

Guidelines in the management of Pneumonia in children aged 1 month-17 years

Indications: Children aged 1 month to 17 years of age

Cautions: Infants under the age of 1 month to be managed according to the sepsis guidelines

Guidelines can be used in conjunction with the Microguide app

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Pneumonia

Recognition and Assessment

- Bacterial pneumonia should be considered when there is a persistent or repetitive fever >38.5 together with chest recession and a raised respiratory rate. (D)
- Up to 35% of lower respiratory tract infections have a single virus as the causative organism
- Inflammation and consolidation of the lung can be caused by bacteria, viral or mycoplasma infection
- Low threshold of suspicion in children with **immunodeficiency, Cystic Fibrosis and Sickle Cell Disease**

Awake and unsettled infants can have a high respiratory rate on a single measurement. Rest and Repeat.

Table 1. WHO definition of tachypnoea

Age	Counted Breath rate
<2 months	≥ 60 /min
2-11 months	≥ 50 /min
1-5yr	≥ 40 /min

Severity assessment

Severity Assessment	Mild	Moderate	Severe
Effort of breathing	Nil-Mild	Moderate increase	Marked respiratory distress
Respiratory rate	Normal PEWS	Amber PEWS	RED PEWS
Circulation	No tachycardia	Tachycardia (amber)	Red PEWS score
Oxygen Saturation	>95% in air	<95% in air	<92% in air or <95% in 6L/min oxygen
Management	Mild	Moderate	Severe
Oxygen	Not required	Oxygen to maintain Sats >95%	High flow oxygen (humidified if possible) Consider Vapotherm Escalate early –if looks tired/septic
Antibiotics	Oral antibiotics	IV if not tolerating oral or vomiting	Iv antibiotics
Hydration	Oral fluids	NG or IV if unable to maintain oral fluids	Iv fluids (2/3 rd maintenance)
Social Situation	Family able to provide appropriate care/fluids at home	Family unable to provide appropriate observation, feed, fluids at home	N/A
Investigations	Mild	Moderate	Severe
CXR	No	consider	Yes
Lab tests	No	Consider	Yes
Disposition	Mild	Moderate	Severe
Decision to admit is based on age and clinical/social factors	Outpatient if meet all criteria Admit if <3months or family unable to manage	Consider admission Senior review (Reg/Consultant) Needs to have clinically improved in 24 hours	Admit Senior review Anaesthetic review Inform STRS if concerns

Antibiotic Choices

Mild Community Acquired Pneumonia

- No oxygen requirement
- No respiratory distress
- Not septic
- Tolerating oral fluids and not needing admission

Possible organisms: *Streptococcus pneumoniae*, *HIB*, *Mycoplasma pneumonia*, *Chlamydia pneumonia* and viruses

Over 1 month of age years

<u>1st Line</u>	<u>Penicillin allergy or atypical pneumonia</u>
<p>Amoxicillin PO (5-7 days)</p> <p><i>If had course of amoxicillin in last 4 weeks or associated with influenza infection</i></p> <p>Co-amoxiclav 7-10 days</p>	<p>Azithromycin PO (3 Days)</p>

Moderate-to severe Community Acquired Pneumonia

- Requiring admission
- Significant respiratory distress
- Oxygen requirement
- Systemic signs of sepsis (in this case give iv treatment)

If able to take oral and not sickle cell, treat with oral antibiotics even if oxygen requirement

***** Sickle cell patients need iv treatment**

<u>1st Line</u>	<u>Penicillin allergy or atypical pneumonia</u>
<p>Amoxicillin PO 10 Days + Azithromycin PO 3 Days</p> <p><i>If had course of amoxicillin in last 4 weeks</i></p>	<p>Azithromycin PO</p>

Co-amoxiclav PO + Azithromycin PO

Switch to oral when appropriate

Unable to take oral, signs of sepsis and all sickle cell patients

1 st line	Penicillin or atypical pneumonia
Co-amoxiclav IV + Clarithromycin IV	Iv Clarithromycin (consider adding Teicoplanin)
Switch to oral when appropriate	Discuss with microbiology if concerns
Co-amoxiclav and Azithromycin when possible	

If concern there was significant aspiration pneumonia add metronidazole

Longer courses of antibiotics maybe required for severe disease such as necrotising pneumonia discuss with the Consultant.

Hospital Acquired Pneumonia

Additional Considerations

- If strong data to suggest *Streptococcus Pneumonia infection* then use **Benzilpenicillin** can be used alone, with oral **Amoxicillin** to complete the course
- If clinical or microbiological data suggest *Staphylococcus Aureus* infection use **Co-amoxiclav**
- Change iv to oral within 24hours if possible
- If uncomplicated treat for 7 days
- If complicated or staphylococcal pneumonia treat for 14 and 14-21 days for severe Community Acquired Pneumonia
- Maintain hydration but restrict to 80% maintenance (if iv therapy 0.9%Normal Saline, 5% Dextrose with potassium)
- Monitor electrolytes

Monitoring

- Continuous SATS monitoring

- 1-4 hourly observations depending on severity of the illness
- If no improvement in 24-48 hours review the diagnosis and repeat CXR

Discharge

- Patients requiring follow-up within 6-8 weeks with CXR if:
 - Lobar Collapse
 - Significant Pleural effusion
 - Round Pneumonia on CXR
 - Previous Respiratory Tract infection
 - Failure to thrive
- GP follow up for all others within 6-8 weeks

References

- 1) **British Thoracic Society guidelines for the management of community acquired pneumonia in children: update 2011** (*Harris M, Clark J, Coote N et al Thorax 2011;66:ii1-23*)
- 2) **Infants and Children: Acute Management of Community Acquired pneumonia clinical practice guide** . http://www0.health.nsw.gov.au/policies/gl/2015/pdf/GL2015_005.pdf
- 3) **Up to date: Community Acquired Pneumonia in Children** (accessed Jan 2017)
- 4) **Paediatric guidelines 2014-16 (Bedside Clinical Guidelines in Partnership) Page 59-60**