

# CHLAMYDIA

## Trichomonas Vaginalis

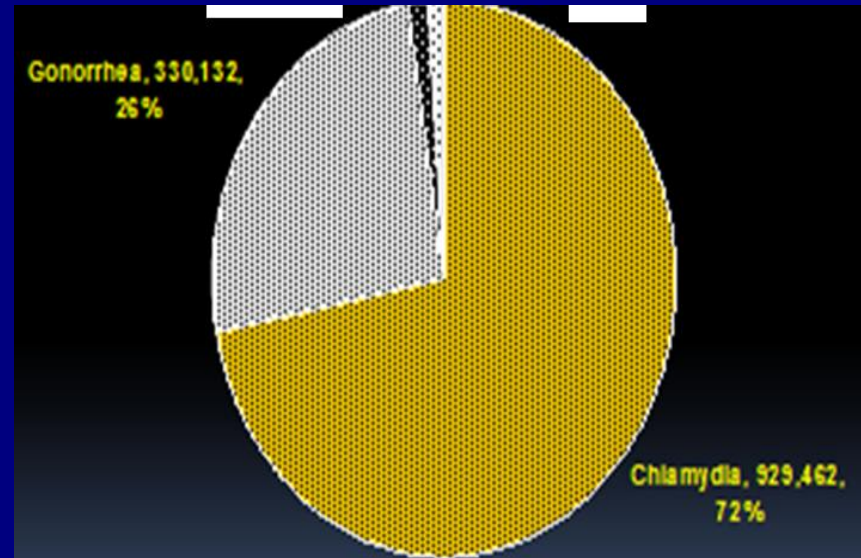
## Candidaiasis

- د. حامد الزعبي

Chlamydia

# Epidemiology

- Risk factors and transmission are similar to other STDs
- In USA over 900,000 cases are reported each year, which is more than gonorrhea
- The asymptomatic cases among males and females are higher than in gonorrhea
- Risk is more Pregnant s and menstruating women
- Reinfection is frequent



Reported Sexually Transmitted Diseases, United States, 2004

# Family: *Chlamydiaceae*

- Genus: *Chlamydia*
  - *C. trachomatis* - Urogenital infections, trachoma, conjunctivitis, pneumonia and lymphogranuloma venerium (LGV)
- Genus: *Chlamydophila*
  - *C. psittaci* - Pneumonia (psittacosis)
  - *C. pneumoniae* - Bronchitis, sinusitis, pneumonia and possibly atherosclerosis

# Chlamydia- Microbiology

- Small obligate intracellular parasites
- Inner and outer membrane
- LPS but no peptidoglycan
  - Cell wall not well characterized
- Energy parasites
  - Can't make ATP

# Physiology and Structure

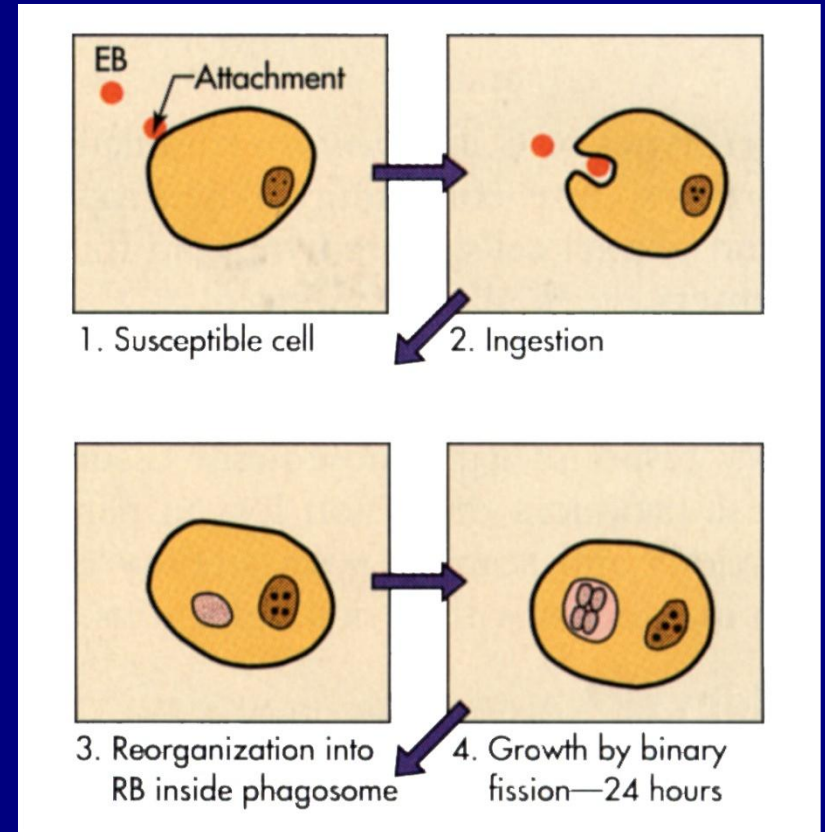
- Elementary bodies (EB)
  - Extracellular form
  - Rigid outer membrane
    - Disulfide linked proteins
  - Resistant to harsh conditions
  - Non-replicating, non-metabolically active form
  - Infectious form
    - Bind to columnar epithelial cells (macrophages)

# Physiology and Structure

- Reticulate bodies (RB)
  - Intracellular form
  - Fragile membrane
    - Fewer disulfide bonds
  - Metabolically active form
  - Replicating form
  - Non-infectious

# Developmental Cycle of Chlamydia

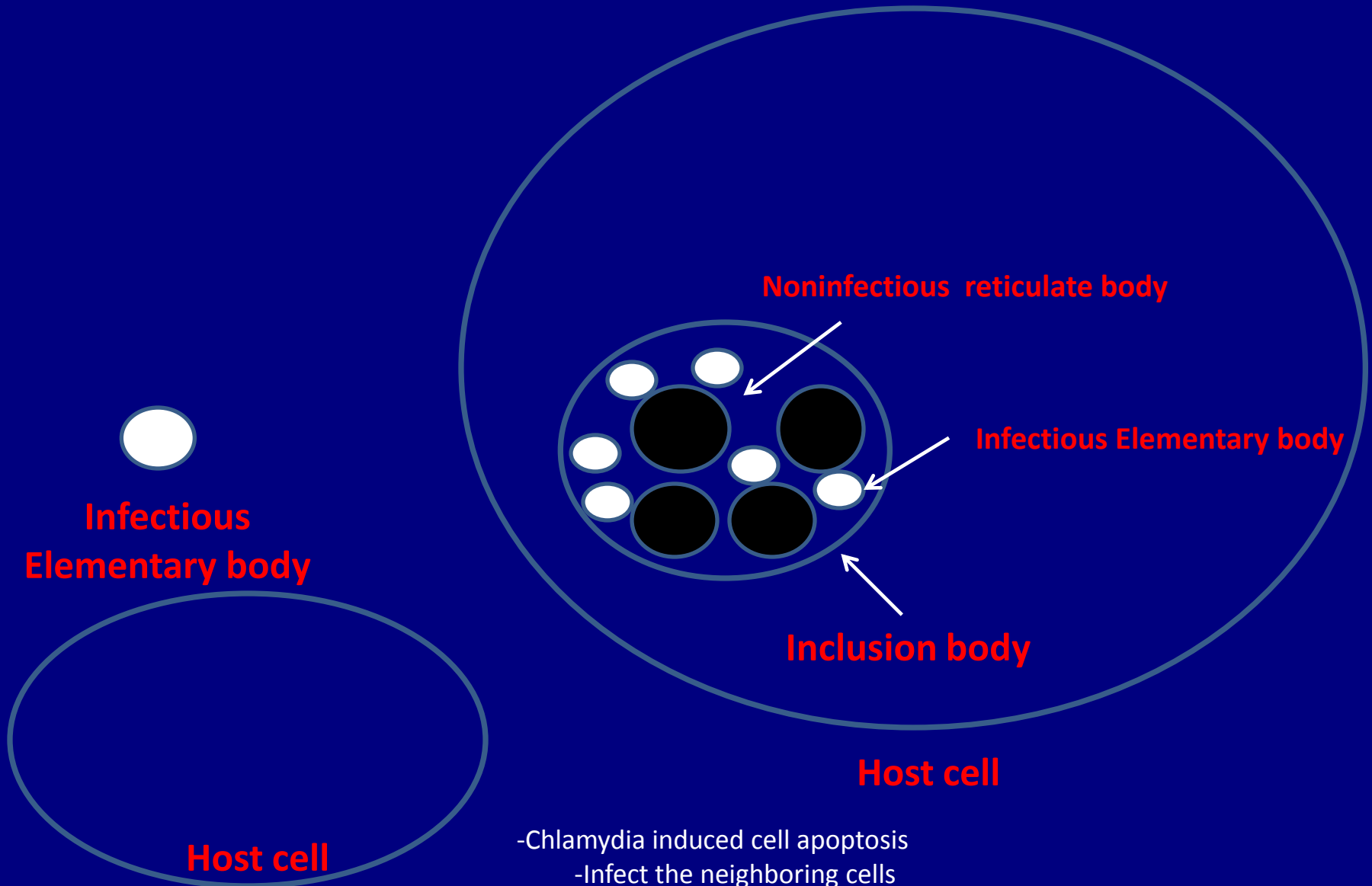
- EB bind to host cells
  - Epithelial
  - Macrophage
- Internalization
  - Endocytosis
  - Phagocytosis
- Inhibition of phagosome-lysosome fusion
- Reorganization into RB
- Growth of RB and release





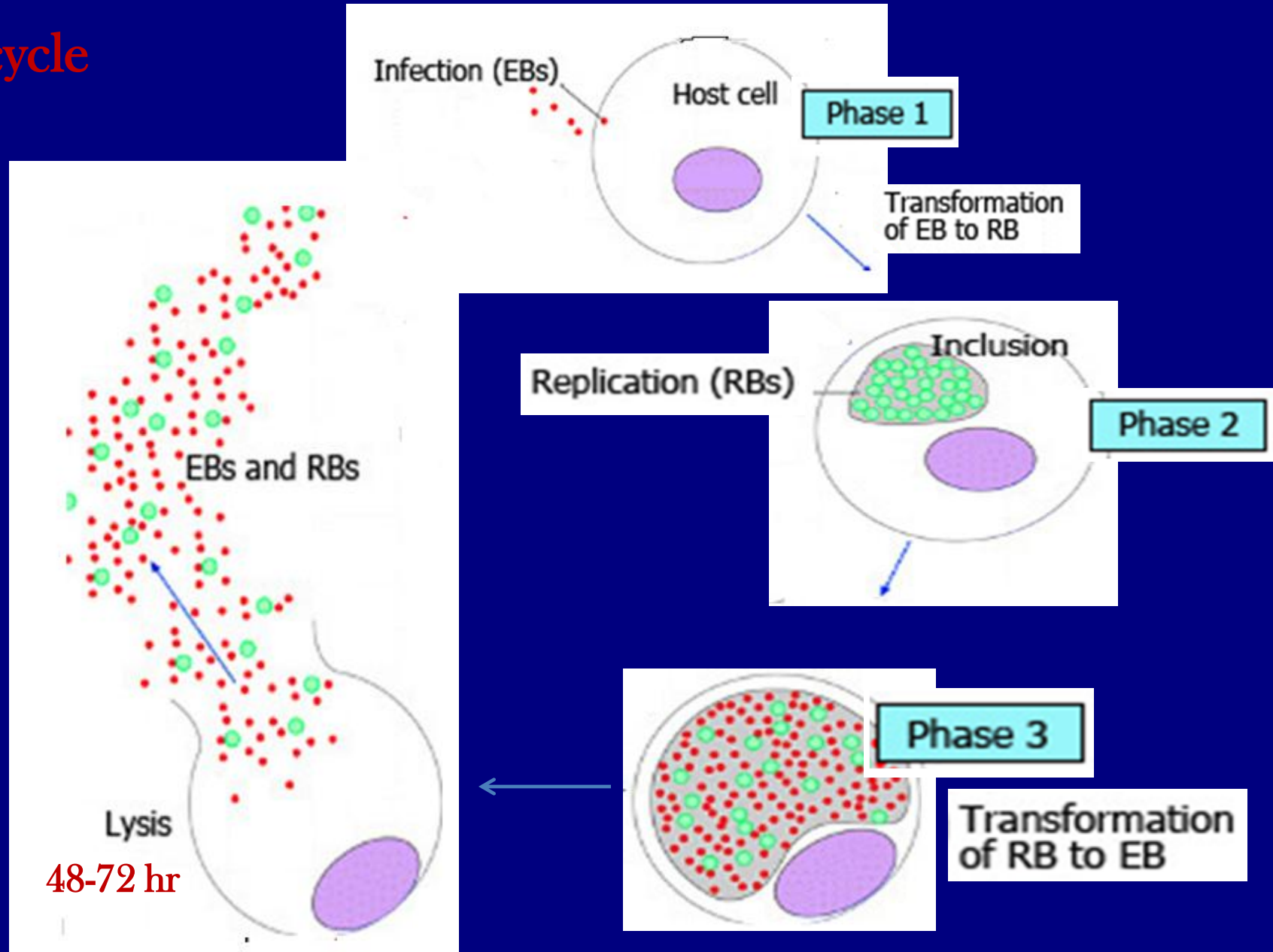
# *Chlamydia curriculum*

## Chlamydial Morphologies and life cycle



# Chlamydia curriculum

Life cycle



# Pathogenesis

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- Chlamydiae have a tropism for epithelial cells of the endocervix and upper genital tract of women, and the urethra, rectum and conjunctiva of both sexes.
- Once infection is established, there is a release of proinflammatory cytokines by infected epithelial cells.
- This results in early tissue infiltration by PMNs, later followed by lymphocytes, macrophages, plasma cells and eosinophils.
- If the infection progresses further (because of lack of treatment and/or failure of immune control), aggregates of lymphocytes and macrophages (lymphoid follicles) may form in the submucosa; these can progress to necrosis, followed by fibrosis and scarring.

# C. trachomatis - Serovars

## Clinical Spectrum of *C. trachomatis* Infections

### SEROVARS

A, B, Ba, C  
B, Ba, D to K

L<sub>1</sub>, L<sub>2</sub>, L<sub>3</sub>

### DISEASES

Trachoma

Oculogenital disease (conjunctivitis, urethritis, proctitis, cervicitis); infant pneumonia

LGV

# *C. trachomatis*

- Ocular infections
  - Worldwide
  - Poverty and overcrowding
  - Endemic in Africa, Middle East, India, SE Asia
  - United States - American Indians
  - Infection of children
  - Transmission: droplets, hands, contaminated clothing, flies, contaminated birth canal

# Clinical Syndrome - *Trachoma*

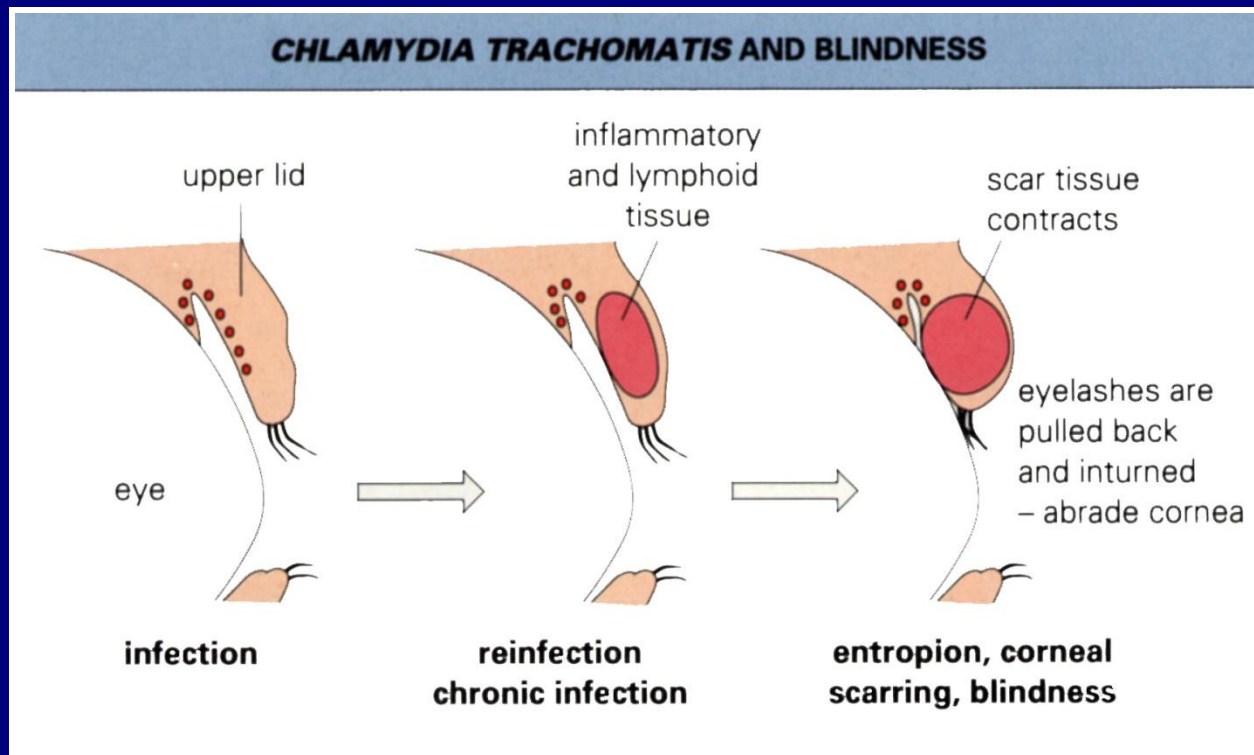


From: G. Wistreich, Microbiology Perspectives, Prentice Hall

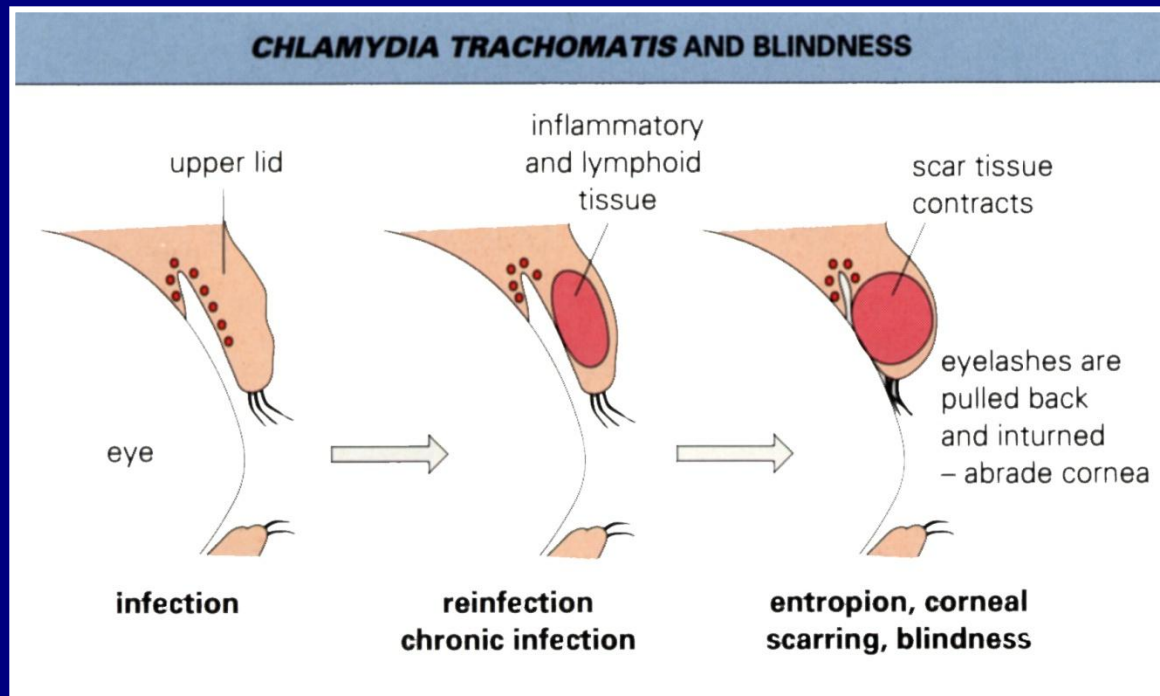


# Clinical Syndrome -*Trachoma* (*C.trachomatis* biovar: trachoma)

- Chronic or repeated infection
  - Follicle formation on conjunctiva
  - Scarring of the conjunctiva

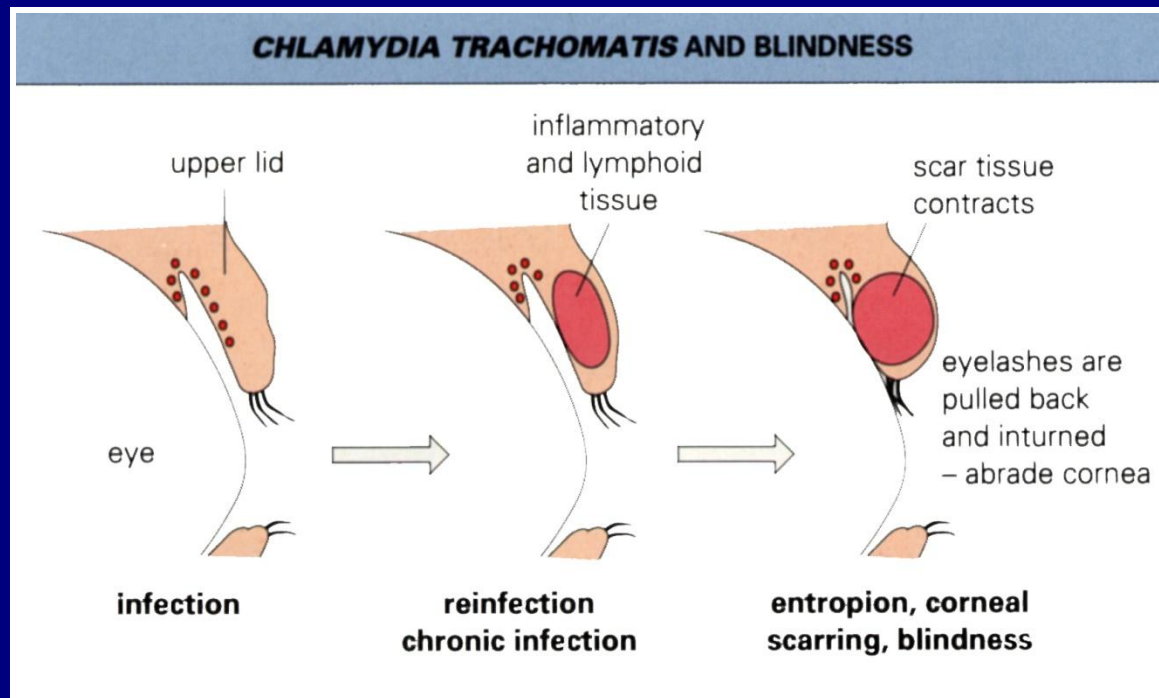


- Eyelids turn in and abrade cornea
  - Ulceration
  - Scarring
  - Blood vessel formation





- Flow of tears impeded
  - Secondary infections



# Clinical syndromes

## In Men

### – Urethritis

- The most **common cause of nongonococcal urethritis (NGU)** in men (40 to 96 percent)
- Majority (>50%) are asymptomatic
- The **incubation** period is variable but is typically **5 to 10** days after exposure
- Symptoms
  - ✓ mucoid or clear urethral discharge
  - ✓ dysuria
- Sometimes the **discharge is so scant**. This is in contrast to the more copious and purulent urethral discharge and shorter (two to seven days) incubation period for gonococcal urethritis
- **Prostatitis**
- **Epididymitis**

# Clinical syndromes

## In woman

### Urethritis

### Cervicitis

- Majority (70%-80%) are asymptomatic
- Local signs of infection, when present, include:
  - mucopurulent endocervical discharge
  - cervical edema with erythema and friability



Normal Cervix

Cervicitis



# Clinical syndromes

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## In woman

### Complications in Women

- Pelvic Inflammatory Disease (PID)
  - Salpingitis
  - Endometritis
- Perihepatitis (Fitz-Hugh-Curtis Syndrome)

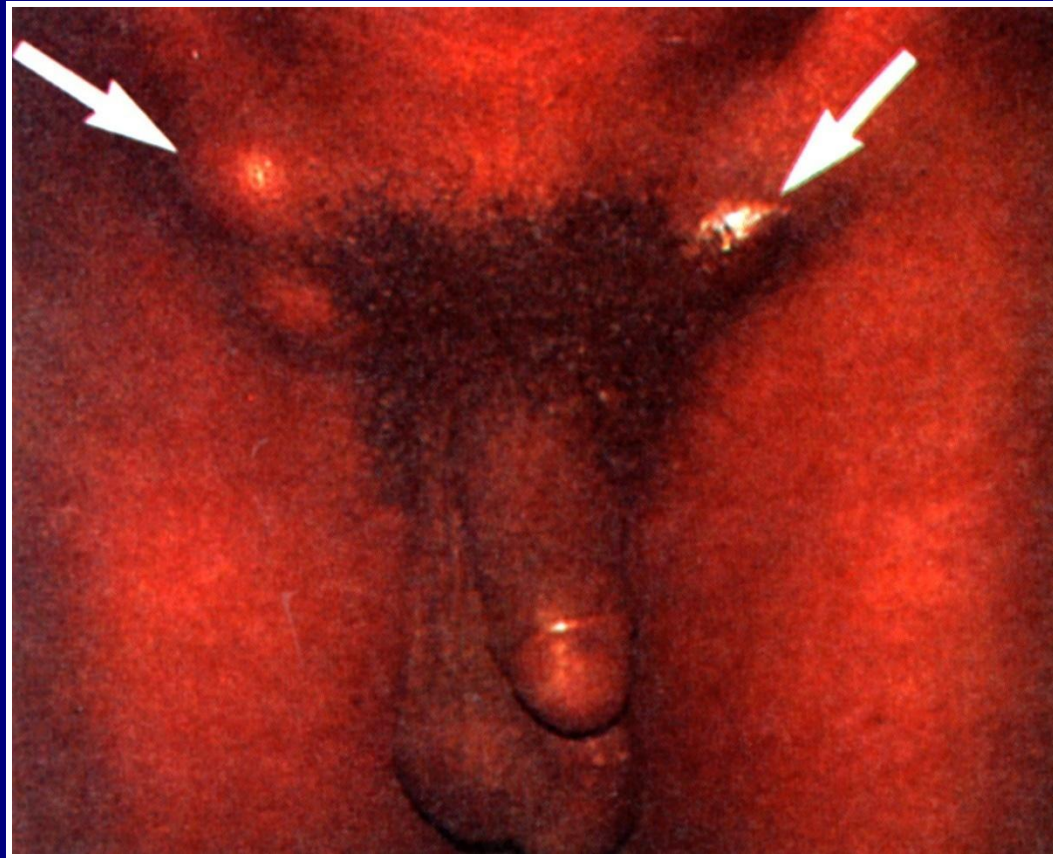
# Clinical Syndrome - Lymphogranuloma Venereum

*C. trachomatis* (biovar: LGV)

- First stage
  - Small painless vesicular lesion at infection site
  - Fever, headache and myalgia
- Second stage
  - Inflammation of draining lymph nodes
  - Fever, headache and myalgia
  - Buboes (rupture and drain)
  - Proctitis
  - Ulcers or Elephantiasis

# Patient with LGV

Bilateral inguinal buboes (arrows)



# *C. trachomatis* - Diagnosis

Histo Cytology:

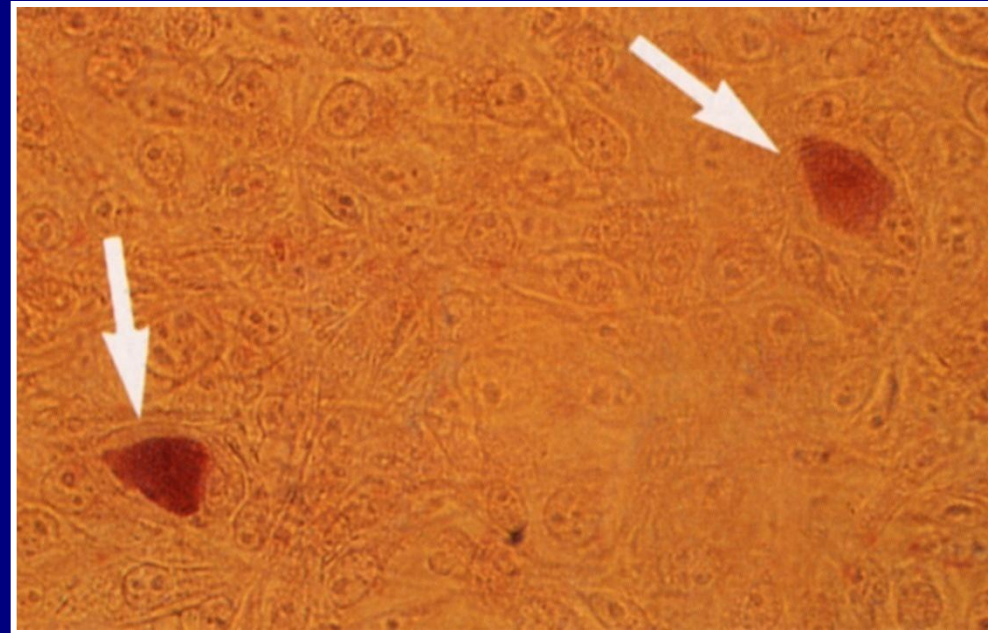
Iodine-staining  
inclusions

Not sensitive

Culture:

Iodine staining  
inclusions

Most specific



Iodine-stained inclusion bodies

# C. trachomatis - Diagnosis

- Antigen detection (ELISA or IF)
  - Group specific LPS
  - Strain specific outer membrane proteins
- Nucleic acid probes
  - Several kits available
  - May eventually replace culture



# *C. trachomatis* - Treatment

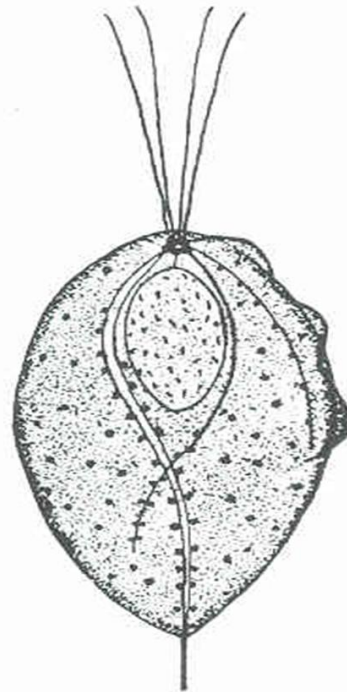
- Doxycycline ; alternatives are erythromycin and sulfonamides
- Treatment of patients and their sexual partners

# Trichomonas vaginalis

- Trichomonas vaginalis is flagellated protozoan and the causative agent of **trichomoniasis**.
- Women are usually symptomatic, while infections in men are usually asymptomatic.
- Trichomonas vaginalis exists only as a trophozoite (no cysts stage)

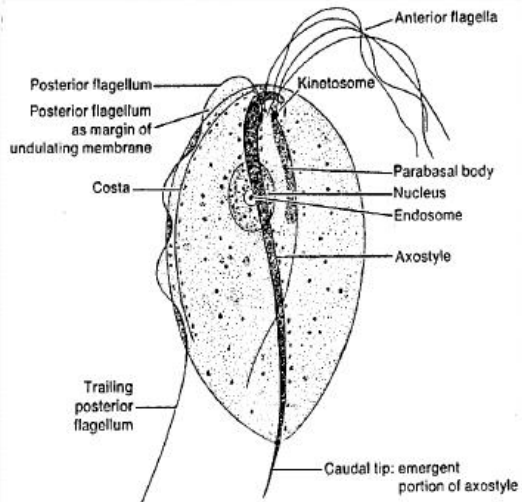
# Trichomonas vaginalis

- It is pear-shaped, with a short undulating membrane lined with a flagellum and 4 anterior flagella.
- It moves with wobbling and rotating motion.
- In females it causes low-grade inflammation limited to vulva, vagina and cervix, causing frothy yellow or creamy discharge.
- In males it may infect the prostate, seminal vesicles and urethra.



**General Morphology of the *Trichomonas* trophozoite**

***Trichomonas vaginalis* infection**



- ***Pathogenesis***

- It is causative agents of persistent vaginitis. The histological features are non-specific & include increased vascularity & congestion.
- Several studies showed that *T. vaginalis* produce a cell-detaching factor that causes detachment & sloughing of vaginal epithelial cells.

# Diagnosis

- Specimen used : urine/vaginal discharges (female)
- prostatic secretions/urine (male)
- Clinical diagnosis is based on symptoms of burning , a frothy creamy discharge, hyperemia of the vagina.

- Microscopic examination in a drop of saline for motile trichomonas of the fresh vaginal discharge
- Motile
- pear-shaped



- Cultures will reveal the organism when negative microscopic examination result was obtained.
- ❖ Example :diamond's medium
- Incubated aerobically for 96 hours at 35°C.
- Showing turbidity in lower portion of tube.
- Treatment: metronidazole





# ***CANDIDIASIS***

- Candida albicans (budding yeast)

## ***How common is genital candidiasis?***

- Nearly 75% of all adult women have had one genital infection ( yeast infection ) in their life time. On rare occasions, male may also experience genital candidiasis.
- Candidiasis is opportunistic infection & there are some conditions that may put a women at risk for genital infection e.g:
  - Diabetes mellitus, General debilitating disease
  - Immunodeficiency, Pregnancy & contraceptive pills.

# ***CANDIDIASIS***

- ***Transmission***
- Most of the cases of candida infection are caused by the person's own candida (endogenous infection).
- It is usually live in mouth, gastrointestinal tract & vagina without causing symptoms.
- Symptoms can develop only when Candida overgrown in these sites.
- Rarely, Candida can be passed from person to another, such as sexual contact

## ***Clinically: Vulvo- vaginitis or vaginal thrush***

- Manifested by a thick yellow a white (*cheesy- like*) discharge, burning sensation, itching...

# **CANDIDIASIS**

- **Diagnosis :**

- **Vaginal discharge examined by:**

- **1-Direct microscopy**

- Candida yeast can be detected in un- stained or gram stained film

- **2- Culture**

- C. albicans grows well on sabouraud' s agar. After 24-48 hours incubation at 37c or at room temp., colonies appear as cream, pasty with yeast smell

- **3- Differential Germ tube tests**

- To diff. between C.albicans & non- pathogenic species of Candida e.g C. tropicalis& C. pseudotropicalis

- ***Treatment***
- A-Topical antifungal
  - Nystatin
  - Canestan
  - Miconazol ( Dactarine )
- B-Systemic antifungal
  - Ketoconazol ( oral )
  - Amphotericine - B I.V

The End