

## Cervicitis, PID, Urethritis & Other GC/Chlamydia Infections

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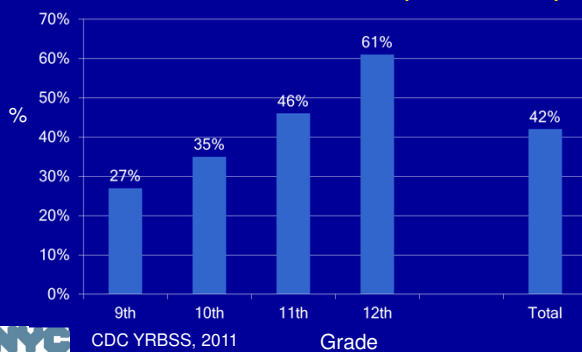


## Overview

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



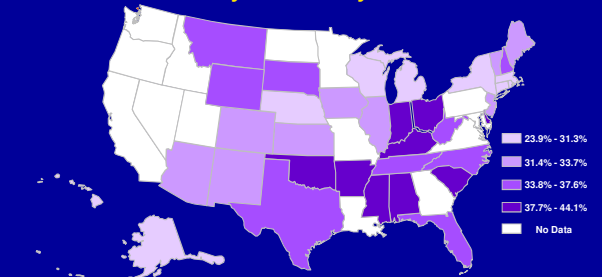
## NYS High School Students Who Ever Had Sexual Intercourse, 2011 (YRBS 2011)



CDC YRBSS, 2011

Grade

## Percentage of High School Students Who Were Currently Sexually Active,\* 2011



\* Had sexual intercourse with at least one person during the 3 months before the survey.



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% → 14%
  - Used condom during last sexual intercourse
    - 1991-2003: ↑46% → 63%
    - 2003-09: no significant change, still ~61%



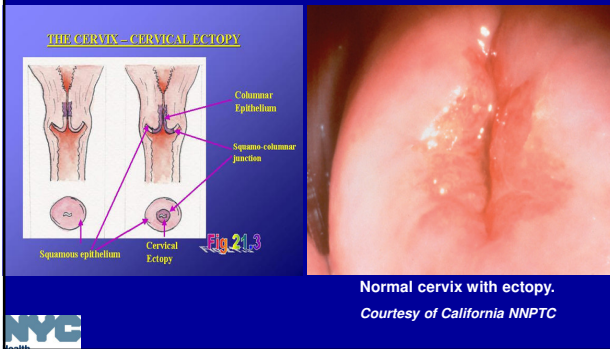
[www.cdc.gov/HealthyYouth/yrbbs](http://www.cdc.gov/HealthyYouth/yrbbs)

## 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



## 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

Economic costs ~\$17 billion/year

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

2006: 33% new STI among 13–29 yo

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

STI	All ♀ Weighted Prevalence (%)	Sexually Experienced ♀ Weighted Prevalence (%)
Any STI	24.1	37.7
HPV*	18.3	29.5
<i>C trachomatis</i>	3.9	7.1
<i>T vaginalis</i>	2.5	3.6
HSV-2	1.9	3.4
<i>N gonorrhoeae</i>	1.3	2.5

Forhan SE, et al. *Pediatrics* 2009;124:1505–1512.

## 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

## 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



\*[www.guttmacher.org/statecenter/adolescents.html](http://www.guttmacher.org/statecenter/adolescents.html)

## 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



## 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



## Confidentiality and Billing 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

\*[http://www.health.ny.gov/health\\_care/medicaid/program/longterm/familyplanbenprog.htm](http://www.health.ny.gov/health_care/medicaid/program/longterm/familyplanbenprog.htm)



## New York State Family Planning Benefit (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!



## 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

2010 CDC Guidelines

### Females

- Screen all sexually active women  $\leq 25^*$  at least annually
- Screen all pregnant women during first trimester of pregnancy; consider re-screening during 3<sup>rd</sup> trimester for women  $\leq 25$  and those at increased risk



\*USPSTF Grade A Recommendation

## Chlamydia

2010 CDC Guidelines

### 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

## Adolescent STD Screening CDC/NYS Recommendations

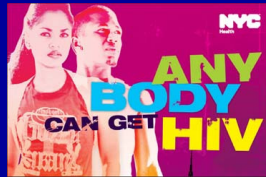
- Annual *C. trachomatis* (CT) screen all sexually active females aged  $\leq 25$  yrs
- Annual *N. gonorrhoeae* (GC) screen all at-risk sexually active females
  - Females aged  $< 25$  years are highest risk for gonorrhea infection
- Offer HIV screening to all adolescents and encourage testing for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



## 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.



## 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



## 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%



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

- Culture
- Nucleic acid amplification tests (NAATs) (PCR, TMA)
- Antigen detection tests (ELISA, EIA, DFA)
- 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

Culture	NAAT	EIA	DFA	DNA Probe
Sensitivity: 70%	Sensitivity: 85-90%	Sensitivity: 50-65%	Sensitivity: 65-70%	Sensitivity: 65-70%
Specificity: 85-95%	Specificity: >98%	Specificity: >95%	Specificity: 95%	Specificity: 95%
	Preferred			

\*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?

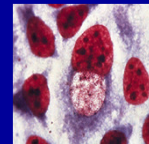


## Chlamydia



## Chlamydia

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



Serovar	Clinical Syndrome
A, B, Ba, C	Trachoma
D → K	Urogenital, rectal, conjunctival infections Neonatal pneumonia
L1, L2, L3	Lymphogranuloma venereum



## Chlamydia

### Transmission:

- Anal, vaginal, oral sex
- Mother-to-child
- Efficient: 65-70% of exposed sex partners concurrently infected<sup>1</sup>

### Risk Factors:

- Young age (<25)
- Female
- Previous Ct infection



<sup>1</sup>Quinn TC et al. JAMA 1996; 276: 1737-1742.

## Chlamydia

### 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

Azithromycin 1g PO x 1

**OR**

Doxycycline 100mg PO BID x 7d

### Alternative regimens

Ofloxacin 300 mg PO BID x 7 d

Levofloxacin 500 mg PO QD x 7 d

Erythromycin base 500 mg PO QID x 7 d

Erythro ethylsuccinate 800 mg PO QID x 7 d



## Chlamydia Treatment Pregnancy

### Recommended Regimens

Azithromycin 1g PO x 1

**OR**

Amoxicillin 500mg PO TID x 7d

- Test of cure 3 weeks after completion of therapy
- Retest in 3 months after treatment
- Retesting during 3<sup>rd</sup> 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



- 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



## 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 in 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



## Gonorrhea

2010 CDC Guidelines

### MSM

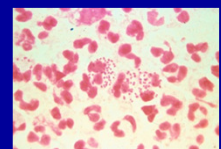
- Screen all sexually active men who have sex with men (MSM) for *N. gonorrhoeae* infection at least annually
- Screen at sites of exposure:
  - Urethral (urine NAAT)
  - Rectal (rectal NAAT\*)
  - Pharyngeal (pharyngeal NAAT\*)

\*Not FDA-approved; require local lab validation



## Gonorrhea

- *Neisseria gonorrhoeae*:  
Gram-negative diplococcus



### Transmission

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



## Gonorrhea

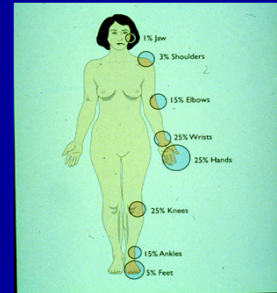
### Clinical Manifestations:

- Conjunctivitis
- Urethritis
- Cervicitis
- Proctitis
- Pharyngitis
- **Complications:** Disseminated Gonococcal Infection (DGI), PID, Epididymitis, Genital abscesses

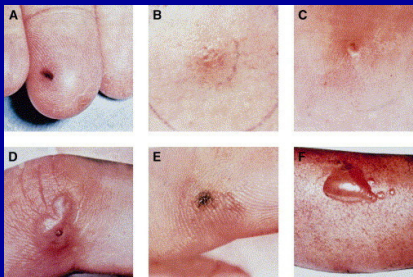


## Disseminated Gonococcal Infection (DGI)

- **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



From Holmes KK et al. Disseminated gonococcal infection. Ann Intern Med 1971; 74:979-93.



## 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

2010 CDC Guidelines

### 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:

**Ceftizoxime 500mg IM**  
**Cefoxitin 2g IM plus probenecid 1g PO x 1**  
**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



## Gonorrhea Treatment

### Cephalosporin Allergy

- Use of cephalosporins should be contraindicated only in those with a history of a **severe** reaction to PCN (e.g. anaphylaxis, Stevens Johnson syndrome, and TEN)
- Azithromycin 2g PO x 1 is effective, but its use should be limited due to concerns over development of macrolide resistance (*MMWR 2011; 60:579-581*)



## 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

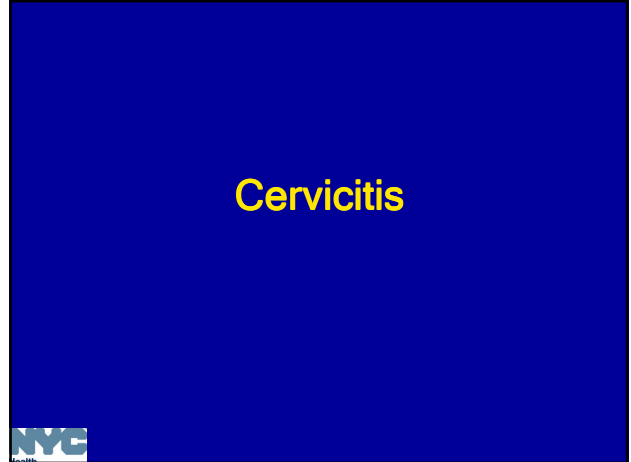
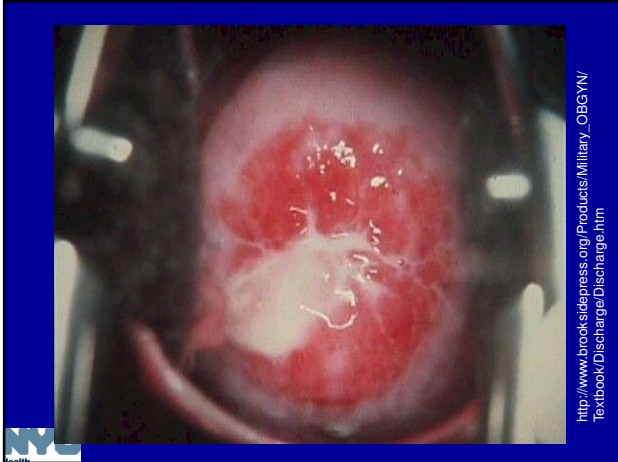
- High CT and GC reinfection rates
  - untreated partners re-exposure
  - new partners new exposure
- Retest ♀ and ♂ for CT and/or GC ~3 months after treatment or whenever persons next present for care
- Consider retest ♀ for TV at 3 months after treatment
- Regardless if believes sex partners treated



## 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)

## Cervicitis

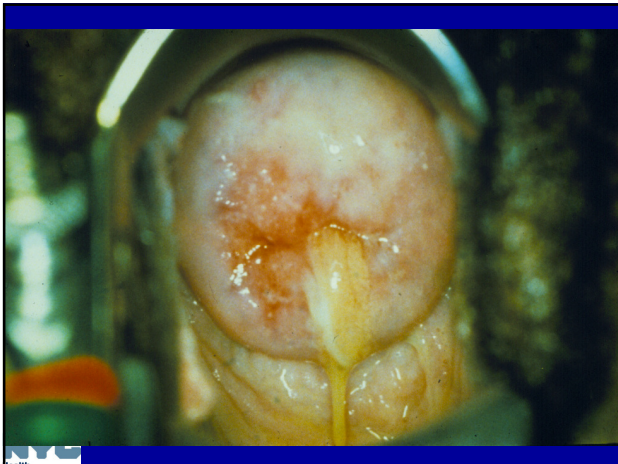
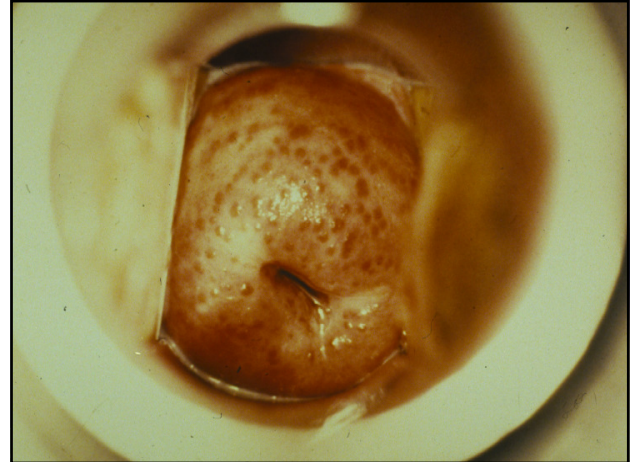
**Etiology:**

- 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*

Azithromycin 1g PO x 1

**OR**

Doxycycline 100mg PO BID x 7d

- 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

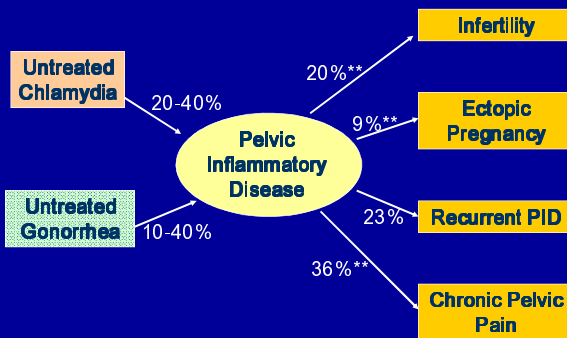
- Josie returns to your office 3 weeks later with abdominal pain. Her boyfriend did not get evaluated or treated. She has continued to have unprotected sex.



## Pelvic Inflammatory Disease



### Sequelae of Untreated GC & Chlamydia in Women

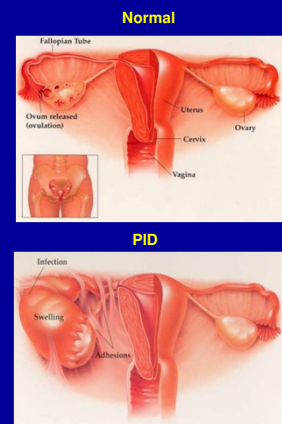


\*\*CDC Update: "Some Facts About Chlamydia, March 1997"



### Pelvic Inflammatory Disease (PID)

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



<http://nlm.nih.gov/NIH/EL/Reproduction/FemaleReproduction1.htm>



## 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



## Pelvic Inflammatory Disease 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 3<sup>rd</sup> gen  
Cephalosporin (e.g.  
ceftizoxime or cefotaxime)

**PLUS**

Doxycycline 100mg  
BID x 14d

**WITH or WITHOUT**

Metronidazole 500mg  
BID x 14d



## Pelvic Inflammatory Disease Outpatient Treatment

### 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

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## 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 abscess; 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”

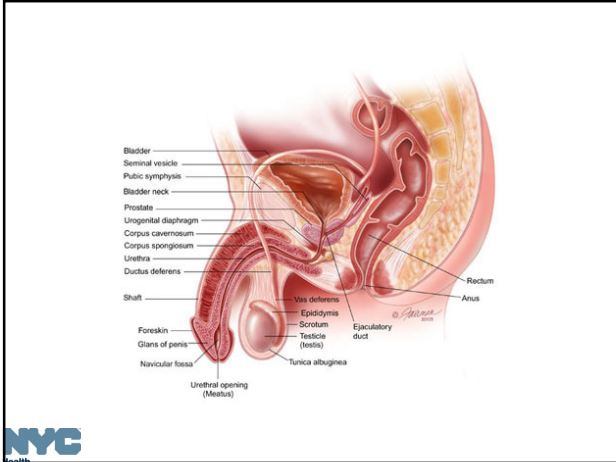
- Josie brings her boyfriend in for treatment. He is 17 years old and complains of intermittent pain on urination. You examine him and see....



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

## Urethritis





## Urethritis

**Etiology:**

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

NYC

## 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%

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

NYC

## Urethritis: Clinical Features

Clinical Features	NGU†	GU
Incubation	7-14 days	2-8 days
Onset	Gradual	Abrupt
Dysuria	Mild	Severe
Discharge		
-Quality	Mucoid	Purulent‡
-Quantity	Less	More

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

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## Urethritis

**Diagnosis:**

- Presence of mucopurulent or purulent discharge
- Gram stain:  $\geq 5$  WBCs/hpf oil immersion
- Positive leukocyte esterase or  $\geq 10$  WBCs/hpf on first void urine
- Test for GC and Ct (Urine NAATs)

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## Non-Gonorrhea Urethritis (NGU) Treatment

### *Recommended Regimens*

Azithromycin 1g PO x 1

**OR**

Doxycycline 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



## Recurrent and Persistent Urethritis (NGU)

### Differential Diagnosis:

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



## Recurrent and Persistent Urethritis (NGU)

### *Recommended Regimens*

Metronidazole 2g PO x 1

**OR**

Tinidazole 2 g PO X 1

**PLUS**

Azithromycin 1g PO x 1 (if doxycycline was first line treatment)

### 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"



## Epididymitis

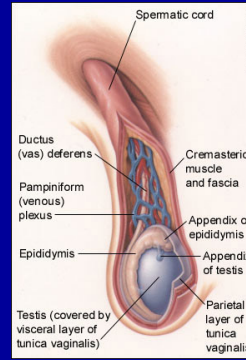


## Acute Epididymitis

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

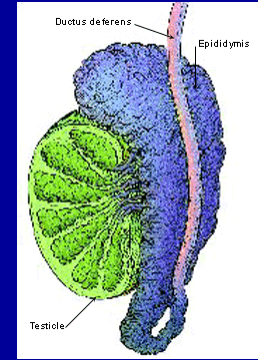


### Normal



Galejs L.E. Am Fam Physician. 1999; 59 (4)

### Epididymitis



Junnila J. Am Fam Physician. 1998; 57 (4)



## Acute Epididymitis 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



## Epididymitis 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:  $\geq 5$  WBCs/hpf oil immersion
- Positive leukocyte esterase or  $\geq 10$  WBCs/hpf on first void urine
- Urine NAATs for GC/Ct and urine culture



## Epididymitis 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 Treatment

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- 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"

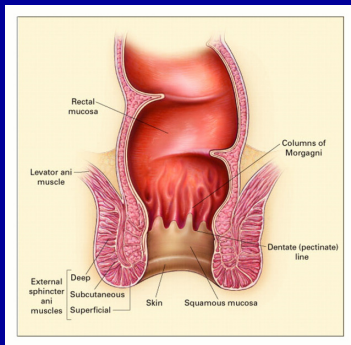
- Mike returns for follow up to your office 2 months later. He now has a new partner who is male. Mike has had receptive anal sex, as well as oral sex. Mike is complaining of pain on defecation.



## Proctitis



## Anal Canal



Ryan DP. NEJM. 2000; 342 (11)

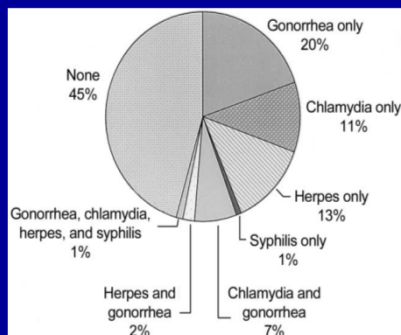


## Proctitis

- 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



Klausner JD et al. CID. 2004; 38:300-2.



## Proctitis: Treatment

### Recommended regimen

Ceftriaxone 250mg IM x 1  
**PLUS**  
 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\*

Etiology	Total N	No anal/rectal symptoms N (%)	Anal/rectal symptoms N (%)
All	386	261 (68)	122 (32)
GC	147	74 (50)	73 (50)
C. trachomatis	215	182 (89)	33 (11)
LGV	24	8 (33)	16 (67)

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



2010 CDC Guidelines

## 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> AAP Section of Adolescent Health
- <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.adolescenthealth.org](http://www.adolescenthealth.org) The Society for Adolescent Health and Medicine
- [www.naspaq.org](http://www.naspaq.org) North American Society for Pediatric and Adolescent Gynecology



## Useful Websites

- <http://www.aclu.org/reproductiverights> The Reproductive Freedom Project of the American Civil Liberties Union
- [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.acog.org/bookstore/Tool\\_Kit\\_for\\_Teen\\_Care\\_P348C84.cfm](http://www.acog.org/bookstore/Tool_Kit_for_Teen_Care_P348C84.cfm)
- Emergency contraception: [www.not-2-late.com](http://www.not-2-late.com)
- Chlamydia Coalition <http://ncc.prevent.org/>



## Patient Resources

American Social Health Association: [www.iwannaknow.org](http://www.iwannaknow.org)

Center for Young Women's Health:

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

Young Men's Health: <http://youngmenshealthsite.org/>

The Children Now: [www.talkingwithkids.org/](http://www.talkingwithkids.org/)

MTV collaboration with Kaiser Family Foundation:

[www.itsyoursexlife.com/](http://www.itsyoursexlife.com/)



## Patient Resources

Planned Parenthood Teens: [www.teenwire.com/](http://www.teenwire.com/)

TeensHealth: <http://teenshealth.org/teen/>

Healthy Children: [www.healthychildren.org/](http://www.healthychildren.org/)

Gay & Lesbian Youth Services: [www.freewebs.com/glyss/](http://www.freewebs.com/glyss/)



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