



# Legionella pneumophila

## Microbiology

- **Aerobic, intracellular, fastidious gram negative bacillus**
- >15 serogroups of *Legionella pneumophila*. Serogroup 1 most prevalent. Other *Legionella* species also pathogenic.
- **Environmental** organism in water and soil; can live inside amoebae; particularly associated with **stagnant, warm (25 to 42°C) water**.
- Most likely sources of infection: showering water; cooling towers; decorative fountains; and hot tubs.
- Transmitted by aerosol inhalation. May be sporadic or epidemic. No person-person spread.

## Clinical spectrum

- Legionnaire's disease – **pneumonia**
- 'Pontiac fever' – sporadic febrile illness noted after contact with legionella in outbreaks
- Extra-pulmonary legionella very rare

## Risk Factors

- Age  $\geq$  50y
- Smoking (current or previous)
- Chronic lung disease
- Immunocompromise
- Systemic malignancy
- Underlying chronic disease (CKD, DM, liver impairment)

## Clinical features

IP 2-10 days

Radiographic findings varied and non-specific

Clinical features that raise suspicion:

- Hyponatraemia
- Raised transaminases
- CRP >100
- Gastrointestinal symptoms
- Pneumonia which fails to respond to beta lactam therapy alone

## Management

- A quinolone or macrolide is recommended for a 7-10 day course
- Notifiable illness

## Investigations

Order both a sputum/BAL sample and a urinary antigen test

## Identification

Difficult to culture.

**BCYE (Buffered Charcoal Yeast Extract)**

media often used – typically grow after 5 days at 37°C

PCR is gold standard diagnostic technique – though no reliable reference standard!

**Urinary antigen has high sensitivity and specificity, but only detects serogroup 1**



Legionella colonies on BCYE agar - described as white grey convex glistening colonies with well defined edge

## Prevention

Control contamination of water supply systems: monitor water temperatures: hot should be >60°C, cold <20°C; remove pipe dead-ends; regularly flush infrequently used outlets at least weekly.

### Sources:

PHE SMI 18 identification of Legionella species

<https://www.cdc.gov/legionella/downloads/fs-legionella-clinicians.pdf>;

<https://www.hse.gov.uk/healthservices/legionella.htm>