

Answers to some burning questions...

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Some material in this presentation contains **sexually explicit language** and/or **photographs** that may not be appropriate for all audiences.



Basic Concepts

- Transmission dynamics of STDs
- STDs occur at the intersection of the other epidemics -esp drugs and poverty
- Condoms work when used consistently
- Prevention education and behavior change is challenging (*to both the provider and the patient*)
- When there's one, look for others



HIV and STDs

- Synergy between STDs and HIV
- ALL clients seeking STD screening should be offered HIV testing at the same time
- All patients between 13 and 64 recommended to have HIV test at least once. (CDC, Oct 2006)



Epidemiological Synergy

- Co-infection with HIV prolongs the infectiousness on STDs
- STDs facilitate HIV transmission by increasing genital HIV-RNA/DNA levels
- STDs facilitate HIV acquisition by disrupting epithelial barriers and attracting inflammatory cells



Risk of an STD

Is dependent on:

- Personal behaviors
- Background community prevalence
- Transmission dynamics of a given STD



Estimates of Risk and Duration

Disease	Risk of Acquisition	Duration of Infectivity
Gonorrhea	0.6	10-50 days
Chlamydia	0.3	6 months +
HSV-2	0.6	Lifelong
Chancroid	0.8	20 days
HIV-1	0.05	Lifelong



The Five Ps

- Partners
- Practices
- Past history of STDs
- Protection from STDs
- Prevention of pregnancy



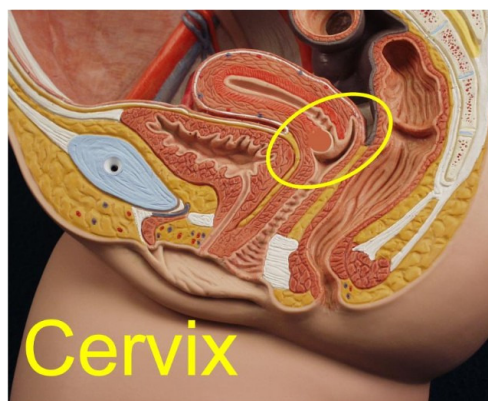
Urethritis and Mucopurulent Cervicitis

Cervicitis symptoms include a red and inflamed cervix with an unusual discharge

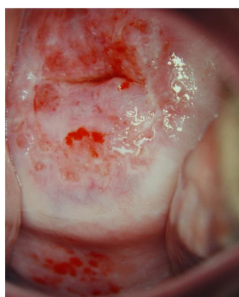
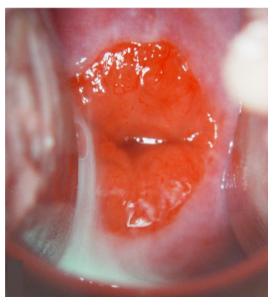
Normal cervix



Cervicitis



Cervix



Causative Organisms for Urethritis and Cervicitis

- N. gonorrhea
- Chlamydia trachomatis
- Trichomonas
- Mycoplasma genitalium
- Herpes simplex virus
- Adenovirus
- Gram negative anaerobes



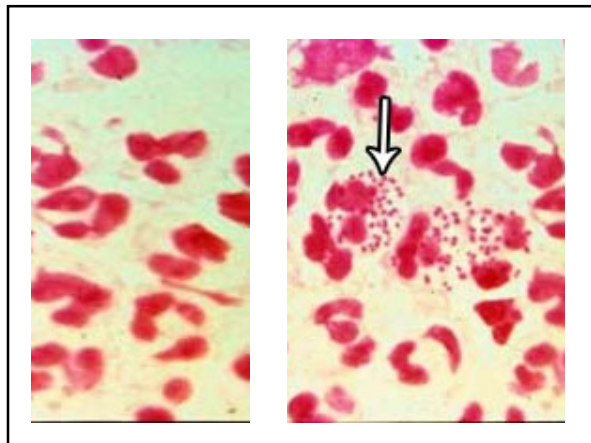
Diagnostic Tests

- Gram stain
- Microscopy of the vaginal/ cervical fluid
- Nucleic acid amplification tests (NAAT)
- Culture
- DNA probes



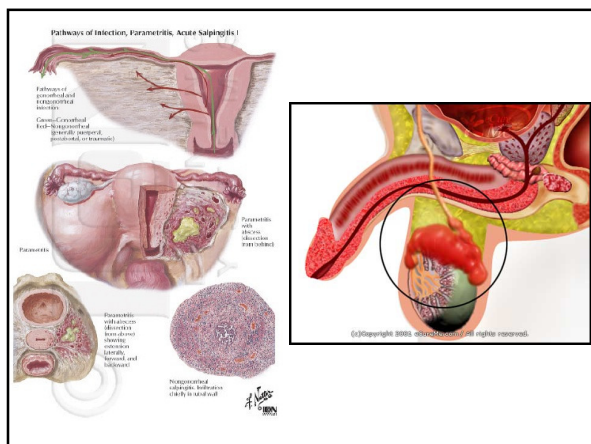
Urine-Based Tests

- Nucleic Acid Amplification Tests (NAAT) for gonorrhea and Chlamydia
- Highly accurate
- Non-invasive collection
 - High patient acceptability
 - Appropriate for screening asymptomatic persons
- Allows screening in non-traditional settings
 - Community settings
 - Correctional settings
 - Schools



Complications of Untreated Genital Infections

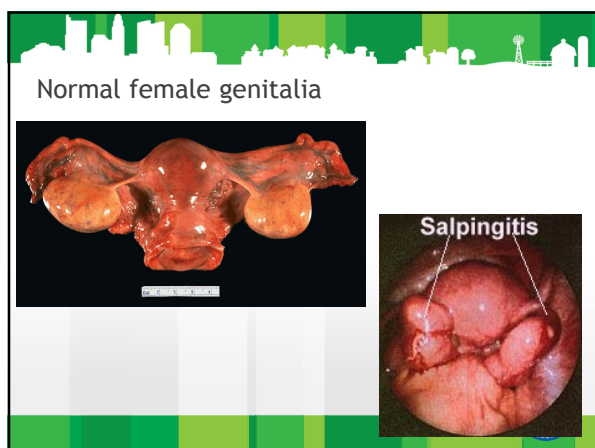
- Result of spread of pathogen, inflammatory response and subsequent healing (scarring)
- Pelvic inflammatory disease / epididymitis
 - Infertility
 - Prostatitis
 - Chronic pelvic pain
 - Urethral stricture
 - Ectopic pregnancy
- Disseminated gonorrhea / reactive arthritis post chlamydia (Reiter's syndrome)
 - Joint involvement, ocular, and skin



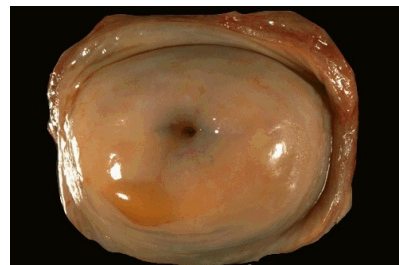
Pelvic Inflammatory Disease (PID)

- Organisms
 - Gonorrhea, Chlamydia, anaerobes
- Treatment
 - Ceftriaxone 250 mg IM + Doxycycline 100 mg po BID x 14 +/- metronidazole





Does This Cervix Have Chlamydia?



Why screen and treat an asymptomatic infection?

- Subtle symptoms
- Long duration of infectivity
- Prevent Complications
 - PID
 - Chronic Pelvic Pain
 - Infertility
 - Ectopic Pregnancy
 - Timeliness to treatment goal < 30 days



Inflammation is common without external findings

Endometritis

Inflammation and infection of the endometrium (the lining of the uterus)

25% of women with gonorrhea or chlamydia have endometritis histologically

How does the diagnosis of chlamydia affect future fertility?

- Evaluated time to pregnancy and rates of ectopic pregnancy in relation to CT diagnosis among ALL women
- 31% CT + and 29.5% CT- became pregnant
- Time to birth comparable
- **No effect on fertility or ectopic pregnancy** noted retrospectively among clients diagnosed with CT



Andersen et al. Sex Trans Dis June 2005. 32 (6)377-381

Recurrent chlamydia infections in young women

- Prospectively recruited women diagnosed with CT to return for f/u eval at 1 and 4 months (all treated)
- Among women negative at first f/u --7.1% positivity at 4 mo f/u
- **Re-screening in 3-4 months recommended for all patients with infection.**



Whittington et al. Sex Trans Dis Feb 2001. 28(2)117-123

Treatment of Chlamydia Infections

Recommended

Azithromycin 1 g orally in a single dose

OR

Doxycycline 100 mg twice daily for 7 days



Gonorrhea Screening

- Screening in areas of with at least 1% prevalence
 - high incidence tend to be concentrated in urban areas
- NAATs screening
- Cultures
- Probes

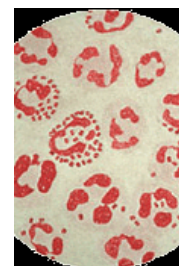


Gonorrhea

- Can also live in oral pharynx
 - Usually without symptoms
 - Easily passed through oral sex to cause urethritis
- Can live in rectal environment
 - may cause proctitis or no symptoms



Pharyngeal Gonorrhea



Pharyngeal Gonorrhea

- Symptoms:
 - >90% of infections are asymptomatic
 - Sore throat, when symptoms present
 - Lymphadenopathy may be present
 - Most infections will self-resolve
- Diagnosis:
 - GC culture or NAATs



Screening for Rectal and Pharyngeal CT and GC in MSM

- CDC recommends screening of at-risk men who have sex with men (MSM) at least annually for urethral and rectal GC and CT, and for pharyngeal GC.

MMWR, July 9, 2009



STDs in MSM

- Screened men attending STD clinic and gay men's health clinic with rectal, pharyngeal and urethral swabs
- 53% of chlamydia infections not in urethra
- 64% of gonococcal infections were not in urethra



Kent et al. CID 2005;41:67-74



Asymptomatic Infection in Men

Rectal chlamydial and gonococcal infections



Urethral chlamydial and gonococcal infections



■ Asymptomatic ■ Symptomatic

- 86% asymptomatic rectal infections
- 42% asymptomatic urethral infections

Kent et al. CID 2005;41:67-74



Screening for Rectal and Pharyngeal CT and GC

- The rectum and pharynx are the most common sites of GC and CT infection among MSM.
- Infections are usually asymptomatic and typically occur without concomitant urethral infection
- Only a minority of MSM at risk for STDs are screened for GC and CT at the recommended frequency.
 - treatment same as for urethral infections



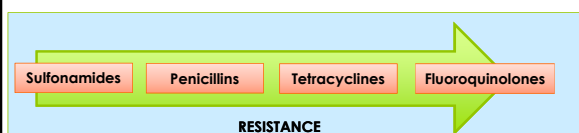
NAAT Testing

- Nucleic acid amplification testing (NAAT) is generally more sensitive than culture for the detection of both GC and CT.
- NAAT tests have not been cleared by the FDA for the diagnosis of extra-genital CT or GC.
- Under U.S. law, labs may offer NAAT testing for diagnosis of extra-genital CT or GC after internal validation of the method by verification study.



The Challenges of Treating Gonorrhea

- Antimicrobial resistance
 - Undermines treatment success
 - Heightens risk of complications
 - Facilitates transmission
- NG has demonstrated ability to progressively develop antimicrobial resistance



Emerging Threat of Cephalosporin-Resistant *N. gonorrhoeae*

- Cefixime treatment failures in Asia and Europe
- Identification of cefixime and ceftriaxone-resistant isolates in Japan (2009), France (2011), and Spain (2011)
- Increasing MICs in Asia, Australia, Europe and US



Uncomplicated Gonococcal Infections of Cervix, Urethra & Rectum

Recommended

Dual Therapy

Ceftriaxone 250 mg as a single intramuscular dose

PLUS

Azithromycin 1 g orally
or Doxycycline 100 mg twice daily for 7 days



Uncomplicated Gonococcal Infections of Cervix, Urethra & Rectum

Alternative #1 (if ceftriaxone is not available)

Dual Therapy

Cefixime 400 mg orally once

PLUS

Azithromycin 1 g orally
or Doxycycline 100 mg twice daily for 7 days

PLUS

Test of Cure at infected site in 1 week,
preferably with culture



Uncomplicated Gonococcal Infections of Cervix, Urethra & Rectum

Alternative #2 (if cephalosporin-allergic)

Azithromycin 2 g as a single dose

PLUS

Test of Cure at infected site in 1 week,
preferably with culture



Clinical Management of Treatment Failures

- Obtain specimens for culture/AST from all exposed anatomic sites (pharyngeal, rectal, urogenital)
- Re-treat
 - If initially treated with cefixime, re-treat with **ceftriaxone 250 mg IM & azithromycin 2 g orally**
 - If initially treated with ceftriaxone, consult with the Ohio Department of Health
- Obtain test of cure (preferably with culture) after re-treatment
- Ensure all partners from past 60 days are treated
- Maintain abstinence for 7 days while completing treatment and until all partners are treated



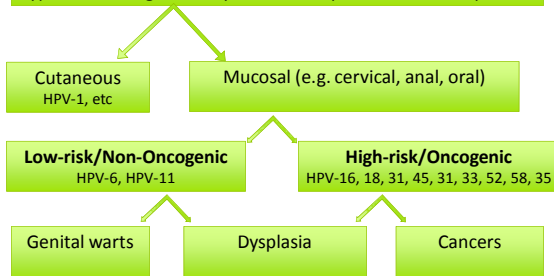
HPV

- 6.2 million infected annually
- 100 serotypes
- 40 + that affect/infect anogenital area
- Divided into high risk (16,18) and low risk (6,11) serotypes
- Most infections are asymptomatic or sub-clinical and regress/clear over time



Human Papillomavirus types

Over 140 genotypes infect human epithelium
Types are distinguished by the DNA sequence for the L1 protein



adapted from J. Kahn

Mechanisms of HPV Transmission & Acquisition

- Sexual contact
 - Through sexual intercourse
 - Genital-genital, manual-genital, oral-genital
 - Genital HPV infection in virgins is rare, but may result from nonpenetrative sexual contact
 - Condom use may help reduce the risk, but it is not fully protective
- Nonsexual routes
 - Mother to newborn (vertical transmission; rare)
 - Fomites (eg. Undergarments, surgical gloves, biopsy forceps)
 - Hypothesized but not well documented



Risk Factors for HPV Infection

- | <u>Women</u> | <u>Men</u> |
|---|---|
| • Young age (peak age group 20-24 years of age) | • Young age (peak age group 25-29 years of age) |
| • Lifetime number of sex partners | • Lifetime number of sex partners |
| • Early age of first sexual intercourse | • Being uncircumcised |
| • Male partner sexual behavior | |
| • Smoking | |
| • Oral contraceptive use | |
| • Uncircumcised male partners | |



HPV and Cancer

Cancer	% Associated With Certain HPV Types
Cervical *	≥95%
Vaginal *	50%
Vulvar *	>50%
Penile	50%
Anal	>70%
Oropharyngeal	20%
Nonmelanoma skin/cutaneous squamous cell	90% *

* Includes cancer and intraepithelial neoplasia
* Immunocompromised patients



Anal and Cervical Cancer Incidence

- Cervical cancer prior to cervical cytology 40-50 / 100,000
- Cervical cancer currently 8/100,000
- Anal cancer among HIV- MSM 13-35/100,000
- Anal cancer twice as high among HIV+ MSM 70-?? / 100,000

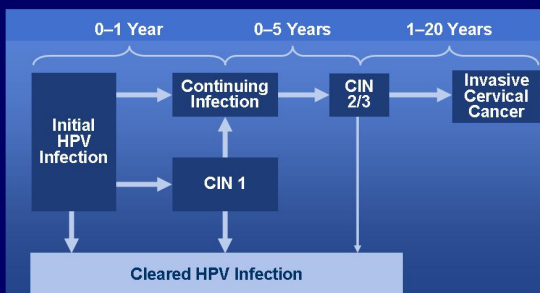


Cervical Cancer Screening

- Current ACOG guidelines support annual screening beginning at age 21, may decrease frequency to every 3 years if repeatedly normal
- HPV testing may be used in conjunction with cervical cytology in women 30 years and older to help guide frequency of screening
- Cervical cancer screening (the Pap smear) has reduced cervical cancer deaths by 74% between 1955 and 1992



Natural History of HPV Infection and Potential Progression to Cervical Cancer¹



1. Pinto AP, Crum CP. Clin Obstet Gynecol. 2000;43:352-362.

HPV Vaccine

- HPV vaccination prevents
 - HPV infection
 - Cervical cancer and its precursors
 - Genital warts
- May also prevent other HPV associated cancers including anal and oropharyngeal



HPV Vaccine

- Quadrivalent
 - Merck 6,11,16,18 *Gardasil*
 - FDA approved for men and women 9-26
- Bivalent
 - GSK 16,18 *Cervarix*
 - FDA approval for women 10-25
- Both are 3 series and highly immunogenic
- Vaccination should occur prior to HVP infection
 - 6.2% of adolescents have sexual intercourse before 13 years old



Even Though You're Vaccinated

- Cervical cancer screening should continue regardless of vaccination status
 - Patients may already be infected with vaccine-HPV types before vaccination
 - Nonvaccine types can still cause dysplasia, precancersous lesions, and cancer
- Condoms are still needed to prevent other STDs

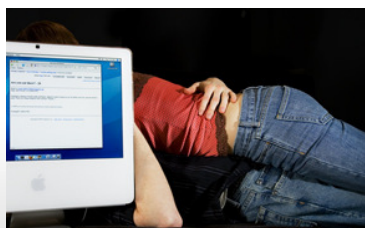


Public Health Response to the STD Epidemic

Are
YOU
Part Of
The **NEW**
ERA?



Sex Seeking on the Internet



Something for Everyone



Times...they have changed

- STD prevention must utilize the technologies and brands adopted by the general public.