PAEDIATRIC ACUTE CARE GUIDELINE	
Pneumonia	
Scope (Staff):	All Emergency Department Clinicians
Scope (Area):	Emergency Department

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Pneumonia

Pneumonia is a lower respiratory tract infection caused by viruses or bacteria.
It may involve a lobe (lobar pneumonia) or be more diffuse (bronchopneumonia).

General

- Pneumonia can be caused by viruses (such as RSV, influenza, parainfluenza and adenovirus), bacteria (most commonly *Streptococcus pneumoniae*) or atypical bacteria (*Mycoplasma pneumoniae* and *Chlamydia trachomatis*).
- Viral pneumonia is more common than bacterial pneumonia.
- The most common cause of bacterial pneumonia in the < 5 year olds is Streptococcus.
- The most common cause of bacterial pneumonia in the > 5 year olds is Mycoplasma.

Assessment

- Differentiation between viral and bacterial pneumonia is best done by clinical acumen.
- Neither X-Ray appearance, WCC, neutophil count nor CRP is reliable in trying to distinguish between viral and bacterial pneumonia.

Examination

- Pneumonia will usually present with fever, cough, tachypnoea and possibly grunting.
- It can also present as fever without a source (especially in neonates), and occasionally as abdominal pain or meningism.

- Clinically, tachypnoea is a consistently useful sign, but auscultatory signs can be unreliable.
- Most children seen in our community with fever and respiratory symptoms will not have pneumonia.

Other clinical features to note:

- In the preschool child, if wheeze is present, primary bacterial pneumonia is unlikely.
- Presence of bilateral signs with wheeze and/or crackles is more suggestive of a viral pneumonia.
- Mycoplasma is the most common cause of community acquired pneumonia in school age children. It generally has a more indolent course and may have quite variable signs. It is often associated with malaise, headache and sore throat.

Investigations

Chest X-Ray	• A CXR may be useful in children with either isolated focal signs or a clear chest • The presence of lobar or segmental consolidation suggests bacterial pneumonia (usually Streptococcus) • Cavitation and significant pleural effusions are rare and suggest a bacterial cause
Blood culture	• Should be performed in all children thought to have bacterial pneumonia who are sick enough to require hospital admission
Blood Tests	• WCC, CRP and ESR are unreliable in distinguishing between bacterial and viral pneumonia • Bacterial serological tests are unhelpful, with the possible exception of paired Mycoplasma titres
Nasopharyngeal aspirate (NPA)	• Viruses (if being admitted for isolation purposes) • May be useful to identify Mycoplasma in school age children • Bacterial culture is meaningless and should not be done

Management

- Most children with bacterial pneumonia can be treated at home with oral antibiotics and General Practitioner follow up in 24 hours.
- Children presenting with mild symptoms of lower respiratory tract infection are likely to be viral and should not be treated with antibiotics.

Medications

Community Acquired Pneumonia (CAP)

Clinical Scenario	Standard Protocol
Neonate < 1 month of age	IV Amoxycillin 50mg/kg/dose **AND** IV Gentamicin 7.5mg/kg/dose Consider investigating and treating for pertussis
Mild pneumonia	Oral Amoxicillin 25mg/kg (maximum 1g) 8 hourly
Moderate pneumonia	IV Benzylpenicillin 30mg/kg (maximum 1.2g) 6 hourly **+/-** Oral Azithromycin 10mg/kg (maximum 500mg) daily if considering atypical pneumonia
Severe pneumonia Suspected Staphylococcal pneumonia (e.g. pneumatocoeles – any age)	IV Ceftriaxone 50mg/kg (maximum 2g) daily **AND** IV Vancomycin 15mg/kg (maximum dose of 750mg) 6 hourly **AND** IV/Oral Azithromycin 10mg/kg (maximum 500mg) daily

For further information (including information on antibitoic choice for aspiration pneumonia and empyema) WA Health Clinicians can access the Children's Antimicrobial Management Program (ChAMP) – Acute Respiratory Tract Infection Empiric Guideline on the intranet.

Admission criteria

- Toxic/septic appearance
- Clinical evidence of significant respiratory distress
- Hypoxia – reduced oxygen saturation < 93%
- Extensive consolidation, large effusion or cavitation on CXR
- Not tolerating oral antibiotics
- History of chronic respiratory disease, congenital cardiac disease, immunodeficiency, trisomy 21 or ex-preterm (< 32 weeks)
- Geographic location and access to travel of parents, or other adverse social circumstance

Referrals and follow-up

If discharged, ensure that child is reviewed within 24 hours, preferrably by the child's GP.

Observations

Baseline observations include heart rate, respiratory rate, oxygen saturations and temperature.
Minimum of hourly observations should be recorded whilst in the emergency department.
Any significant changes should be reported immediately to the medical team.

Tags

bacterial, bronchitis, chest, consolidation, cough, crackles, CXR, effusion, fever, grunting, hypoxia, infection, lobar, lower respiratory tract, LRTI, npa, pleural, PNA, pneumonia, respiratory, tachypnoea, viral, vomit, vomiting, wheeze, X-Ray, xray

References

• Western Australia. Department of Health. Children's Antimicrobial Management Program (ChAMP). Acute Respiratory Tract Infection. ChAMP Empiric Guidelines. Princess Margaret Hospital: 2013.

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