PAEDIATRIC COMMUNITY ACQUIRED PNEUMONIA ON HOME INTRAVENOUS THERAPY - PATIENT MANAGEMENT

PRACTICE GUIDELINE ©

DOCUMENT SUMMARY/KEY POINTS

- Community acquired pneumonia is a common paediatric presentation that resolves quickly with appropriate antibiotic therapy.
- Children with uncomplicated pneumonia who would otherwise be admitted, can be managed on IV therapy at home as a direct referral to HITH from the Emergency Department if they meet criteria.
- Subsequently the patient will be managed through the Acute Review Clinic as part of their HITH admission, or visited at home where appropriate All cases considered for home therapy should be screened for risk factors prior to referral to HITH/Ambulatory care, or discussed with General Medical Team.
- Ceftriaxone covers the spectrum of organisms seen in paediatric pneumonia and provides a once daily dosing option.

CHANGE SUMMARY

- Updated flowchart regarding the process for admission and review in HITH/ARC
- Change in recommended antibiotic from hospital guideline to use once daily ceftriaxone in the ambulatory setting
- This is a new SCHN Network document

Approved by:	SCHN Policy, Procedure and Guideline Committee	
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Team Leader:	Staff Specialist	**Area/Dept**: Ambulatory

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READ ACKNOWLEDGEMENT

- HITH/ARC staff should read and be aware of this document.

Introduction

After the neonatal period, up to 70% of community-acquired pneumonia (CAP) in children is viral, with influenza A virus, respiratory syncytial virus (RSV) and parainfluenza viruses the most commonly identified. Bacterial pneumonia in children is predominantly caused by *Streptococcus pneumoniae*. *Mycoplasma pneumoniae* can cause CAP, especially in school-aged children, though it may also cause CAP in younger children. Other bacterial causes of CAP are less common and are not covered by this guideline.

Clinical features do not reliably distinguish between viral and bacterial (including atypical) pathogens. However, infants or children who have widespread wheeze and/or crackles on auscultation, but no focal changes on chest X-ray are likely to have a viral infection, and symptomatic treatment may be sufficient. Acute viral bronchiolitis is the most likely diagnosis in an infant younger than 18 months who presents with cough and respiratory distress and should be considered.

Oral antibiotic therapy is preferred in mild disease; children with severe pneumonia usually require IV therapy initially. Infants and children with pre-existing cardiac or pulmonary disease require prompt and intensive treatment for CAP.

Patients who have no preceding cardiac and respiratory disease and who present with mild or moderate pneumonia can usually be managed as an outpatient.

All of these patients need review in the following days by their General Practitioner (GP) or the HITH team.

A recent systematic review in the Lancet identified that oral antibiotics can be used in most children, including those requiring admission. Severe or complicated pneumonia included Saturations <85%, shock receiving intravenous bolus, immunocompromised or chronic lung or heart disease. These patients require admission.

Home on oral antibiotics (non-admitted)

- Oxygen saturations >95% in air
- Normal or only slightly reduced oral intake
- Can tolerate oral antibiotics
- No significant comorbidity

Home with admission to HITH (admitted to HITH)

- Oxygen saturations >95% in air, not requiring supplemental oxygen
- Normal or only slightly reduced oral intake
- Poor response to prior oral antibiotics over the last 24-48 hours
- Unable to tolerate oral medication (refusal, vomiting)

Admission as an inpatient

- Severe or complicated pneumonia
- Requiring supplemental oxygen or any respiratory support such as high flow nasal prong oxygen
- Requiring intravenous fluids for fluid management/dehydration
- Toxic or unwell
- Patients with chronic cardiac, respiratory or neurological problems or who are immunosuppressed are at higher risk of complications and should be considered for admission or discussed with the consultant prior to discharge
- Consider admission for younger patients <1 year

Eligibility of Paediatric Community Acquired Pneumonia on Home IV Therapy

Currently the ARC clinic operates with a nurse and registrar:

- CHW - Monday to Friday 08:30am to 4:00pm, excluding public holidays
- SCH – Monday to Friday 10:00am to 8:00pm and Saturday/Sunday 10:00am to 12:00pm
- On weekends HITH nursing staff are able to review patients in ARC
- The patient requires a "HITH referral" through PowerChart and the team will decide on the most appropriate location to review the child, either ARC or in the home.
- CAP in children may be suitable for intravenous antibiotics at home if the child is well and meets the following eligibility criteria:

<u>Eligible Patients</u>

- Age over 1 year
- Not requiring supplemental oxygen or intravenous fluids
- Unable to tolerate oral antibiotics
- Would otherwise be admitted for IV antibiotics
- Meets HITH criteria

<u>Exclusion Criteria</u>

- Age under 1 year
- Require oxygen or IV fluids
- Immunosuppressed
- Significant comorbidity/chronic disease (neurological, cardiac, respiratory) *discuss with ED or Gen Med consultant
- Toxic or unwell requiring observation, or resuscitation

Guideline Overview

1. Consider
- Discuss possible HiTH referral with ED Consultant/Fellow
- Insert IV and collect FBC and blood culture (consider sputum culture if productive)
- Consider a chest x-ray

2. Refer
- Refer potential ambulatory patients to the Medical Registrar for early review
- If deemed appropriate for home IV therapy refer to HiTH and place a PowerChart Referral for HITH containing relevant clinical details

3. Consent
- Patient education, HITH factscheet and consent completed

4. Treat
- First dose IV antibiotics (ceftriaxone) given and 48 hour medication chart completed on EMR
- Can go home ONLY after Fellow or Consultant review
- The patient should be admitted to a HITH bed under Gen Med AMO of the day

5. HiTH
- Acute Review Clinic (ARC) visit next day to review patient and consider continuing IV antibiotics
- If patient deteriorates refer to Medical Team and discuss with AMO for possible admission

6. Review
- Review in Acute Review Clinic (ARC) by registrar next day. Plan for duration of antibiotic therapy
- Check blood/swab cultures. Consider change to PO or elect to continue home IV therapy further 24 hours*
- Any **positive blood cultures** should be discussed with ID physician on call

***Review**
- If further IV antibiotics required patient continues to attend ARC daily with daily medical review by ARC registrar for upto 48 hours
- If the patient develops complications or is not improving after 48 hours, will need inpatient admisison under the Team they were originally admitted

7. Oral ABs
- If improved 5 day oral antibiotic course prescribed on outpatient script
- Follow up GP at 48 hours after discharge
- The ARC registrar is responsible for completion of a discharge summary upon completion of IV therapy

Antibiotics

Pneumonia in children 3 months to younger than 5 years is usually caused by viral pathogens; however, if bacterial infection is suspected clinically or on chest X-ray, consider antibiotic therapy.

For severe pneumonia requiring admission to hospital, please see antibiotic guidelines for current recommended regime. Below applies to children suitable for ambulatory care only.

	Oral	Home IV Therapy
Standard First Line	**amoxicillin** 15 mg/kg, 8-hourly for 5 days **For school age children add **azithromycin** 10 mg/kg/dose (max 500 mg/dose) once a day for 5 days	**Ceftriaxone** 25mg/kg/dose once a day (max 1g/dose) **For school age children add **azithromycin** 10 mg/kg/dose (max 500 mg/dose) once a day for 5 days
Penicillin Allergic	**azithromycin** 10 mg/kg/dose (max 500 mg/dose) once a day for 5 days	**FOR PATIENTS WITH A SEVERE BETA LACTAM (PENICILLIN) ALLERGY, PLEASE DISCUSS WITH INFECTIOUS DISESASES CONSULTANT OR FELLOW ON CALL **

** In school age children, addition of macrolide covers for atypical community acquired pneumonia caused by mycoplasma.

References

1. Madigan T, Banerjee R. Characteristics and outcomes of outpatient parenteral antimicrobial therapy at an academic children's hospital. Pediatr Infec Dis 2013; 32:346-9
2. Patel S, Abrahamson E et al. Good practice recommendations for paediatric outpatient parenteral antibiotic therapy (p-OPAT) in the UK: A consensus statement
3. ETG: community acquired pneumonia in children https://tgldcdp.tg.org.au.acs.hcn.com.au/viewTopic?topicfile=community-acquired-pneumonia&guidelineName=Antibiotic#toc_d1e1531
4. McMullan BJ, Andresen D et al. Antibiotic duration and timing of the switch from Intravenous to oral route for bacterial infections in children: systematic review and guidelines. Lancet Infect Dis 2016;16: e139–52