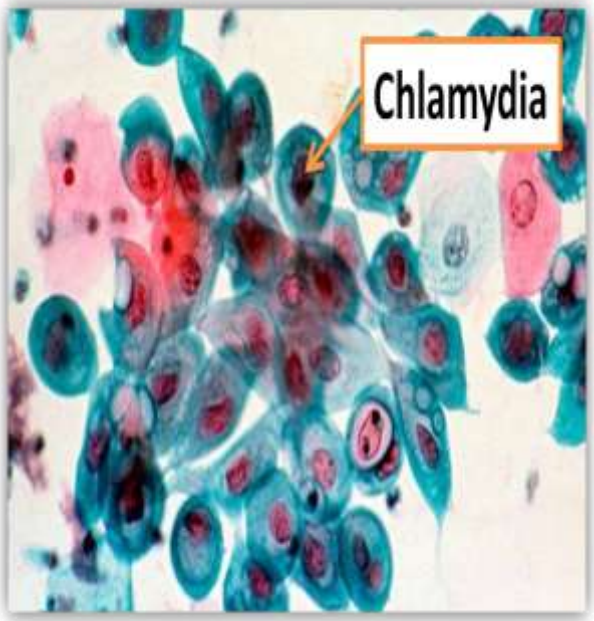
Chlamydia

Chlamydia that infects human are divided into 3 species; *Chlamydia trachomatis*, *Chlamydia pneumoniae*, & *Chlamydia psittaci*. All chlamydiae exhibit similar morphological features, share a common group Ag & multiply in the cytoplasm of their host cell by distinctive developmental cycle. Chlamydiae lack the mechanisms for the production of metabolic energy & cannot synthesize ATP. This defect restrict them to an intracellular existence.

The outer cell wall of chlamydia resembles the cell wall of G – bacteria. It has a relatively high lipid content. It is rigid but does not contain a typical bacterial peptidoglycan.

Chlamydia require an intracellular habitat for growth. It grow in cultures of a variety of eukaryotic cells lines. McCoy cells treated with cyclohexamide commonly used to isolate chlamydia.



Chlamydia trachomatis

Ocular, genital & respiratory infections

Humans are the natural host for *C. trachomatis*. **Trachoma** is an ancient eye disease, it is a chronic keratoconjunctivitis that begins with acute inflammatory changes in the conjunctiva & cornea & progress to scarring & blindness.

Chlamydia

Clinical findings:

The IP for chlamydial conjunctival infection is 3-10 days. In endemic areas, initial infection occurs in early childhood. Trachoma is insidious, & often mixed with bacterial conjunctivitis in endemic areas, & the two produce the clinical picture. The earliest symptoms of trachoma are lacrimation. Mucopurulent discharge, conjunctival hyperemia & follicular hypertrophy. With secondary bacterial infection, loss of vision progress over a period of years.

Lab. Diagnosis:

Culture: inoculation of conjunctival scraping into cycloheximide-treated McCoy cell culture permits growth of *C. trachomatis* if the of viable infectious agent is sufficiently high.

Serology: Infected individuals often develop both group - specific Abs in the serum & eye secretion. IF is the most sensitive method for their detection. Neither ocular nor serum Abs confer resistance to infection.

Molecular methods: PCR or other molecular methods for the diagnosis of *C. trachomatis* have been developed.

Epidemiology:

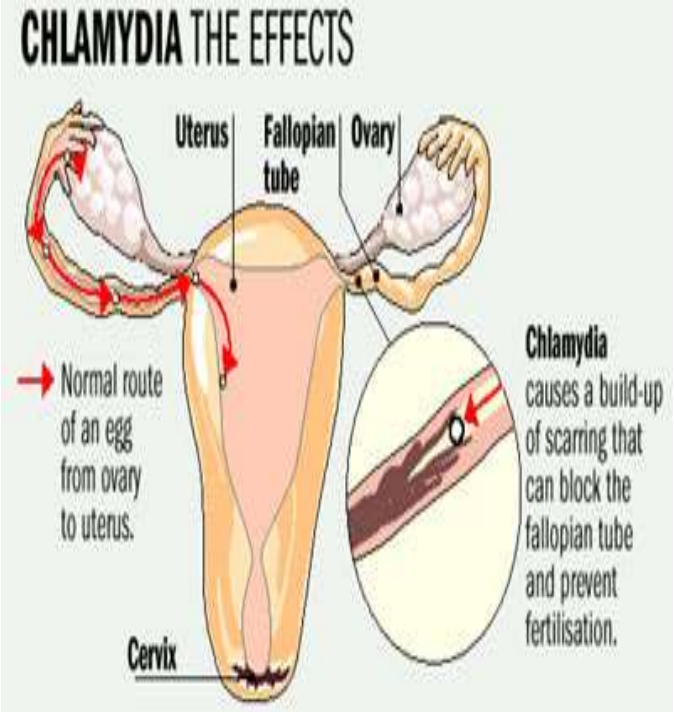
It is believed that more than 400 million people throughout the world have trachoma & that 20 million are blinded by it. The disease is most prevalent in Africa, Asia, & the Mediterranean basin, where hygienic conditions are poor & water is scarce.

Chlamydia

Genital infection

C. trachomatis cause sexually transmitted disease, specially in developing countries, & may also produce infection of the eye (inclusion conjunctivitis). In sexually active men, *C. trachomatis* causes NGU & occasionally epididymitis. In women, It causes urithritis, cervicitis & pelvic inflammatory disease, which can lead to sterility & predispose to ectopic pregnancy. Upto 50% of NGU (men) or Urethral syndrome (women) is attributed to chlamydia & produce dysuria, nonperulent discharge, & frequency of urination. Genital secretions of infected adults can be self-inoculated into the conjunctiva, resulting in inclusion conjunctivitis, an ocular infection that closely resemble trachoma.

The newborn acquires the infection during passage through the infected birth canal, about 20-50% of infants of infected mothers acquired the infection, with 15-20% of infected infants manifesting eye symptoms & 10-20% manifesting respiratory tract involvement. Inclusion conjunctivitis of newborns begins as mucoperulent conjunctivitis 7-12 days after delivery, It tend to subside with erythromycin or tetracycline treatment.



Chlamydia

Lab. Diagnosis:

Culture: endocervical specimens, cervical secretion, specimens from vagina, urethra, & conjunctiva can be cultured on McCoy cell which are treated with cycloheximide to inhibit metabolism & increase the sensitivity of isolation of chlamydia. These are incubated at 37 ^{0}C for 48-72 hrs. the monolayer cells are examined by direct immunofluorescent to see the intracytoplasmic inclusion. The sensitivity & specificity of this method is 80% & 100% respectively.

Direct immunofluorescent antibody (DAF) & Enzyme linked immunoassay (EIA):

DFA & EIA can be used to detect chlamydia on same specimens collected for culture. The DFA uses monoclonal Ab directed against species-specific on the chlamydia membrane protein, while EIA detect the presence of genus-specific LPS Ag of inclusion bodies. Both methods are sensitive & specific.

Molecular methods: by using PCR technique.

Serology: Serum Abs due to genital infection & less commonly trachoma are of value during & after acute infection..

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Respiratory tract involvement with *C. trachomatis*

newborns infected by mothers, 10-20 % may develop RT involvement 2-12 wks after birth, culminating in pneumonia. *C. trachomatis* may be the most common cause of neonatal pneumonia. In such cases, IgM titer to *C. trachmatis* of 1:32 or more is considered positive.

Lymphogranuloma venereum:

LGV is a sexually transmited diseases caused by *C. trachomatis* & characterised by suppurative inguinal adenitis. It is more common in tropical climate.

Clinical findings:

Several days to several wks after exposure, a small papule or vesicle develops on any part of the external genitalia, anus, rectum, or elsewhere. The lesion may be ulcerate. The regional LNs are enlarged & painful. In males, inguinal nodes are more commonly involved. In females, the perirectal nodes are prominently involved.

Lab. Diagnosis:

Culture: suspected materials inoculated into MaCoy cell culture.

Serology: Abs can be detected by CF, IF or EIA a