NHS
Vale of York
Clinical Commissioning Group

NHS
York and Scarborough
Teaching Hospitals
NHS Foundation Trust

Referral Support Service

Paediatrics

PA27 Community Acquired Pneumonia (CAP)

Paediatric Normal Values (adapted from APLS)			
Age	Resp Rate	Heart Rate	Systolic BP
Neonate <4w	40-60	120-160	>60
Infant <1 y	30-40	110-160	70-90
Toddler 1-2 yrs	25-35	100-150	75-95
2-5 yrs	25-30	95-140	85-100

Definition

An acute infection of the pulmonary parenchyma in a child who has acquired the infection in the community.

Exclude Red Flag Symptoms

- Worsening work of breathing (e.g. grunting, nasal flaring, marked chest recession)
- Fluid intake is less than 50-75% of normal or no wet nappy for 12 hours
- Apnoea or cyanosis
- Exhaustion (e.g. not responding normally to social cues, wakes only with prolonged simulation)

Low Threshold for Admission

- Chronic lung disease
- Haemodynamically significant congenital heart disease
- Age < 12 weeks (corrected)
- Premature birth, particularly under 32 weeks
- Neuromuscular disorders
- Immunodeficiency
- Duration of illness <3 days with amber symptoms (see assessment box)
- Re-attendance

General Points

- Severity is influenced by both the pathogen and host susceptibility to infection
- Severe disease is more common in children under 5 and those with a history of prematurity
- Can be caused by bacteria and viruses
- Streptococcus pneumoniae is the single most common cause in children
- Group A streptococci and Staphylococcus aureus are less common, but more likely to progress to severe infections
- Viruses are more commonly found in those under 1 year. Respiratory syncytial virus (RSV) is the most common viral aetiology
- Streptococcus pneumoniae is a rare cause of haemolytic uraemic syndrome (HUS). Consider HUS in a child with anuria and profound anaemia.

Assessment

- Fever, cough, difficulty breathing and tachypnoea
- Wheeze, chest pain and abdominal pain may be present
- Cough may be absent in the initial stages
- Crackles often heard on auscultation, bronchial breathing is a later sign of consolidation
- Reduced air entry and dull percussion note suggest pleural effusion
- Symptoms begin in the community or within 48 hours of admission
- Prolonged fever associated with influenza may be a feature of secondary bacterial pneumonia

Management

- All children diagnosed with pneumonia should receive antibiotics as it is not possible to distinguish between bacterial and viral pneumonia
- Children <2y with mild symptoms do not usually have pneumonia and often don't need antibiotics but should be reviewed if symptoms persist
- Oral antibiotics are safe and effective for most children
- Duration: 5-7 days is usually sufficient for non-severe pneumonia, up to 14 days may be required in severe cases

Community Acquired Pneumonia			
Drug	Age/weight	Dose	Comments
First Line Options			
Amoxicillin	1-11m	125 mg TDS	
	1-4y	250 mg TDS	
	5-17y	500 mg TDS	
Can be added if there is no response to Amoxicillin Use first line if penicillin allergic			
Clarithromycin	1m-11y	<8kg: 7.5mg/kg BD 8-11kg: 62.5 mg BD 12-19kg: 125 mg BD 20-29kg: 187.5mg BD 30-40kg: 250mg BD	
	12-18y	250mg BD	
Second Line Options (should be used in pneumonia associated with influenza)			
Co-amoxiclav	1-11m	0.25ml/kg of 125/31 suspension TDS	
	1-5y	5ml of 125/31 suspension TDS	
	6-11y	5ml of 250/62suspension TDS	
	12-17y	250/125mg tablet TDS	

Treatment Failure

If the child is still pyrexial or unwell at 48 hours seek advice from secondary care and consider

- Is an appropriate dose being used? Consider adding clarithromycin
- Has a complication developed?
- Is the child immunocompromised or have an underlying condition?
- Consider tuberculosis

	Traffic light system for identifying severity of illness		
	Green – Low Risk	**Amber – Intermediate Risk**	**Red – High Risk**
Activity	• Responds normally to social cues • Content/smiles • Stays awake/awakens quickly • Strong normal cry	• Altered response to social cues • No smile • Reduced activity • Parental anxiety	• Not responding normally or no response to social cues • Unable to rouse or if roused does not stay awake • Weak, high pitched or continuous cry • Appears ill
Skin	• Normal skin colour • CRT <2 secs • Normal skin turgor • Warm extremities • Normal eyes	• Normal skin colour • Pallor reported by parent/carer • Cool peripheries • CRT 2-3 secs	• Pale, mottled, ashen • Cold extremities • CRT >3 secs • Sunken eyes
Respiratory	• Normal breathing • <12m: RR <50bpm • 1-5y: RR <40bpm • O_2 sats ≥ 95% • No chest recessions • No nasal flaring	• Tachypnoea • Moderate recessions • May have nasal flaring • <12m: RR 50-60bpm • 1-5y: RR 40-60bpm • O_2 sats: 92-94%	• Significant respiratory distress • Grunting • Apnoeas • Severe recessions • Nasal flaring • All ages: RR >60bpm • O_2 sats:≤ 92%
Circulation	• Tolerating 75% of fluid • Occasional cough induced vomit • Moist mucous membranes	• 50-75% fluid intake over 3-4 feeds • Cough induced vomiting • Reduced urine output	• 50% or less fluid intake over 2-3 feeds • Cough induced vomiting frequently • Significantly reduced urine output
Fever	• Systemically well • T <38°C	• Age 3.6m: T ≥ 39°C • Fever for ≥5d • Rigors • Swelling of a limb or joint • Non-weight bearing limb/not using an extremity	• Age <3m: T ≥ 38°C • Non-blanching rash • Bulging fontanelle • Neck stiffness • Status epilepticus • Focal neurological signs • Focal seizures
	All green	**Any amber and no red**	**If any red**
	• Can be managed at home • Give community acquired pneumonia information leaflet • Optimise analgesia • All children should receive antibiotics	• Consider same day review • If you feel the child is ill, needs O_2 support or will not maintain hydration discuss with paediatrician on-call	• Refer immediately to emergency care – consider 999 • Bleep paediatrician on-call • Consider appropriate means of transport • If appropriate commence relevant treatment to stabilise child for transfer • Consider starting high flow oxygen support

Patient information leaflets/ PDAs

RSS Parent Leaflet

References

- Harris M et al. British Thoracic Society guidelines for the management of community acquired pneumonia in children: update 2011. Thorax Oct 2011; 66 Suppl 2:ii1-ii23
- National Institute for Clinical Excellent [NICE] (2021) *Cough – acute with chest signs in children.* [Viewed 16 Nov 2021] https://cks.nice.org.uk/topics/cough-acute-with-chest-signs-in-children/management/community-acquired-pneumonia/

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