हिमाचल प्रदेश सरकार

NATIONAL HEALTH MISSION
राष्ट्रीय स्वास्थ्य मिशन
हिमाचल प्रदेश

मानव सेवा

TRAINING MODULE ON PNEUMONIA MANAGEMENT

FOR MEDICAL OFFICERS AND STAFF NURSES

SAANS

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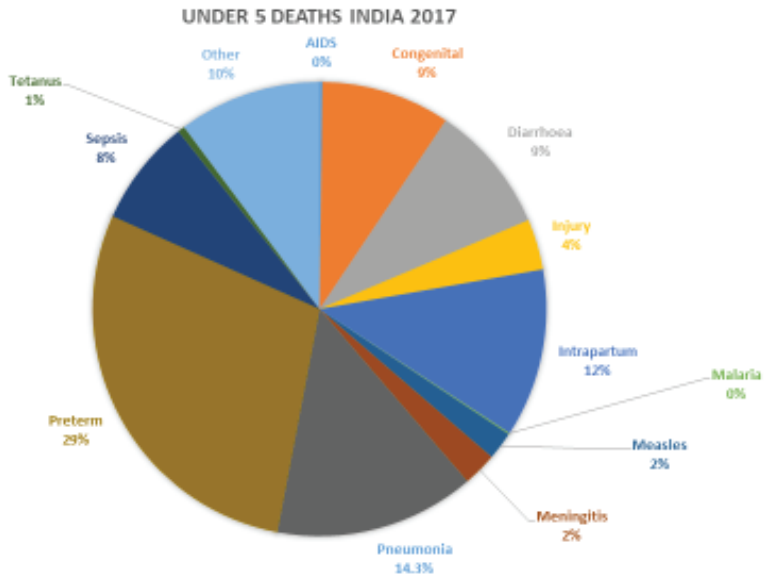
SECTION -1

1.1 Introduction

Childhood Pneumonia continues to be the topmost infectious killer among under-five childrent, contributing to 15 percent of under five deaths in the country. Around 1.4 lakhs children die due to Pneumonia annually in the country. Mortality due to pneumonia is strongly linked to malnutrition, poverty and inadequate access to health care.



Source: Estimates generated by the WHO and Maternal and Child Epidemiology Estimation Group (MCEE) 2018

Pneumonia morbidity & mortality in India

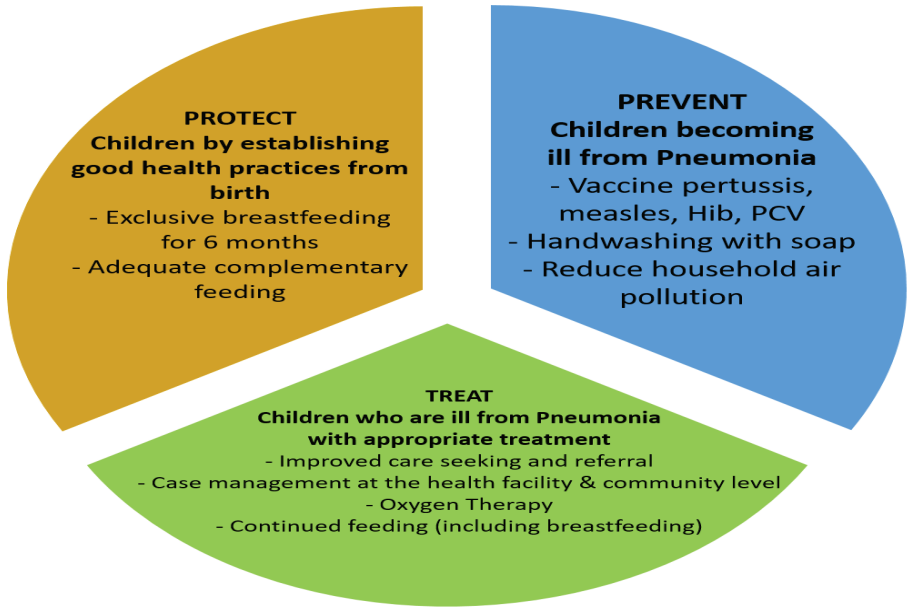
Number of episodes of ARI/Pneumonia every year	30 Million
Incidence Rate (per child per year)	0.22
Severe cases out of total cases	3 Million (10%)
Mortality Rate per 1000 live births	5.7

The national goals for pneumonia to be achieved by 2025, under the Integrated India Action Plan for Pneumonia and Diarrhoea (IAPPD) are:

- Reduce mortality from pneumonia to < 3 per 1000 live births;
- Reduce the incidence of severe pneumonia by 75% as compared to 2010 levels

1.2 Protect, Prevent and Treat framework

The protect, prevent and treat framework provides key interventions to comprehensively address the pneumonia problem. Deaths due to pneumonia are largely preventable if protect, prevent & treat interventions (PPT interventions) are adequately and appropriately implemented. The Protect, Prevent Treatment (PPT) approach for Pneumonia management is as follows:



Framework of Childhood Pneumonia adapted from GAPPD / IAPPD

Protect

- *protecting* children by establishing and promoting good health practices;
    - Exclusive breastfeeding for six months and continued breastfeeding with appropriate

Prevent

- *preventing* children from becoming ill from pneumonia by ensuring universal coverage of immunization, and healthy environments;
    - Use of vaccines like Measles/MMR, Pentavalent vaccine, Pneumococcal vaccine substantially reduces the disease burden and deaths caused by the infectious agents.
    - Hand-washing and promotion of key hygiene practices provide health, economic and social benefits.
    - Reduction of household air pollution has been shown to reduce pneumonia incidence. According to WHO 45% of pneumonia deaths in children are attributable to household air pollution

Treat

- *treating* children who are ill from pneumonia with appropriate treatment.
    - Identification and treatment of pneumonia in the community, at first-level health facilities and at referral hospitals using standardized guidelines substantially reduces child deaths.

This training module provides guidance on assessment, classification and management of children with pneumonia aged less than 5 years. Further, this module is divided in two age groups.

- Management of sick children 2 months up to 5 years (2 to 59 months)
- Management of young infants age up to 2 months (0 to 59 days old)

The module aligns with the IMNCI approach of assess, classify and treat using the same three colours for management of pneumonia (pink, yellow and green):

- Conditions included in the boxes with pink colour indicate severe illness. Children with a severe illness must be referred to a hospital or sent to the doctor.
- Conditions included in the boxes with a yellow colour should be treated with medicine at home and home care advice to the mother.
- Conditions included in the boxes with green colour are to be treated with home care without the use of medicines.

SECTION -2

2.1 Pneumonia assessment, classification and management protocol for children tt

After the session, the participants "Must Know" the following:

"Must Know":
- Classification of pneumonia/ARI
- Identification of danger signs for pneumonia
- Outpatient Management of pneumonia
- Facility management of pneumonia
- Dose and duration for treatment with Amoxicillin and Gentamycin
- When and where to refer a child with severe pneumonia/ Very severe disease

What is Pneumonia?

- Pneumonia: Pneumonia is inflammation of lungs, in which the air sacs (alveoli) get filled with pus & may become solid. Pneumonia is inter-changeably used as acute lower respiratory tract infection (ALRI) or acute respiratory infections (ARI).
- Pneumonia is frequently due to infection which may be bacterial, viral, fungal, or parasitic. The most common bacteria causing pneumonia are Streptococcus pneumoniae and Haemophilus influenzae. Children with bacterial pneumonia may die from hypoxia (too little oxygen) or sepsis (generalized infection).
- Symptoms may include fever, cough, and difficulty in breathing.

Two important clinical signs for assessing pneumonia –

- fast breathing
- chest indrawing

2.1.A Outpatient case management of Pneumonia in children (2-59 months)

For case management for the child (2-59 months),Follow the below steps:

- Greet the mother and Ask The Mother What the Child's Problems Are
- Determine if this is initial visit or a follow up visit for this problem
- CHECK FOR GENERAL DANGER SIGNS: A child with any general danger sign needs URGENT attention; complete the assessment and any pre-referral treatment immediately so referral is not delayed.
- The general danger signs are:

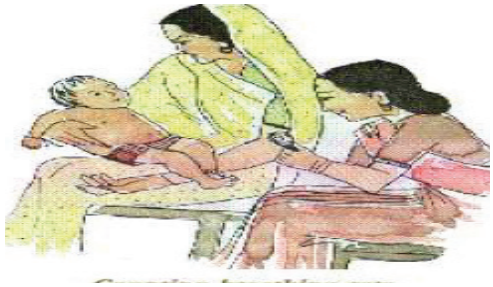
  - Not able to drink or breastfeed
  - Vomits everything
  - Convulsions
  - Lethargic or unconscious

- ASK: Is the child **able to drink or breastfeed** ?
    - A child has the sign "not able to drink or breastfeed" if the child is not able to suck or swallow when offered a drink or breastmilk.
    - If the mother says that the child is not able to drink or breastfeed, ask her to describe what happens when she offers the child something to drink. If you are not sure about the mother's answer, ask her to offer the child a drink of clean water or breastmilk. Look to see if the child is swallowing the water or breastmilk.
    - A child who is breastfed may have difficulty sucking when his nose is blocked. If the child's nose is blocked, clear it. If the child can breastfeed after his nose is cleared, the child does not have the danger sign, "not able to drink or breastfeed."
- ASK: Does the **child vomit everything?**
    - A child who is not able to hold anything down at all has the sign "vomits everything." A child who vomits several times but can hold down some fluids does not have this
- ASK: Has the **child had convulsions**
    - Ask the mother questions on whether the child has suffered from convulsions (local term) or not.
- LOOK: See if the child is **lethargic or unconscious.**
    - The lethargic child is sleepy when the child should be awake. A child who stares blankly and does not appear to notice what is happening around is also lethargic.
    - The unconscious child does not waken at all. This child does not respond to touch, loud noise or pain.

ASSESS AND CLASSIFY COUGH OR DIFFICULT BREATHING

- ASK the mother if the **child has cough or difficult breathing.**
    - If the child has no cough or difficult breathing, do not assess for the same. If the mother says that the child has cough or difficult breathing:
- ASK: **For how long?**
    - A child who has had cough for more than 14 days needs to be referred to hospital for further assessment.
- Look and Listen for Stridor: ***Stridor*** is a harsh noise made when the child breathes IN. Stridor happens when there is a swelling of the larynx, trachea or epiglottis. To look and listen for stridor, look to see when the child breathes IN. Then listen for stridor by putting your ear near the child's mouth because stridor can be difficult to hear. Sometimes you will hear a wet noise if the child's nose is blocked. Clear the nose, and listen again. A child who is not very ill may have stridor only when he is crying or upset. Be sure to look and listen for stridor when the child is calm.
- LOOK: **Count the breathing rate**
  Count the breaths the child takes in one minute. Decide whether the child has normal breathing or fast breathing
- Count the breaths the child takes in one minute.
- The child must be quiet and calm. If the child is frightened, crying or angry, you will not be able to obtain an accurate count.

- To count the number of breaths in one minute:
    - Use a watch with a second hand or a digital watch.
    - Put the watch where you can see the second hand and the breathing movements.
    - Glance at the second hand as you count the breaths the child takes in one minute.
    - Look for breathing movement anywhere on the chest or abdomen. Usually you can see breathing movements even on an child who is dressed. If you cannot see this movement easily, ask the mother to lift the child's shirt.
    - If you are not sure about the number of breaths you counted , repeat the count.



If the child's age is	The child has fast breathing if you count
2 months up to 12 months	50 breaths per minute or more
12 months up to 5 years	40 breaths per minute or more

Note: The child who is exactly 12 months old has fast breathing if you count 40 breaths per minute or more.

- LOOK for **chest indrawing**
    - If you did not lift the child's shirt when you counted the breaths, ask the mother to lift it now.
    - Look for chest indrawing when the child breathes IN.
    - Look at the lower chest wall (lower ribs). The child has chest indrawing if the lower chest wall goes IN when the child breathes IN.
    - In normal breathing, the whole chest wall (upper and lower) and the abdomen move OUT when the child breathes IN. When chest indrawing is present, the lower chest wall goes IN when the child breathes IN.
    - For chest indrawing to be present, it must be clearly visible and present all the time. If you only see chest indrawing when the child is crying or feeding, the child does not have chest indrawing.
    - Chest indrawing in a child with cough or difficult breathing indicates that the child has pneumonia.

CLASSIFY COUGH OR DIFFICULT BREATHING

You would assess and classify children with cough and/or difficult breathing using the classification table given below:

- You would also measure oxygen saturation using pulse oximeter
- Listen for wheeze. Wheezing is a high-pitched whistling sound made while child breathe. It is heard most clearly when sick children exhale, but in severe cases, it can be heard when they inhale. It is caused by narrowed airways or inflammation in the airways

SIGNS	Classify as	Management
• General danger signs (inability to breastfeed or drink, lethargy or reduced level of consciousness, convulsions) • Stridor in calm child	Severe Pneumonia Or Very Severe Disease	• Hospitalize • Give oxygen if saturation < 90% • Manage airway • Give recommended antibiotics
• Chest indrawing OR • Fast breathing: (Respiratory rates o 2-11 months ≥50/min o 12-59 months ≥40/min)	Pneumonia	• Give Oral Amoxicillin for 5 days • Treat wheeze if present • Advice home care for cough & cold • Advise mother when to return immediately • Follow up after 2 days
No signs of severe PNEUMONIA or PNEUMONIA	No Pneumonia	• Advice home care for cough & cold • If coughing for more than 14 days, refer for assessment • Follow up after 5 days if not improving
* If the child has wheezing, give 3 doses of nebulized salbutamol for 20 minutes; or 2-4 puffs of salbutamol MDI (at a gap of 2-3 min between each puff) with spacer repeated every 20 minutes and reassess		

- *Refer the children with classification of Severe Pneumonia/Very severe disease and Pneumonia for hospitalization to the appropriate health facility after administering pre-referral dose of Oral Amoxicillin and Injection Gentamicin. If oxygen saturation is less than 90%, administer oxygen to the child while arranging referral*
- *Administer Oral Amoxicillin for 5 days and counsel on home care to children with classification of Pneumonia. Follow up after 2 days. If condition of child is improving, complete 5 days treatment. If after 2 days child's condition worsens or no improvement, refer for hospitalization*
- *If the child has wheezing, give 3 doses of nebulized salbutamol for 20 minutes; or 2-4 puffs of salbutamol MDI (at a gap of 2-3 min between each puff) with spacer repeated every 20 minutes. You need to reassess the child and then classify the problem. Antibiotics should not be used if there is significant improvement with bronchodilator AND there are no clinical signs of consolidation. Sometimes pneumonia can also have some element of wheezing and in such cases there is usually persistence of tachypnoea and/or respiratory distress even after bronchodilator use, and or patient may be sick or toxic looking. In such overlapping situations antibiotics may be continued with bronchodialtors.*
- *If referral for hospitalization is not feasible or refused, manage with oral amoxicillin twice a day and injection gentamicin once a day for 7 days with daily monitoring*
- *Counsel on home care for children classified as 'No Pneumonia'*

Treat Pneumonia with Amoxicillin

Give Amoxicillin by mouth every morning and every night for five days. The dose of amoxicillin according to age is summarized in table 1

Table 1: Dosage of Amoxicillin for Pneumonia

AGE or WEIGHT	Amount of Amoxicillin to be given orally as syrup (125 mg per 5 ml) twice a day x 5 days	Amount of Amoxicillin to be given orally as a dispersible tablet (250 mg) twice a day x 5 days
2 months up to 4 months (4 to < 6 kg)	5 ml	½
4 months up to 12 months (6 kg to < 10 kg)	10 ml	1
12 months up to 3 years (10 kg to <14 kg)	15 ml	1½
3 years up to 5 years (14 kg to <20 kg)	-	2

Give Pre-referral Oral Amoxicillin and IM Gentamicin for Severe Pneumonia or Very severe disease

Table 2: Pre-referral dosage of antibiotics for Severe pneumonia/very severe disease*

WEIGHT	Amount of Gentamicin to be given intramuscularly as Injection (vial* contains 80 mg in 2 ml)	Amount of Amoxicillin to be given per-orally as Syrup (contains 125 mg./ 5 ml.	Amount of Amoxicillin to be given per-orally as tablet (contains 250 mg.)
2 months up to 4 month (4- <6 kg.)	0.5-1.0 ml	5 ml	½
4 months up to 12 months (6- <10 kg.)	1.1-1.8 ml	10 ml	1
12 months up to 3 years (10- <14 kg.)	1.9-2.7 ml	15 ml	1½
3 years up to 5 years (14- <20 kg.)	2.8-3.5 ml	-	2

- **Give Injection Gentamicin once a day and Oral Amoxicillin twice a day for 7 days if referral is refused/ not possible*

Home Care for child with cough and cold

Children having no signs of either Pneumonia or severe Pneumonia are classified as NO PNEUMONIA and worker will advise on home care.

- The mother is advised to properly clothed the child and keep the child warm
- The mother is advised to continue feeding the child during the illness. Breast-feeding should be continued
- Mother is advised to give home available fluids as much as the child would take. This would help in the relief of cough
- The mother is advised to give the child a safe homemade soothing cough remedy if the child is more than 6 months of age like Honey, tulsi, ginger, herbal concoctions and other safe local home remedies. Avoid cough syrups. **An infant below 6 months who is exclusively breast fed should not be given any home remedy**
- The mother is advised to keep the nose clean by putting in nasal drops (boiled and cooled water with salt mixed in it) and by cleaning the nose with a soft cotton cloth. Mothers can also prepare saline nasal drops at home by adding ½ teaspoon of common salt (2.5 gm) to 250 ml (1 glass) of clean drinking water. Fresh solution should be prepared daily.
- The mother should also be advised on how to give drugs at home.

Mother should look for **DANGER SIGNS** of illness like:

- child becomes sicker,
- not able to drink or breastfeed,
- fast breathing,
- difficult breathing, or
- Child develops fever

2.1.B Facility based management (In-patient) of Severe Pneumonia in children 2 months-5 years of age

Severe Pneumonia is defined as cough or difficult breathing in a child with at least one of the following conditions:

- Central cyanosis or Oxygen saturation < 90%
- Severe respiratory distress (Laboured of very fast breathing {Respiratory Rate >70 per minute} or severe lower chest indrawing or head nodding or stridor or grunting)
- Signs of Pneumonia with general danger sign (inability to breastfeed or drink, lethargy or reduced level of consciousness or convulsions)

Such children are very hypoxic and need urgent treatment and oxygen therapy. They often cannot take orally and therefore need to be given intravenous fluids and parenteral antibiotics. Thes e children need a very close monitoring for distress and oxygen saturation as they are at higher risk of complications

On auscultation, you may get following signs in severe pneumonia:

- Bronchial breath sounds
- Crackles
- Decreased breath sound
- Abnormal vocal resonance (decreased over a pleural effusion or empyema, increased over lobar consolidation).

Investigations

- Obtain a chest X-ray in all children with severe pneumonia to identify complications and decide treatment.
- Hemogram (Hb, TLC, DLC).
- Blood culture may be sent, where possible, in severely ill septicameic infants or with severe complicated pneumonia.

Note:

- If the child also has wheezing, a trial of rapidly acting inhaled bronchodilator should be given in addition, and if there is improvement it should be continued under monitoring. In severe pneumonia DO NOT DELAY ANTIBIOTICS administration, pending evaluation of response to bronchodilators, unlike cases with simple pneumonia.

  Dose of Salbutamol:

  Nebulizer:2.5 mg/dose

  Oral (syrup/tablet): 1 mg per dose <1 year 6-8 hourly

  2mg per dose 1-4 years 6-8 hourly

- Give antibiotics:
  - Ampicillin 50 mg/kg or Benzyl penicillin 50 000 U/kg IM or IV every 6 hours.
  - Gentamicin 7.5 mg/kg IM or IV once a day
- Give Cloxacillin or Amoxicillin + Clavulanic acid if Staphylococcal infection is suspected (presence of skin pustules / boil)
- Give Ceftriaxone with Vancomycin in case of septic shock.
- If the child does not show signs of improvement within 48 hours, switch to Gentamicin 7.5 mg/kg IV once a day combined with ceftriaxone 100 mg/kg IV in two divided doses or Cloxacillin 50 mg/kg IV 8 hourly.

- Shift to oral drugs as soon as the child is able to take orally, except those with shock or complicated Pneumonia, where longer parenteral therapy is advised.

- Total duration of antibiotics in Severe Pneumonia:

    - Clinical response within 48 hours: 7 days
    - Clinical response after 48 hours:10 days

Oxygen therapy

- Give oxygen to all children with oxygen saturation <90% (<94% if they also have other emergency signs like shock etc).
- Use nasal prongs as the preferred method of oxygen delivery to young infants; if not available, a nasal or nasopharyngeal catheter may be used.
- Use a pulse oximetry to guide oxygen therapy (keep oxygen saturation > 90%). If a pulse oximeter is not available, continue oxygen until the clinical signs of hypoxia (such as inability to breastfeed or breathing rate ≥ 70/min) are no longer present.

Supportive care

- Remove any thick secretions at the entrance to the nasal passages or throat by gentle suction, which the child cannot clear.
- If the child has fever(≥ 38.5C), give paracetamol.
- Provide maintenance IV fluid if child cannot accept oral feeds. Stop IV fluids gradually when the child is acceptingorally satisfactorily.
- If wheeze is present, give a rapid-acting bronchodilator.
- Encourage the child to feed as soon as child is able to take feeds.
- There is no role of Cough Syrup (may be harmful).
- Ensure vaccination/ Nutritional advice

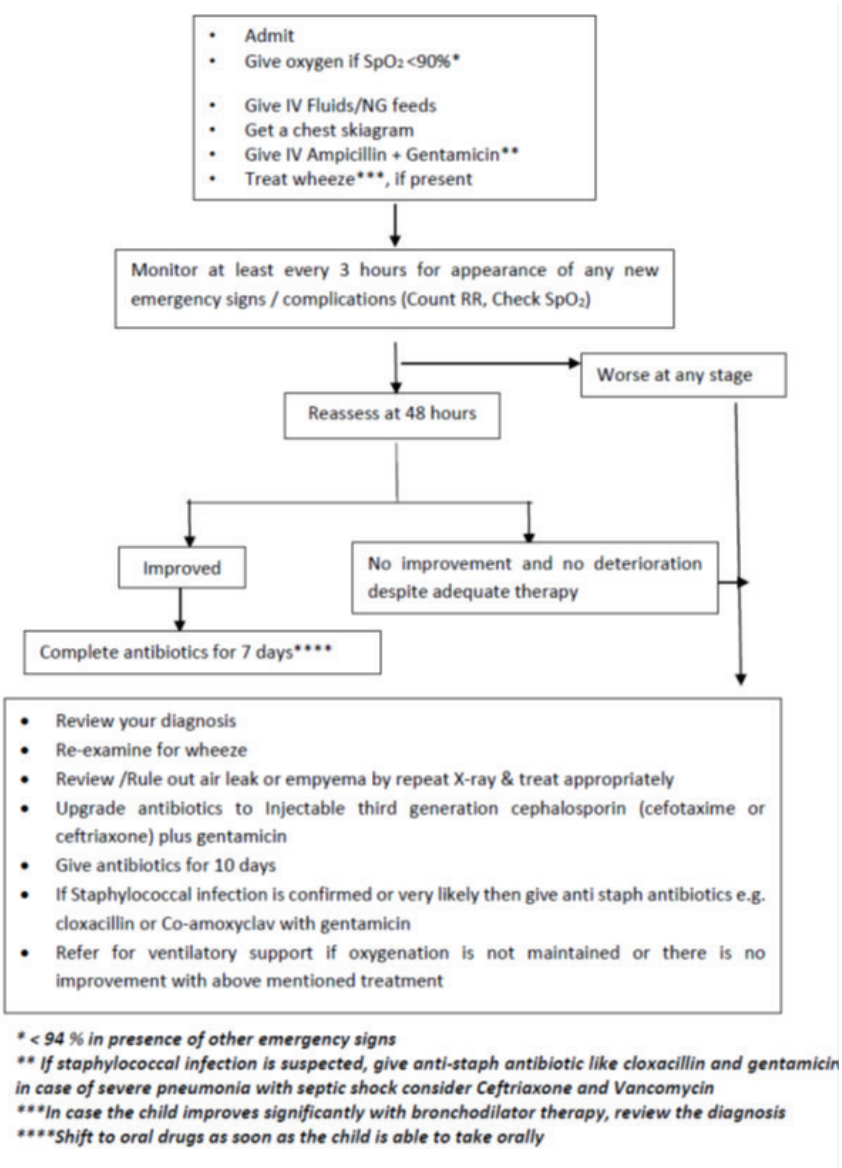
Monitoring

Child should be checked by a nurse at least every 3hours and by a doctor at least twice a day. In the absence of complications, there should be signs of improvement like breathing slower, less indrawing of the lower chest wall, less fever, improved ability to eat and drink and better oxygen saturation in next 48 hours

Tuberculosis
Consider the possibility of tuberculosis in a child with Pneumonia if:

- Child has unremitting fever and cough for more than 2 weeks and cause of fever cannot be found
- Contact with a pulmonary TB case
- Lack of response of respiratory symptoms and signs to broad-spectrum antibiotics.
  Weight loss or failure to thrive.

Flow Chart 1- Management of Severe Pneumonia cases (2-59 months) admitted in health facilities



2.2.A Outpatient case management of Pneumonia/PSBI in young infants (0-59 days)

It is clinically difficult to differentiate between Pneumonia, sepsis & meningitis, in young infants and the treatment of these conditions is quite similar. Therefore, these conditions are grouped as Possible Serious Bacterial Infection (PSBI). The process to assess and classify the young infant is very similar to the one you learnt for the sick child 2 months to 5 years.

For case management for the young infant age up to 2 months, Follow the below steps:

- Greet the mother and give a friendly smile
- Ask the mother what the young infant's problems are.
- Record what the mother tells you about the infant's problems.
- Determine if this is an initial or follow-up visit for this problem.
- ASK: Is the infant having **difficulty in feeding** ? A young infant who was feeding well earlier but is not feeding well now may have a serious infection. These infants who are either not able to feed or are not feeding well should be referred urgently to hospital.

- ASK: Has the **infant had convulsions**? Ask the mother questions on whether the young infant has suffered from convulsions or not. Use the local term for convulsions.
- LOOK: **Count the breathing rate as you have learnt for the sick child**

    - Since the breathing rate of the young infant is often irregular, repeat the count if elevated (60 breaths per minute or more). The second count is accepted as the final count.
    - If the young infant has fast breathing (60 breaths per minute or more), the young infant may have pneumonia. This is considered serious in a young infant.

If the Child's age is	The child has fast breathing if you count
Below 2 months	60 breaths per minute or more during second count

- LOOK: for severe chest indrawing
    - Mild chest indrawing is normal in a young infant because the chest wall is soft. Severe chest indrawing is very deep and easy to see. Severe chest indrawing is a sign of pneumonia and is serious in a young infant

- FEEL: Measure axillary temperature (if not possible feel for fever or low body temperature).
    - Fever (axillary temperature more than 37.5 C) is uncommon in the first two months of life. If a young infant has fever, this may mean the infant has a serious bacterial infection.
    - Young infants can also respond to infection by dropping their body temperature to below 35.5 C.

  Keep the thermometer in the axilla (armpit) and then hold the young infant's arm against his body for 5 minutes before reading the temperature. If you do not have a thermometer, feel the infant's abdomen or armpit and determine if it feels hot or cold to touch.

- LOOK at the **young infant's movements.**
    - Does the young infant move only when stimulated? Are there no movements even after the young infant is stimulated? Young infants often sleep most of the time, and this is not a sign of illness. If a young infant does not wake up during the assessment, ask the mother to wake him.
    - An awake young infant will normally move his arms or legs or turn his head several times in a minute if you watch him closely. Observe the infant's movements while you do the assessment.
    - If the infant is awake but has no spontaneous movements, gently stimulate the young infant. If the infant moves only when stimulated and then stops moving, or does not move even when stimulated, it is a sign of severe disease.

The classification table for Possible Bacterial Infection is as follows:

• Not able to feed or • Convulsions or • Fast breathing (60 breaths per minute or more) or • Severe chest indrawing or • Axillary temperature 37.5oC or above (or feels hot to touch) or • Axillary temperature less than 35.5oC (or feels cold to touch) or • Movement only when stimulated or no movement at all	POSSIBLE SERIOUS BACTERIAL INFECTION	• Give first dose of oral Amoxicillin and intramuscular Gentamicin. • Treat to prevent low blood sugar. • Warm the young infant by Skin to Skin contact if temperature less than 35.50C (or feels cold to touch) while arranging referral. • Advise mother how to keep the young infant warm on the way to the hospital. • Refer urgently to hospital

- Warm the young infant by skin to skin contact with mother/care giver if temperature less than 35.5^{0} C (or feels cold to touch) while arranging referral and during transport.
- Treat to prevent low blood sugar:
  - If the child is able to breastfeed: Ask the mother to breastfeed the child.
  - If the child is not able to breastfeed but is able to swallow: Give 20-50 ml (10 ml/kg) expressed breastmilk or locally appropriate animal milk (with added sugar) before departure. If neither of these is available, give 20-50 ml (10 ml/kg) sugar water.
  - To make sugar water: Dissolve 4 level teaspoons of sugar (20 grams) in a 200-ml cup of clean water
- Make all efforts to ensure that a young infant with PSBI is referred for admission to the nearest health facility for appropriate treatment after giving the first dose/pre-referral doses of Injection Gentamicin & Syrup Amoxicillin.
- In case referral is refused by caregivers or not feasible, management of illness should be done using oral Amoxicillin twice a day & injection Gentamicin once a day for.7 days

Table 3: Antibiotic Therapy for management of PSBI-Pre-referral dose (0-2 months)*

- Give Injection Gentamicin once a day and Oral Amoxicillin twice a day for 7 days if referral is refused/ not possible

*Precaution- If the treatment is to be continued gentamicin vial can be used for entire 7 days, provided it is stored properly and its content do not change colour or have turbidity. In case of any its is better to use a new vial

Young Infant's Weight	Amount of Gentamicin to be given intramuscularly as Injection (vial* contains 80 mg in 2 ml)	Amount of Amoxicillin to be given per-orally as Syrup*** (contains 125mg./ 5 ml.)	Amount of Amoxicillin to be given per-orally as tablet (contains 250 mg.)
	Dosage 5 mg/kg/dose * once a day	Dosage 25 mg/kg/dose** twice a day	
Less than 1.5 Kg	To be referred to higher facility		
Above 1.5 kg – up to 2.0 Kg	0.2 ml	2 ml	¼
Above 2.0 kg – up to 3.0 Kg	0.3 ml	2.5 ml	½
Above 3.0 kg – up to 4.0 Kg	0.4 ml	3 ml	½
Above 4.0 kg – up to 5.0 Kg	0.5 ml	4 ml	½

**The health provider will instruct the mother how to reconstitute the syrup if it is in powder form

***Measuring cap is used to measuring dose of Amoxicillin, the amount of medicine to be given is up to 2.5 ml mark of cap for babies weighing up to 4.0 kg and for babies weighing 4.0 kg - up to 5.0 kg, the dose is 5 ml mark of cap. Similarly, if a teaspoon is used instead of a syringe dose is ½ tsp for babies weighing up to 4.0 kg and for babies weighing 4.0 kg - up to 5.0 kg, the dose is 1 tsp

2.2.B FACILITY BASED MANAGEMENT OF YOUNG INFANTS WITH Pneumonia/PSBI in Young Infants (0-59 days)

The steps for management of PSBI/Pneumonia in Young infants admitted in health facilities are:

- Give Antibiotics

Injection Ampicillin and Gentamicin is used as initial treatment. In case there is suspicion of concomitant meningitis a combination of injection Cefotaxime and Gentamicin should be used instead.

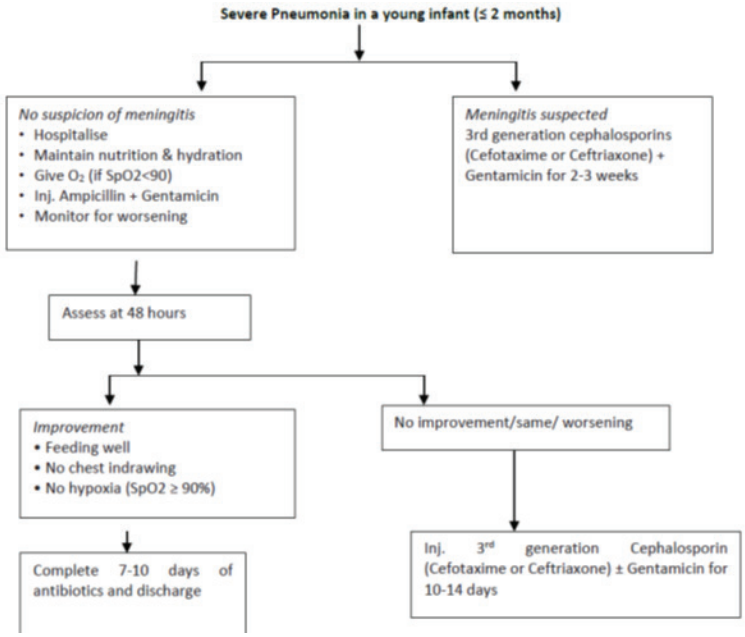
- Give Oxygen is given where required (presence of cyanosis, grunting, severe respiratory distress i.e. RR > 70/bpm, SpO2<90%).
- Keep the infant warm.
- Continue Breast - feeding to prevent hypoglycemia. If the infant is unable to suck he should be given expressed breast milk. Infants on oxygen should be given intravenous fluids until the infant is able to take orally.

Table 3: ANTIBIOTIC THERAPY FOR PNEUMONIA/SEPSIS IN YOUNGNFANTS

Antibiotic	Each Dose	Frequency		Route	Duration
	(mg/kg/dose)	< 7 days age	> 7 days age		(Days)
Inj. Ampicillin*	50	12 hrly	8 hrly	IV, IM	7-10
And Inj.	5	24 hrly	24 hrly	IV, IM	7-10
Gentamicin **or**					
Inj. Amikacin	15	24 hrly	24 hrly	IV, IM	7-10

*If concomitant meningitis is suspected the drugs should be given IV and Inj. Cefotaxime 50 mg/kg IV 8 hourly is used instead of Ampicillin. The total duration of therapy in meningitis is 2 - 3 weeks.
In case of suspected staphylococcal infection Inject ion Cloxacillin 50mg/kg 8 hourly is to be added to the regime

Flow Chart 2: Management of Pneumonia/PSBI in Young Infants



SECTION -3

Case studies for pneumonia management

Case 1: Raman

Raman is a 6- week-old infant. His weight is 3.5 kg. His axillary temperature is 37.5°C. He is brought to the health facility because he is having difficulty breathing. The health facility staff first checks the young infant for signs of possible bacterial infection. His mother says that Raman is less active and not breast feeding well. The health staff counts 74 breaths per minute. He repeats the count. The second count is 70 breaths per minute. He finds that Raman has severe chest in- drawing. There is no pus in his ears, the umbilicus is normal, and there are no skin pustules.