Chlamydia, Gonorrhea, Trichomonas and PID

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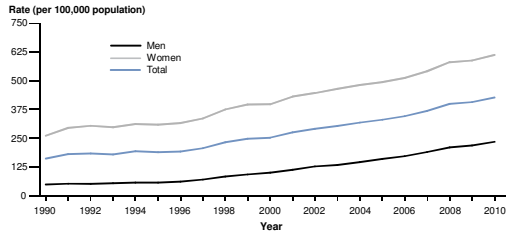
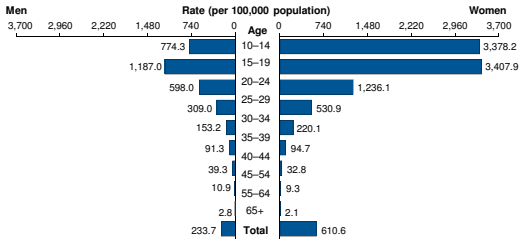
Chlamydia

Chlamydia—Rates by Sex, United States, 1990–2010



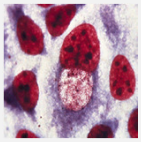
NOTE: As of January 2000, all 50 states and the District of Columbia have regulations that require the reporting of chlamydia cases.

Chlamydia—Rates by Age and Sex, United States, 2010



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[1]

Risk Factors:

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

Chlamydia

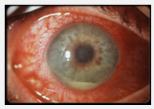
Clinical manifestations:

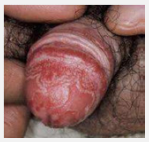
- Conjunctivitis
- Urethritis
- Cervicitis
- Proctitis
- **Complications:** Reiter's Syndrome, PID, epididymitis

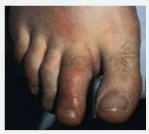
****The majority of infections are *asymptomatic* (~70-80% in females, 50% in males)**

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: antiobiotics, anti-inflammatory agents

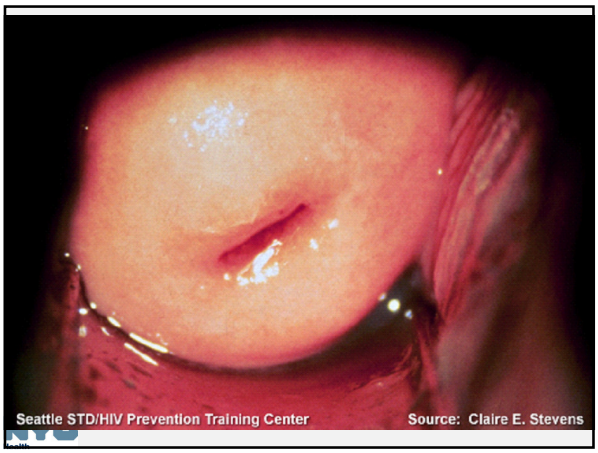




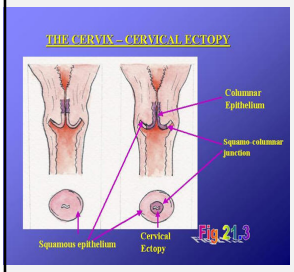


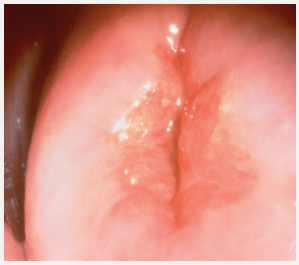
Chlamydia: Diagnosis

- **NAATs**
  Male urethral/urine
  Female vaginal/endocervical/urine/liquid cytology
  Rectal and pharyngeal with local validation studies only
- **Culture**
  Endocervical, urethral, pharyngeal or rectal specimens
- **Non-Amplified Tests**
- **Serology**



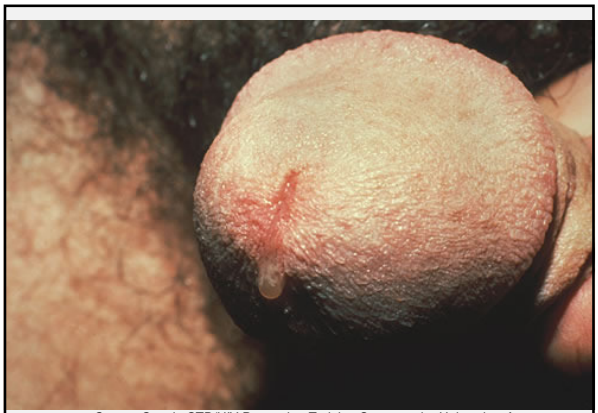
Cervical Ectopy





Normal cervix with ectopy.

Courtesy of California NNPTC



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

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

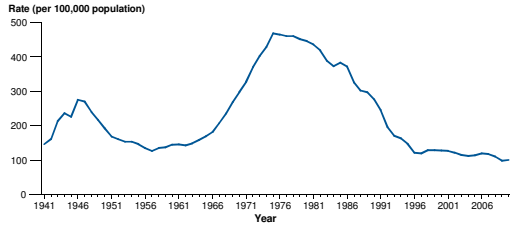
Recommended Regimens

Azithromycin 1g PO x 1
OR
Amoxicillin 500mg PO TID x 7d

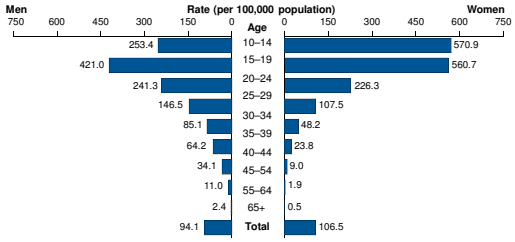
- Test of cure 3 weeks after completion of therapy
- Retest in 3 months after treatment
- Retesting during 3rd trimester for women at increased risk (<25, multiple sex partners)

Gonorrhea

Gonorrhea—Rates, United States, 1941–2010

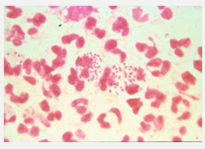


Gonorrhea—Rates by Age and Sex, United States, 2010



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

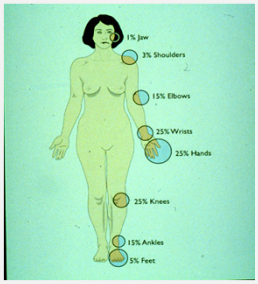
Gonorrhea

Clinical Manifestations:

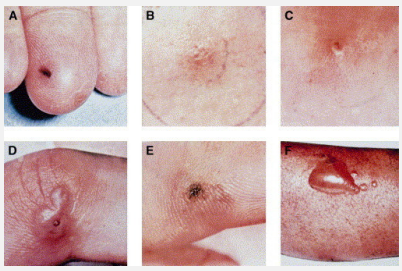
- Conjunctivitis
- Urethritis
- Cervicitis
- Proctitis
- Pharyngitis
- **Complications**: Disseminated Gonococcal Infection (DGI), PID, Epididymitis, Genital abscesses

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



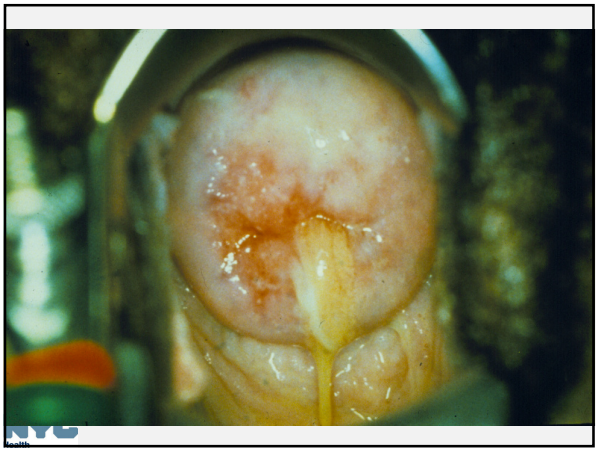
DGI – Skin Lesions

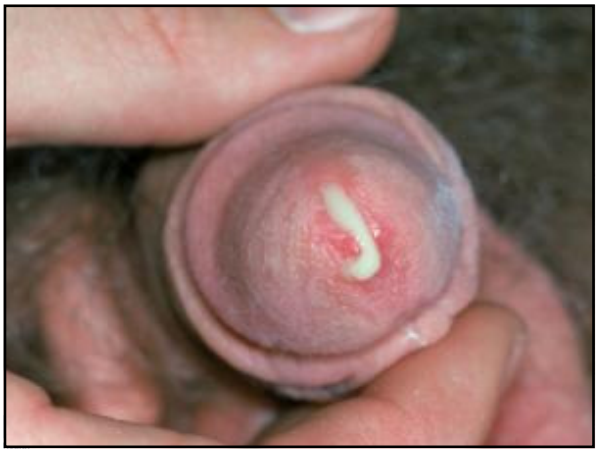


From Holmes KK et al. Disseminated gonococcal infection. Ann Intern Med 1971; 74:979-93.

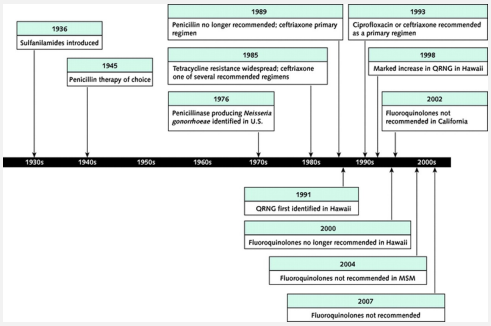
Gonorrhea Diagnosis

- **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**





Historical perspective on antimicrobial resistance in the United States.QRNG = quinolone-resistant Neisseria gonorrhoeae; MSM = men who have sex with men.

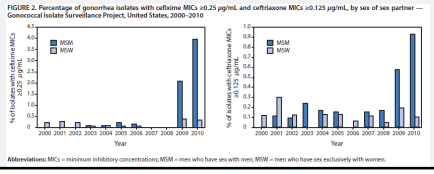


Workowski K A et al. Ann Intern Med 2008;148:606-613

Annals of Internal Medicine

Emergence of cephalosporin resistance among *Neisseria gonorrhea* isolates

- Cephalosporins are the only drug class left for treating GC
- Isolated reports of clinical treatment failures with injectable cephalosporins: Japan (2001), Norway (2 cases, 2010)
- Decreased susceptibility to cephalosporins has been observed in the U.S.; no known treatment failures have occurred (*MMWR 2011; 60:873-877)*



Gonorrhea
Emerging Antibiotic Resistance

- **Ceftriaxone 250mg** now recommended:
  - Observed decreased *in vitro* susceptibility to cephalosporins and reported treatment failures
  - Enhanced efficacy against pharyngeal GC infections;
  - Same dosage for treatment at all anatomic sites
- ***Routine* co-treatment for chlamydia**:
  - Frequency of co-infection with chlamydia
  - Dual therapy may enhance eradication of pharyngeal GC and hinder development of antibiotic-resistant GC
  - Azithromycin 1g preferred over Doxycycline

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

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

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)*

Gonorrhea

For treatment failure or *in vitro* resistance:

- Report to CDC via local public health authorities
- Culture and susceptibility studies
- Infectious disease consultation regarding re-treatment
- Ensure partner treatment
- Test of cure in 1 week with culture or NAAT

(MMWR 2011; 60:873-877)

Gonorrhea and Chlamydia
Follow-up

- Patients treated for uncomplicated infections do not need a test of cure
- Sex partners during the 60 days preceding onset of symptoms or diagnosis should be evaluated, tested and treated
- **Retest 3-6 months after treatment**, or when the patient next seeks care within the following 12 months
- Abstinence for 7 days after single-dose treatment or until after completion of a 7-day regimen

Trichomoniasis

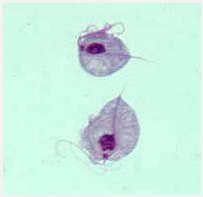
Trichomoniasis

- **The most common treatable STD**
- Estimated prevalence:
  - 2%-3% in the general female population
  - 50%-60% in female prison inmates and commercial sex workers
  - 18%-50% in females with vaginal complaints

Trichomoniasis

Trichomonas vaginalis:

- Flagellated anaerobic protozoa
- The only protozoan that infects the genital tract
- Causes **vaginitis** in women and **urethritis** in men
- May persist for *months to years* in epithelial crypts and periglandular areas



Trichomoniasis

Transmission:

- Vaginal sex
- Not found to infect oral sites, and rectal prevalence low among MSM
- Transmission between female sex partners has been documented
- Fomite transmission rare

Risk Factors:

- Change in sexual partners; multiple partners
- Infection with another STD
- Drug use

Trichomoniasis
Clinical Manifestations

Females:

- 50% with symptomatic vaginitis
- 50% are asymptomatic
  - 30% will become symptomatic within 6 months

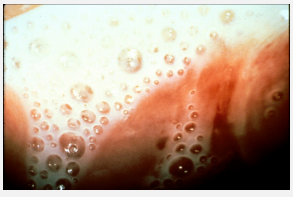
Males:

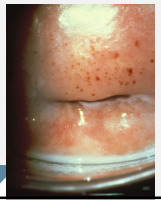
- Majority are asymptomatic
- May cause urethral discharge and dysuria, ?prostatitis and epididymitis

Trichomoniasis

Vaginal Discharge:

- Frothy, yellow-green, malodorous
- pH >5.0
- Amine Whiff Test may be positive





Strawberry Cervix
Punctate hemorrhages on cervix are pathognomonic but not common

Trichomoniasis Diagnosis

Wet Prep:

- Sensitivity: 60-70% among symptomatic females
  - Decreases to 20% if microscopy is delayed 10 min
  - Low sensitivity for males
- If trichomonas is suspected and microscopy is negative, confirm with culture or PCR

Pap Smear:

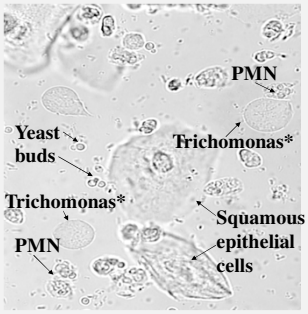
- If low risk and pap suggests trichomonas, confirm with culture (unless liquid cytology was used)

Trichomoniasis

Wet Prep

Saline. 40X objective

T. Vaginalis must be **motile** for positive identification



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

Trichomoniasis Diagnosis

Test type	Sensitivity
• PCR	74-98%
• Vaginal microscopy	60 - 70%
• Culture*	>90%
– Diamond's modified media	
– InPouchTV	
• Point of Care Tests	
– Osom ready in 10 minutes	>83%
– Affirm VP III ready in 45 minutes	>83%

*May use for testing males: urethral swab, urine, semen

Trichomonas
Treatment

Recommended regimens

Metronidazole 2g PO x 1
OR
Tinidazole 2g PO x 1

Alternative Regimen

Metronidazole 500mg PO BID x 7 d*

*7-day treatment recommended for HIV positive women

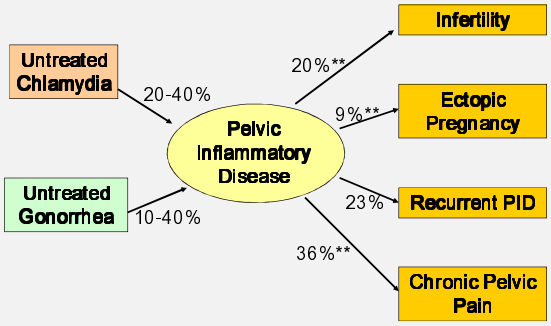
Trichomonas

Follow-up:

- Sex partners need to be treated!
- Advise to avoid sex with partners until completion of treatment and resolution of symptoms
- Consider repeat screening in 3 months

Pelvic Inflammatory Disease

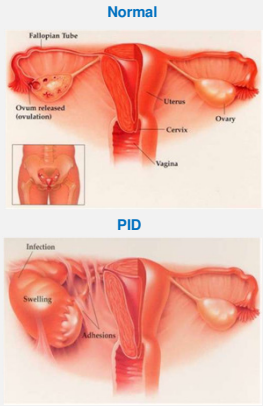
Sequelae of Untreated GC & Chlamydia in Women



**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://urbisia.org/USMLE/ReproductionFemaleReproduction1.htm

Pelvic Inflammatory Disease (PID)

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 (PID) 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 (PID)

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 (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

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 (PID)

Outpatient Treatment

Recommended regimens

Ceftriaxone 250mg IM x 1
OR
Cefoxitin 2g IM x 1 +
Probenecid 1g PO x 1

Other parenteral 3rd gen Cephalosporin (e.g. ceftizoxime or cefotaxime)

PLUS

Doxycycline 100mg BID x 14d

WITH or WITHOUT

Metronidazole 500mg BID x 14d

Pelvic Inflammatory Disease (PID)
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

Pelvic Inflammatory Disease (PID) Criterial 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 (PID) 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 (PID) 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

Thank you!