STD Prevention and Control

- Education and counseling to reduce risk of STD acquisition
- Detection of asymptomatic and/or symptomatic persons unlikely to seek evaluation
- Effective diagnosis and treatment
- Evaluation, treatment, and counseling of sexual partners
- Preexposure vaccination--hepatitis A, B
Prevention Messages

• Prevention messages tailored to the client’s personal risk; interactive counseling approaches are effective

• Despite adolescents greater risk of STDs, providers often fail to inquire about sexual behavior, assess risk, counsel about risk reduction, screen for as infection

• Specific actions necessary to avoid acquisition or transmission of STDs

• Clients seeking evaluation or treatment for STDs should be informed which specific tests will be performed
**Prevention Methods**

**Male Condoms**

- Consistent/correct use of latex condoms are effective in preventing sexual transmission of HIV infection and can reduce risk of other STDs.

- Likely to be more effective in prevention of infections transmitted by fluids from mucosal surfaces (GC, CT, trichomonas, HIV) than those transmitted by skin-skin contact (HSV, HPV, syphilis, chancroid).
Prevention Methods

Spermicides

- N-9 vaginal spermicides are not effective in preventing CT, GC, or HIV infection
- Frequent use of spermicides/N-9 have been associated with genital lesions
- Spermicides alone are not recommended for STD/HIV prevention
- N-9 should not be used as a microbicide or lubricant during anal intercourse
MSM

- STD/HIV sexual risk assessment and client-centered prevention counseling
- Annual STD screening for MSM at risk
  - HIV and syphilis serology
  - Urethral cx or NAAT, GC/CT
  - Pharyngeal cx, GC (oro-genital)
  - Rectal cx, GC/CT (receptive anal IC)
Early HIV Infection
Initial Evaluation

- Medical/sexual history, previous STD
- PX, pelvic (pap, wet mount), GC, CT
- Syphilis serology
- CD4 count, HIV viral load
- CBC, blood chemistry
- PPD, urinalysis, CXR
- Hepatitis A, B, C serology
Genital Ulcer Evaluation

- Diagnosis based on medical history and physical examination often inaccurate
- Serologic test for syphilis
- Culture/antigen test for herpes simplex
- *Haemophilus ducreyi* culture in settings where chancroid is prevalent
- Biopsy may be useful
Herpes
Genital Herpes
First Clinical Episode

Acyclovir 400 mg tid
or
Famciclovir 250 mg tid
or
Valacyclovir 1000 mg bid

*Duration of Therapy 7-10 days*
Genital Herpes
Episodic Therapy

Acyclovir 400 mg three times daily x 5 days
or
Acyclovir 800 mg twice daily x 5 days
or
Famciclovir 125 mg twice daily x 5 days
or
Valacyclovir 500 mg twice daily x 3-5 days
or
Valacyclovir 1 gm orally daily x 5 days
Genital Herpes
Daily Suppression

Acyclovir 400 mg bid
or
Famciclovir 250 mg bid
or
Valacyclovir 500-1000 mg daily
Genital Herpes
Treatment in Pregnancy

- Available data do not indicate an increased risk of major birth defects (first trimester)
- Limited experience on pregnancy outcomes with prenatal exposure to valacyclovir or famciclovir
- Acyclovir may be used with first episode or severe recurrent disease
- Risk of transmission to the neonate is 30-50% among women who acquire HSV near delivery
Genital Herpes Counseling

• Natural history of infection, recurrences, asymptomatic shedding, transmission risk
• Individualize use of episodic or suppressive therapy
• Abstain from sexual activity when lesions or prodromal symptoms present
• Risk of neonatal infection
Syphilis
Primary, Secondary, Early Latent

Recommended regimen
Benzathine Penicillin G, 2.4 million units IM

Penicillin Allergy*
Doxycycline 100 mg twice daily x 14 days
or
Ceftriaxone 1 gm IM/IV daily x 8-10 days (limited studies)
or
Azithromycin 2 gm single oral dose (preliminary data)

*Use in HIV-infection has not been studied
Syphilis
Primary/ Secondary Syphilis
Response to Treatment

• No definitive criteria for cure or failure are established
• Re-examine clinically and serologically at 6 and 12 months
• Consider treatment failure if signs/symptoms persist or sustained 4x increase in nontreponemal test
• Treatment failure: HIV test, CSF analysis; administer benzathine pcn weekly x 3 wks
• Additional therapy not warranted in instances when titers don’t decline despite nl CSF and repeat therapy
Syphilis
Latent Syphilis

Recommended regimen
Benzathine penicillin G 2.4 million units IM at one week intervals x 3 doses

Penicillin allergy*
Doxycycline 100 mg orally twice daily
or
Tetracycline 500 mg orally four times daily

Duration of therapy 28 days; close clinical and serologic follow-up; data to support alternatives to penicillin are limited
Latent Syphilis
Management Considerations

- Clinical evaluation of tertiary disease (aortitis, gumma, iritis)
- CSF analysis: neurologic or ophthalmic signs/sx, active tertiary disease, tx failure, HIV infection
- Some experts recommend CSF exam in those with nontreponemal titer of $\geq 1:32$
- Pharmacologic considerations suggest an interval of 10-14 days between benz pen doses may be acceptable before restarting treatment course in nonpregnant patients
Syphilis
Management of Sex Partners

• At risk- 3 mo + sx for primary, 6 mo + sx for secondary, one yr for early latent

• Exposure to primary, secondary, or early latent within 90 days, tx presumptively

• Exposure to primary, secondary, or early latent > 90 days, tx presumptively if serology not available

• Exposure to latent syphilis who have high nontreponemal titers > 1:32, consider presumptive tx for early syphilis
Syphilis
Treatment in Pregnancy

• Screen for syphilis at first prenatal visit; repeat RPR third trimester/delivery for those at high risk or high prevalence areas
• Treat for the appropriate stage of syphilis
• Some experts recommend additional benzathine penicillin 2.4 mu IM after the initial dose for primary, secondary, or early latent syphilis
• Management and counseling may be facilitated by sonographic fetal evaluation for congenital syphilis in the second half of pregnancy
Congenital Syphilis
Infants with Seroreactive Mothers

- Nontreponemal test on infant serum
- Examination (nonimmune hydrops, jaundice, HSM, rhinitis, rash)
- Pathologic exam of placenta or umbilical cord (fluorescent antitreponemal antibody)
- Darkfield or DFA of suspicious lesions or body fluids
**Congenital Syphilis**

*Proven/ highly probable disease*

- Abnormal physical exam consistent with congenital syphilis
- Nontreponemal titer $4X \geq$ maternal titer or $+$ DFA or darkfield
- Evaluation: CSF exam, CBC; other tests as clinically indicated--long bone films, LFTs, cranial US, eye exam, auditory brain stem response
Congenital Syphilis
Proven/ highly probable disease

Aqueous crystalline penicillin G 100,000-150,000 units/kg/day, administered as 50,000 units/kg/dose IV q 12 hours during the first 7 days and thereafter q 8 hours for 10 days

or

Procaine penicillin G 50,000 units/kg/dose IM in a single daily dose for 10 days
Congenital Syphilis Subsequent Evaluation

- Clinical/serologic evaluation q 2-3 mo
- RPR should decline by 3 mo, nonreactive at 6 mo
- Stable or increasing titers after 6-12 mo--CSF analysis/parenteral pcn X 10 d
- Reactive treponemal/RPR after 18 mo re-evaluate and treat for congenital syphilis
Congenital Syphilis
Older Infants and Children

- Review records and maternal serology- congenital vs acquired
- Evaluation- CSF analysis, CBC/pts; +/- long bone films, auditory brain stem response
- Treatment- Aqueous pcn G 50,000 units/kg q 4-6 hours for 10 days
Chancroid

Azithromycin 1 gm orally
or
Ceftriaxone 250 mg IM in a single dose
or
Ciprofloxacin 500 mg twice daily x 3 days
or
Erythromycin base 500 mg tid x 7 days
Chancroid Management Considerations

- Re-examination 3-7 days after treatment
- Time required for complete healing related to ulcer size
- Lack of improvement: incorrect diagnosis, co-infection, non-compliance, antimicrobial resistance
- Resolution of lymphadenopathy may require drainage
Chancroid
Management of Sex Partners

Examine and treat partner whether symptomatic or not if partner contact ≤ 10 days prior to onset
October 28, 2004

CDC Reports:
Rare Infection a Risk to Gay & Bisexual Men in US

Lymphogranuloma Venereum

A recent outbreak of the disease in gay and bisexual men in the Netherlands has brought about a concern that it will be overlooked in the US as doctors are not required to report these infections to local health departments in US
Lymphogranuloma Venereum

LGV primary lesion

Chronic lymphogranuloma venereum in female.
Genital elephantiasis
Lymphogranuloma Venereum

**Recommended regimen**
Doxycycline 100 mg twice daily for 21 days

**Alternative regimen**
Erythromycin base 500 mg four times daily for 21 days
Granuloma Inguinale

Doxycycline 100 mg twice daily
or
Trimethoprim-sulfamethoxazole 800 mg/160 mg twice daily

Minimum treatment duration three weeks
Granuloma Inguinale
Granuloma Inguinale

Alternative regimens

Ciprofloxacin 750 mg twice daily
or
Erythromycin base 500 mg four times daily
or
Azithromycin 1 gm orally weekly

Minimum treatment duration three weeks
Urethritis

- Mucopurulent or purulent discharge
- Gram stain of urethral secretions $\geq 5$ WBC per oil immersion field
- Positive leukocyte esterase on first void urine or $\geq 10$ WBC per high power field

*Empiric treatment in those with high risk who are unlikely to return*
Nongonococcal Urethritis

Azithromycin 1 gm in a single dose
or
Doxycycline 100 mg bid x 7 days
Recurrent/ Persistent Urethritis

- Objective signs of urethritis
- Re-treat with initial regimen if non-compliant or re-exposure occurs
- Intraurethral culture for trichomonas
- Effective regimens not identified in those with persistent symptoms without signs
Recurrent/ Persistent Urethritis

Metronidazole 2 gm single dose

PLUS

Erythromycin base 500 mg qid x 7d

or

Erythromycin ethylsuccinate 800 mg qid x 7d
**Chlamydia trachomatis**

- Annual screening of sexually active women ≤ 25 yrs
- Annual screening of sexually active women > 25 yrs with risk factors
- Sexual risk assessment may indicate more frequent screening for some women
- Rescreen women 3-4 months after treatment due to high prevalence of repeat infection
Chlamydia trachomatis

Azithromycin 1 gm single dose
or
Doxycycline 100 mg bid x 7d
Chlamydia trachomatis

Treatment in Pregnancy

Recommended regimens
Erythromycin base 500 mg qid for 7 days
or
Amoxicillin 500 mg three times daily for 7 days

Alternative regimens
Erythromycin base 250 mg qid for 14 days
or
Erythromycin ethylsuccinate 800 mg qid for 14 days
or
Erythromycin ethylsuccinate 400 mg qid for 14 days
or
Azithromycin 1 gm in a single dose
Neisseria gonorrhoeae

- Gonococcal urethritis
- Gonococcal cervicitis
- Bartholin's abscess
- Disseminated gonorrhea - skin lesion
Neisseria gonorrhoeae

Cervix, Urethra, Rectum

Cefixime 400 mg
or
Ceftriaxone 125 IM
or
Ciprofloxacin 500 mg
or
Ofloxacin 400 mg/Levofloxacin 250 mg

PLUS Chlamydial therapy if infection not ruled out
Neisseria gonorrhoeae
Cervix, Urethra, Rectum

Alternative regimens

Spectinomycin 2 grams IM in a single dose
or
Single dose cephalosporin (cefotaxime 500 mg)
or
Single dose quinolone (gatifloxacin 400 mg, lomefloxacin 400 mg, norfloxacin 800 mg)

PLUS Chlamydial therapy if infection not ruled out
Neisseria gonorrhoeae

Pharynx

Ceftriaxone 125 IM in a single dose

or

Ciprofloxacin 500 mg in a single dose

PLUS Chlamydial therapy if infection not ruled out
Neisseria gonorrhoeae
Treatment in Pregnancy

- Cephalosporin regimen
- Women who can’t tolerate cephalosporin regimen may receive 2 g spectinomycin IM
- No quinolone or tetracycline regimen
- Erythromycin or amoxicillin for presumptive or diagnosed chlamydial infection
Disseminated Gonococcal Infection

Recommended regimen
Ceftriaxone 1 gm IM or IV q 24 hr

Alternative regimens
Cefotaxime or Ceftizoxime 1 gm IV q8 hr
or
Ciprofloxacin 400 mg IV q 12
or
Ofloxacin 400 mg IV q 12
or
Levofloxacin 250 mg IV daily
Candida Vaginitis
Classification

**Uncomplicated**
- Sporadic, infrequent
- Mild-to-moderate
- Likely *C. albicans*
- Non-immunocomprised
  - pregnancy,
- immunosuppression

**Complicated**
- Recurrent
- Severe
- Non-albicans
  - Diabetes,
Candida Vulvovaginitis

Intravaginal regimens
- Butoconazole, clotrimazole,
- miconazole,
- nystatin, tioconazole, terconazole

Oral regimen
- Fluconazole 150 mg in a single dose
Recurrent VVC

- Four or more symptomatic episodes/year
- Vaginal culture useful to confirm diagnosis and identify unusual species
- Initial regimen of 7-14 days topical therapy or fluconazole 150 mg (repeat 72 hr)
- Maintenance regimens- clotrimazole, ketoconazole, fluconazole, itraconazole
- Non-albicans VVC- longer duration of therapy with non-azole regimen
Vulvovaginal Candidiasis

Management of Sex Partners

• Treatment not recommended
• Treatment of male partners does not reduce frequency of recurrences in the female
• Male partners with balanitis may benefit from treatment
Vulvovaginal Candidiasis
Treatment in Pregnancy

• Only topical intravaginal regimens recommended
• Most specialists recommend 7 days of therapy
Trichomoniasis

**Recommended regimen**
- Metronidazole 2 gm orally in a single dose

**Alternative regimen**
- Metronidazole 500 mg twice a day for 7 days

**Pregnancy**
- Metronidazole 2 gm orally in a single dose
Trichomoniasis
Management of Sex Partners

• Sex partners should be treated
• Avoid intercourse until therapy is completed and patient and partner are asymptomatic
Bacterial Vaginosis

Metronidazole 500 mg twice daily for 7 days
or
Metronidazole gel 0.75%, 5 g intravaginally once daily for 5 days
or
Clindamycin cream 5%, 5 g intravaginally qhs for 7 days
Bacterial Vaginosis
Treatment in Pregnancy

Metronidazole 250 mg three times daily for 7 days
or
Clindamycin 300 mg twice daily for 7 days
Bacterial Vaginosis
Management of Sex Partners

Woman’s response to therapy and the likelihood of relapse or recurrence not affected by treatment of sex partner
Pelvic Inflammatory Disease

**Minimum Diagnostic Criteria**
Uterine/adnexal tenderness or cervical motion tenderness

**Additional Diagnostic Criteria**
- Oral temperature >38.3 C Elevated
- ESR Elevated
- Cervical CT or GC Elevated
- CRP Elevated
- WBCs/saline microscopy Cx discharge
Pelvic Inflammatory Disease

Definitive Diagnostic Criteria

- Endometrial biopsy with histopathologic evidence of endometritis
- Transvaginal sonography or MRI showing thick fluid-filled tubes
- Laparoscopic abnormalities consistent with PID
Pelvic Inflammatory Disease
Hospitalization

- Surgical emergencies not excluded
- Pregnancy
- Clinical failure of oral antimicrobials
- Inability to follow or tolerate oral regimen
- Severe illness, nausea/vomiting, high fever
- Tubo-ovarian abscess
Pelvic Inflammatory Disease

Parenteral Regimen A

Cefotetan 2 g IV q 12 hours

or

Cefoxitin 2 g IV q 6 hours

PLUS

Doxycycline 100 mg orally/IV

q 12 hrs
Pelvic Inflammatory Disease
Oral Regimen A

Ofloxacin 400 mg twice daily for 14 days

or

Levofloxacin 500 mg once daily for 14 days

WITH OR WITHOUT

Metronidazole 500 mg twice daily for 14 days
Pelvic Inflammatory Disease

Management of Sex Partners

- Male sex partners of women with PID should be examined and treated for sexual contact 60 days preceding pt’s onset of symptoms.

- Sex partners should be treated empirically with regimens effective against CT and GC.
Epididymitis
Diagnostic Considerations

• Gram stain smear of urethral exudate for diagnosis of urethritis

• Intraurethral culture or nucleic acid amplification test for GC and CT

• Examination of first void uncentrifuged urine for WBCs if urethral gram stain negative
Epididymitis

Infection likely due to GC or CT
  Ceftriaxone 250 mg IM in a single dose
  PLUS
  Doxycycline 100 mg twice daily for 10 days

Infection likely due to enteric organisms or age > 35
  Ofloxacin 300 mg twice daily for 10 days
  or
  Levofloxacin 500 mg once daily for 10 days
Papillomavirus
Treatment

• Primary goal for treatment of visible warts is the removal of symptomatic warts
• Therapy may reduce but probably does not eradicate infectivity
• Difficult to determine if treatment reduces transmission
  – No laboratory marker of infectivity
  – Variable results utilizing viral DNA
Papillomavirus
Papillomavirus

Patient-applied
Podofilox 0.5% solution or gel
or
Imiquimod 5% cream

Provider-administered
Cryotherapy
or
Podophyllin resin 10-25%
or
Trichloroacetic or Bichloroacetic acid 80-90%
or
Surgical removal
Papillomavirus
Treatment in Pregnancy

• Imiquimod, podophyllin, podofilox should not be used in pregnancy
• Many specialists advocate wart removal due to possible proliferation and friability
• HPV types 6 and 11 can cause respiratory papillomatosis in infants and children
• Preventative value of cesarean section is unknown; may be indicated for pelvic outlet obstruction
Cervical Cancer Screening

Women with History of STDs

- Women with STD hx may be at increased risk of cervical cancer
- Clinics that offer pap screening without colposcopic f/u should arrange for referral
- Management of abnormal pap provided per Interim Guidelines for Management of Abnormal Cervical Cytology (NCI Consensus Panel)
- Emerging data support HPV testing for the triage of women with ASCUS Pap tests
Vaccine Preventable STDs
Hepatitis A

- MSM
- Illegal drug users
- Chronic liver disease, hepatitis B and C infection
Vaccine Preventable STDs

Hepatitis B

- History of STD, multiple sex partners, sexually active MSM
- Illegal drug use
- Household members, sex partners of those with chronic hepatitis B
- Hemodialysis, occupational blood exposure
Pediculosis Pubis

- Pruritus or lice or nits on pubic hair
- Decontaminate bedding and clothing

**Recommended regimens**
- Permethrin 1%
- Lindane 1% shampoo
- Pyrethrins with piperonyl butoxide

- Re-treatment may be necessary if sx persist
- Treatment of sex partners within the last month
Scabies

• Predominant symptom is pruritus
• **Recommended regimen**
  Permethrin cream 5%
• **Alternative regimen**
  Lindane 1% or Invermectin 200 ug/kg, repeat in 2 wks
• Sex partners and household contacts within the preceding month should be treated
Sexual Assault Evaluation

• Cultures for GC and CT from sites of penetration; if Nucleic Acid Amplification Test (NAAT) is used, positive test should be confirmed by a second FDA licensed NAAT utilizing a different primer sequence
• Wet mount and culture for trichomonias
• HIV, hepatitis and syphilis serology
Sexual Assault

• Suggested preventative therapy
  - Postexposure hepatitis B vaccination
  - Empiric regimen for chlamydia, gonorrhea, trichomonas, and BV

• Efficacy of antimicrobial regimens in the prevention of genitourinary infections after sexual assault has not been evaluated