

Asthma



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Asthma: Chronic inflammatory airway disease characterised by intermittent airway obstruction and hyper-reactivity either at random or after exposure to a trigger.

Triggers: Air pollution, allergens, exposure to cold air, aspirin, beta blockers, cigarette smoke, viral infections, bacterial infections, dust & mould.

Pathophysiology:

- A complex disease with underlying multiple genetic variations interacting with environmental influences
- Two main elements of asthma are: inflammation and airway hyper-responsiveness
- Inflammation: environmental trigger → release of inflammatory mediators → activation and migration of other inflammatory cells
- Airway hyper-responsiveness: WBCs accumulate and cause airway epithelial damage, hyper-secretion of mucus, and increased smooth muscle sensitivity → smooth muscle hypertrophy
- Products of the inflammatory response stimulate smooth muscle contraction → airway narrowing

Presentation

- Dyspnoea - can interrupt sleep
- Recent URTI - cold, strep throat, sinusitis
- Chest tightness
- Coughing - can interrupt sleep
- Expiratory wheeze - high pitch, **whistle-like wheeze**
- History of atopy - allergic rhinitis, eczema
- Nasal polyps



Diagnosis

- Spirometry - FEV₁/FVC ratio <0.75
- Chest auscultation may reveal expiratory wheeze
- CXR - to rule out pneumonia/ airway obstruction
- Peak expiratory flow rate (PEFR) - positive result = average daily diurnal variability in PEFR of >10%
- Skin-prick testing - determine sensitivity to inhalant allergens
- Exercise-induced bronchoconstriction - positive result = decrease in FEV₁ after exercise is ≥10%

Management

Physiotherapy:

- **Breathing re-training:** normalise breathing pattern by reducing respiratory rate and increasing expiratory airflow
- Education on **correct inhaler administration technique**

- **CBT:** to improve anxiety and asthma control where appropriate
- **Aerobic exercise:** cycling/ swimming/ brisk walking with global strengthening exercises - aim to improve exercise tolerance
- **Education** on avoidance of triggers
- **Secretion clearance:** teach effective coughing technique, postural drainage, percussion, vibrations

Medical: short-acting bronchodilators - for sudden asthma episodes, long-acting bronchodilators - to control prolonged asthmatic symptoms, low-dose inhaled corticosteroids, leukotriene antagonists and long acting muscarinic antagonists

Want to learn more?

With AcePhysio the learning journey doesn't stop here! Take a look at our further reading recommendations below to become an expert in asthma:

1. National Institutes of Health; National Heart, Lung, and Blood Institute, National Asthma Education and Prevention Program. Expert panel report 3: Guidelines for the diagnosis and management of asthma. August 2007 [internet publication]
2. Turner S, Eastwood P, Cook A, Jenkins S. Improvements in symptoms and quality of life following exercise training in older adults with moderate/severe persistent asthma. *Respiration* 2011;81(4):302-310.
3. Bott J, British Thoracic Society Physiotherapy Guideline Development Group. Guidelines for the physiotherapy management of the adult, medical, spontaneously breathing patient. BMJ Publ. Group; 2009.