Management: antibiotics, anti-inflammatory agents

Chlamydia Treatment

**Adolescents and Adults - non-pregnant**

**Recommended regimens**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azithromycin 1g PO x 1</td>
<td>OR</td>
</tr>
<tr>
<td>Doxycycline 100mg PO BID x 7d</td>
<td></td>
</tr>
</tbody>
</table>

**Alternative regimens**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ofloxacin 300 mg PO BID x 7d</td>
<td></td>
</tr>
<tr>
<td>Levofloxacin 500 mg PO QD x 7d</td>
<td></td>
</tr>
<tr>
<td>Erythromycin base 500 mg PO QID x 7d</td>
<td></td>
</tr>
<tr>
<td>Erythro ethylsuccinate 800 mg PO QID x 7d</td>
<td></td>
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</tbody>
</table>

**Chlamydia Treatment**

**Pregnancy**

**Recommended Regimens**

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<td>Amoxicillin 500mg PO TID x 7d</td>
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</tbody>
</table>

- Test of cure 3 weeks after completion of therapy
- Retest in 3 months after treatment
- Retesting during 3rd trimester for women at increased risk (<25, multiple sex partners)

Case 2: Ear Infection

- Joey is a 17 year old sexually active boy who comes for an acute visit for ear pain. You diagnose otitis media. He has not seen you in over a year and is sexually active with one female partner for the past 6 months; his only sexual partner ever. Condom use “most of the time” for vaginal sex and never for oral or anal sex.

How Do You Take Care of Joey?

A) Treat ear infection only
B) Treat ear infection and make follow up appointment for STD evaluation
C) Treat ear infection and evaluate for STD
D) Treat ear infection and give him free condoms
Results of STD Screen Are:

- Positive for Gonorrhea

Gonorrhea

Adolescent Females

- Screen all sexually active women at increased risk*, including:
  - Age < 25
  - Previous history of STIs, new/multiple sex partners, inconsistent condom use, sex work, drug use
- No screening recommendation for low-risk/low-prevalence areas
- Screen pregnant women with risk factors

*USPSTF Grade B Recommendation

Gonorrhea

Adolescent Males

- Screen populations with 1% or greater prevalence of infection among patients served
  - Adolescent clinics, correctional facilities, STD clinics, MSM
- AAP Bright Futures recommends if appropriate to patient population and clinical setting
- CDC - insufficient evidence to recommend routine screening in young men unless settings as above
  - feasibility
  - efficacy
  - cost

MSM

- Screen all sexually active men who have sex with men (MSM) for *N. gonorrhoeae* infection at least annually
- Screen at sites of exposure:
  - Urethral (urine NAAT)
  - Rectal (rectal NAAT*)
  - Pharyngeal (pharyngeal NAAT*)

*Not FDA-approved; require local lab validation

Gonorrhea

Transmission

- Vaginal, anal, oral sex
- Mother-to-child
- Risk of F to M transmission: 20% with one episode, 60-80% after 4 episodes

*Neisseria gonorrhoeae*:
Gram-negative diplococcus
Gonorrhea

Clinical Manifestations:
- Conjunctivitis
- Urethritis
- Cervicitis
- Proctitis
- Pharyngitis

Complications: Disseminated Gonococcal Infection (DGI), PID, Epididymitis, Genital abscesses

Disseminated Gonococcal Infection (DGI)
- Septic Arthritis: 1-2 joints
- Dermatitis-Arthritis:
  - Painless skin lesions
  - Asymmetrical polyarthritis, tenosynovitis
- High fevers, chills, rigors
- Initial treatment requires hospitalization and IV antibiotics

DGI – Skin Lesions


Gonorrhea Diagnosis
- Gram Stain (symptomatic male urethral specimens) +PMNs with intracellular Gram neg. diplococci
- Culture
  - Rectal and pharyngeal specimens
  - Urethral and endocervical specimens
  - Conjunctival specimens
- NAATs
  - Male urethral/urine
  - Female vaginal/endocervical/urine
  - Rectal and pharyngeal with local validation only
- Non-Amplified Tests

Gonorrhea Treatment

Uncomplicated Cervical, Urethral, Rectal Infections

Recommended Regimens
- Ceftriaxone 250mg IM x 1
- OR, IF NOT AN OPTION
- Cefixime 400mg PO x 1
- OR
- Single-dose injectable cephalosporin regimens

PLUS
- Azithromycin 1g PO x 1
- OR
- Doxycycline 100mg BID x 7 days

Gonorrhea Treatment

Uncomplicated Cervical, Urethral, Rectal Infections

Other single-dose injectable cephalosporins:
- Ceftriaxone 500mg IM
- Cefotaxime 500mg IM

Alternative Regimens
- Cefpodoxime 400mg PO x 1
- Cefuroxime axetil 1g PO x 1
- Azithromycin 2g PO x 1
Gonorrhea Treatment
Uncomplicated Pharyngeal Infections

Recommended Regimens

**Ceftriaxone 250mg IM x 1**

**PLUS**

Azithromycin 1g PO x 1
OR
Doxycycline 100mg BID x 7 days

2010 CDC Guidelines

Chlamydia/Gonorrhea Follow-up

- Patients treated for uncomplicated infections do not need a test of cure
- Re-infection is common
- **Retest 3-6 months after treatment**, or when the patient next seeks care within the following 12 months

Chlamydia/Gonorrhea Partner Management

- Sex partners during the 60 days preceding onset of symptoms or diagnosis should be evaluated, tested and treated
- Abstinence for 7 days after single-dose treatment or until after completion of a 7-day regimen
- **EPT for Chlamydia infections only**: [www.nyc.gov/health/ept](http://www.nyc.gov/health/ept)

Test of Reinfection

- High CT and GC reinfection rates
  - untreated partners re-exposure
  - new partners new exposure
- Retest ♀ and ♂ for CT and/or GC ~3 months after treatment or whenever persons next present for care
- Consider retest ♀ for TV at 3 months after treatment
- Regardless if believes sex partners treated

Case 3- Vaginal Discharge-Part 1

- Josie is a 15 year old sexually active girl who comes to your office with vaginal discharge and dysuria. You do a speculum examination and see:
Cervicitis

**Definition:**
- Purulent or mucopurulent exudate visible in the endocervical canal ("mucopurulent cervicitis")
  - AND/OR
- Easily induced bleeding (friability) at the endocervical os

**Other signs:**
- Vaginal wet mount with >10 WBCs/hpf
- Edema of cervical ectropion (edematous ectopy)

**Etiology:**
- Chlamydia and Gonorrhea (<50%)
- Non-GC/Ct Cervicitis:
  - Mycoplasma genitalium
  - Ureaplasma urealyticum
  - Trichomonas vaginalis
  - Herpes Simplex Virus
- Irritant mucositis (chemical douches, deodorants)
- Role of Bacterial Vaginosis--?

**Mycoplasma genitalium**
- Found in men with urethritis, and treatment that eradicates *M. genitalium* is associated with clinical cure
- Also found in women with cervicitis, and there is evidence that it is a causative agent in PID
- A small bacterium with fastidious growth requirements; difficult to culture
- No available commercial lab test
- Variable sensitivity to tetracyclines and macrolides
Cervicitis

**Diagnosis:**
- NAAT testing for GC and Ct
- Evaluate for Bacterial Vaginosis and Trichomonas (culture or Ag-detection, if available)
- Consider HSV
- Standardized diagnostic testing for *M. genitalium* not commercially available
- Assess for signs of PID

**Cervicitis - Management**

**Treatment Options:**
- Treat presumptively for Ct:
  - Young (<25), new or multiple sex partners, hx of unprotected sex
  - If follow-up is uncertain
- Treat presumptively for GC and Ct:
  - If risk factors as above and/or high local prevalence (>5%)
- Await results of diagnostic tests:
  - Low-risk, good follow-up, sensitive tests used (NAATs)

**Cervicitis - Presumptive Treatment**

**Recommended regimens**

<table>
<thead>
<tr>
<th>Regimen</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Azithromycin 1g PO x 1</td>
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</tbody>
</table>

- Concurrent treatment for GC if risk/prevalence
- Treat for Trichomonas and Bacterial Vaginosis, if detected
- Refer partners for evaluation and treatment
Case 3- Part 2-Abdominal Pain

- Josie returns to your office 3 weeks later with abdominal pain. Her boyfriend did not get evaluated or treated. She has continued to have unprotected sex.

Pelvic Inflammatory Disease

Sequelae of Untreated GC & Chlamydia in Women

- Untreated Chlamydia
  - Pelvic Inflammatory Disease: 20-40%
  - Infertility: 20%
  - Ectopic Pregnancy: 5%

- Untreated Gonorrhea
  - Pelvic Inflammatory Disease: 10-40%
  - Recurrent PID: 23%
  - Chronic Pelvic Pain: 36%

Pelvic Inflammatory Disease (PID)

- Infection and inflammation of the female upper genital tract
- Caused by microorganisms ascending from the lower genital tract
- Polymicrobial etiology

Pelvic Inflammatory Disease

Etiology:

- Gonorrhea (30-80%) and Chlamydia (20-40%)
- Organisms of the vaginal flora:
  - G. vaginalis: Anaerobes
  - H. influenzae: Enteric gram neg. rods
  - Strep. Agalactiae
- Other sexually transmitted organisms:
  - Mycoplasma spp.
  - Ureaplasma urealyticum
  - CMV

Pelvic Inflammatory Disease Risk Factors

- Adolescence
- Multiple sexual partners
- History of prior PID; history of GC or Ct
- Male partner with GC or Ct
- Recent (within 3 weeks) upper genital tract procedure e.g. IUD placement
- Bacterial Vaginosis
- Current douching
Pelvic Inflammatory Disease

Clinical Manifestations:
- Lower abdominal pain/cramping
- Vaginal Discharge
- Dysuria
- Fever/Chills
- Nausea/Vomiting
- RUQ Pain (Perihepatitis)
- Post-coital/irregular bleeding
- "Silent" PID

Diagnosis

Minimum Criteria:
- Cervical motion tenderness OR uterine tenderness OR adnexal tenderness
- No single historical, physical or lab finding is both sensitive and specific for diagnosis of acute PID

Additional Criteria:
- Temp > 38.3 C (101 F)
- Abnormal discharge; abundant WBCs on wet mount
- Elevated ESR/C-reactive protein
- + GC/Ct laboratory test

Fitz-Hugh Curtis

Peri-hepatitis

- Right upper quadrant abdominal pain
- May have lower quadrant pain
- May have cervical motion tenderness
- Normal liver function tests
- Elevated ESR/C-reactive protein
- Generally, positive test for chlamydia/gonorrhea

Differential Diagnosis of PID

- Acute Appendicitis
- Ectopic Pregnancy
- Ruptured, Bleeding, Torsion of Ovarian Cyst
- Pelvic Endometriosis
- Inflammatory Bowel Disease
- Urinary Tract Infection
- Renal/Ureteral Stones

Pelvic Inflammatory Disease

Outpatient Treatment

Recommended regimens

Ceftriaxone 250mg IM x 1
 OR
Cefoxitin 2g IM x 1 +
 Probenecid 1g PO x 1
 OR
Other parenteral 3rd gen Cephalosporin (e.g. ceftizoxime or cefotaxime)

PLUS
- Doxycycline 100mg BID x 14d

WITH or WITHOUT
- Metronidazole 500mg BID x 14d

Alternative regimens

Use quinolones only if cephalosporin therapy is not feasible and prevalence/risk of GC is low
Levofloxacin 500 mg PO QD x 14 d OR
Ofloxacin 400 mg PO BID X 14 d
 +/- Metronidazole 500 mg PO BID x 14 d**

Other regimens

Ceftriaxone 250mg IM x 1 PLUS
Azithromycin 1g PO qweek x 2
 +/- Metronidazole 500mg BID x 14 d

2010 CDC Guidelines
Pelvic Inflammatory Disease
Criteria for Hospitalization

• Unable to rule out surgical emergency
• Pregnancy
• Inability to tolerate or poor clinical response to outpatient treatment regimen
• Severe symptoms—nausea/vomiting, high fever
• Evidence of tubo-ovarian abscess

Pelvic Inflammatory Disease
Follow-up

• Stress importance of adherence to oral regimen
• Re-examine within 72 hours; hospitalization usually required if no clinical improvement
• Treat sex partners: Male sex partners 60 days preceding onset of symptoms
• For + GC/Ct: repeat testing in 3-6 months
• HIV testing

Pelvic Inflammatory Disease
Special Considerations

• Pregnant women with suspected PID should be hospitalized and treated with IV antibiotics
• Women with HIV may be more likely to develop tubo-ovarian abscesses; but no evidence for more aggressive management
• IUD: Increased risk of PID is confined to first 3 weeks after insertion; evidence insufficient to recommend removal of an IUD in women diagnosed with acute PID, but close follow-up is mandatory

Case 3, Part 3- “It Hurts When I Pee”

• Josie brings her boyfriend in for treatment. He is 17 years old and complains of intermittent pain on urination. You examine him and see...

Source: Seattle STD/HIV Prevention Training Center at the University of Washington/UNHICER Slide Bank

Urethritis
Urethritis

**Etiology:**
- **Infectious**
  - Gonorrhea urethritis: ~20%
  - Non-Gonorrhea urethritis (NGU): ~80%
- **Non-infectious**
  - Irritants, allergy
  - Autoimmune (e.g. Reiter’s Syndrome)

**Urethritis: NGU**

**Etiology:**
- Chlamydia trachomatis 15-55%
- Mycoplasma genitalium 15-25%
- Ureaplasma urealyticum 10-40%
- Trichomonas vaginalis < 5%
- Herpes Simplex Virus < 5%
- Candida albicans < 1%
- Enterics (insertive anal) Unknown
- Adenovirus Unknown
- Unknown > 50%

**Clinical Features**
- Incubation: 7-14 days
- Onset: Gradual
- Dysuria: Mild
- Discharge
  - Quality: Mucoid
  - Quantity: Less

† ~ 1/3 men with NGU in STD clinic setting are asymptomatic
†‡ 25% GU presents with scant or minimally purulent discharge

**Urethritis: Clinical Features**

<table>
<thead>
<tr>
<th>Clinical Features</th>
<th>NGU†</th>
<th>GU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incubation</td>
<td>7-14 days</td>
<td>2-8 days</td>
</tr>
<tr>
<td>Onset</td>
<td>Gradual</td>
<td>Abrupt</td>
</tr>
<tr>
<td>Dysuria</td>
<td>Mild</td>
<td>Severe</td>
</tr>
<tr>
<td>Discharge</td>
<td>-Quality</td>
<td>Mucoid</td>
</tr>
<tr>
<td></td>
<td>-Quantity</td>
<td>Less</td>
</tr>
</tbody>
</table>

† †‡ From Burstein GR, CID 1999; 28 (Suppl 1): S66-73

**Urethritis: Diagnosis**

- Presence of mucopurulent or purulent discharge
- Gram stain: > 5 WBCs/hpf oil immersion
- Positive leukocyte esterase or ≥ 10 WBCs/hpf on first void urine
- Test for GC and Ct (Urine NAATs)
Non-Gonorrhea Urethritis (NGU) Treatment

**Recommended Regimens**
- Azithromycin 1g PO x 1
- Ordoxycycline 100mg PO BID x 7d

**Alternative Regimens**
- Erythromycin base 500 mg PO QID x 7d
- EES 800 mg PO QID x 7days
- Levofloxacin 500 mg PO QD x 7days
- Ofloxacin 300 mg BID x 7days

- Sex partners from preceding 60 days should be evaluated and treated

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Recurrent and Persistent Urethritis (NGU)

**Differential Diagnosis:**
1. Re-exposure to untreated partner
2. Incomplete treatment
3. Persistent infection:
   - Mycoplasma, Ureaplasma
   - Trichomoniasis
4. Non-infectious causes; chronic prostatitis/chronic pelvic pain syndrome (referral to Urology)

**Recommended Regimens**
- Azithromycin 1g PO x 1
  - Or Doxycycline 100mg PO BID x 7d

**Other Regimen**
- Moxifloxacin 400mg qd x 7-10 days

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Case 4- “I’m Swollen Down There”

- Mike is a 17 year old young man who comes to the Emergency Room with 2 day history of swollen right testicle. He is bisexual and has had 2 female and 3 male partners in his lifetime. Currently, he has 1 female partner and uses condoms “most of the time”

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Epididymitis
Acute Epididymitis

- Pain, swelling, and inflammation of the epididymis, <6 weeks
- Pathophysiology: retrograde flow of infected urine into the ejaculatory duct
- Chronic epididymitis: symptoms > 6 weeks

Etiology

- Men aged < 35 years:
  - Chlamydia (60-80%)
  - Gonorrhea (5-20%)
  - Ureaplasma urealyticum
  - Mycoplasma spp.
  - E. coli and other coliforms (insertive anal sex)

- Chronic infectious epididymitis:
  - TB, Brucellosis, Filariasis

Diagnostic Considerations

- History and genital exam:
  - Tender/swollen testicle and spermatic cord
  - Palpable swelling and tenderness of the epididymis
  - +/- urethral discharge and hydrocoele
  - Evaluate for testicular torsion, if indicated

Diagnosis:

- Gram stain: > 5 WBCs/hpf oil immersion
- Positive leukocyte esterase or > 10 WBCs/hpf on first void urine
- Urine NAATs for GC/Ct and urine culture

Treatment

**Recommended regimens**

- Ceftriaxone 250 mg IM in a single dose
- **PLUS**
- Doxycycline 100 mg twice daily for 10 days

**For infections most likely caused by enteric organisms:**

- Ofloxacin 300 mg twice daily for 10 days
- **OR**
- Levofloxacin 500 mg once daily for 10 days

Epididymitis

- If risk for both GC/Ct and enteric organisms (i.e. MSM, insertive anal intercourse), recommend ceftriaxone + fluoroquinolone
- Bedrest, scrotal elevation, analgesics, NSAIDS
- Re-evaluate within 72 hours; if no improvement, refer to ED

Evaluation and treatment of sex partners
Case 4-Part 2: “It Hurts When I Try to Go”

- Mike returns for follow up to your office 2 months later. He now has a new partner who is male. Mike has had receptive anal sex, as well as oral sex. Mike is complaining of pain on defecation.

Proctitis

- Inflammation of the rectum (distal 10-12 cm)
- Associated with receptive anal intercourse
- Symptoms: rectal pain, tenesmus, constipation, mucopurulent discharge, hematochezia
- Etiology:
  - Neisseria gonorrhoea
  - Chlamydia trachomatis (including LGV strains)
  - Treponema pallidum
  - Herpes simplex virus

Proctitis: Etiology

- Anal Canal

Proctitis: Treatment

Recommended regimen

- Ceftriaxone 250mg IM x 1
- Doxycycline 100mg PO BID x 7 days

- If painful perianal ulcers present, treat for HSV
- If LGV is suspected (e.g. mucosal ulcers detected on anoscopy), doxycycline should be continued for 21 days.
Proctitis Diagnosed in NYC STD Clinics, 2008 - 2009*

<table>
<thead>
<tr>
<th>Etiology</th>
<th>Total N</th>
<th>No anal/rectal symptoms N (%)</th>
<th>Anal/rectal symptoms N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>386</td>
<td>261 (68)</td>
<td>122 (32)</td>
</tr>
<tr>
<td>GC</td>
<td>147</td>
<td>74 (50)</td>
<td>73 (50)</td>
</tr>
<tr>
<td>C. trachomatis</td>
<td>215</td>
<td>182 (88)</td>
<td>33 (11)</td>
</tr>
<tr>
<td>LGV</td>
<td>24</td>
<td>8 (33)</td>
<td>16 (67)</td>
</tr>
</tbody>
</table>

*Rectal/anal symptoms noted as part of chief complaint; etiology lab-confirmed

Primary Prevention of STD

- Vaccinate against HPV, HBV, HAV
- Screen sexually active adolescents at preventive care visits or at acute visits if no screening in last year
- Health care providers should integrate sexuality education into clinical practice:
  - Counsel adolescents about sexual risk behaviors
  - Educate patients about prevention strategies
    - abstinence
    - consistent and correct condom use

Other prevention guidance...

Persons in corrections
- GC/CT screening of all adolescent females and older women at increased risk
- Syphilis screening based on local epidemiology

Women who have sex with women
- HPV vaccination

Pregnant women
- Routine syphilis, HepBsAg, Ct screening
- GC, Hep C screening if increased risk
- No routine HSV, BV, or trichomoniasis screening

Useful Websites

- [www.aap.org](http://www.aap.org) The American Academy of Pediatrics (AAP)
- [http://www2.aap.org/sections/adolescenthealth/default.cfm](http://www2.aap.org/sections/adolescenthealth/default.cfm) AAP Section of Adolescent Health
- [http://brightfutures.aap.org/](http://brightfutures.aap.org/) Bright Futures
- [www.aapdistrictii.org](http://www.aapdistrictii.org) NY State American Academy of Pediatrics
- [www.prch.org](http://www.prch.org) Physicians for Reproductive Choice and Health
- [www.naspag.org](http://www.naspag.org) North American Society for Pediatric and Adolescent Gynecology
- [www.advocatesforyouth.org](http://www.advocatesforyouth.org) Advocates for Youth
- [www.guttmacher.org](http://www.guttmacher.org) Guttmacher Institute
- [www.cahl.org](http://www.cahl.org) Center for Adolescent Health and the Law
- [www.siecus.org](http://www.siecus.org) The Sexuality Information and Education Council of the United States
- [www.arhp.org](http://www.arhp.org) The Association of Reproductive Health Professionals

Provider Resources

- NY State AAP Teen Health Care Bill of Rights
- PRCH’s Minors’ Access to Confidential Reproductive Healthcare Cards and Emergency Contraception: A Practitioner’s Guide
- ARHP’s Reproductive Health Model Curriculum
- The American College of Obstetricians and Gynecologists Toolkit
- [www.not-2-late.com](http://www.not-2-late.com) Emergency contraception
- Chlamydia Coalition [http://ncc.prevent.org/](http://ncc.prevent.org/)
Patient Resources

American Social Health Association: www.iwannaknow.org
Center for Young Women’s Health: www.youngwomenshealth.org/
Young Men’s Health: http://youngmenshealthsite.org/
The Children Now: www.talkingwithkids.org/
MTV collaboration with Kaiser Family Foundation: www.itsyoursexlife.com/

Patient Resources

Planned Parenthood Teens: www.teenwire.com/
TeensHealth: http://teenshealth.org/teen/
Healthy Children: www.healthychildren.org/
Gay & Lesbian Youth Services: www.freewebs.com/glyss/

• Thank you to
  - Anne Lifflander, MD, MPH
  - Gale Burstein, MD, MPH