

Dyspnoea

Definition / Supporting Information

Dyspnoea is the medical term for breathlessness. It may be due to a range of underlying disorders.

Consider:

- Respiratory causes
- Non-respiratory causes such as:
 - Sepsis
 - Metabolic
 - Neurological
 - Cardiac
 - Pharmacological

Keywords / also known as: shortness of breath, breathing difficulties

Essential History

Ask about:

- Onset
 - Sudden (eg, inhaled foreign body or lung collapse)
 - Gradual (eg, bronchiolitis or diabetic ketoacidosis)
- Duration and frequency of attacks
- Any identifiable trigger event
- Any changes with position
 - Unilateral lung disease may be worse when the patient lies on the affected side
- Associated signs and symptoms, such as:
 - Cough
 - Wheezing
 - Fever
 - Sputum production
 - Stridor (an abnormal, harsh inspiratory breath sound arising from the upper airway)
 - Snoring
 - Apnoea
 - Pleuritic pain

- History (patient and family) of:
 - Allergies
 - Respiratory illness
 - Smoking
 - Prematurity
 - Medications
 - Environmental issues
 - Consider house moulds and fuel poverty (cold homes)
 - Recent travel

‘Red Flag’ Symptoms and Signs

Ask about:

- Restriction of daily activities
- Reduced oral intake (see Appetite Loss)
- Lethargy / reduced activity
- Decreased responsiveness (see Altered Conscious Level)
- Reduced ability to speak / communicate
- Very high fever or hypothermia
- Confusion
- Convulsions
- Vomiting

Look for:

- Signs of exhaustion such as increasing lethargy accompanied by decreasing respiratory effort / air entry (“the silent chest”)
- Dehydration
- Meningism (see Bacterial Meningitis)
- Non-blanching rash
- Evidence of poor perfusion
- Stridor
 - For example, croup or foreign body inhalation
- Evidence of increased respiratory effort
 - Suprasternal / intercostal / sub-costal recession
 - Nasal flaring
 - Use of accessory respiratory muscles such as:
 - Sternocleidomastoid (leading to head bobbing in infants)
 - Abdominal muscles
 - Intercostal muscles

- Grunting (may indicate airway collapse / consolidation eg, pneumonia)
- Tachypnoea (see Table 1)
- Hypoxia
 - Clinically suspected due to presence of cyanosis and / or pallor
 - Detected by pulse oximetry
- Apnoea
- Bradycardia or tachycardia (see Table 1)
- Absent / reduced breath sounds with a dull percussion note
 - Pleural effusion
 - Absent breath sounds with a hyperresonant sound / note on chest percussion:
 - May indicate pneumothorax
 - Prompts careful assessment for other associated signs such as mediastinal shift
- Signs of chronic lung or heart disease
 - Barrel chest
 - Finger clubbing
 - Central cyanosis
 - Paradoxical pulse

Table 1 Abnormal vital signs by age

Age group (years)	Heart rate - tachycardia (bpm)	Heart rate - bradycardia (bpm)	Respiratory rate - tachypnoea (bpm)	Systolic blood pressure - hypotension (mmHg)
< 1	> 160	< 110	> 40	< 65
1-2	> 150	< 100	> 35	< 70
2-5	> 140	< 95	> 30	< 70
5-12	> 120	< 80	> 25	< 80
> 12	> 100	< 60	> 20	< 100

Adapted from: Samuels M, Wietska S, eds. Advanced Paediatric Life Support – The Practical Approach. 5th edn. Chichester: Wiley-Blackwell, 2011.

Differential Diagnosis / Conditions

Table 2 Causes of dyspnoea

	Newborn	Infant	Older child
Congenital	Choanal atresia or stenosis		
	Pierre Robin syndrome		
	Ankyloglossia (tongue tie)	Tracheal web	
	Pulmonary agenesis	Cystic fibrosis	
	Eventration of the diaphragm	Bronchomalacia	Cystic fibrosis
	Diaphragmatic hernia	Laryngomalacia	
	Tracheoesophageal fistula	Tracheomalacia	
	Osteogenesis imperfecta	Congenital lung abnormality	
	Congenital myasthenia gravis		
	Congenital heart disease		
Vascular	Airway haemangioma		
	Vascular ring	Vascular ring	Pulmonary oedema eg, due to:
	Pulmonary oedema		<ul style="list-style-type: none"> ▪ Congestive heart failure ▪ Fluid overload ▪ Renal disease
	Pulmonary venous hypertension	Pulmonary oedema	
	Persistent pulmonary hypertension of the newborn		
Infective	Septicaemia		Pneumonia
	Pneumonia	Bronchiolitis	Epiglottitis
	Pertussis	Pneumonia (bacterial / viral)	Bacterial tracheitis
			Croup Retropharyngeal abscess

Key Practice Points
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Inflammatory	<ul style="list-style-type: none"> Interstitial lung disease Meconium aspiration 	<ul style="list-style-type: none"> Asthma Bronchomalacia Aspiration 	<ul style="list-style-type: none"> Asthma Anaphylaxis Enlarged tonsils or adenoids Inhalation / Ingestion of caustic substance Hypersensitivity pneumonitis Granulomatous disease
Neurological	<ul style="list-style-type: none"> CNS depression Hypoxia Vocal cord paralysis Diaphragmatic paralysis 		<ul style="list-style-type: none"> Cord transection Myasthenia gravis Muscular dystrophy Multiple sclerosis Guillain-Barré syndrome Pickwickian syndrome
Developmental	<ul style="list-style-type: none"> Hyaline membrane disease Hypoplastic lungs 		<ul style="list-style-type: none"> Kyphoscoliosis Ankylosing spondylitis Pectus excavatum
Iatrogenic	<ul style="list-style-type: none"> Tracheal stenosis (post-intubation) Maternal drugs 		<ul style="list-style-type: none"> Drugs (eg, antineoplastic agents, narcotics)
Environmental		Foreign body	Foreign body
Cardiac	Cardiac arrhythmias	Cardiac arrhythmias	Cardiac arrhythmias
Metabolic	Acidosis due to inborn errors of metabolism	Acidosis due to inborn errors of metabolism	Acidosis eg, due to: <ul style="list-style-type: none"> Diabetic ketoacidosis Aspirin (in overdose) Renal disease

Haematological	Anaemia Sickle-cell chest crisis	Anaemia Sickle-cell chest crisis
Neoplastic		Tumour Vocal cord polyp
Traumatic		Laryngeal trauma Crush chest injury Pneumothorax Pneumomediastinum
Autoimmune		Systemic lupus erythematosus Scleroderma
Idiopathic	Idiopathic pulmonary artery hypertension	Idiopathic pulmonary artery hypertension Fibrosis
Other		Pleural effusion eg, due to: <ul style="list-style-type: none"> ▪ Pneumonia ▪ Malignancy ▪ Renal disease ▪ Hyperthyroidism Obesity Pregnancy Stress / anxiety (panic attacks)

Investigations

Evaluation should progress only after the ABCs (airway, breathing, and circulation) of resuscitation have been addressed.

To be undertaken by non-specialist practitioners (eg, General Practitioner (GP) Team) or by specialist practitioners (eg, Emergency Department / Paediatric / Paediatric Respiratory Team(s)):

Investigations should be done on an individual basis and be guided by the clinical picture and clinical judgment as they may not always be required.

N.B. Current guidelines state that the following are not indicated in uncomplicated community acquired pneumonia:

- Chest X-ray
- Acute phase reactants (eg, white cell count and C-reactive protein)
- Microbiological investigations

Recommended evaluations:

- Full blood count and blood film
- Blood culture
- Capillary or venous blood gas measurement
- Urea / creatinine and electrolytes
- Bacterial and viral swabs
- Chest X-ray if suspicion of:
 - Effusion
 - Lobar collapse
 - Chronic respiratory disease
- Pulmonary function tests such as peak flow and spirometry may be useful in children over 5 years of age

To be undertaken by non-specialist practitioners (eg, GP Team) or by specialist practitioners (eg, Emergency Department / Paediatric / Paediatric Respiratory Team(s)):

- Laryngoscopy, bronchoscopy, and oesophagoscopy may be used by paediatric specialists to identify a radiolucent foreign body.

Treatment Approach

Severe dyspnoea is a medical emergency and if not treated promptly, the child may progress to respiratory failure and death. Assessment and treatment should be initiated without delay using the ABC approach.

To be undertaken by non-specialist practitioners (eg, GP Team) or by specialist practitioners (eg, Emergency Department / Paediatric / Paediatric Respiratory Team(s)):

- Give oxygen to a child with oxygen saturation below 92% or if dyspnoea is severe
- Reassure the child and family
- Stay with the child and call for help if necessary
- Manage the underlying disorder
 - Eg treat bronchospasm with β_2 -agonists
 - Patients with asthma should receive a personalised action plan (see Asthma [NICE Quality Standard QS25])

Specific Treatment

To be undertaken by specialist practitioners (eg, Emergency Department / Paediatric / Paediatric Respiratory Team(s)):

Severe dyspnoea

- Assess the adequacy of the airway
- Remove foreign bodies, if present
- Treat bronchospasm with β_2 -agonists eg, salbutamol
- If the child cannot effect adequate ventilation, consider the need for mechanical ventilation
- Assess:
 - The heart
 - Peripheral circulation
 - Intravascular volume status
 - Blood oxygen-carrying capacity
- Treat any disturbances found as appropriate:
 - Vasopressors for low cardiac output
 - Fluids or blood transfusion for reduced blood volume
 - Diuretics for volume overload
- Administer oxygen until the cause of dyspnoea is known

When to Refer

Refer urgently to specialist practitioners (eg, Emergency Department / Paediatric / Paediatric Respiratory Team(s)) if:

- There are any 'red flag' symptoms and signs listed above (consider emergency transport)
- There are associated conditions, such as:
 - Prematurity
 - Congenital or acquired heart disease
 - Chronic lung disease
 - Underling metabolic or neurological disorder
- Radiology, spirometry, endoscopy or surgical procedures are likely to be required or to gain a second opinion
- Signs of underlying malignancy such as [lymphadenopathy](#) or [splenomegaly](#)
 - See Suspected cancer: recognition and referral [[NICE guidelines NG12](#)]

When to Admit

- If there are signs and symptoms of respiratory failure or impending respiratory failure (see 'Red Flag' Symptoms and Signs - above)

- If there is hypoxia while breathing room air

‘Safety Netting’ Advice

- Advise the family / carers to seek urgent medical review if there is:
 - Worsening respiratory rate or distress
 - Increasing lethargy / exhaustion
 - Decreasing intake of fluids
 - Pale, grey or cyanosed appearance
 - Concern that their child is deteriorating

Patient / Carer Information

****Please note: whilst these resources have been developed to a high standard they may not be specific to children.***

- [Shortness of breath](#) (Web page), the NHS website
- [Diagnosing asthma in children – Advice for you](#) (Web page), Asthma UK
- [Asthma](#) (Web page), the NHS website
- [Croup](#) (Web page), the NHS website

Resources

National Clinical Guidance

[Anaphylaxis: assessment to confirm an anaphylactic episode and the decision to refer after emergency treatment for a suspected anaphylactic episode](#) (Web page), NICE clinical guideline CG134, National Institute for Health and Care Excellence

[British guideline on the management of asthma](#) (PDF), SIGN clinical guideline 158, Scottish Intercollegiate Guidelines Network and the British Thoracic Society

[BTS guidelines for the management of pleural infection in children](#) (PDF), British Thoracic Society

[BTS guidelines for the management of community acquired pneumonia in children: update 2011](#) (PDF), British Thoracic Society

[Respiratory tract infections – antibiotic prescribing: Prescribing of antibiotics for self-limiting respiratory tract infections in adults and children in primary care](#) (Web page), NICE clinical guideline CG69, National Institute for Health and Care Excellence

[Suspected cancer: recognition and referral](#) (Web page). NICE clinical guidance NG12. National Institute for Health and Care Excellence

[Bronchiolitis in children: diagnosis and management](#) (Web page). NICE guidance NG9. National Institute for Health and Care Excellence

[Feverish illness in children: Assessment and initial management in children younger than 5 years](#) (Web page), NICE clinical guideline CG160, National Institute for Health and Care Excellence

[Asthma](#) (Web page) NICE clinical guideline QS25, National Institute for Health and Care Excellence

Suggested Resources

****Please note: these resources include links to external websites. These resources may not have national accreditation and therefore PCO UK cannot guarantee the accuracy of the content.***

[Difficulty in Breathing](#) (Web page – requires log-in), Spotting the Sick Child

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Content Editor: Dr Will Christian

Clinical Expert Reviewers: Dr Simon Langton Hewer

GP Reviewer: Dr Ian A Dunn

AAP Reviewer: Thomas McInerny, MD, FAAP

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Update Reviewer: Dr Sandheeah Ramdeny (trainee paediatrician)

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