STD'S AND UTI'S (5/04) 5

Major STD Syndromes

1. Male urethritis
2. Genital ulcer disease
3. Mucopurulent cervicitis
4. Pelvic inflamatory disease
5. Vaginitis

I. Sexually Transmitted Diseases

A. **Male urethritis** - urethritis is classically defined as the presence of 4 or more PMN's per HPF.

1. **Gonococcal-** Purulent, profuse discharge. Diagnosis is made by gram stain.
2. **Nongonococcal** slight to moderate, clear, white or gray discharge, often present only in the morning on rising. Dysuria is usually mild. Chlamydia causes 30-50%, the remainder caused by Ureaplasma urealyticum, probably other organisms. Diagnosis made by negative gram stain and culture for gonorrhea
3. **Postgonococcal**- when tetracycline not given, along with treatment for GC. Same as nongonococcal, chlamydia more common.
4. **Herpetic** - beefy red urethral meatus, slight to moderate mucoid discharge. Dysuria is severe relative to other findings. The key to the diagnosis is finding the typical skin lesions, which if not already there will develop within 24 hours.
5. **Diagnosis**
   a. Clinical presentation
      N. gonorrhoeae has a short incubation period (2-5 days) and usually produces a copious, thick, purulent discharge. C. trachomatis has a longer incubation period and usually results in a less profuse, thin, clear or mucoid discharge. A substantial percentage of men with

chlamydia urethritis may be asymptomatic.

b. Gram stain
Gram-negative intracellular diplococci will be seen in 95% of symptomatic patients with gonorrhea. Chlamydial urethritis may present with only a few PMNs or may have a negative smear.

c. Culture
Culture on select media (Thayer-Martin) for N. gonorrhoeae will be positive in 95% of men with gonorrhea (whether or not they are symptomatic). Cell culture is currently the most specific way to definitively diagnose chlamydia ifection.

d. DNA probe tests
A single swab specimen can be tested for both N. gonorrhoeae (95% sensitive, 85% specific) and C. trachomatis (80% sensitive, 95% specific)

e. Nucleic acid amplification
Highly sensitive and specific for both infections. May be done on urine specimens.

6. Therapy
   a. Therapy for gonorrhea
      (1) Recommended
         (a) ceftriaxone 125 mg IM (single dose) or cefixime 400 mg orally (single dose) or ciprofloxicine 500 mg orally (single dose) or ofloxacin 400 mg orally (single dose)
      (2) Alternatives
         (a) spectinomycin 2 g IMM (single dose) or cefuroxime axetil 1 g orally (single dose)
      (3) All of the above regimens should be accompanied by treatment for C. trachomatis due to the high likelihood of co-infection (10-30%)
      (4) Partner notification and treatment

b. Therapy for non-gonococcal urethritis (NGU)
   (1) Recommended
      (a) doxycycline 100 mg orally b.i.d. for 7 days or azithromycin 1 g orally (single dose)
   (2) Aternatives
      (a) ofloxacin 300 mg orally b.i.d. for 7 days or erythromycin 500 mg orally q.i.d. for 7 days
   (3) Management of recurrent NGU
      (a) Retreat with a different regimen
      (b) Partner evaluation and treatment
      (c) Consider Trichomonas vaginalis or urethral warts
      (d) Refer repeated treatment failures to an urologist

7. Resistance in <u>N. gonorrhoeae</u> - a problem in U.S. as well as developing countries - prevalence is increasing in such places as New York, Miami, Los Angeles
   (a) Penicillinase-producing Neisseria gonorrhoeae (PPNG)- plasmid mediated, resistance acquired by a single step
   (b) Chromosomally mediated resistant gonorrhea (CMRG) - multiple mechanisms, including decreased cell wall permeability, decreased affinity of penicillin-binding proteins - the cumulative result of many chromosomal mutations.
   (c) Tetracycline resistance - mediated by the tedM-containing plasmid, mechanism unclear.
   (d) All treatment failures should lead you to suspect resistance.
   (e) New cephalosporins (ceftriaxone, cefixime) or quinolones (ofloxacin, preferred drugs for treating gonorrhoeae.
8. Gonococcal resistance in the U.S. (1996)
   (a) penicillin – 15%
   (b) tetracycline – 22%
   (c) ciprofloxacin - .04% were resistant and .5% had intermediate susceptibility
   (d) ceftriaxone – no resistance
   (e) cefixime – no resistance

B. Chlamydia trachomatis
   1. Clinical syndromes
      a. **Male urethritis** (nongonococcal urethritis, or NGU) Chlamydia are responsible for 30-50% of cases of NGU. The urethral discharge tends to be less purulent and less copious than GC.
      b. **Epididymitis** - Chlamydia is the most common cause of this in sexually active men.
      c. **Mucopurulent cervicitis** - the cervix is usually friable and erythematous, and the discharge is usually indistinguishable from that caused by the gonococcus
      d. **Pelvic Inflammatory Disease** - symptoms tend by comparison to be less severe than those caused by the gonococcus. The sequelae of infertility, tubal occlusion and ectopic pregnancy are as common or more so than from GC. These are the most important long term morbid events associated with clamydial infections.
      e. **Acute urethral syndrome** - in young women who present with dysuria, pyuria and sterile urine cultures.
      f. **Proctitis** - symptoms are indistinguishable from those caused by other organisms.
      g. **Reiter's syndrome** - C. trachomatis has been isolated from the urethra of up to 70% of men with untreated, nondiarrheal Reiter's syndrome and associated urethritis.
      h. **Lymphogranuloma venereum**
         (1) Endemic in Asia, Africa, South America- about 500 cases/year reported in the U.S.
         (2) Incubation period 3 days to 3 weeks-the first stage is a small, painless herpetiform ulcer or papule. Only noticed by about 1/3 of patients.Primary genital ulcer in 10% of patients.
         (3) 2-6 weeks after exposure, the second stage of extensive, painful regional adenopathy begins.The nodes eventually suppurate, and develop multiple draining sinuses. Fistula formation also common.

(4) Second stage is accompanied by systemic symptoms such as fever, chills, headache, myalgias, etc.
(5) The third stage of LGV is represented by chronic ulcerative or infiltrative involvement of local structures causing fibrosis, stricture formation, and abnormal lymphatic drainage.

2. Diagnosis of chlamydial infection
   a. Tissue culture using McCoy or HeLa cells is the gold standard. Positive cultures are identified by visualizing typical intracytoplasmic inclusion bodies stained by Giemsa, iodine or fluorescent monoclonal antibody, stains.
   b. Rapid diagnostic tests - Microtrak, Chlamydiazyme - useful in screening high-risk populations but may have a high rate of false positives when used in a population with low prevalence.

C. Complications of Gonococcal and Chlamydial Infections
   1. Epididymitis
      a. Most epididymitis in men under 35 years of age has a sexually transmitted etiology ans those patients should be treated for C. trachomatis and N. gonorrheae. (ceftriaxone 250 mg IM once plus doxycycline 100 mg p.o. b.i.d. for 10 days).
      b. In most men over 35 years, the infection has a urinary tract origin and they should be tested for an STD but treated for coliforms (ofloxacin 300 mg b.i.d. for 10 days).
   2. Conjunctivitis
      May be secondary to autoinoculation with either N. gonorrhoeae or C. trachomatis
   3. Therapy for chlamydia urethritis or non-gonococcal urethritis (NGU)
      a. Recommended
         doxycycline 100 mg orally b.i.d. for 7 days
         or
         azithromycin 1 g orally (single dose)
      b. Alternatives
         Ofloxacin 300 mg orally b.i.d. for 7 days
         Or

Erythromycin 500 mg orally q.i.d. for 7 days

c. Management of recurrent NGU
   (1) Partner evaluation and treatment
   (2) Retreat with a second course of doxcycline plus metronidazole for possible Trichomonas vaginalis
   (3) Consider prostatitis
   (4) Refer treatment failures to a urologis

4. Disseminated Gonococcemia
   a. Most common cause of acute infectious arthritis among sexually active adults.
   b. Signs-migratory arthralgias and arthritis finally settling in one or two joints; low-grade fever; skin lesions;genital symptoms are frequently absent.
   c. Signs-tenosynovitis; arthritis: skin lesions erythematous papules frequently with a pustular or necrotic center, usually less than 30 in number, located distally on the extremities.
   d. Complications (if untreated)-septic arthritis, endocarditis,meningitis.
   e. Diagnosis-clinical picture; culture of the organism from urethra, throat, or rectum, or from sexual partner.Blood cultures are positive early on. Cultures of joint fluid should be done but are usually negative until late in the course. Pustular skin lesions should be studied as well to rule out other disseminated infections.
   f. Treatment-see table, p.48
5. Reiter's syndrome
   a. Seen in men who are HLA B27 or related antigen positive.
   b. Chlamydia is the "triggering" agent in as many as 70%of cases not related to a GI infection.
   c. Clinical-asymmetrical arthritis, most commonly involving the large joints of the lower extremities, skin lesions (keratoderma blennorrhagica, circinate balanitis), urethritis (often subclinical), conjunctivitis (usually very mild and evanescent), uveitis is sometimes seen.
   d. If chlamydia is implicated, treat the patient

and sex partners with doxycycline.

6. Pelvic inflammatory disease / also major syndrome
   a. The term is most often used to describe acute spontaneously occurring infection ascending from the servix and involving the uterus, fallopian tubes, and broad ligaments
      (1) Clinically the diagnosis is imprecise. Classically, symptoms proceed from cervical discharge to midline abdominal pain and abnormal vaginal bleeding, to bilateral lower abdominal and pelvic pain to nausea, vomiting, and peritonitis. The pattern as well as severityof symptoms varies between patients.
      (2) 5-10% will also have perihepatitis
      (3) 10% with suspected PID have other problems such as appendicitis, endometriosis, ectopic pregnancy, fallopian tube torsion, or carpus luteum bleeding
      (4) 25% with suspected PID have no laparoscopic evidence of any disease
   b. Causes of PID
      (1) Neisseria gonorrhoea
      (2) Chlamydia trachomatis
      (3) Mycoplasma hominis
      (4) Mixed aerobic and anaerobic bacteria
      (5) 25% have no etiology proven

D. Vaginal Discharge
   1. Endocervix involved (cervicitis**)**
      a. <u>N. gonorrheae.</u> Gram stain 60-70% sensitive, very specific.
      b. <u>C. trachomatis.</u> May see typical raised, follicular ectropion. Endocervical mucopus seen.
   2. Vaginitis
      a. Candidas sp. Identify by positive KOH prep. Discharge tends to be more curdy in appearance. Treat with short-course miconazole or clotrimazole - in recurrent cases may need to treat the partner as well.(white)

      b. Trichomonas vaginitis - organisms seen on

saline prep with typical motility pattern. Treat with a single 2g dose of metronidazole. Warn about the antabuse reaction.

c. Nonspecific vaginitis - probably caused by Gardnerella vaginalis in combination with anaerobes.(gray)
   (1) Usual criteria:
      (a) pH > 4.7
      (b) presence of clue cells-we mount
      (c) positive amine test (whiff test) when KOH added Treat with metronidazole 500 BID X 7 days.
      (d) thin, homogenous discharge.

E. Genital Ulcer Disease

Regardless of the etiology, genital ulcers have been implicated as a co-factor in the sexual transmission of HIV

1. Venereal Causes
   a. Genital herpes
   b. Syphilis
   c. Chancroid
   d. LGV
   e. Granuloma inquinale
2. Non venereal
   a. Trauma
   b. Fixed drug eruption
   c. Neoplasia
   d. Aphtous ulcers
   e. Non vereal infection
   f. Behcets syndrome
   g. Reiters syndrom
3. The Big Three:
   A. Syphilis
      (1) Review of natural history
         (a) Primary
         Classically described as a painless, cleansed ulcer with indurated margins. Most cases, however, do not fit these "classic" criteria

(b) Secondary
Macular papular rash that preferentially involves the palms and soles (but may occur anywhere), diffuse lymphadenopathy, moth-eaten alopecia.

(c) Latency
- Early
- late

(d) Tertiary
Aortitis, meningoencephalitis, tabes dorsalis, general paresis of the insane

(2) Diagnosis

(a) Darkfield examination
70-80% sensitive in primary syphilis

(b) Reagin tests (RPR, VDRL, ART)
70% sensitive in primary syphilis, but 99% sensitive in secondary syphilis. Reactivity may fall over time.

(c) Treponemal tests (FTA, MHA-TP)
85% sensitive in primary syphilis, 99% sensitive in secondary or tertiary syphilis.

Table 1
Sensitivity of serology Tests for Syphilis

	Primary	Secondary	Late
Nonspecific (RPR, VDRL, etc.)	60-80%	100%	40-90%
Specific (FTA, TPHA, etc.)	60-90%	95-100%	95-100%

(3) Treatment

(a) Primary, secondary or early latent
Benzathine penicillin G, 2.4 million units IM (single dose)
or
doxycycline 100 mg orally b.i.d. for 14 days

(b) Late latent, unknown duration, or tertiary
Benzathine penicillin G, 7.2 million units IM given in 3 doses of 2.4 million units at 1 week intervals
or
doxycycline 100 mg orally b.i.d. for 4 weeks

(c) Special circumstances
- CNS infection
- Pregnancy
- HIV-positive patient

(4) Serologic response to therapy
(a) A two-dilution decrease in titer should be seen 1 year after treatment
(b) Recently infected patients may have a more rapid decrease in titer
(c) Some patients remain serofast

B. Genital herpes

1. Natural history
   a. The most common cause of genital ulcer disease in North America. 80-90% of genital herpes is due to herpes simplex virus type 2.
   b. Primary infection
      Typically the most severe of herpes outbreaks. The vesicular eruption ulcerates, crusts over and heals over 2-3 weeks. The lesions are typically multiple, shallow and painful. Systemic symptoms are common.
   c. Recurrences
      Similar to above, but with less severe lesions, a shorter duration, and less frequent systemic symptoms.
   d. Most patients with HSV-2 infection have unrecognized manifestations or remain asymptomatic; however, the virus may be transmitted even in the absence of symptoms.
2. Diagnosis
   a. Viral culture
   b. Fluorescent antibody microscopy
   c. Serology (use "type specific" tests)
   d. Tzank smear
3. Therapy
   a. First episode
      - acyclovir 200 mg orally 5 times per day for 7-10 days
      - acyclovir 400 mg orally 3 times per day for 7-10 days
      - fanciclovir 250 mg orally three times per

day for 7-10 days

b. Recurrent episodes
- Acyclovir 200 mg orally 5 times per day for 5 days
- Acyclovir 400 mg orally t.i.d. for 5 days
- Fanciclovir 125 mg orally b.i.d. for 5 days
- Valacyclovir 500 mg orally b.i.d. for 5 days

c. Suppressive therapy
   i. Indicated for those with 6 outbreaks per year
   ii. Reduces the frequency and severity of recurrences, and reduces the likelihood of asymptomatic viral shedding.

d. Counseling
In the past, patients were counseled to avoid intercourse or use a condom during an aoutbreak in order to prevent transmission between partners. Now, patients should be counseled to use condoms at all times to reduce the likelihood of transmission.

C. Chancroid

1. Natural history
   a. Etiologic agent is the gram-negative bacillus *Haemophilus ducreyi*
   b. Average incubation period is 3-7 days
   c. Classically described as a painful, ragged edged, soft ulcer with a purulent base. Most cases, however, do not fit this "classic" description.
   d. 30% develop inguinal buboes.
2. There are no commercially available diagnostic tests, so the diagnosis is entirely clinical.
3. Therapy
   Ceftriaxone 250 mg IM (single dose)
   or
   azithromycin 1 g orally (single dose)
   or ciprofloxicin 500 mg orally b.i.d. for 3 days

or
erythromycin 500 mg orally q.i.d. for 7 days

D. Inguinal lymphadenopathy and STDs
1. Tenderness
   a. chancroid
   b. LGV
   c. genital herpes
   d. gonorrhea
   e. rarely syphilis
2. Suppurative
   a. chancroid
   b. LGV
   c. rarely genital herpes, syphilis, gonorrhea
3. Bilateral
   a. syphilis
   b. genital herpes
   c. rarely chancroid, LGV
4. Mucopurulent Cervicits (MPC)
   a. Definition - Inflammation of the endocervix resulting in a thick cervical discharge, erythema and ectopy of the endocervical mucosa, and easily induced bleeding.
   b. Pathogens
      (1) N. gonorrhoeae
      (2) C. trachomatis
      (3) No organism is isolated in many cases.
   c. Diagnosis
      (1) Clinical presentation
         (a) Signs and symptoms are less specific in women than in men. 30-40% of women with gonorrhea and perhaps >50% with chlamydia may be asymptomatic.
         (b) Bartholin's glands may be involved.
         (c) Acute urethral syndrome (C. *trachomatis*)Young women who present with dysuria, pyuria and negative urine cultures.
      (2) Gram stain is not as sensitive for women as for men.
      (3) Culture has equal sensitivity in men and women.

   d. Treatment for uncomplicated gonococcal or chlamydial cervicitis in the female patient is

identical to that of urethral infections in the male patient.

5. Pelvic Inflammatory Diseases (PID)
   a. Definition - An acute syndrome caused by the ascent of microorganisms from the vagina and endocervix to the endometrium, fallopian tubes and/or contiguous structures. A significant (but unknown) percentage of upper genital tract infections in women, however, may be asymptomatic.
   b. Pathogens
      (1) C. trachomatis
      (2) N. gonorrhoeae
      (3) Gardnerella vaginalis
      (4) other facultative aerobes and anaerobes
   c. Diagnosis
      (1) Clinical criteria
         (a) Minimum criteria (all three must be present)
            - ✓ lower abdominal tenderness
            - ✓ adnexal tenderness
            - ✓ cervical motion tenderness
         (b) Additional criteria
            - ✓ cervical or vaginal discharge
            - ✓ oral temperature > 38.3°C
            - ✓ leukocytosis
            - ✓ elevated erythrocyte sedimentation rate or
            - ✓ C-reative protein
            - ✓ inflammatory mass on ultrasound
            - ✓ endometritis by biopsy
            - ✓ purulent aspirate by culdocentesis
      (2) Complications
         (a) Tubo-ovarian absecess
         (b) Fitz-Hugh-Curtis syndrome
         (c) Infertility and ectopi pregnancy
      (3) Treatment
         (a) Criteria for hospitalization
            - ✓ pelvic abscess
            - ✓ uncertain diagnosis (cannot

Table 2
Relationship Between Number of PID Episodes, Ectopic Pregnancy, and Tubal Infertility in 1539 Women

	Number of PID Episodes			
	0	1	2	≥3
Intrauterine pregnancy	433	852	124	24
Ectopic pregnancy (%)	6 (1.3)	61 (9.3)	24 (16)	15 (38)

rule out appendicitis) or ectopic pregnancy)
- ✓ pregnancy
- ✓ concurrent HIV infection
- ✓ adolescence
- ✓ severe illness
- ✓ inability to follow or tolerate out-patient regimen
- ✓ lack of a clinical response after 3 days of outpatient therapy
- ✓ inability to arrange appropriate follow-up

(b) Inpatient therapy
- ✓ Recommended cefoxitin 2g IV every 6 hours or cefotetan 2 g IV every 12 hours plus doxycycline 100 mg IV every 12 hours
- ✓ This regimen should be continued for 48 hours after clinical improvement develops, then followed with doxycycline 100 mg orally b.i.d. to complete a total of 14 days of therapy.

(c) Outpatient therapy
- ✓ Recommended cefxitin 2 g IM plus probenecid 1 g orally (single dose) or ceftriaxone 250 mg IM (single dose) plus doxycycline 100 mg orally b.i.d. for 14 days

9. Vaginitis
   a. Conditions and organisms
      (1) Trichomoniasis - Trichomonas vaginalis
      (2) Bacterial vaginosis - Gardnerella vaginalis, anaerobes
      (3) Vulvovaginal candidiasis - Candida albicans (and other species)
   b. Trichomoniasis
      (1) Diagnosis

(a) saline wet prep

(2) Treatment

(a) metronidazole 2 g orally (single dose) or metronidazole 500 mg orally b.i.d. for 7 days

(b) treatment of sex partners

(c) pregnant women may be treated with single dose of metronidozole

c. Bacterial vaginosis

(1) Diagnosis

(a) discharge

(b) pH > 4.5

(c) whiff test with 10% KOH

(d) clue cells on saline wet prep

(2) Treatment

(a) metronidazole 500 mg b.i.d. for 7 days
or
metronidazole 2 g orally in a single dose
or clindamycin cream 2% 5 g intravaginally qHS for 7 days
or
Metronidazole gel intravaginally b.i.d. for 5 days

(b) Partner treatment is not routinely recommended

(c) In pregnancy, use of lower dose metronidazole (250 mg t.i.d. for 7 days) is recommended. Delay treatment until the second trimester if possible.

d. Vulvovaginal candidiasis

(1) Diagnosis

(a) thick white vaginal discharge

(b) pruritus

(c) yeast and pseudohyphae on 10% KOH preparation

(2) Treatment

(a) wide variety of prescription and OTC azole creams for intravaginal use

(b) fluconazole 150 mg orally in a single dose
(c) treatment of sex partners is not routinely indicated

10. Human Papillomavirus
    A. Incidence
        (1) Over 1 million office visits/year in the U.S.; 200,000 "first time" visits
        (2) Estimated that one-third of sexually active women are infected with HPV, yet the prevalence of genital warts may only be about 1% of the population
    B. Manifestations
        (1) Genital warts: condyloma acuminata; smooth papules; keratotic; flat
        (2) Types 6 and 11 are most common, and they are not associated with cervical neoplasia
        (3) Types 16 and 18 are associated with cervical neoplasia
    C. Diagnosis is usually made on the basis of clinical examination, but occasionally acetic acid solution (3-5%) is used, or biopsy and pathologic examination are required. HPV typing has not played a role in the management of patients.
    D. Treatment
        (1) Observation (up to 28% may resolve on their own)
        (2) Imiquimod cream, 5% (Aldara) – apply at right and wash off in the morning 3 times per week for 8 weeks (safe in pregnancy)
        (3) Podophyllin 10-25% - wash off after 1-4 hours; weekly treatment for 6 weeks
        (4) Podofilox .5% (Condylox) – apply b.i.d. for 3 days, followed by 4 days off; repeat cycle for 4 weeks (not for use in pregnancy)
        (5) Cryotherapy (liquid nitrogen)
        (6) Trichloracetic acid 85-95% solution applied weekly (safe in pregnancy)
        (7) Electrodesiccation
        (8) Interferon infections

(9) 5-fluorouracil injection

Treatment of Sexually Transmitted Diseases

Type or Stage	Drug of Choice	Dosage	Alternatives
CHLAMYDIA TRACHOMATIS			
Urethritis, cervicitis, conjunctivitis, or proctitis (except lymphogranuloma venereum)	Doxycycline[1]	100 mg oral bid x 7 days	Erythromycin2 500mg oral qid x 7d[2] Ofloxacin 300 mg oral bid x 7 days Arithromycin 1 gram orally once
Infection in Pregnancy	Erythromycin[2]	500 mg oral qid x 7 days[3]	Amoxicillin 500 mg oral tid x 10 days Clindamycin 450mg oral qid x 10 days`
❑ Ophthalmia	Erythromycin	12.5 mg/kg oral or IV qid x 14 days	
❑ Pneumonia	Erythromycin	12.5 mg/kg oral or IV qid x 14 days	Sulfiasoxazole5 100 mg/kg/day oral or IV in divided doses x 14 days
Lymphogranuloma venereum	Doxycycline[1]	100 mg oral bid x 21 days	Erythromycin[2] 500 mg oral qid x 21 days
GONORRHEA[6]			
Urethral, cervical, rectal, or pharyngeal	Ceftriaxone	125-250 mg IM once	Cefixime 400 mg orally once Ciprofloxacin 500 mg orally once Ofloxacin 400 mg orally once Spectinomycin 2 grams IM once
Ophthalmia (adults)[8]	Ceftriaxone	1 gram IM once plus saline irrigation	Ceftriaxone 1 gram IV or IM daily x 5 days, plus saline irrigation
Bacteremia and arthritis[9]	Ceftriaxone	1 gram IV daily x 7-10 days	Ceftizoxime or cefotaxime, 1 gram. IV q8h for 2-3 days or until improved, followed by cefixime 400 mg orally bid or ciprofloxacin 500 mg orally to complete 7-10 days total therapy
Meningitis	Ceftriaxone	2 grams IV daily for at least 10 days	Penicillin G at least 10 million U IV daily for at least 10 days
Endocarditis	Ceftriaxone	2 grams IV daily for at least 3 to 4 weeks	Penicillin G at least 10 million U IV daily for at least 3-4 weeks[10]

1. Or tetracycline 500 mg oral qid
2. Erythromycin estolate is contraindicated in pregnancy.
3. In presence of severe-gastrointestinal intolerance, decrease to 250 mg qid and extend duration to 14 days.
4. Or another sulfonamide in equivalent dosage; avoid all sulfonamides in the third trimester.
5. Only for infants more than four weeks old.
6. Since a high percentage of patients with gonorrhea have coexisting Chlamydia trachomatis infection, all patients should also receive a course of treatment effective for Chlamydia.
7. Not effective for pharyngeal infection.
8. An oral fluoroquinolone, such as ciprofloxacin for 3-5 days, probably would also be effective, but experience is limited.
9. If the infecting stain of N. gonorrhoeae has been tested and is known to be susceptible to penicillin or the tetracyclines, treatment may be changed to penicillin G 10 million U IV daily, amoxicillin 500 mg orally qid, doxycycline 100 mg orally bid, or tetracycline 500 mg orally qid.
10. If infecting strain of N. gonorrhoeae has been tested and is known to be susceptible

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Treatment of Sexually Transmitted Diseases

Type or Stage		Drug of Choice	Dosage	Alternatives
GONORRHEA Neonatal				
❑ Ophthalmia		Ceftriaxone	125 mg IM once plus saline irrigation	Penicillin G 100,000 U/kg/day IV in 4 doses[10] x 7 days, plus saline irrigation
	OR	Cefotaxime	25 mg/kg IV or IM q8-12h x 7 days, plus saline irrigation	`
❑ Arthritis and septicemia		Cefotaxime	25-50 mg/kg IV q8-12h x 10-14 days	Penicillin G75,000 to 100,000 U/kg/day IV in 4 doses x 7 days[10]
❑ Meningitis		Cefotaxime	50 mg/kg IV q8-12h x 10-14 days	Penicillin G 100,000 U/kg/day IV in 8 or 4 doses for at least 10 days[10]
Children (under 45 kg)				
❑ Urogenital, rectal and pharyngeal		Ceftriaxone	125 mg IM once	Spectinomycin[7] 40 mg/kg/day IM once Amoxicillin 50 mg/kg oral once plus probenecid 25 mg/kg (max. 1 gram) oral once[10]
❑ Arthritis		Ceftriaxone	50 mg/kg/day (max. 2 grams) IV x 7 days	Penicillin G 150,000 U/kg/day IV x 7 days[10]
	OR	Ceftriaxine	50 mg/kg/day IV in divided doses x 7 days	
❑ Meningitis		Ceftriaxone	100 mg/kg/day (max. 2 grams) IV x 7 days	Penicillin G 250.000 U/kg/day IV in 6 divided doses for at least 10 days[10]
	OR	Cefotaxime	100 mg/kg/day IV for at least 10 days	Chloramphenicol 100 mg/kg/day IV for at least 10 days
SEXUALLY INFLAMMATORY DISEASE				
		Ceftriaxone followed by doxycycline	250 mg IM once 100 mg oral bid x 10 days	Ciprofloxacin 500 mg or ofloxacin 400 mg orally once followed by doxycycline[1] 100 mg oral bid x 10 days
PELVIC INFLAMMATORY DISEASE				
❑ hospitalized patients		Cefoxitin	2 grams IV q6h	Clindamycin 900 mg IV q8h plus gentamicin 2 mg/kg IV once followed by gentamicin 1.5 mg/kg IV q8h until improved followed by doxycycline[1] 100 mg oral bid to complete 14 days[11]
	OR	Cefotetan	2 grams IV q12h	
		either one plus doxycycline followed by doxycycline[1]	100 mg IV q12h until improved 100 mg oral bid to complete 14 days	
❑ outpatients		Cefoxitin plus probenecid	2 grams IM once 1 gram oral once	
	OR	Ceftriaxone	250 mg IM once	
		either one followed by		
		Doxycycline[1]	100 mg oral bid x 14 days	
VAGINAL INFECTION				
Trichomoniasis		Metronizadole12	2 grams oral once	Metronidazole 500mg oral bid x7days
Bacterial vaginosis		Metronizadole	500 mg oral bid x 7 days	Clindamycin 300mg oral bid x 7 days
Vulvovaginal candidiasis		Topital butoconazole, clotrimazole, miconazole, nystatin, terconazole, or tioconazole[13]		

11. Or clindamycin 450 mg oral qid to complete 14 days
12. Metronidazole should be avoided during pregnancy but, for pregnant women with severe symptoms, 2 grams oral (single dose) may be given after the first trimester.
13. For preparations and dosage, see The Medical Letter, 33:81, 1991

Treatment of Sexually Transmitted Diseases

Type or Stage		Drug of Choice	Dosage	Alternatives
SYPHILIS				
Early (primary, secondary, or latent less than one year)		Penicillin G benzathine	2.4 million U IM once[14]	Doxycycline[1] 100mg oral bid x 14 d Ceftriaxone 250 mg IM once daily x 10 days[15] Erythromycin 500 mg oral qid x 14 days[16]
Late (more than one year's duration, cardiovascular, gumma, late-latent)		Penicillin G benzathine	2.4 million U IM weekly x 3 weeks	Doxycycline[1] 100 mg oral bid x 4 weeks
Neurosyphilis		Penicillin G	2 to 4 million U IV q4h x 10-14 days	Penicillin G procaine 2.4 million U IM daily plus probenecid 50 mg qid orally, both x 10-14 days
Congenital		Penicillin G	50,000 U/kg IM or IV q8-12 h for 10-14 days	
	OR	Penicillin G procaine	50,000 U/kg IM daily for 10-14 days	
CHANCROID		Erythromycin[2]	500 mg oral qid x 7 days[3]	Ciprofloxacin 500 mg oral bid x 3 days
	OR	Ceftriaxone	250 mg IM once[18]	
HERPES SIMPLEX				
First Episode Genital		Acyclovir	400 mg oral tid x 7-10 days	Acyclovir 200 mg oral 5 times/day x 7-10 days
First Episode Proctitis		Acyclovir	800 mg oral tid x 7-10 days	Acyclovir 400 mg oral 5 times/day x 7-10 days
Severe		Acyclovir	5 mg/kg IV q8h x 5-7 days	
Prevention of Recurrences		Acyclovir	400 mg bid	200 mg oral 2-5 times a day

14. Some experts recommend repeating this regimen after seven days, especially in patients with HIV infection.
15. Limited experience; use only if compliance and follow-up are assured
16. Treatment with erythromycin is associated with an increased rate of relapse and should be used only in compliance and 12 months' follow-up are assured and other regimens are contraindicated.
17. Patients allergic to penicillin should be desensitized. Most authorities recommend following either the IV or IM penicillin regimen with benzathine penicillin G 2.4 million units IM weekly x 3 weeks.
18. Single-dose treatment is less effective in HIV-infected patients.
19. Preventive treatment should be discontinued for 1 to 2 months once a year to reassess the frequency of recurrence.