

Expert Group Pack A: Bronchiectasis

What is Bronchiectasis?

Bronchiectasis is a chronic lung condition in which the airways (bronchi) become permanently widened, scarred, and thickened. The name comes from the Greek: bronkhos (windpipe) + ektasis (stretching or widening). Unlike COPD, where the damage is primarily to alveoli or bronchial lining, bronchiectasis damages the structural walls of the airways themselves.

The damaged airways lose their ability to clear mucus effectively. Mucus pools in the widened airways, creating a breeding ground for bacteria. This leads to a vicious cycle of infection, inflammation, more airway damage, and more mucus retention.

Prevalence

UK: Approximately 212,000–300,000+ people living with bronchiectasis (British Lung Foundation / Quint et al., 2016). This is at least four times higher than the commonly quoted NHS estimate of ~50,000.

Wales: Estimated ~1 in every 1,000 adults have the condition (Asthma + Lung UK). Admission rates in Wales are lower than the UK average.

Demographics: More common in women than men. 60% of diagnoses are made in people over 70. Prevalence and incidence are both increasing, likely due to better diagnostic imaging (CT scans) and increased awareness.

Interesting finding: Unlike most respiratory diseases, bronchiectasis is more commonly diagnosed in LESS deprived populations. This may reflect better access to specialist diagnostics rather than true prevalence differences.

Aetiology & Pathology

The Vicious Cycle: Bronchiectasis follows a self-perpetuating cycle described by Cole's vicious circle hypothesis:

1. An initial insult damages the airways (infection, immune deficiency, aspiration, or inflammation)
2. Damaged airways can't clear mucus properly → mucus pools
3. Pooled mucus becomes infected with bacteria (commonly *Haemophilus influenzae*, *Pseudomonas aeruginosa*)
4. Bacterial infection triggers inflammation → more airway wall damage
5. More damage → worse mucus clearance → more infection → and so on

Common causes:

- Post-infectious: following severe pneumonia, whooping cough, tuberculosis, or measles in childhood – the most common cause worldwide
- Immune deficiency: conditions that weaken the immune system increase susceptibility
- Allergic bronchopulmonary aspergillosis (ABPA): an allergic reaction to a fungus
- Cystic fibrosis: the most common genetic cause
- Autoimmune conditions: e.g. rheumatoid arthritis
- Idiopathic: in up to 50% of cases, no cause is identified

Signs and Symptoms

- Persistent productive cough with large volumes of sputum (often purulent – yellow/green)
- Recurrent chest infections (the hallmark feature – multiple courses of antibiotics per year)
- Breathlessness (progressive, worsens with infections)
- Haemoptysis – coughing up blood (due to damaged blood vessels in airway walls)
- Fatigue and malaise
- Coarse crackles on auscultation (listening with a stethoscope)
- Finger clubbing (widening and rounding of fingertips – a sign of chronic hypoxia)

Risk Factors

- History of severe childhood respiratory infections (pneumonia, whooping cough, TB)
- Immune deficiency (primary or acquired)
- COPD or asthma (these conditions can coexist with bronchiectasis)
- Gastro-oesophageal reflux (aspiration of stomach contents damages airways)
- Rheumatoid arthritis and other autoimmune conditions
- Female sex (higher prevalence in women)
- Older age (60% diagnosed over 70)

Impact on Quality of Life

- Daily sputum clearance routines (airway clearance techniques can take 20–30 minutes twice daily)
- Frequent antibiotic courses and hospital admissions – disruption to daily life
- Social embarrassment about coughing and sputum production
- Fatigue from chronic infection and disrupted sleep
- Anxiety about exacerbations and progressive decline
- Mortality: people with bronchiectasis have more than twice the mortality rate of the general population (Quint et al., 2016)

WALES SPOTLIGHT

Post-infection bronchiectasis has historical relevance in Wales, where overcrowded housing and industrial communities saw high rates of childhood pneumonia and TB.

Wales' current challenges with damp housing and recurrent respiratory infections in children may contribute to future bronchiectasis burden.

Bronchiectasis often coexists with COPD – relevant given Wales' high COPD prevalence.