

## ***The Burning Issue***

Sexually Transmitted Diseases

### **Materials for Learners:**

- Handout #1: Chlamydia – Rates by Age and Sex (Figure 2)  
Gonorrhea – Rates by Age and Sex (Figure 3)
- Handout #2: PID Pathway (Figure 5)  
Treatment for uncomplicated STI (Table 1)
- Handout #3: Criteria for PID (Table 2)  
PID treatment (Table 3)
- Clinical pearls
- Knowledge questions and answers
- References

## Handout #1

Figure 2

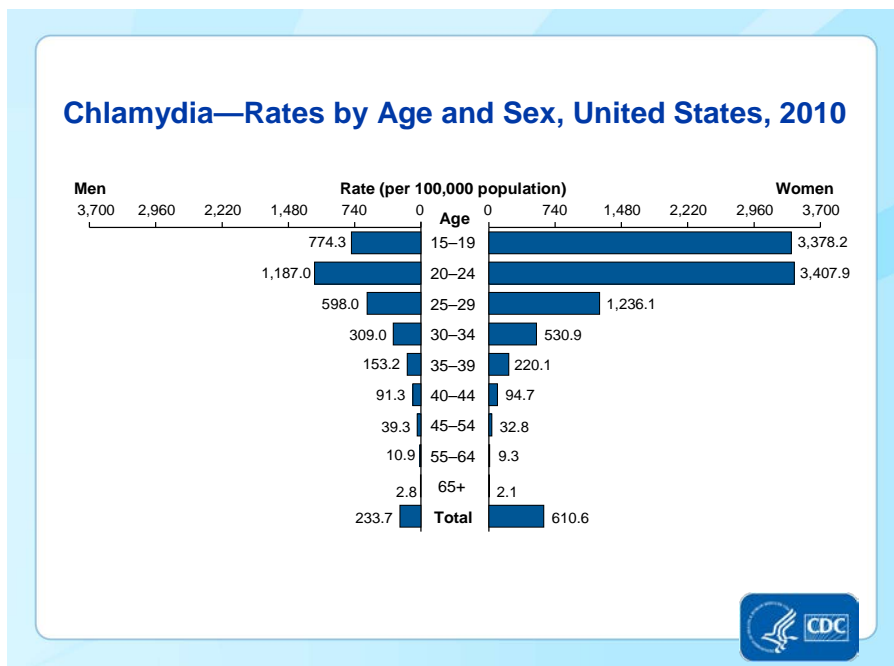


Image: Chlamydia – Rates by Age and Sex, US 2010, CDC STD Prevention Module  
Retrieved from <http://www.cdc.gov/std/stats10/slides.htm> on 10/31/13

Figure 3

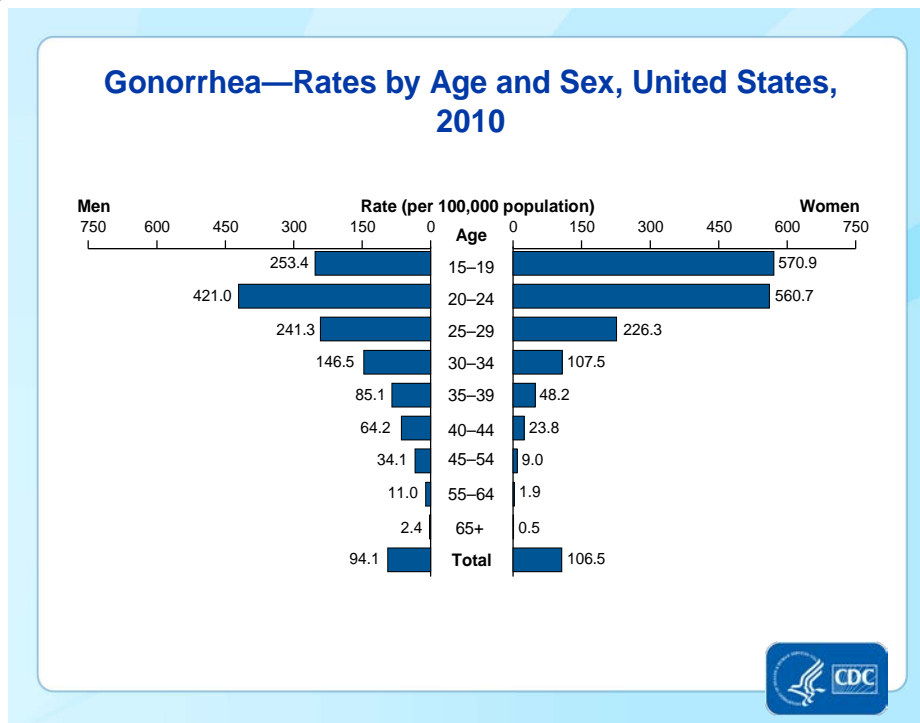


Image: Gonorrhea – Rates by Age and Sex, US 2010, CDC STD Prevention Module  
Retrieved from <http://www.cdc.gov/std/stats10/slides.htm> on 10/31/13

## Handout #2

Figure 5: PID Pathway

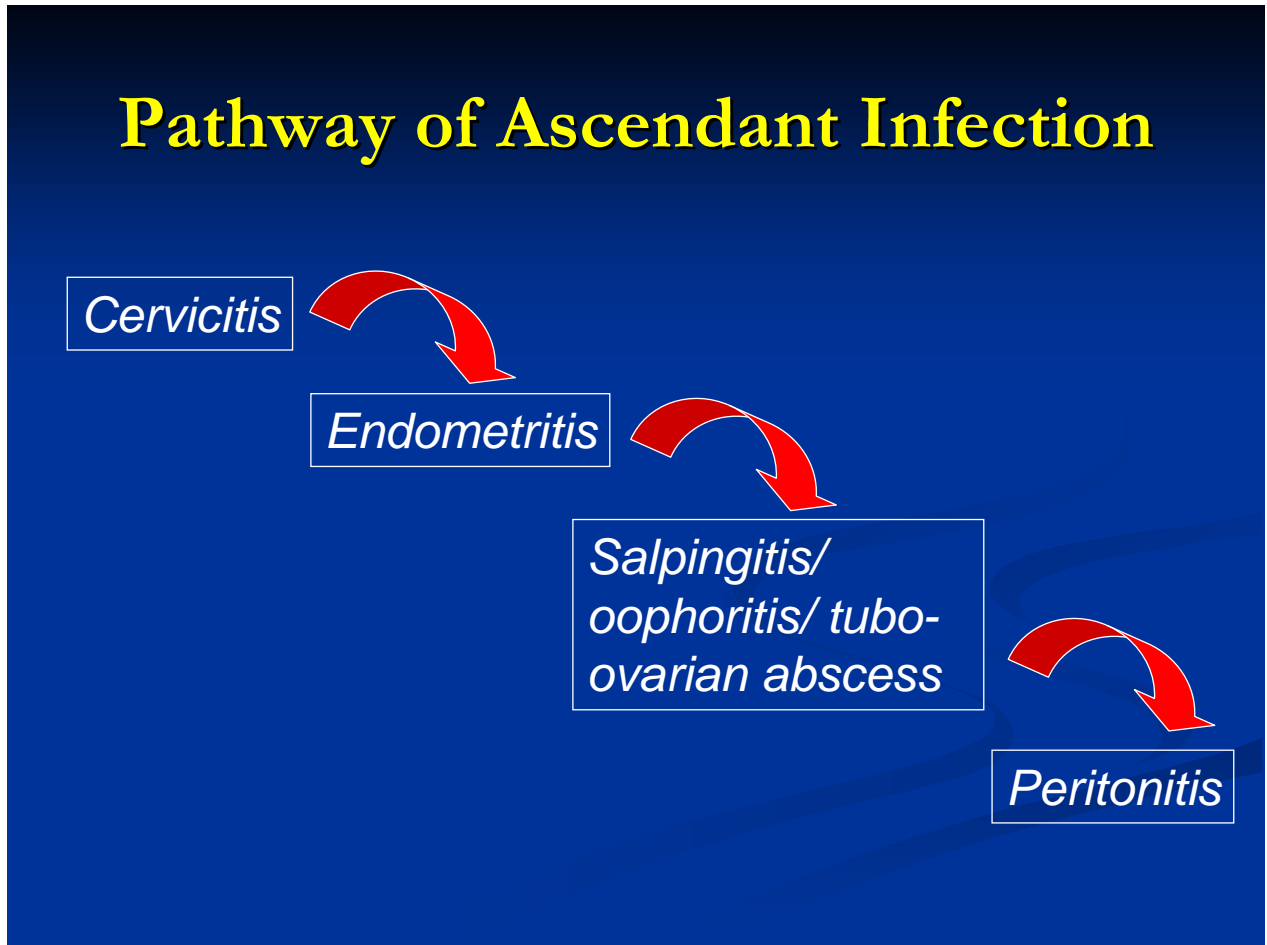


Image: Pathway of Ascendant Infection, CDC STD Prevention Module

Retrieved from <http://www2a.cdc.gov/stdtraining/self-study/pid/pid-sb3.asp> on 10/31/13

Table 1: Treatment for uncomplicated STD – GC/Chlamydia

**Ceftriaxone** 250 mg IM in a single dose

PLUS

**Azithromycin** 1 g orally in a single dose OR Doxycycline 100 mg orally twice a day for 7 days

### Handout #3

**Table 2: Criteria for PID**

Minimum Diagnostic Criteria	Supportive Criteria	Definitive Criteria
<p>Empiric treatment should begin in sexually active women at risk for STDs if one of the following criteria are present and no other cause identified:</p> <ul style="list-style-type: none"> <li>– Uterine tenderness <b>or</b></li> <li>– Adnexal tenderness <b>or</b></li> <li>– Cervical motion tenderness</li> </ul>	<ul style="list-style-type: none"> <li>• Temperature &gt; 101 F (38.3C)</li> <li>• Abnormal cervical or vaginal mucopurulent discharge</li> <li>• WBCs on saline microscopy</li> <li>• Elevated ESR and/or C reactive protein</li> <li>• Documentation of GC or Chlamydia infection</li> </ul>	<ul style="list-style-type: none"> <li>• Histopathology of endometrial biopsy consistent with endometritis</li> <li>• Laparoscopic abnormalities consistent with PID (e.g. violin string adhesions, visualization of peritoneal exudate)</li> <li>• Transvaginal US or MRI findings suggestive of pelvic infection (e.g. tubal hyperemia, TOA abscess)</li> </ul>

**Table 3: PID Treatment**

<p><b>Oral</b></p> <ul style="list-style-type: none"> <li>– Ceftriaxone 250 mg IM OR Cefoxitin 2g IM + Probenicid 1g x 1 PLUS Doxycycline 100 mg PO BID x 14 days</li> <li>– +/- Metronidazole 500 mg PO BID x 14 days*</li> </ul> <p><b>Parenteral</b></p> <ul style="list-style-type: none"> <li>– Cefotetan 2g IV q12 OR Cefoxitin 2g IV q 6 hours PLUS Doxycycline 100 mg PO/IV q 12 h (14 days)</li> <li style="text-align: center;">OR</li> <li>– Clindamycin 900 mg IV q 8 hours PLUS Gentamycin loading dose IV/IM 2mg/kg followed by 1.5 mg/kg q 8 h (in patients with normal renal function)</li> </ul> <p><i>*Upon discharge, patients should continue doxycycline 100 mg q12 hours with or without metronidazole to complete 14 days of treatment. Clindamycin or doxycycline plus metronidazole are the preferred regimens to complete 14 days of treatment for TOAs</i></p>
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## **Clinical Pearls:**

- The most concerning causes of dysuria with symptomatic voiding in an adolescent female are bacterial cystitis or an STD.
- Always ask about sexual history and last testing for STD when evaluating adolescent patients presenting with gastro-intestinal or genito-urinary symptoms.
- Common STD infections among adolescents include HPV, Chlamydia, gonorrhea, HSV, and trichomoniasis.
- A single dose of azithromycin (1 gram) can be used to treat patients who are Chlamydia positive, GC negative. All patients testing positive for gonorrhea should have dual therapy because of concerns regarding co-infections with chlamydia and resistant gonorrhea which includes a single dose of IM ceftriaxone (250 mg IM) in addition to 1 gram of azithromycin. A 7 day course of doxycycline (100 mg PO BID) can be used as an alternative to azithromycin.
- Most cases of PID can be treated outpatient with a two week course of antibiotics and close follow-up within 72 hours. Criteria exist for those needing parenteral therapy and admission.

## Knowledge questions:

1. *Which of the following sex partners of a woman who has just tested positive for Chlamydia do NOT need treatment?*
  - a. A partner from last month who reports he is asymptomatic.
  - b. A long-term partner who the patient broke up with about six months ago.
  - c. A current partner who received treatment about a week ago but has continued to have penile-vaginal intercourse with the woman.
  - d. None of the above need treatment
  
2. *Which of the following are long-term sequelae to untreated PID?*
  - a. Infertility
  - b. Ectopic pregnancy
  - c. Chronic pelvic pain.
  - d. All of the above.
  
3. *You are treating a patient for uncomplicated Chlamydia (no concerns regarding PID) who reports an allergy to azithromycin. Which of the following regimens can be used as an alternative treatment?*
  - a. Metronidazole 500 mg PO BID for seven days
  - b. Doxycycline 100 mg PO BID for seven days
  - c. Doxycycline 100 mg PO BID for fourteen days
  - d. Cefixime 400 mg PO x 1 dose
  
4. *You are seeing an 18 year old patient for pelvic pain who has both cervical motion and uterine tenderness on pelvic exam. A recent routine screening NAAT is positive for both GC/Chlamydia but patient had not yet returned for treatment. She had an IUD placed several months ago and no longer has regular periods. She denies previous history of STIs or PID. Comprehensive ROS is otherwise negative (no fever, no nausea or vomiting). Which of the following is the most appropriate next step?*
  - a. Admit to the hospital for further workup including urine HCG, and to start parenteral antibiotics.
  - b. Order urine HCG, and if negative, treat with IM ceftriaxone and start 2 week PO course of doxycycline.
  - c. Call GYN consult to have IUD removed immediately.
  - d. Order an abdominal CT to evaluate pelvic pain further.
  
5. *You are seeing a 17 year old female patient for routine health care maintenance. You note that she has recently become sexually active with two male partners, reports condom use "most of the time," has a negative review of symptoms and no significant past medical history. Which of the following should be completed as part of her visit today?*
  - a. PAP smear
  - b. HSV titers

- c. GC and chlamydia screening
- d. None of the above

## Answers to Knowledge Questions

1. *Which of the following sex partners of a woman who has just tested positive for Chlamydia does NOT need to be treated?*

**Preferred response: b “A long-term partner who patient broke up about six months ago”**

Sex partners of patients treated for Chlamydia should be treated (and preferentially examined before treatment) if they had sexual contact within sixty days preceding onset of symptoms or diagnosis regardless of whether they are asymptomatic. A partner who was recently treated but continued to have intercourse with the same (untreated) partner has high risk for re-infection and should also be re-treated. Of note, women who have sex with women are still at risk for STDs from current or previous partners (male or female) and should not be presumed to be at lower risk based on their sexual orientation.

2. *Which of the following are long-term sequelae to acute PID?*

**Preferred response: d “All of the above”**

Over 800,000 women in the United States are diagnosed with PID each year, with about 20% in the adolescent age group. Long-term sequelae include infertility, ectopic pregnancy, chronic pelvic pain, and increased risk for recurrent PID.

3. *You are treating a patient for uncomplicated Chlamydia (no concerns regarding PID) who reports an allergy to azithromycin. Which of the following regimens can be used as an alternative treatment?*

**Preferred response: b “doxycycline 100 mg PO BID for seven days”**

The fourteen day oral regimen of doxycycline is indicated for those diagnosed with PID. For an uncomplicated Chlamydia infection, a seven day course can be used instead of azithromycin.

4. *You are seeing an 18 year old patient for pelvic pain who has both cervical motion and uterine tenderness on pelvic exam. A recent routine screening NAAT is positive for both GC/Chlamydia but patient had not yet returned for treatment. She had an IUD placed several months ago and no longer has regular periods. She denies previous history of STIs or PID. Comprehensive ROS is otherwise negative (no fever, no nausea or vomiting). Which of the following is the most appropriate next step?*

**Preferred response: b “Order urine HCG, and if negative, treat with IM ceftriaxone and start 2 week PO course of doxycycline.”**

A pregnancy test should be obtained in all adolescents presenting with abdominal or pelvic pain to rule out ectopic pregnancy. If negative, this patient does meet clinical criteria for PID and has a recent documentation of positive STI. There are no indications

at this time for hospitalization (able to tolerate PO, not pregnant, etc). She can be started on outpatient regimen for PID with planned follow-up in 72 hours.

IUDs have become a popular method of long-acting contraception. Although the risk of PID is slightly increased in the first three weeks after insertion, the risk thereafter is similar to the baseline population. The CDC recommends the same screening and treatment guidelines for adolescents both with and without IUDs. There is insufficient evidence to support removal of IUD during treatment of acute PID.

Imaging is recommended in patients with acute PID if difficulty assessing adnexa on pelvic exam, concern for ectopic pregnancy (positive HCG), or possible tubo-ovarian abscess. Ultrasonography, preferentially transvaginal, is considered the first line imaging modality for ectopic pregnancy. Sexually active teens can usually tolerate a transvaginal exam.

*5. You are seeing a 17 year old female patient for routine health care maintenance. You note that she has recently become sexually active with two male partners, reports condom use "most of the time," has a negative review of symptoms and no significant past medical history. Which of the following should be completed as part of her visit today?*

**Preferred response c: "GC and Chlamydia screening"**

The US Preventive Services Task Force (USPSTF), as well as the CDC, recommends at minimum annual screening for chlamydia in all sexually active adolescent females and young women. Gonorrhea screening is recommended in these same age groups if concern for increased risk of GC infection (high community prevalence, inconsistent condom use, multiple partners, previous history of STDs, etc)

Guidelines for cervical cancer screening recommend PAP smears beginning at age 21 for all adolescents with or without history of sexual activity. Routine screening for herpes is not recommended in asymptomatic patients. In those presenting with active genital ulcers, a viral culture can be sent. Titers can be used to further evaluate patients with a history of ulcers who did not have a diagnostic workup completed while symptomatic.



## References

1. Shrier LA. Sexually transmitted infections: Chlamydia, gonorrhea, pelvic inflammatory disease, and syphilis. Emans SJ and Laufer MR (eds). *Emans, Laufer and Goldstein's Pediatric and Adolescent Gynecology*, sixth ed. Philadelphia: Lippincott, Williams and Wilkins; 2012.
2. Sweet RL, Gibbs RS. *Atlas of Infectious Diseases of the Female Genital Tract*. Phila: Lippincott, Williams & Wilkins; 2005.
3. Haggerty CL, et al. Mycoplasma genitalium among women with nongonococcal, nonchlamydial pelvic inflammatory disease. *Infect Dis Obstet Gynecol*. 2006; 30184.
4. Centers for Disease Control and Prevention. *Sexually Transmitted Diseases (STDs). 2010 STD Treatment Guidelines*. Atlanta, GA: U.S. Dept. of Health and Human Services. <http://www.cdc.gov/std/treatment/2010/default.htm>. Accessed 28 Aug. 2012.
5. Neinstein LS, et al. *Adolescent Health Care: A Practical Guide*, fifth ed. Phila: Lippincott Williams & Wilkins; 2007.
6. Centers for Disease Control and Prevention. *Sexually transmitted disease surveillance, 2008*. Atlanta, GA: U.S. Dept. of Health and Human Services, 2009.
7. Centers for Disease Control and Prevention. *Prevalence of sexually transmitted infections and bacterial vaginosis among female adolescents in the United States: data from the National Health and Nutritional Examination Survey (NHANES), 2003*. 2010 National STD Prevention Conference. Summaries of highlighted research, March 11, 2008.
8. Eng T, Butler W, eds. *The hidden epidemic: confronting sexually transmitted diseases*. Washington, DC: National Academy Press, 1997.
9. Workowski KA, Berman S. Sexually Transmitted Diseases Treatment Guidelines, 2010. *MMWR Recomm Rep* 2010;59:1-110.
10. Wang SP, et al. Chlamydia trachomatis infection in Fitz-Hugh-Curtis syndrome. *Am J Obstet Gynecol* 1980;138:1034.
11. Katzman DK, et al. Chlamydia trachomatis Fitz-Hugh-Curtis syndrome without salpingitis in female adolescents. *Am J Dis Child* 1988;142:996.
12. Oh MK, et al. Risk for gonococcal and chlamydial cervicitis in adolescent females: Incidence and recurrence in a prospective cohort study. *J Adolesc Health* 1996;18:270.
13. Lee HH, et al. Diagnosis of Chlamydia trachomatis genitourinary infection in women by ligase chain reaction assay of urine. *Lancet* 1995;345:213.
14. Westrom L, Eschenbach D. Pelvic inflammatory disease. In: Holmes K, Sparling P, Mardh P-A, et al, eds. *Sexually transmitted disease*. New York: McGraw-Hill, 1999:783.
15. Burstein GR, Eliscu A, Ford K, et al. Expedited partner therapy for adolescents diagnosed with chlamydia or gonorrhea: a position paper of the Society for Adolescent Medicine. *J Adolesc Health* 2009; 45:303