6 | *CHLAMYDIA PNEUMONIAE*

6.1 | Disease agent

- *Chlamydia pneumoniae*

6.2 | Disease agent characteristics

- Gram-negative, coccoid, nonmotile, non-spore forming, obligate intracellular bacterium.
- Order: Chamydiales; Family: *Chlamydiaceae*.
- Size: 0.2–0.4 μm.
- Nucleic acid: The genome of *Chlamydia trachomatis* is 1.0 Mb with a plasmid of 7.5 kb which has been found to be highly conserved between strains; no extrachromosomal elements have been identified in *C. pneumoniae*.

6.3 | Disease name

- Can be a cause of pneumonia and bronchitis

6.4 | Priority level

- Scientific/Epidemiologic evidence regarding blood safety: Theoretical
- Public perception and/or regulatory concern regarding blood safety: Absent
- Public concern regarding disease agent: Very low

6.5 | Background

- Stable in the population
- Considered a common cause of pneumonia worldwide

6.6 | Common human exposure routes

- Person-to-person through respiratory droplets, no other reservoirs known

6.7 | Likelihood of secondary transmission

- Inefficient by direct contact

6.8 | At-risk populations

- Elementary school-age children (between 5 and 14 years) old at greatest risk
- General population—High seroprevalence (50% of young adults)

6.9 | Vector and reservoir involved

- Human reservoir

6.10 | Blood phase

- Specific DNA and RNA transcripts demonstrated by PCR in peripheral blood mononuclear cells are found in a number of blood donors and symptomatic and asymptomatic patients and can persist for months or years.
- Culture has not demonstrated the presence of infectious bacteria in the blood.
- Serologic evidence of infection from seropositive donors was absent in a seronegative population receiving buffy coat-depleted RBCs.

6.11 | Survival/persistence in blood products

- Not well studied. Only fresh products used in filtration studies

6.12 | Transmission by blood transfusion

- Theoretical. *C. pneumoniae* DNA has been found in PBMCs in 9%–46% of blood donors.

6.13 | Cases/frequency in population

- 50%–85% of adults show serologic evidence of previous exposure worldwide, increasing with age.
- 1%–20% of community-acquired pneumonia may be caused by *C. pneumoniae*, depending on the population studied and diagnostic methods used.

6.14 | Incubation period

- Greater than 3 weeks based on serology

6.15 | Likelihood of clinical disease

- Unknown

6.16 | Primary disease symptoms

- Cough, mild fever, pharyngitis, hoarseness, pneumonitis

6.17 | Severity of clinical disease

- Usually low, with elderly individuals at increased risk for severe disease.
- Has been associated with arthritis and atherosclerotic heart disease in epidemiologic studies.
- Well-designed secondary prevention trials using antibiotics active against *C. pneumoniae* have been uniformly negative raising questions about the significance of any association with coronary artery disease.

6.18 | Mortality

- Low except as complicated pneumonia

6.19 | Chronic carriage

- Yes

6.20 | Treatment available/efficacious

- Treatment with antibiotics (e.g., erythromycin, azithromycin, clarithromycin, fluoroquinolones and their derivatives [such as levofloxacin], and tetracyclines [such as doxycycline]).
- In severe cases, treatment with intravenous antibiotics and oxygen supplementation may be required.

6.21 | Agent-specific screening question(s)

- No specific question is in use.
- Not indicated because transfusion transmission has not been demonstrated.
- No sensitive or specific question is feasible.

6.22 | Laboratory test(s) available

- No FDA-licensed blood donor screening test exists.
- Serology: Commercially available microimmunofluorescence (MIF) and EIAs are most commonly used. Although quite technically challenging, MIF appears more frequently in the literature as a "gold standard" for serological confirmation.
- PCR; prevalence of DNA detection highly dependent on which primers are used.

6.23 | Currently recommended donor deferral period

- No FDA Guidance or AABB Standard exists.
- Prudent practice would be to defer donor until signs and symptoms are gone and a course of treatment is completed.

6.24 | Impact on blood availability

- Agent-specific screening question(s): Not applicable
- Laboratory test(s) available: Not applicable

6.25 | Impact on blood safety

- Agent-specific screening question(s): Not applicable
- Laboratory test(s) available: Not applicable

6.26 | Leukoreduction efficacy

- Leukoreduction significantly reduces the number of bacteria present in blood products and the number of positive test results from those products.

6.27 | Pathogen reduction efficacy for plasma derivatives

- Specific data indicate that the multiple steps in the fractionation process are robust and capable of inactivating and/or removing bacteria at concentrations that may be present in plasma.

6.28 | Other prevention measures

- Unknown

SUGGESTED READING

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