Sexually Transmitted Diseases

(STDs)

Toward effective prevention, diagnosis and treatment

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Common STDs

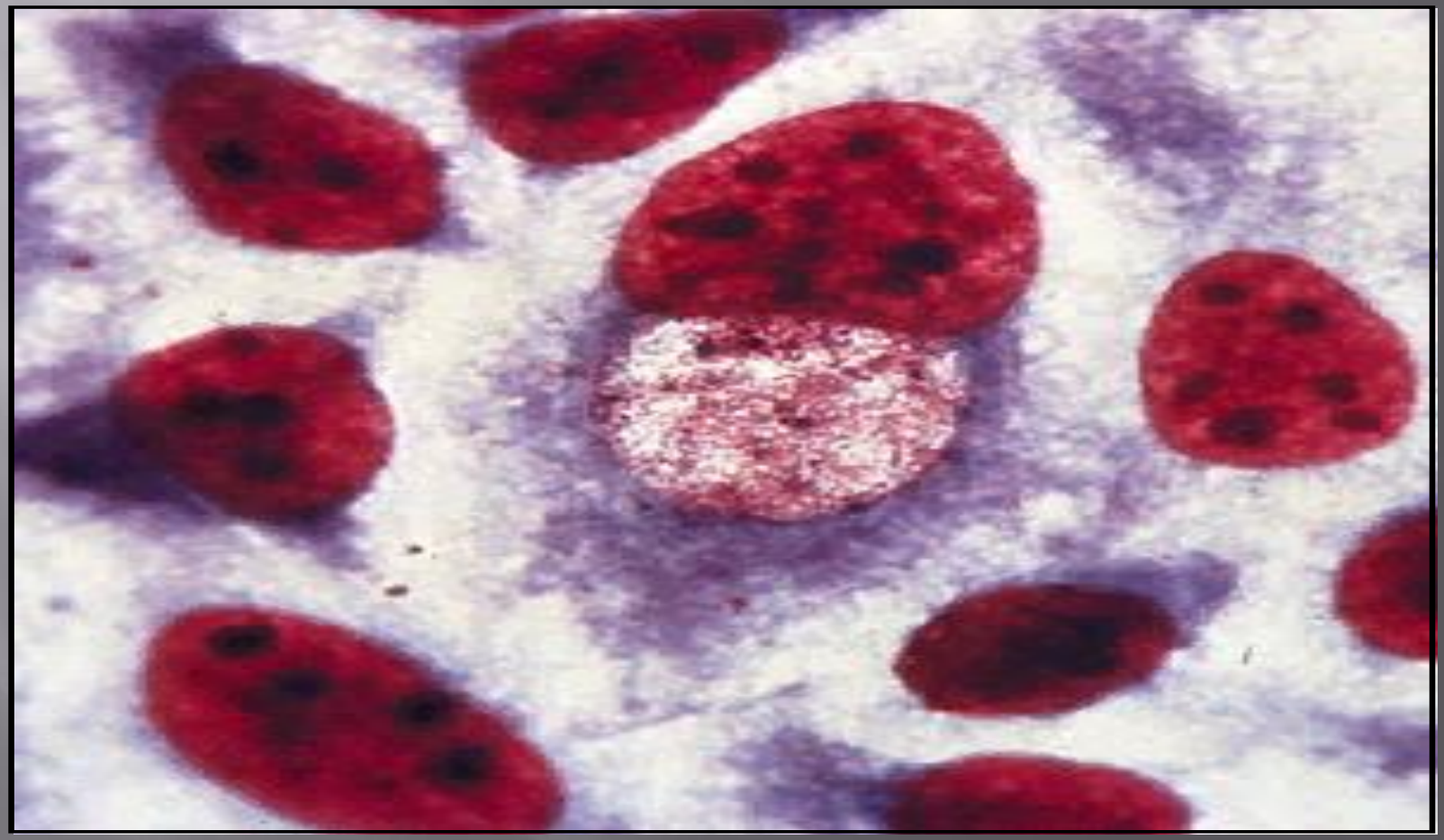
- Bacterial diseases
  - Chlamydia (CT)
  - Gonorrhoea (GC)
  - Syphilis
  - Trichomoniasis (Trich)
- Viral diseases
  - Human Papillomavirus (HPV)
  - Genital herpes (HSV-2 or HSV-1)
  - Hepatitis B, HIV
  - Hair Lies

Common STDs
Estimated U.S. Annual Incidences

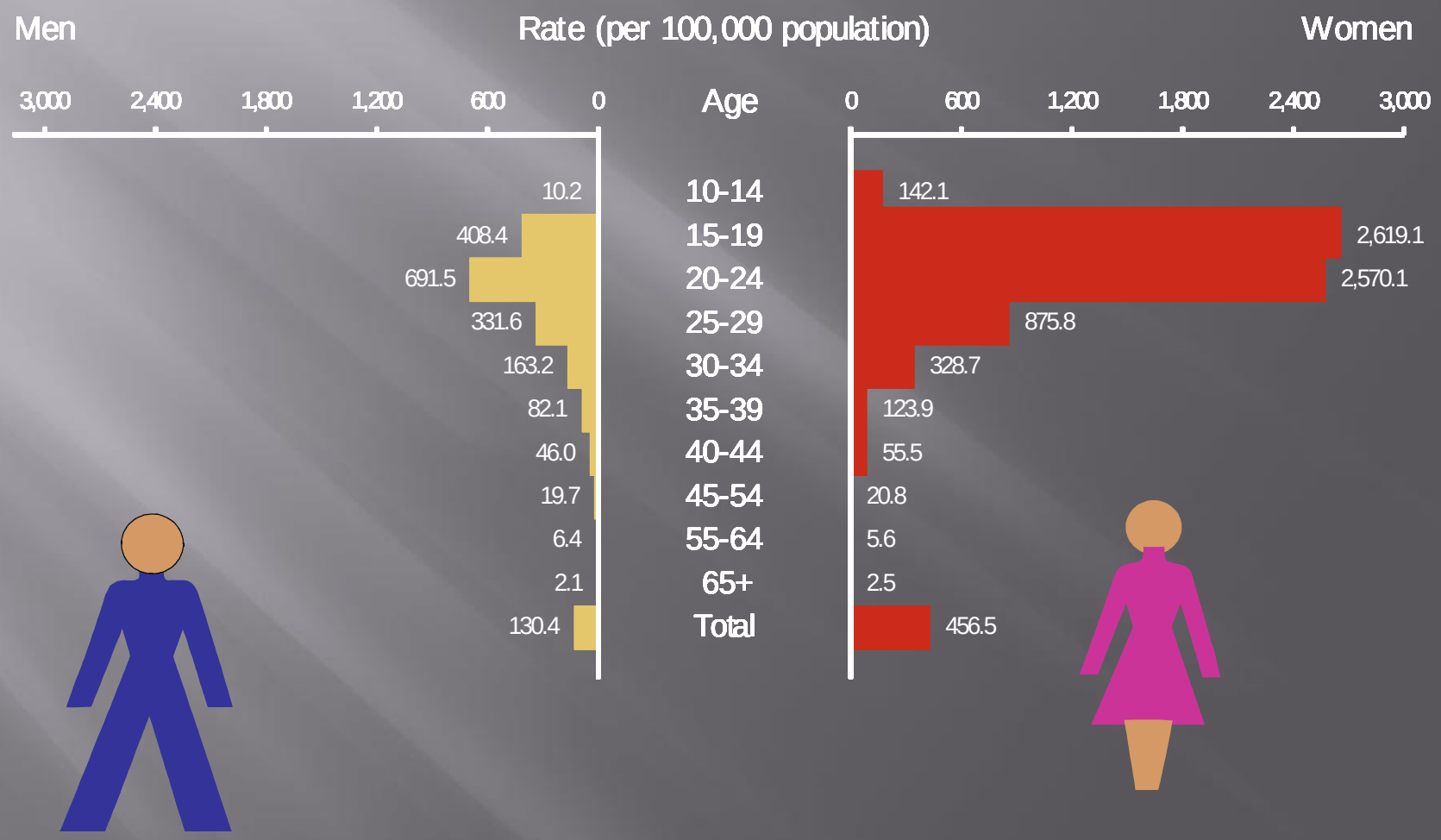
- Human Papillomavirus: 5.5 million
- Trichomoniasis: 5 million
- Chlamydia: 3 million
- Genital herpes: 1 million
- Gonorrhoea: 650,000
- Hepatitis B: 120,000
- Syphilis: 70,000

Chlamydia Infection

- Caused by bacteria Chlamydia trachomatis
- Incubation period: 7-21 days
  - Incidence is highest among sexually active adolescents and young adults
  - Transmission – sexual (vaginal, anal, oral or vertical)
- Most infections are asymptomatic
- Leading cause of preventable infertility in women
- Direct and indirect costs estimated at $1.7 billion annually



Chlamydia
Age- and sex-specific rates: U.S., 2002



Chlamydia Infections in Women, Men, and Neonates

- Genitals
  - Cervicitis
  - PID
  - Urethritis
- Eye (Conjunctivitis)
- Throat (Pharyngitis)
- Rectum (Proctitis)

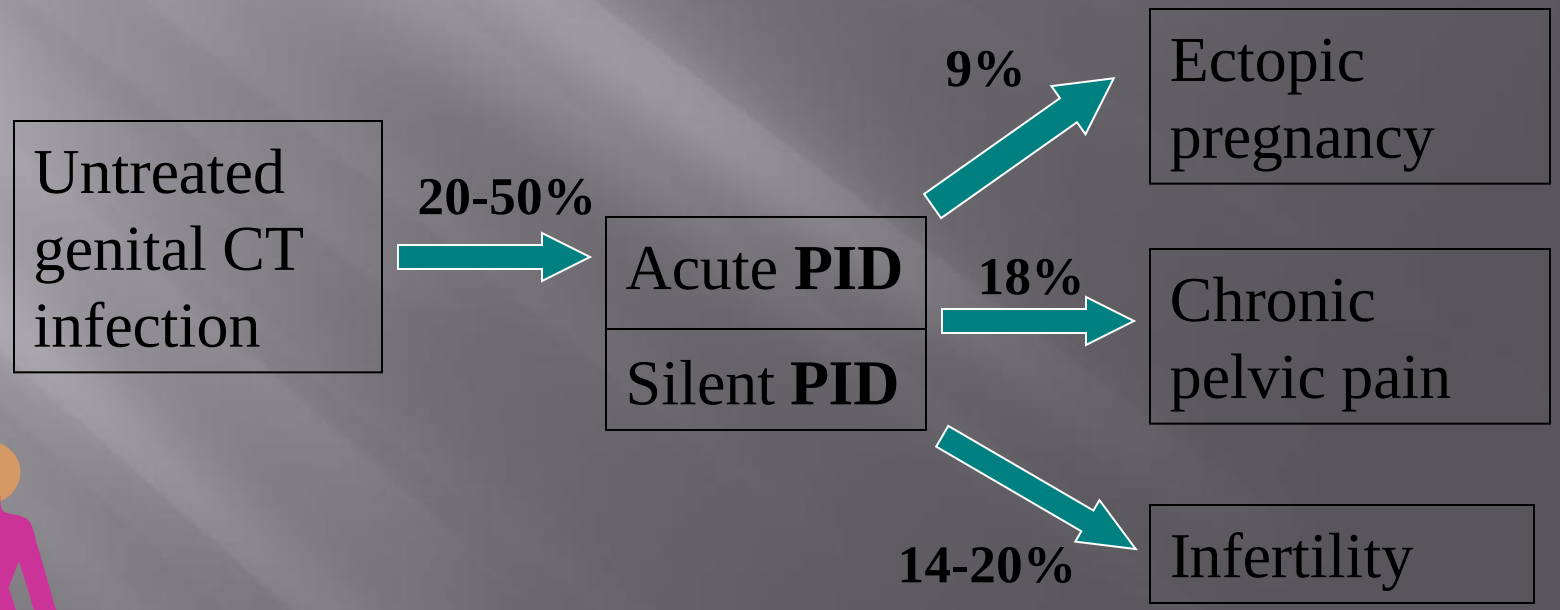
70-80% ASYMPTOMATIC

- **Genitals** (Urethritis) (Epididymitis)
- **Rectum**(Proctitis)
- **Throat** (Pharyngitis)
- **Eye**(Conjunctivitis)
- **Systemic** (Reiter's Syndrome)

>50% ASYMPTOMATIC

- Eye (conjunctivitis
- Lungs (pneumonia)

Genital Chlamydia in Women: Complications



Symptoms of Chlamydia

- In females
- Usually asymptomatic about 75%
- Abnormal vaginal discharge
- Pain during sex

- In males
- Usually asymptomatic about 50%
- Discharge from penis (may be runny or whitish
- Burning on urinating

Chlamydia Infection Clinical Manifestations

Cervical Ectopy

Ectopy SCJ

Minimal ectopy

Mosby *STD Atlas, 1997*

Pelvic Inflammatory Disease (PID)

- Estimated that up to 40% of women with untreated chlamydia infection will Develop PID

- Of those, 20% will become infertile
- 9% will have life-threatening ectopic pregnancy

Source: Health Awareness Connection, http://www.healthac.org/images.html

Treatment

- Easily cured with antibiotics

  - Azithromycin

    2 gm in a single dose

  - Doxycycline

    1 tab twice a day for 7 days

Chlamydia Screening Recommendations

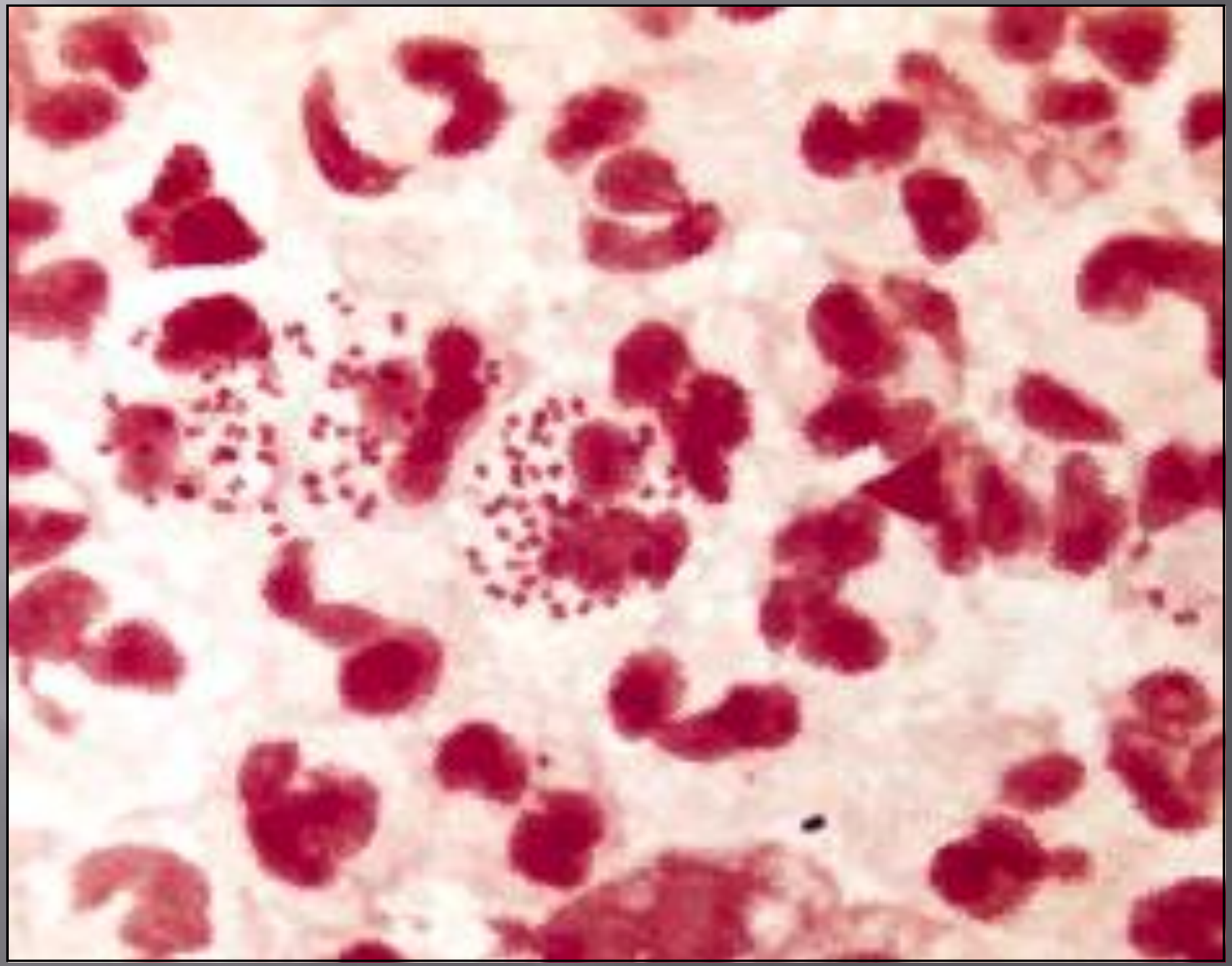
- All sexually active women under 26 yoa
  - Initial screen
  - Repeat annually
  - Consider repeat with new or multiple sex partners
  - Repeat 2-3 months after an infection
- All pregnant women under 26 yoa
- Men, and women 26 and older, consider with
  - New or multiple sex partners,
  - Inconsistent condom use

Chlamydia: KEY POINTS

- Most common bacterial (curable) STD
- Most cases in women and men give no symptoms
- Leading cause of PID and infertility in women
- All sexually active women 25 y.o.a. and younger should be tested at least annually

Gonorrhoea Infection

- Caused by *Neisseria gonorrhoeae*
- Incubation period: 1-14 days
  - Transmission – sexual (vaginal, anal, oral)
- Highly transmissible (male to female via semen: 50-70% episode of vaginal intercourse)
- Most common in young adults and adolescents
- Asymptomatic infections
  - 10% in males
  - 50% in females
- Resistance to medication is an spreading problem



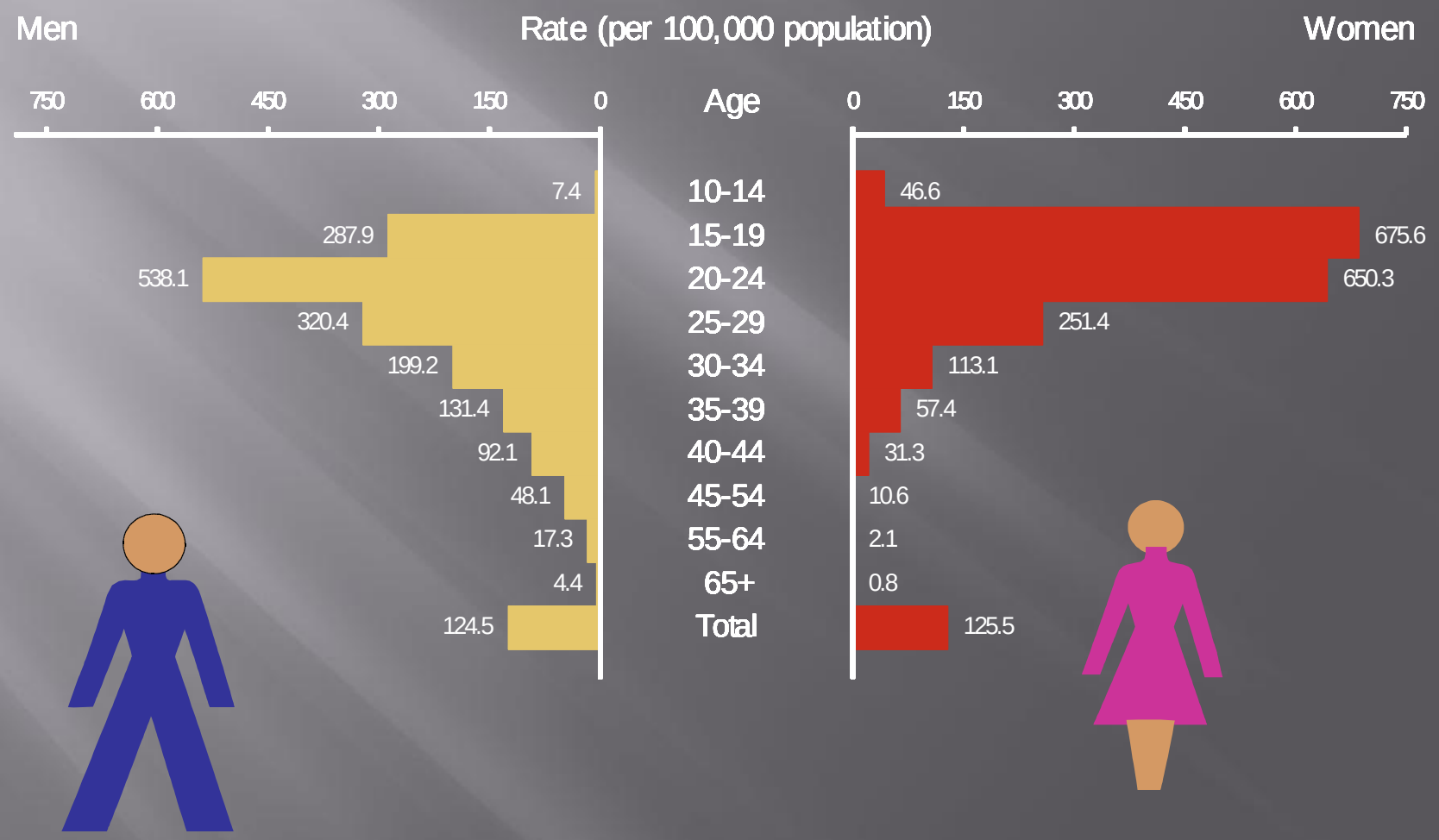
Presentation

- In females
- Usually asymptomatic
- Abnormal vaginal discharge/bleeding
- Pain during sex
- Painful urination

- In males
- Usually asymptomatic
- Discharge from penis (may be thick, milky white, yellowish or greenish)
- Burning on urinating

Gonorrhoea

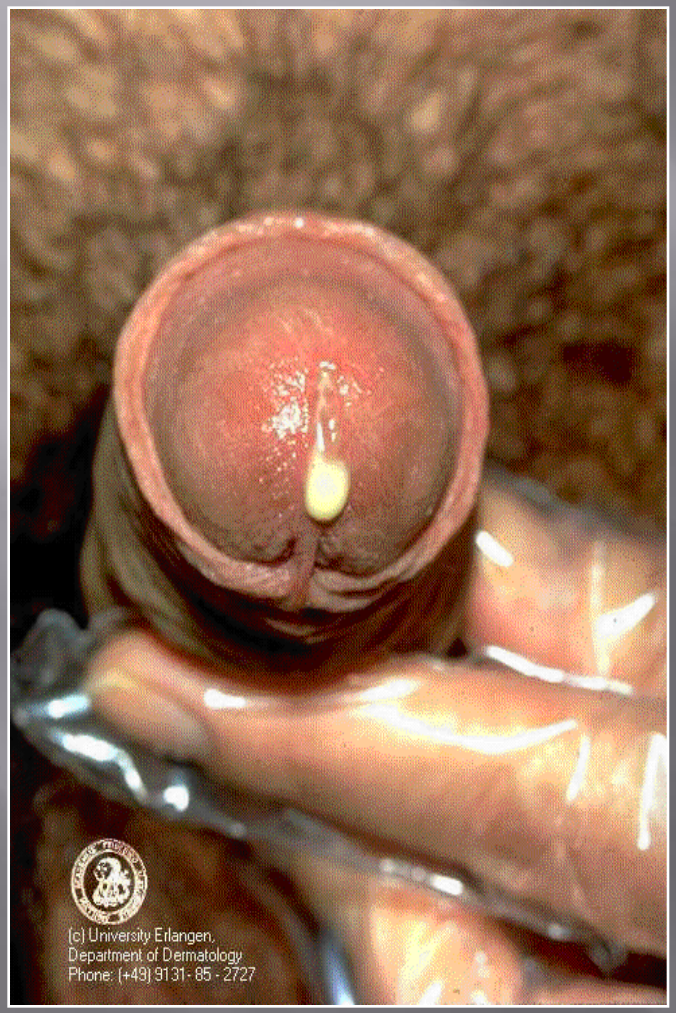
Age- and sex-specific rates: U.S., 2002

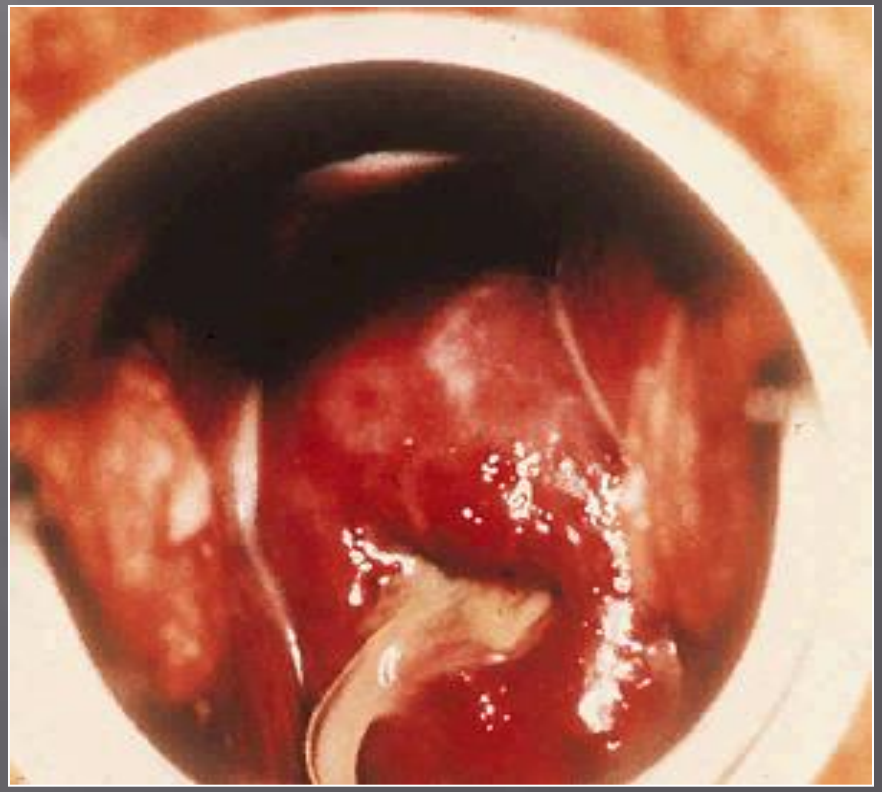


Gonorrhoea Infections in Men Women and Neonoates

- Men are usually symptomatic (urethra), women are commonly asymptomatic
- Men: urethral infection, epididymitis
  - Usually gives pain with urination and heavy, thick penile discharge; few may be asymptomatic carriers
- Women: cervical infection, PID
  - ~50% women asymptomatic, others have pain with urination, vaginal discharge or bleeding
- Other sites of infection: throat, rectum, eye
- Neonates: eye and skin infections

Gonorrhoea Symptoms: Discharge from Penis/Cervix





Gonorrhoea Symptoms in Men: Discharge from Penis

www.tippektrukkok.hu/images/gonorrhoea_2.jpg

GC Management

- Easily cured with antibiotics

  - Ceftriazone (1 injection in a single dose)

  - ? Ciprofloxacin

  Partners with contact during the 60 days preceding the diagnosis should be evaluated, tested and treated

- If no sex partners in previous 60 days, treat the most recent partner

Increasing Medication Resistance

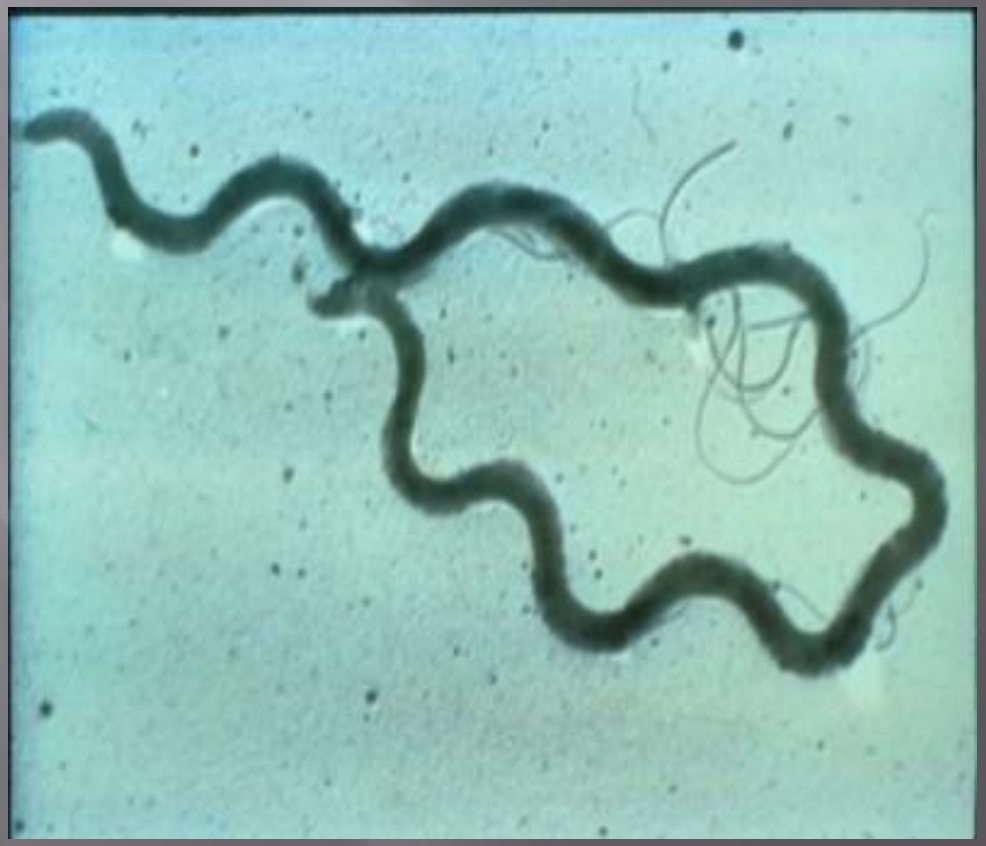
- Almost all GC isolates testing in Asia are resistant to fluoroquinolones (Cipro and related medications)

Gonorrhea: KEY POINTS

- Second most common bacterial (curable) STD.
- Concentrations of infection in urban areas
- Resistance to medications is a spreading problem

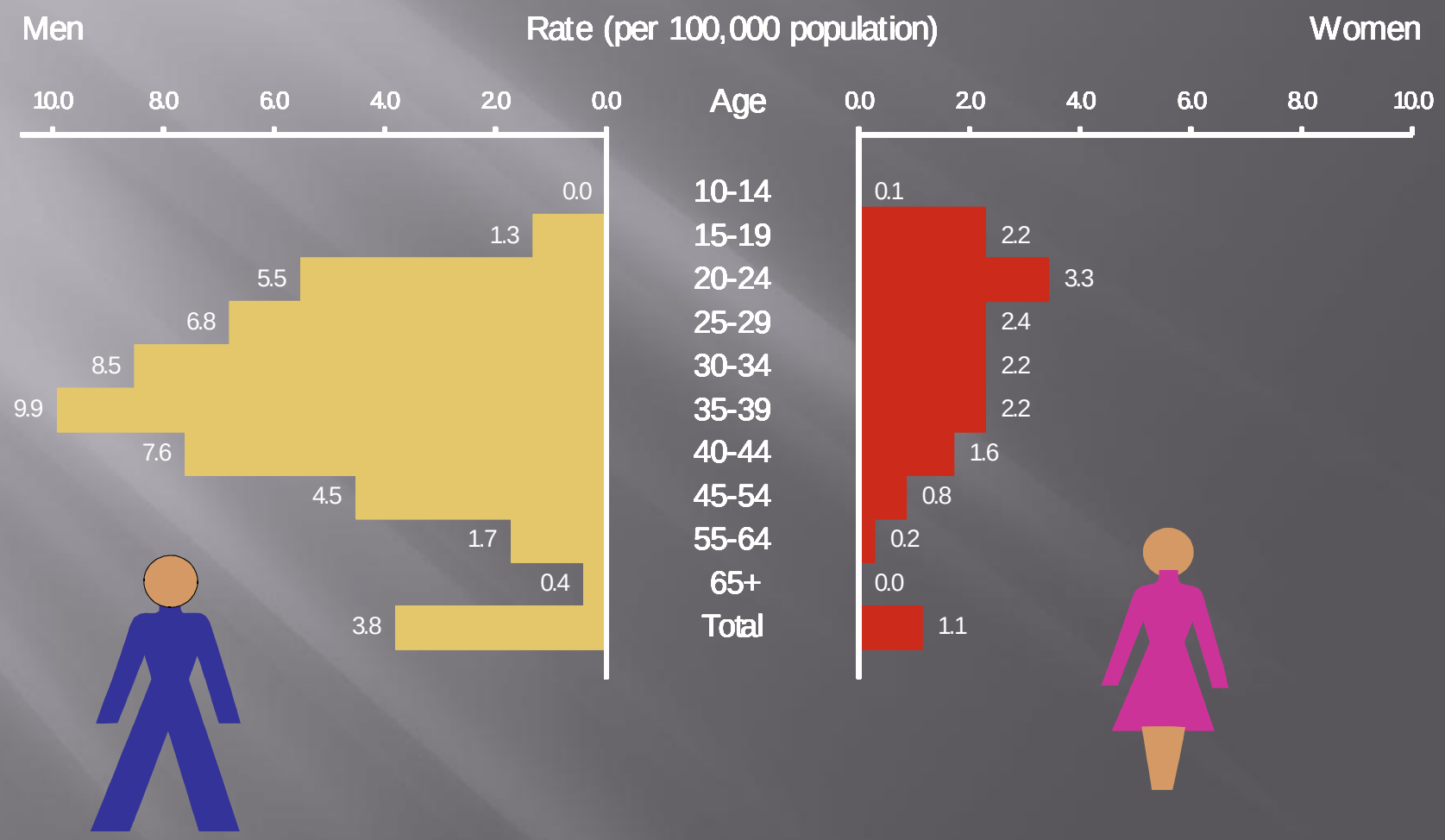
Syphilis

- Caused by a spirochaete - Treponema pallidium



Primary and Secondary Syphilis

Age- and sex-specific rates: U.S., 2002

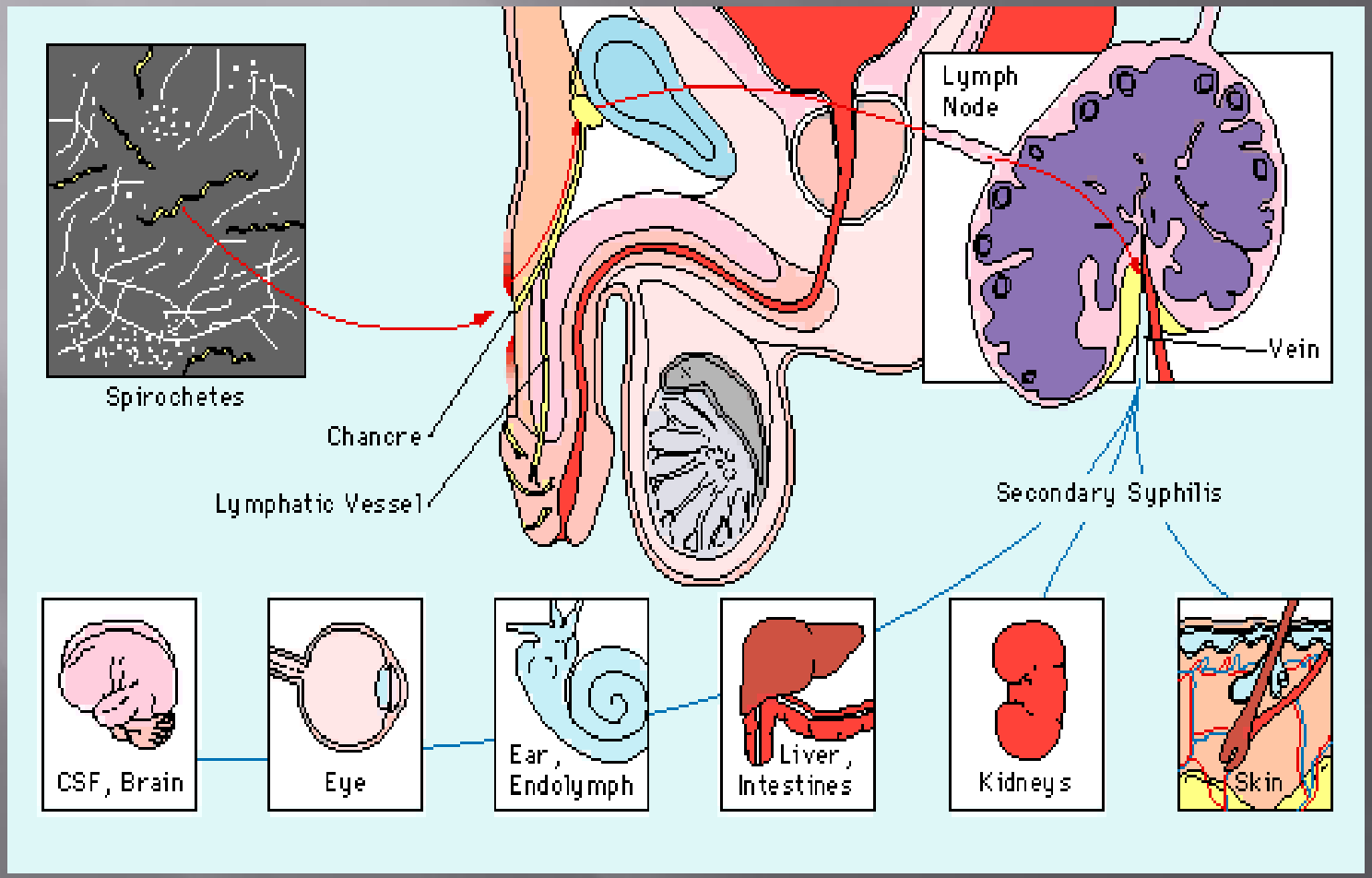


Understanding STD Trends

- Why? (increases in unprotected sex)
  - Assumptions about reduced HIV infectivity in HAART era
  - Less personal exposure to persons with advanced AIDS
  - STDs considered minor and readily treatable nuisances
- Who?
  - Subsets of MSM (minority MSM, older men, both HIV-&+)
  - Mixing by HIV serostatus
- What contexts?
  - Drug use (Methamphetamines, Viagra)
  - Anonymous venues for meeting partners (internet, bathhouses, circuit parties)

C. Celum,"Sleepless in Seattle" Study, 1999

Syphilis
Distribution of the Organism



Mosby *STD Atlas, 1997*

Primary Syphilis

Photos: Dr. Joseph Engelman, San Francisco City Clinic

Primary Syphilis

Chancroidal ulcer showing purulent appearing base

Primary Syphilis

Primary Chancre of the Penile Shaft

Healing Chancres, Darkfield negative

Rash of Secondary Syphilis

Mosby *STD Atlas, 1997*

Photo: Dr. Joseph Engelman, San Francisco City Clinic

Secondary Syphilis
Other Symptoms

Comdyloma lata

Photo: Dr. Joseph Engelman
San Francisco City Clinic

DOIA *Website, 2000*

Mosby *STD Atlas, 1997*

Syphilis
New Therapies

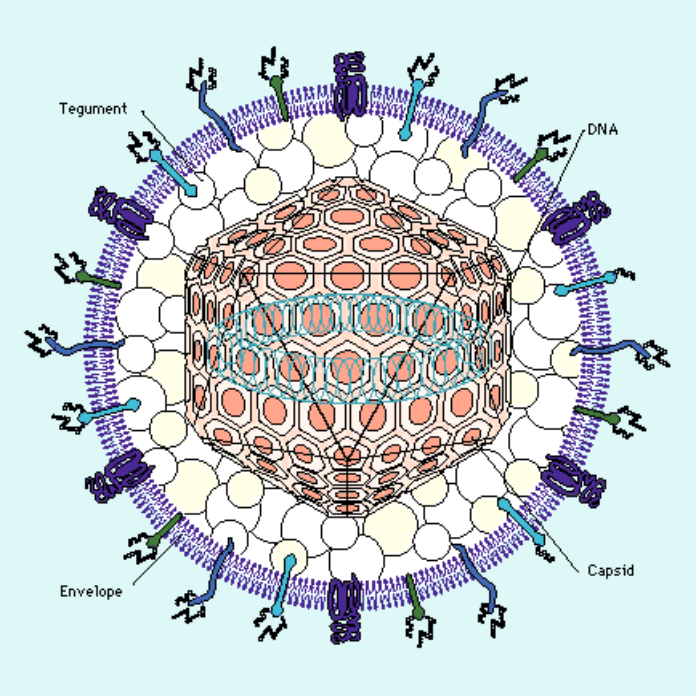
- Penicillin G (an injectable) remains the first line treatment
- Limited data support the use of Azithromycin (in a one-time oral dose) as an alternative regimen
  - Azithromycin 2 gm orally in a single dose as treatment for early syphilis
  - Azithromycin 1 gm orally in a single dose as prophylactic treatment for contacts to infectious syphilis
  - Has not been well-studied in HIV + patients; larger trials ongoing
- Ceftriaxone almost certainly effective, but best dose/duration has not been established

Syphilis: KEY POINTS

- Outbreaks - sexuallly active in urban areas
- Serious systemic infection
- Strong connection with HIV transmission
- Yearly testing of all HIV-positive patients is recommended

Genital Herpes: Overview

- Caused by Herpes Simplex Viruses
  - HSV 1: orolabial herpes (cold sores, fever blisters
  - HSV 2: mainly genital herpes
- Both symptomatic & asymptomatic infections are common
- Can cause serious complications
- Asymptomatic shedding is well documented


Tegument
DNA
Envelope
Capsid

Genital Herpes Infection

- Numerous painful lesions (sores)

  - on the penis, vagina, anus, buttocks, thighs, mouth of finger

  - Lasts up to 4 - 21 days

  - Headache, fever, muscle aches, swollen lymph nodes, and difficult urinating.
  - Rates are higher in HIV infected persons
  - Most infections are unrecognised because of mild symptoms or absence of symptoms

Genital Herpes Without Symptoms

- Many people with herpes have no or only minimal symptoms
- Transmission can occur from an infected partner who does not have a visible sore and may not know that he/she is infected

Herpes in a Man

In a woman

Genital Herpes Natural History

- Initial infection
  - Virus enters through microscopic breaks in skin
- Establishes chronic infection
  - Virus becomes latent in nerves cells along spinal cord
  - Infection persists despite host immune response
  - Virus may remain latent indefinitely or can reactivate
- Virus can reactivate
  - Precipitating factors: trauma, fever, UVL, stress
  - Virus reproduces and moves along nerve axon to skin or mucosa, and recurrent lesions can occur
  - Reactivation (shedding) can also be asymptomatic

Herpes Transmission in Pregnancy

- Most transmission occurs at time of delivery, rarely in utero
- Risk factors: primary infection, new infection
- Over half of infants with neonatal infection are born to mothers with no history of genital herpes

Testing & Treatment for Herpes

- Older blood tests but not distinguish HSV-1 from HSV-2 antibody
- Herpes cannot be cured but symptoms can be treated with antivirals
- Transmission can occur if even when taken antivirals

Genital Herpes Psychological Impact

- A diagnosis of herpes can cause significant psychological distress
  - Depression
  - Anger
  - Fear of rejection/discord in relationship
  - Fear of passing infection to sex partners or infants
  - Frustration regarding lack of a cure
  - Uncertainty about asymptomatic shedding

Genital Herpes Counseling about Transmission

- Encourage patients to inform their sex partners of the herpes diagnosis
- Advise patients to abstain from sexual activity when lesions are present
- Discuss possibility of asymptomatic shedding
- Discuss treatment options
- Encourage condom use with new or uninfected partners

Genital Herpes Condom Effectiveness

Latex condoms, when used consistently and correctly, are highly effective for:

- HIV

And can reduce the risk of:

- GC, CT, and Trichomonas
- Genital herpes, syphilis, chancroid, and HPV, *only when the infected areas are covered by the condom*

CDC, 2002

Genital Herpes: KEY POINTS

- About 1/5 of adult have HSV 2
- Most do not recognize or get symptoms
- New type-specific blood tests can accurately diagnose HSV 2 infection even when no symptoms are present
- Treatment to control symptoms and lessen the chance of transmission are available

Genital Human Papillomavirus (HPV)

- Two disease processes caused by different viral types
  - Precancer and cancer of the genital tissues (abnormal Paps and anal carcinoma)
  - Skin growths in the anogenital area (genital warts)

Symptoms of Genital HPV Infection

- Usually asymptomatic and brief (6 to 12 months)
- Genital warts (usually infection with low-risk type of HPV)
- – Warts on the penis, vagina, anus or urethra
- – Rarely may have itching, bleeding, burning, or pain along with the warts
- – May go away on their own, stay about the same, or get worse
- Cervical lesions (usually infection with high-risk type of HPV)
- Some will persist and need to be followed by health care provider

What happens once people get infected with HPV?

- For most people, nothing will happen
  - The body's immune system usually eliminates HPV infection
  - After HPV is found on the cervix, it becomes undetectable within 2 years in at least 90% of women
- Some people who get "low-risk" types will develop:
  - Visible genital warts
  - Low-grade Pap smear abnormalities that usually go away on their own

What happens once people get infected with HPV?(cont)

- Some women who get "high-risk" types will develop:
  - Low or high grade Pap smear abnormalities
  - Cervical cancer (rarely)
- *Persistent* infection with high-risk HPV types is associated with the development of pre-cancerous and cancerous cervical changes
- The course of penile infection in men has not been well studied

Typical Genital Warts

DOIA *Website, 2000*

Perianal Wart

Testing & Treatment for HPV

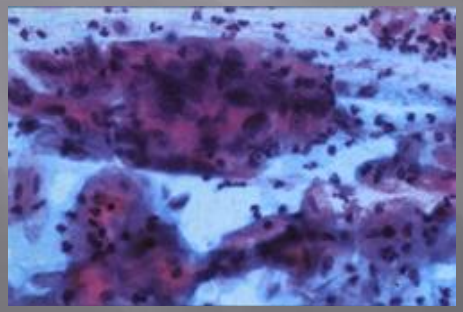
- Genital Warts
  - No tests for genital warts
  - Several types of treatment are available
  - Warts may come back
- Cervical lesions and cervical cancer
  - Regular Pap smears are best way to detect serious lesions and prevent cervical cancer
- – Pap smear screening is recommended for all sexually active women

Do Condoms Prevent HPV?

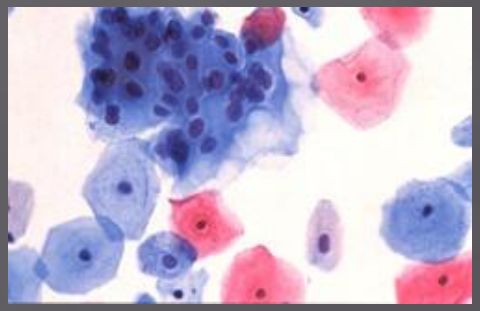
- Effectiveness of condoms to prevent HPV infection has not been determined
  - A few studies in women show no protective effect
  - However, these studies were not designed to assess condom effectiveness
- No prospective studies have evaluated the effectiveness of condom use to protect men from genital HPV infection
- Condoms work only if they cover infected areas
- HPV often infects genital areas not covered by condoms

The "New" Kind of Pap

- Thin-Layer Paps vs Conventional Paps
  - Generally compare favorably
  - Simple collection procedure for the clinician
  - Provides a better sample
  - Can be read more accurately in the lab
  - More expensive



Conventional Pap



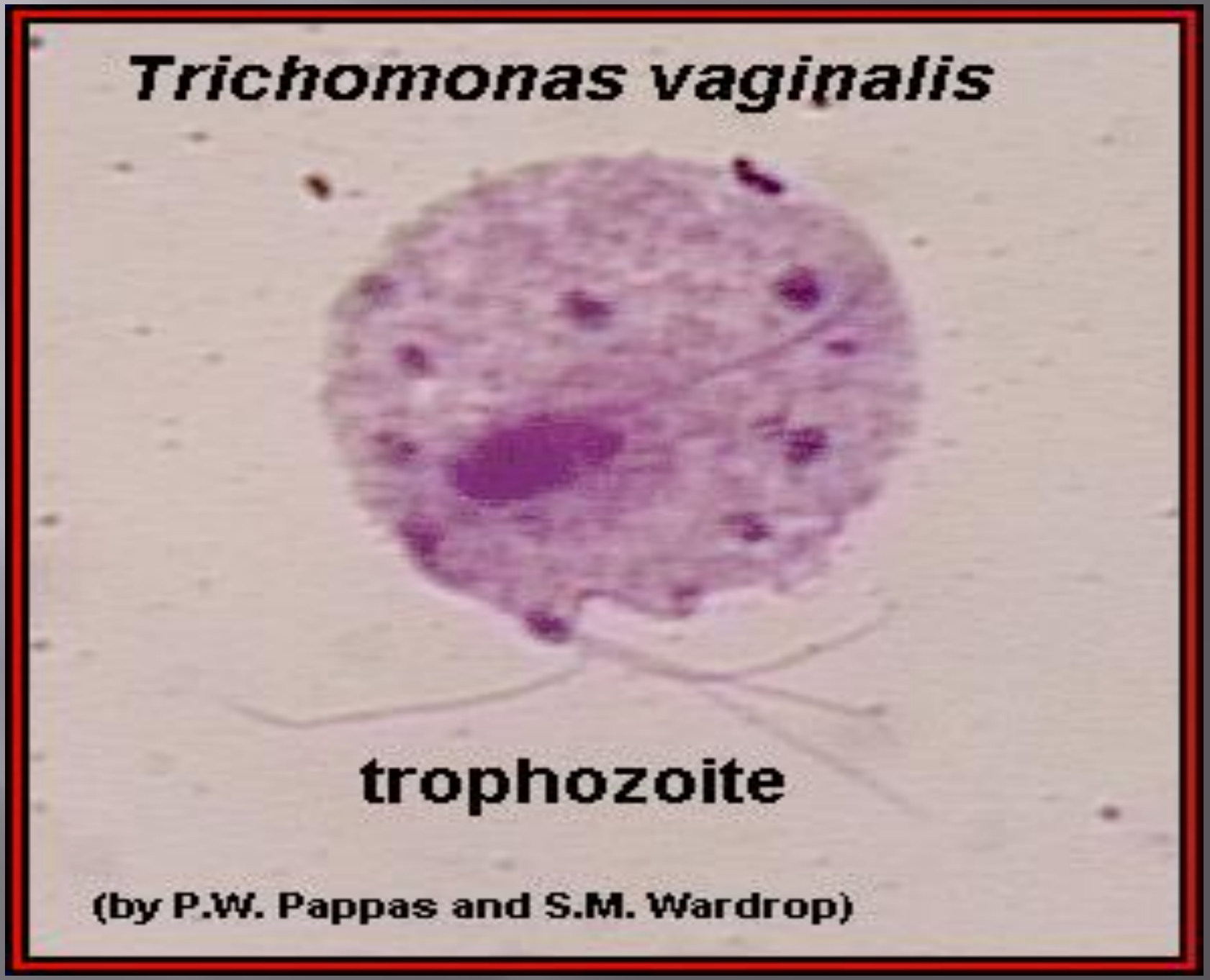
ThinPrep Pap Test

HPV: KEY POINTS

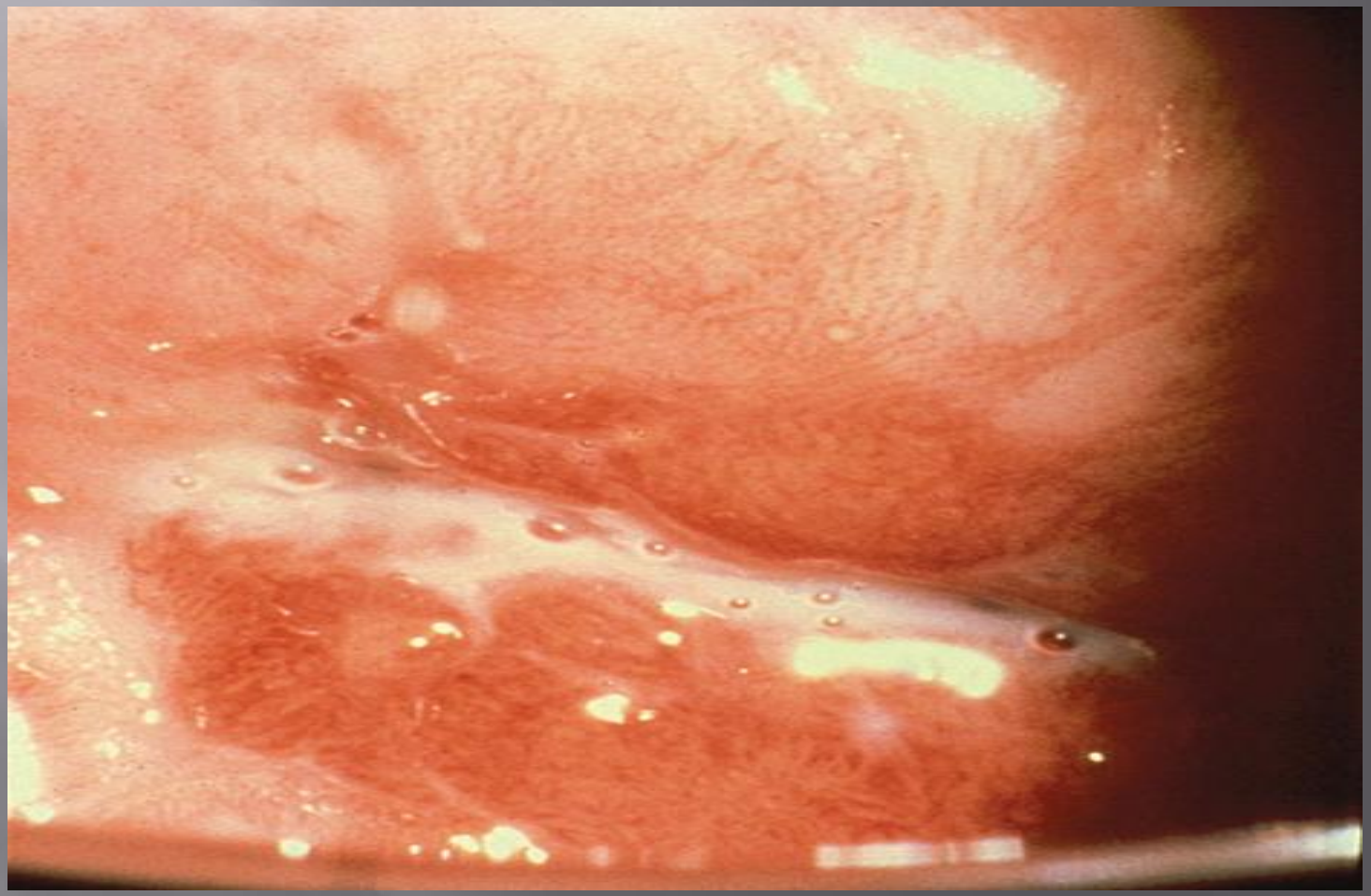
- Extremely common virus
- Some types cause genital warts
- Other types cause cervical and anal cancer
- HPV tests can help in managing female patients with abnormal Paps
- Best approach to anal dysplasia is unclear

Trichomoniasis: KEY POINTS

- Caused by *Trichomonas vaginalis*, flagellated anaerobic protozoa
- In women, causes malodorous yellow-grey discharge with irritation and vulvar itching
- In men, usually gives no symptoms but can cause urethritis
- Resistance to common treatment (metronidazole) does occur


Trichomonas vaginalis
trophozoite
(by P.W. Pappas and S.M. Wardrop)

Clinical Manisfestation



Thin, watery, cervical discharge of trichomonas infection

Hepatitis B

A vaccine-preventable viral infection that affects the liver

- **What is it?**

- • A virus that affects the liver
- • A virus found in blood and body fluids including the vaginal secretions, semen, breast milk and saliva of infected individuals
- • Most infected people (90%) naturally produce antibodies to fight the disease, but some develop chronic hepatitis B; they carry the virus all their lives and are infectious for life
- • Chronic infection can significantly damage the liver
- • Most common in developing countries

- **How is hepatitis B transmitted?**

- • Through anal, vaginal or oral sex with an infected person
- • Through exposure to infected blood or blood products (e.g. injection drug use with shared equipment, accidental exposure, needlestick)
- • Occasionally from contact with shared household items (such as toothbrushes or razors)
- • During childbirth (transmission from mother to infant)

Hepatitis B

- **Considerations and possible complications**

- • All sexual and household contacts of people with hepatitis B should be advised
- to be vaccinated to prevent infection
- • Chronic hepatitis B can lead to severe liver damage including cirrhosis (scarring of the liver)
- and cancer
- • Individuals who develop chronic hepatitis B infection require liver-function monitoring and may
- benefit from treatment with interferon or an anti-viral medication
- • Babies born to mothers with hepatitis B are at a high risk of becoming chronic carriers. They
- should receive an injection of antibodies immediately after birth, followed by the vaccine

Hepatitis B

- **What are the signs and symptoms?**
- In up to 50% of people, there are no outward signs of infection.
- Up to eight weeks after exposure to the virus, some people experience flu-like symptoms including:
- • Tiredness
- • Nausea and vomiting
- • Decreased appetite
- • A rash
- • Joint pain
- • Yellowing of the eyes and skin (in rare cases)

Candidiasis (Yeast Infection

- **What is it?**

- • 75% of women develop vaginal candidiasis at least once in their lifetime
- • Candida can also affect the mouth, esophagus, skin or blood.
- • Yeast is normally found in a woman's vagina. When the fungus begins
- to grow in excess, it may develop into candidiasis.

- Causes of overgrowth include:

- • Pregnancy
- • Recent or current use of antibiotics and certain other prescription
- medications
- • Sexual activity
- • Poorly controlled diabetes
- • A weakened immune system
- • Genital moisture retention caused by tight-fitting clothing

Candidiasis (Yeast Infection

- **How is a yeast infection transmitted?**
- While yeast infection can be transmitted sexually, it is not generally considered an STI.
- Men sometimes develop signs of a yeast infection on the head (glans) of the penis after having intercourse with a woman with vaginal candidiasis. (She may have no symptoms.)

Candidiasis

- **What are the signs and symptoms?**
- **Female**
- Women with vaginal candidiasis may experience:
- • Vaginal itching
- • Swollen or red vulva and vagina
- • Thick white, clumpy discharge resembling cottage cheese
- • Burning of the external genitalia on urination
- • Pain with intercourse due to vaginal dryness and irritation of the vulva
- **Male**
- Men with an infection of the penis may develop balanitis (inflammation of the head of the penis) and may experience:
- • Itching
- • Red dots on the tip of the penis
- • Dry peeling skin
- • Burning on urination (occasionally)
- **Considerations and possible complications**
- • Yeast infections can increase the risk of acquiring and transmitting HIV

Pubic Lice

Infections caused by parasitic infestations

- **What are pubic lice?**

- • Tiny crab-like insects that nest in pubic hair; also found in chest, armpit
- and facial hair, eyebrows and eyelashes
- • Adult insects bite and feed on the blood of their host and lay small eggs
- (nits) that attach to the shaft of the hair

- **How are pubic lice transmitted?**

- • Transmission occurs primarily during intimate sexual and non-sexual
- contact
- • Pubic lice can live for one to two days in the bedding, towels and clothes
- of an infected individual. These items can be a source of transmission

Pubic Lice

- **What are the signs and symptoms?**

- Pubic lice and nits are small and can be difficult to spot. Infected individuals may experience:

- • Skin irritation and inflammation accompanied by itchiness and redness
- • Small blue spots on the skin where lice have bitten
- • Louse feces (fine black particles) in the infected person's undergarments

- **Considerations and possible complications**

- • Persistent scratching of irritated skin can cause a secondary bacterial
- infection
- • All sexual partners who have had contact with the infected person in the
- month before diagnosis should be treated to help prevent reinfestation
- • Clothes, bedding and other possible contaminated items should be
- washed or drycleaned, or bagged for a week. Items that cannot be
- washed or bagged should be vacuumed

THANK YOU

References:

1. California STD/HIV Prevention Training Diseases Centre
2. Health Protection Agency(HPA) Colindale – UK
3. Centre for Disease Control (CDC) – Atlanta
4. *Health Awareness Connection,http://www.healthac.org/images.html*
5. *Cincinnati STD/HIV Prevention Training Centre*