ပြည်ထောင်စုမြန်မာနိုင်ငံ၊ အထူးဒေသ(၁) ကျန်းမာရေးဌာန

缅甸联邦第一特区卫生部

The Union of Myanmar, SR(1) Department of Health

Pneumonia

Standard Operating Procedure (SOP)

Contents

RESPIROLOGY

Pneumonia

Diagnostic Features

- *Cough*
- *Fever*
- *Dyspnoea and tachypnoea*
- *Danger signs such as convulsion, drowsiness, cyanosis and stridor in calm child*
- *Use of accessory muscle of respiration, chest indrawing and intercostal indrawing*
- *Coarse crepitation, and rhonchi in some patients*
- *Bronchial breath sounds are associated with lobar consolidation*

Assessment of Severity of Pneumonia
For all age groups in between 2-59 months

No Pneumonia

- *Cough and cold*

Pneumonia

- *Fast breathing and/or chest indrawing*
  - *<2 months age: >60/min*
  - *2-12 months age: >50/min*
  - *12 months-5 years age: >40/min*

Severe pneumonia or Very severe disease

- *Presence of general danger signs*
  - *Not able to drink*
  - *Persistent vomiting*
  - *Convulsions*
  - *Lethergic or unconscious*
  - *Stridor in a calm child*
  - *Severe malnutrition*

Investigations

Chest radiograph

- *Chest radiography should not be considered as a routine investigation*
- *Children with signs and symptoms of pneumonia who are not admitted to hospital should not have a chest X-ray.*
- *A lateral X-ray should not be performed routinely*
- *CXR is indicated ONLY if*
    - *Clinical findings are ambiguous*
    - *A complication such as a pleural effusion is suspected*
    - *Pneumonia is prolonged and unresponsive to antimicrobials*

Follow-up chest radiography is not required in those who were previously healthy and who are recovering well, but should be considered in those with a round pneumonia collapse or persisting symptoms.

Repeated chest radiographs should be obtained in children who fail to demonstrate clinical improvement and in those who have progressive symptoms or clinical deterioration within 48-72 hours after initiation of antibiotic therapy.

Repeated chest radiographs 4-6 weeks after the diagnosis of CAP should be obtained in patients with recurrent pneumonia involving the same lobe and in patients with lobar collapse on initial chest radiography with suspicion of an anatomic anomaly, chest mass, or foreign body aspiration.

White blood cell count

Routine measurement of the complete blood cell count is not necessary in all children with suspected CAP managed in the outpatient setting.

In more serious disease, it may provide useful information for clinical management in the context of the clinical examination and other laboratory and imaging studies.

- *Increased counts with predominance of polymorphonuclear cells suggests bacterial cause*
- *Leucopenia can either suggests a viral cause or severe overwhelming infection*

Acute phase reactants

ESR and CRP are not useful in distinguishing viral from bacterial infections or in the management of uncomplicated pneumonia.

Microbiological investigations

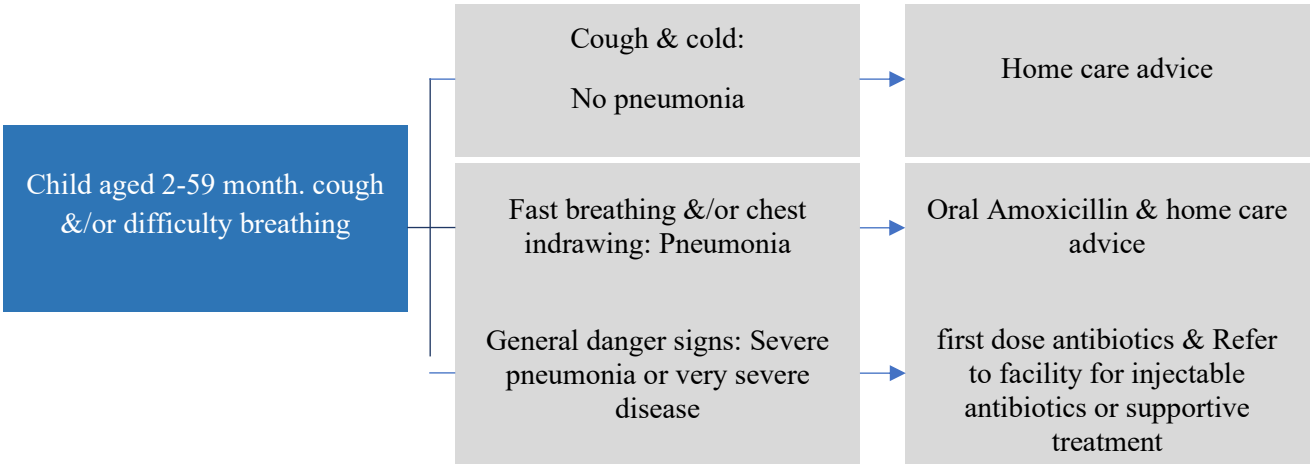
Should not be considered routinely in those with milder disease or those treated in the community.

Microbiological diagnosis should be attempted only in children with

- *Severe pneumonia sufficient to require paediatric intensive care admission or if poor response to first line antibiotics*
- *Complications of pneumonia*

Serology is not routinely done even if suspected of atypical pneumonia, i.e. Mycoplasma pneumonia, Chlamydia.

Treatment



General management strategy should be provided for a child treated as outpatients. The general management of a child who does not require hospital referral comprises advising parents and carers about;

- *Management of fever*
  - *use of antipyretics*
  - *avoidance of tepid sponging*
- *Preventing dehydration*
- *Identifying signs of deterioration*
- *Identifying signs of other serious illness*
- *How to access further healthcare (providing a 'Safety net'). The 'Safety net should be one or more of the following:*
  - *Provide the parent or carer with verbal and/or written*
  - *Information on warning symptoms and how further healthcare can be accessed;*
  - *Arrange a follow-up appointment at a certain time and place;*

Criteria for Hospitalization

- *Severe pneumonia or very severe disease*
- *Intermittent apnoea*
- *Severely dehydrated*
- *Recurrent pneumonia*
- *Severe underlying disorder (i.e. immunodeficiency, congenital heart disease, chronic lung disease)*
- *Pneumonia refractory to oral antibiotics*
- *Family not able to provide appropriate observation or supervision*
- *Infants less than 3-6 months of age with suspected bacterial CAP are likely to benefit from hospitalization.*
- *SpO_2, <92% in air*

Indications for Transfer to ICU

- *Haemodynamic instability*
- *Recurrent apnoea or slow irregular breathing*
- *Rising respiratory rate and pulse rate with clinical evidence of respiratory distress and exhaustion and failure to maintain SpO_2 >92% with 8 L of oxygen*

Monitoring (For children needing admission)

- *Temperature, heart rate, respiratory rate, SpO_2, and respiratory distress including chest indrawing and use of accessory muscles of respiration should be monitored 4 hourly*

Antibiotic Therapy

Antibiotic therapy for outpatient setting (For Pneumonia)

Antimicrobial therapy is not routinely required for preschool-aged children with CAP, because viral pathogens are responsible for the great majority of clinical disease.

Bacterial pneumonia should be considered in children when there is persistent or repetitive fever >38.5ºC together with chest recession and a raised respiratory rate.

Children under 5 years of age

- *First line: PO Amoxicillin (40 mg/kg/dose twice daily for 5 days)*
- *Second line: Co-amoxiclav (30 mg of Amoxicillin/kg/dose 8 hourly) OR*
- *Cephalosporin (Second- or third-generation Cephalosporin (Cefpodoxime. Cefuroxime, Cefprozil)*
- *Macrolide (Azithromycin) if Mycoplasma pneumoniae or Chlamydia pneumoniae is suspected*
- *Flucloxacillin (50 mg/kg/day in 4 divided doses) if Staph aureus is suspected*

Children age 5 years and older

- *First line: Amoxicillin*
- *Second line: If high suspicion of atypical bacterial cause: Azithromycin (Child 6 month to 17 years: 10 mg/kg OD, maximum dose 500 mg) for 3 days*

Duration for outpatient setting

- *Total duration 5-7 days except Azithromycin (for 3 days)*

Antibiotic therapy for inpatient setting

(For severe pneumonia/ HIV infected child with pneumonia)

- *First line IV/IM Ampicillin (or Penicillin) and Gentamicin*
  - *Ampicillin: 50 mg/kg OR Benzyl penicillin 50 000 units/kg IV/IM every 6 hours for at least five days*
  - *Gentamicin: 7.5 mg/kg IV/IM once a day for at least five days*
- *Second line*
  - *Considered when:*
    - *No signs of recovery after 48-72 hours of 1s line antibiotics*
    - *Toxic and ill with spiking temperature for 48-72 hours*
  - *Drugs*
    - *Ceftriaxone (50 mg/kg OD)*
    - *Coamoxiclav (30 mg of Amoxycillin/kg/dose 8 hourly) or*
    - *Cefotaxime (200 mg/kg/day Iv in 3 divided doses) or*
    - *Cefuroxime (150 mg/kg/day Iv in 3 divided doses)*
- *Third line*
  - *Cetazidime (30 mg/kg/dose 8 hourly)*
  - *Other: Aminoglycosides (Amikacin 7.5 mg/kg/dose 12 hourly) if sepsis is suspected*
- *Duration of for inpatient setting*
  - *Total duration 7 days for mild to moderate cases and minimum 10 days for more severe cases.*
  - *Start with IV and change oral once the clinical response is good and the child can take orally*

Supportive Treatment

Fluids

- *Patients who are vomiting or who are severely ill may require IV fluids*
- *it should be given at 80% of maintenance level and serum electrolytes should be monitored*

Oxygen

- *It is important to maintain the SpO_2 >92%*
- *For children who are restless, tachypnoeic with severe chest indrawing, cyanosed or not tolerating feeds*
- *It can be given either via nasal cannulae, face mask or head box*

Temperature control

Paracetamol 15 mg/kg/dose every 4-6 hours to reduce discomfort

Prevention

- *Advise families for frequent handwashing, avoiding tobacco smoking, promoting breastfeeding, reducing exposure to other children, and immunization.*