



Sexually Transmitted Diseases

Judith A. Lightfoot DO, FACOI

NY NJ AETC
AIDS EDUCATION & TRAINING CENTER

Garden State Infectious Diseases Associates, P.A.

Table of content

- Update on the prevalence of STD's in the US
- Which populations are greatly affected?
- Should we be alarmed?
- How does this affect HIV/AIDS
- Gonorrhea
- Chlamydia
- Trichomoniasis

Sexually Transmitted Infections

- 448 million new infections of curable sexually transmitted infections occur each year
 - Syphilis
 - Gonorrhea/Chlamydia
 - Trichomoniasis
- Some sexually transmitted infections exist without symptoms

Common Bacterial Infections

- *Neisseria gonorrhoeae*
 - causes gonorrhea or gonococcal infection
- *Chlamydia trachomatis*
 - causes chlamydial infections
- *Treponema pallidum*
 - causes syphilis
- *Haemophilus ducreyi*
 - causes chancroid
- *Klebsiella granulomatis*
 - previously known as Calymmatobacterium granulomatis
 - causes granuloma inguinale or donovanosis

Common Viral Infections



- Human Immunodeficiency Virus
 - causes AIDS
- Herpes Simplex Virus Type 2
 - causes genital herpes
- Human Papillomavirus
 - causes genital warts and certain subtypes lead to cervical cancer in women
- Hepatitis B Virus
 - causes hepatitis
 - chronic cases may lead to cancer of the liver
- Cytomegalovirus
 - causes inflammation in a number of organs including the brain, the eye and the bowel

Parasites



- *Trichomonas vaginalis*
 - causes vaginal trichomoniasis
- *Candida albicans*
 - causes vulvovaginitis in women
 - causes inflammation of the glans penis and foreskin [balanoposthitis] in men

1 in 4 Girls Has an STD



- 838 girls ages 14–19
 - National survey 2003–2004
- HPV–18%
- *C. trachomatis* – 4%
- *Trichomonas* – 2.5%
- Genital HSV – 2%
- HIV, Syphilis, GC – not evaluated

Incidence of STDs



- 1 in 4 teen girls has a sexually transmitted disease

March 11, 2008

Screening of Adolescents



- High school population
- Self-collection of vaginal swabs for Chlamydia, GC, Trich by PCR
 - 8%+ chlamydia
 - 10%+ trich
 - 2%+ GC
 - overall 18%+
- 13% of those who never had a gyn exam tested +
- 32% of those positive never had a pelvic exam
- 87% did not think they had an STD

Screening Women who have Sex with Women (WSW)



- Risk varies by sexual practice
- Transmission of HPV has been detected by PCR in 13-30% of WSW
- Transmission of syphilis by oral sex
- Transmission of HSV 1 > HSV 2
- Rate of transmission of C. trachomatis is unknown
- 53–99% of WSW have had sex with men

Taking a Sexual History



1. Do you have sex with men, women or both?
2. How many different people do you have sex with?
3. How many different people have you had sex with in the past 6 mos? A year? Lifetime?
4. Did you put your mouth on someone's penis, rectum, or vagina?
5. Does someone put his penis in your vagina, mouth or rectum?

Taking a Sexual History



6. Do you use birth control? What kind? Do you use it all the time?
7. Do you use condoms? With every person? All the time?
8. Do you use condoms at the start?
9. Have you ever had a sexually transmitted infection?

Approach to the Patient



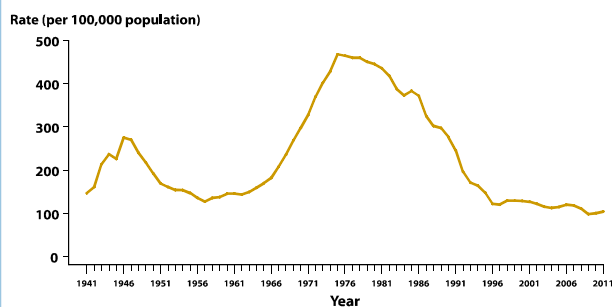
- Physical Exam
- Laboratory Tests:
 - Cervical gram stain
 - Wet prep of vaginal secretions
 - Urethral gram stain
 - Specimens for gonorrhea
 - Specimens for chlamydia
 - Syphilis serology
 - HIV testing
 - Education/counseling

Mucosal Inflammatory Diseases

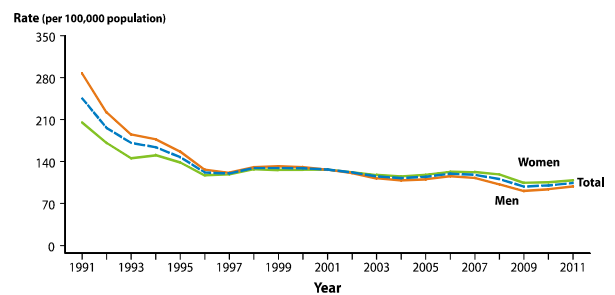


- Gonorrhea
- Chlamydia
- Trichomonas
- (mycoplasma, ureaplasma, others)
 - Urethritis is purulent discharge
 - 10 WBC/hpf in urethral gram stain
 - 5WBC/hpf in urethral gram stain
 - May be misleading in 15% Ctor Mycoplasma, where 5<WBC/hpf are possible

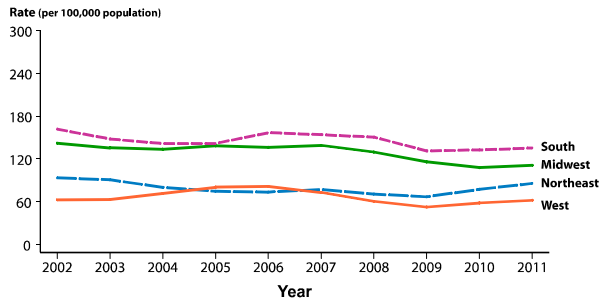
Gonorrhea—Rates, United States, 1941–2011



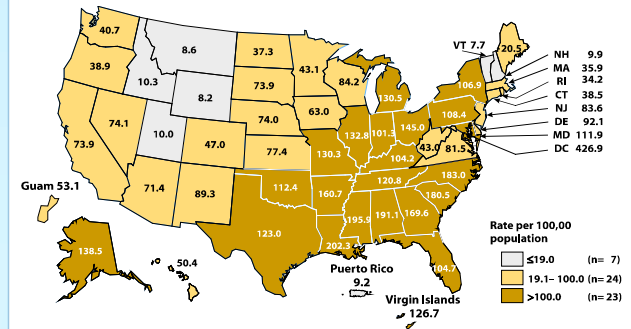
Gonorrhea—Rates by Sex, United States, 1991–2011



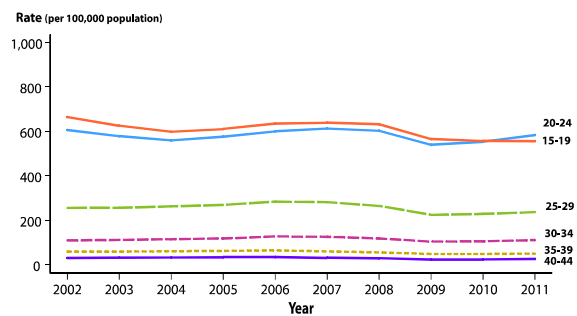
Gonorrhea—Rates by Region, United States, 1991–2011



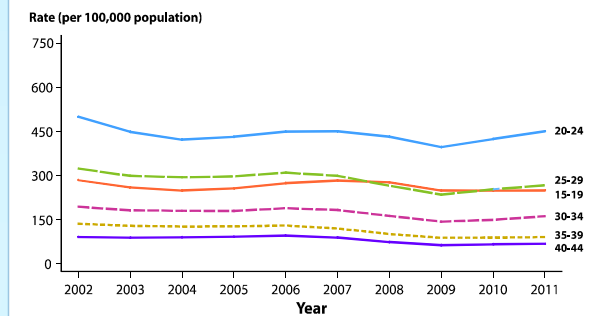
Gonorrhea—Rates by State, United States and Outlying areas, 2011



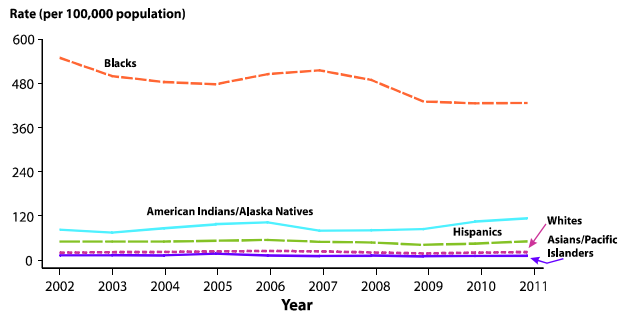
Gonorrhea—Rates by Age Among Women Aged 15–44 Years, United States, 2002–2011



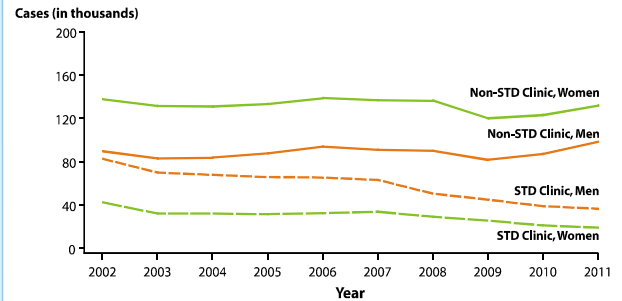
Gonorrhea—Rates by Age Among Men Aged 15–44 Years, United States, 2002–2011



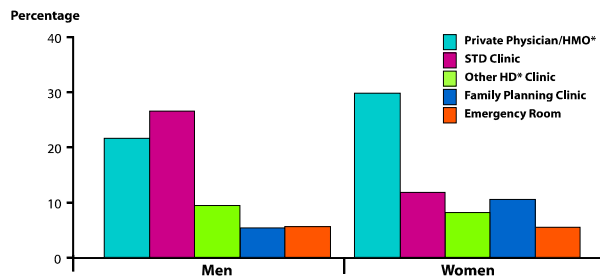
Gonorrhea—Rates by Race/Ethnicity, United States, 2002–2011



Gonorrhea—Cases by Reporting Source and Sex, United States, 2002–2011



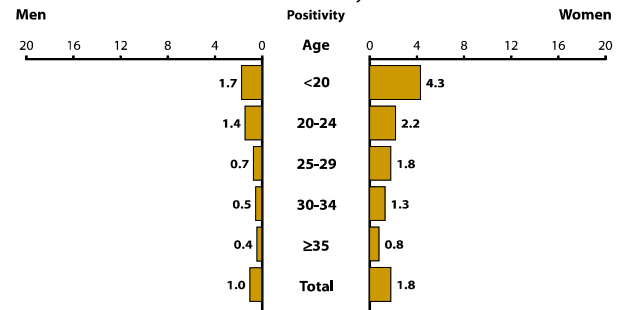
Gonorrhea—Percentage of Reported Cases by Sex and Selected Reporting Sources, United States, 2011



*HMO=health maintenance organization; HD=health department

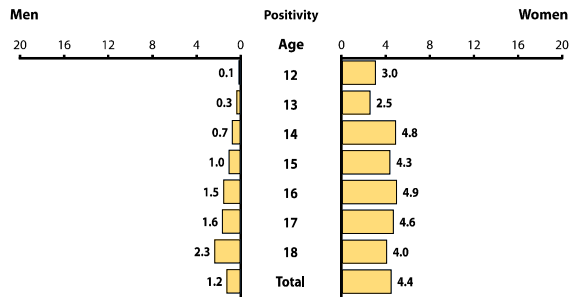
NOTE: These categories represent 66.5% of cases with a known reporting source. Of all cases, 11.7% has a missing or unknown reporting source.

Gonorrhea—Positivity by Age and Sex, Adult Corrections Facilities, 2011



NOTE: Includes gonorrhea positivity data from facilities reporting more than 100 results.

Gonorrhea—Positivity by Age and Sex, Juvenile Corrections Facilities, 2011



NOTE: Includes gonorrhea positivity data from facilities reporting more than 100 results.



Endocervical Gonococcal Infection



- Symptoms within 10 days of infection: vaginal discharge, dyspareunia, abnormal menstrual bleeding but asymptomatic infection is common
- Examination: cervical discharge, erythema and edema, mucosal friability, inflammation of Bartholin's glands
- Urethral (90%), rectal (40%) and pharyngeal (10-20%) infections accompany cervical infection



GC Urethritis in the Male



- 82% symptomatic within 2–5 days
- Complications are rare
- Colonization of the rectum 5%, Pharynx 3-7 %
- New data suggest a VERY HIGH prevalence of asymptomatic GC infection in some countries and US communities

Recommendations for Testing GC



- U.S. Preventive Service Task Force
 - Screen all sexually active women at risk (eg, <25, prior GC, other STI, new/multiple partners, inconsistent condom use, CSW, drug use)
 - No screening – low prevalence populations
- NAAT approved for vaginal swabs (TMA), cervix, urethral, urine, rectal or pharyngeal sites to be approved as NAATS preforms well

Gonorrheal Infections



- Uncomplicated Infections
 - Ceftriaxone 250 mg IM
 - Cefixime 400 mg po
 - Cefpodoxime 400 mg po
 - Azithromycin 2 gms po
- No Longer USED
 - Spectinomycin
 - Quinolones
- Pharyngeal infections
Requires Ceftriaxone!!

- For patients with uncomplicated genital, rectal, and pharyngeal gonorrhea, CDC now recommends combination therapy with ceftriaxone 250 mg as a single intramuscular dose, plus either azithromycin 1 g orally in a single dose *or* doxycycline 100 mg orally twice daily for 7 days



- There are times, however, when it may be necessary to use an alternative antibiotic regimen that does not include ceftriaxone. In instances where ceftriaxone is not available, CDC recommends cefixime 400 mg orally, plus either azithromycin 1 g orally *or* doxycycline 100 mg orally twice daily for 7 days. For patients with a severe allergy to cephalosporins, CDC recommends a single 2-g dose of azithromycin orally.



Cephalosporin GC RX Failures



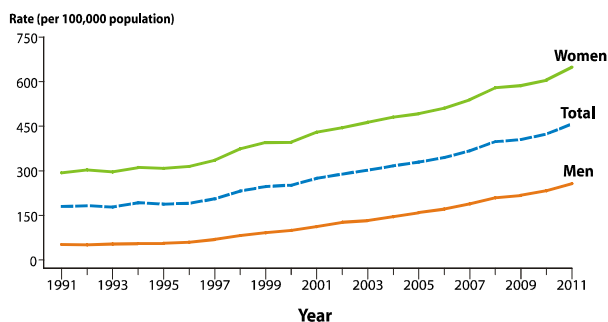
- Oropharyngeal ceftriaxone failure mostly in Asia
- Treatment failure or in vitro resistance
 - Infectious disease consultation
 - Culture and susceptibility
 - Rx at least 250 mg of ceftriaxone IM
 - Ensure partner tx
 - Reports to CDC via state or local public health authorities

Chlamydia Trachomatis

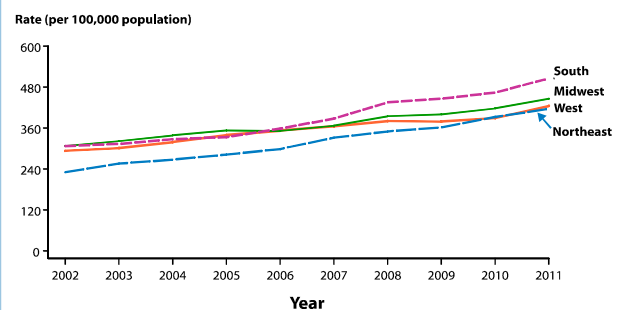


- Worldwide 500 million people are affected by ocular trachoma, where 7-9 million are blind as a result
- This is the most common preventable blindness world wide.
- Responsible for PID, Infertility, Genital & Infant Pneumonia

Chlamydia—Rates by Sex, United States, 1991–2011



Chlamydia—Rates by Region, United States, 2002–2011



Chlamydial Infection



- Can cause mucopurulent cervicitis, PID, ectopic pregnancy, infertility in women
- Treatment
 - Azithromycin 1 gm po single dose OR
 - Doxycycline 100 mg po BID
- Follow-up
 - Only if symptoms recur or persist
- Partners
 - Sexual contacts within past 60 days should be evaluated and treated
 - Abstinence for 7 days after regimen and until all partners are treated

Retesting after GC and CT RX

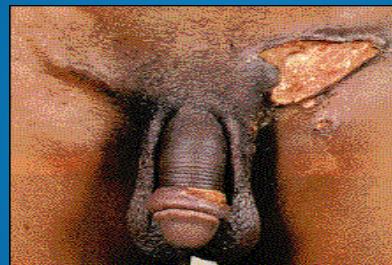


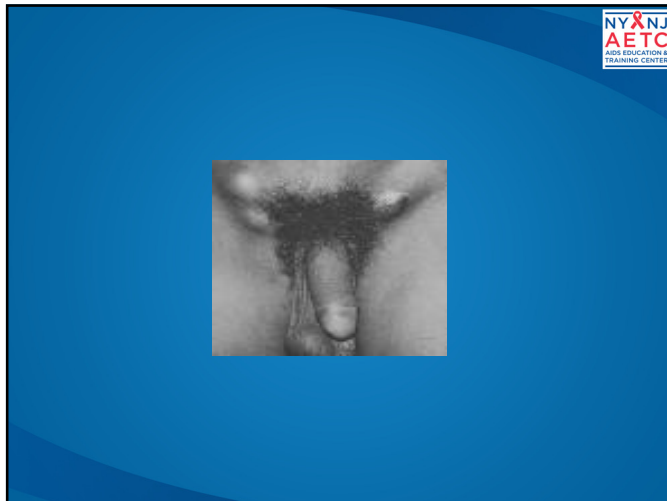
- Reinfection rates
 - CT women 7.25%; men 13%
 - GC women 12-24%; men 9%
- Retesting recommendations
 - Women with GC or CT
 - Retest 3 months after treatment
 - Retest all women next present for care within 12 mos
 - Whether patient believes partner infected or not
 - Less evidence on men (suggest retest in 3 mos)

Expedited Partner Therapy for GC/CT



- Sex partners may not seek evaluation/tx antibiotic delivery may be an option
- Male partners inform female partners about still seeking care for assessment of possible PID
- Partners with GC should receive CT co-RX
- Not routinely recommended for MSM due to lack of data





Lymphogranuloma Venereum

- LGV strains for Chlamydia
- Novel presentation in gay men(HIV+)
 - Rectal inflammation
 - Anemia
 - Fever and weight loss
- Diagnosis
 - Genital lymph node aspiration culture, DFA, nucleic acid detection (CLA validation)
 - Serology not validated for proctitis presentation
- Treatment
 - Doxycycline 100 mg PO bid x 21 days
 - Azithromycin 1 g po q wk x 3 weeks
 - Erythromycin 500mg po QID x 21 days alternative

Pelvic Inflammatory Disease

- Diagnostic Criteria
 - Definitive Criteria
 - Histopathologic endometritis on biopsy
 - Evidence of thick fluid-filled tubes (on U/S or other imaging)
 - Laparoscopic abnormalities c/w PID
 - Minimum and Supportive Criteria
 - Tenderness: lower abdomen, adnexa, cervical
 - Temp > 38.3, cervical /vaginal discharge, lab
 - Documentation GC or CT, elevated ESR or CRP

Complications Due to C. Trachomatis Infection

- 40 % of Untreated C. Trachomatis
- PID
 - 17 % Chronic Pelvic Pain
 - 9% Ectopic Pregnancy
 - 17% Infertility

Treatment of PID



Oral Regimen for PID



- Ceftriaxone 250 mg IM or
- Cefoxitin 2 gms IM plus probenecid 1 gm po or
- 3 rd Generation Cephalosporin IM
 - Plus Doxycycline 100 mg BID for 14 days
 - Plus Metronidazole 500 mg BID for 14 days (optional)

Epididymitis



- Age predicts etiology
- <35 years-chlamydia/gonorrhea predominates
- >40 years – aerobic gram negative predominates
- Differential diagnosis
 - Cystitis/torsion/tumor

Epididymitis



- Ceftriaxone 250 mg IM single dose plus
- Doxycycline 100 mg po BID for 10 days
- Ceftriaxone + quinolones will cover both sexually transmitted and enteric organisms

Disseminated Gonococcal Infection



- .5-3% of patients with urethritis/cervicitis
- Women > men effects of menses
- Dermatitis and tenosynovitis vs. arthritis
- Proven (<50%) probable (80%) and suspected DGI
- Complement deficiency
- Rare complications: endocarditis, meningitis, osteomyelitis

Initial Therapy of DGI



- Ceftriaxone 1 gm IV or IM q 24 hours
or
- Cefotaxime 1 gm q8 hours
or
- Ceftizoxime 1 gm IV q 8 hours
or
- Spectinomycin 2 gms IM q 12 hours

Life Cycle



- Biphasic meaning it enters the cell by phagocytosis, pinocytosis, or receptor mediated endocytosis.
- The latter is the pathway by which eukaryotic cells internalize & transport macromolecules to specific cells within the cell.

Which cells are affected?



- Squamous columnar epithelial cells
 - Endocervix
 - Upper Genital tract in females
 - Conjunctiva
 - Urethra
 - Rectum in males & females
 - Epididymis & prostate in males

Diagnosis



- Giemsa stain - used to detect Intracytoplasmic Inclusions 48-72 hours.
- Antigen detection by enzyme - linked immunosorbent assay
- Amplification Test - via DNA probe
- Serologic Evaluation - more specific for LGV

Treatments



- Topical antibiotics marginal effects
- Systemic antibiotics
 - Doxycycline 100mg BID (*not in children*)
 - Erythromycin 250 mg QID (*compliance*)
 - Azithromycin 1 gm orally

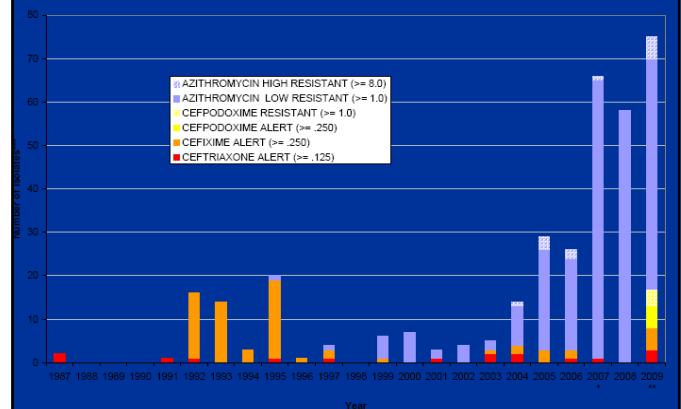
Rectal Gonorrhea



- Occurs in 30 – 50% of women with GC and 40% of MSM
- Majority are asymptomatic
- Symptoms include:
 - Constipation
 - Pain
 - Tenesmus
 - Anorectal bleeding
 - Discharge
- Gram stain: positive in 60 – 80%
- Differential dx:
 - Chlamydia
 - HSV
 - Syphilis
 - Shigella
 - LGV
 - Campylobacter
 - E. Histolytica

GISP Alert values and Resistant Isolates - CA GISP DATA1987-2009

California STD/HIV PTC and STD control branch



Chlamydia Trachomatis



- Most frequently reported infectious disease in the US
- Est. 3 million cases annually
- 1 out of 10 adolescent girls tested are infected
- Teenage girls have the highest rate of infection
- 15–19 year old girls represent 46% of infections
- 20–24 year olds represent 33% of infections

Genital Infection in Females



- Asymptomatic with Chlamydia
- *Risk Factors* include:
 - multiple sex partners
 - young age
 - unmarried status
 - low socioeconomic
 - oral contraceptive use

Symptoms



- Vaginal Discharge
- Bleeding
- Mild Dysuria
- Pain
- Dysuria

What Complications Can Occur?



- Tubal Infertility
- Ectopic Pregnancy
- Endometritis & Salpingitis
- PID
- Chronic Pelvic Pain Syndrome
- Perinatal Infections
- Ocular Infections

Dx of Chlamydial Infections



- Serology
- Culture
- Rapid Assays
 - FA
 - ELISA
 - DNA probe
 - NAAT
- Cytology

Chlamydia Dx – New Assays



- BD Probe TEC™ ET
- Hybrid Capture II CT/GC
- Aptima Combo 2 Assay (Gen-Probe)

Rx of Chlamydia in Adults With Uncomplicated Urethral, Cervical or Rectal Infections



- AZITHROMYCIN 1gram once
Or
- DOXYCYCLINE 100 mg BID x 7days
Or
- TETRACYCLINE 500 mg QID x 7days
Or
- OFLOXACIN 300 mg BID x 7days
Or
- LEVOFLOXACIN 500 mg QD x 7days
Or
- ERYTHROMYCIN BASE 500 mg QID x 7days

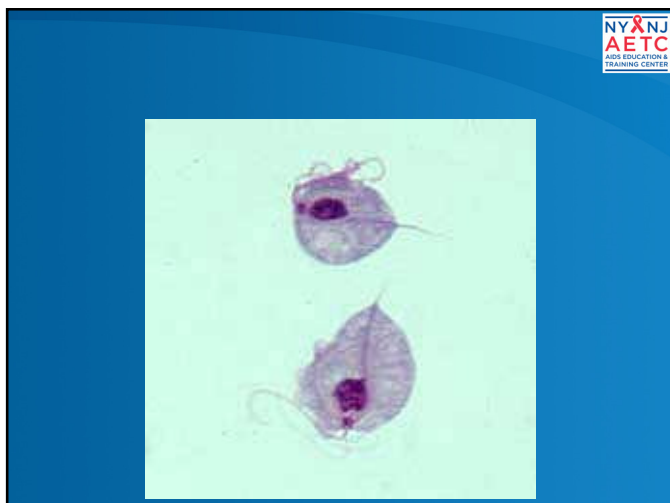
Screening Recommendations for C. Trachomatis: Sexually Active Women



- Screening asymptomatic women is COST-EFFECTIVE
- <20yrs old: screen at any pelvic examinations and *AT LEAST ONCE/YR*
- 20-24yrs old: screen *AT LEAST ONCE/YR*
- >25yrs old: screen *AT LEAST ONCE/YR* IF AT RISK

RISK FACTORS:

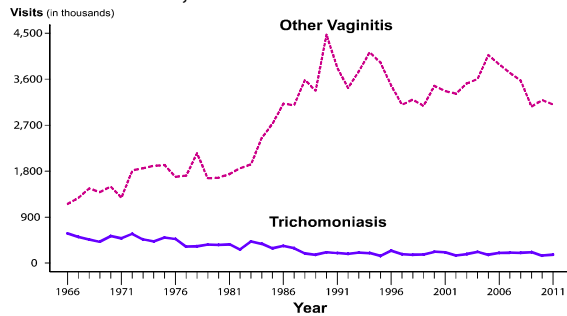
- Inconsistent use of barrier method
- New or more than 1 sexual contact in the last 3 months
- New contact since last test
- Infected with another STD



Trichomonas

- 5 million Americans affected yearly
- Sexually transmitted
- 25% of females who carry Trichomonas are asymptomatic

Trichomoniasis and Other Vaginal Infections— Women—Initial Visits to Physicians' Offices, United States, 1966–2011



Trichomonas Vaginalis

- A protozoan parasite that infects the urogenital tract of men and women
- The most common non-viral STD in the world
- > 180 million cases in the world
- 5 million cases in the US

Trichomonas Vaginalis Infection

- Clinical presentation
 - Profuse yellow green frothy discharge
 - Vaginal wall inflammation
 - Strawberry cervix
- Diagnosis
 - Vaginal pH >4.5
 - Wet mount (40 – 60% sensitive) motile trichomonas
 - Newer antigen test (sensitivity > 83% specificity (97%))
 - PCR (not FDA approved)
 - Culture (90-97% sensitive)

Trichomoniasis

- Treatment
 - Metronidazole 2 g po
 - Single dose, or
 - Metronidazole 500mg po BID for 7 days
- Pregnancy
 - Metronidazole 2 g po single dose
- Treatment Failures
 - Retreat with 7 days regimen
 - If repeat failure metronidazole 2 g dose daily for 3-5 days
- Sex Partners Treated
 - Avoid intercourse until therapy finished and both index patient and partner are asymptomatic

Prevention



- Protective barriers
- Screening
- Partner notification
- Reporting and Confidentiality
- HIV/STD Prevention Counseling

Female condom



- Reality – lubricated polyurethane sheath
- Effective mechanical barrier to viruses including HIV
- Used consistently and correctly condom may reduce the risk of STD's

Male Condom



- Use new condom with each act of intercourse (latex)
- Carefully handle condom to avoid damaging
- Apply condom while erect
- Only use water base lubricants
- Hold condom firmly against the base of penis to prevent slippage

Vaginal & Rectal Spermicides



- Nonoxynol-9 not effective in preventing cervical, gonorrhea, chlamydia or HIV infection
- Rectal use may increase the risk of vaginal transmission of HIV virus
- Women who are not at risk for pregnancy may incorrectly perceive themselves to be at no risk for STD's

Reporting and Confidentiality



- Disease control
- Morbidity trends
- Local health departments
- Identifying infected partners

Reportable STD's



- HIV
- GONORRHEA
- SYPHILIS
- CHLAMYDIA