Government of India

सत्यमेव जयते

NATIONAL HEALTH MISSION

CHILDHOOD PNEUMONIA MANAGEMENT GUIDELINES

Ministry of Health and Family Welfare,
Government of India

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Government of India

प्रधानमंत्री जन आरोग्य योजना
आयुष्मान भारत
PM-JAY

जय विज्ञान
जय अनुसंधान

सबका साथ, सबका विकास, सबका विश्वास
Sabka Saath, Sabka Vikas, Sabka Vishwas

सत्यमेव जयते

डॉ हर्ष वर्धन
Dr Harsh Vardhan
स्वास्थ्य एवं परिवार कल्याण, विज्ञान और प्रौद्योगिकी
व पृथ्वी विज्ञान मंत्री, भारत सरकार
Union Minister for Health & Family Welfare,
Science & Technology and Earth Sciences
Government of India

MESSAGE

India has made rapid strides in vastly improving its health indicators. However, we need to ensure that we reach goal of zero preventable child deaths and achieve better health outcomes for the coming generations.

2. Pneumonia poses a significant health threat to the children under 5 years of age across the country. Pneumonia continues to be the topmost infectious killer among under-five children, contributing to 15 percent of under-five deaths in the country. An estimated 1.4 lakhs children die due to Pneumonia annually in the country. These are preventable deaths if we strengthen our systems to detect and treat Pneumonia cases early.

3. India has envisioned reduction of childhood mortality from 39 per 1000 live births in 2016 to 23 per 1000 live births by 2025 as the prime goals of National Health Policy 2017. To achieve the National Health Policy goal, we need to reduce childhood Pneumonia mortality to less than 3 per 1000 live births.

4. Deaths due to childhood Pneumonia are preventable if there is effective coverage of protective, preventive and treat interventions (PPT interventions) with specific emphasis on exclusive breastfeeding, adequate complementary feeding and Vitamin A supplementation, vaccination coverage, safe WASH practices and reduced household air pollution. To prevent deaths from Pneumonia, improving care seeking and referral, ensuring case management at the health facility and community level and ensuring uninterrupted supplies of antibiotics and oxygen are essential. We have added Pneumococcal (PCV) vaccine to the basket of vaccines in the five high burden states and are committed to gradually expand it to other states/UTs to accelerate reduction of child mortality due to pneumonia.

5. As an affirmation towards reducing Pneumonia related child deaths, we have updated our evidence-based guidelines on treating and managing childhood Pneumonia. I urge States and key stakeholders to prioritise this strategy for achieving long term health and economic outcomes.

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6. We have taken the initiative to ensure visibility and sustainability for Pneumonia programmatic activities via the SAANS (Social Awareness & Action to Neutralize Pneumonia Successfully) campaign. The SAANS campaign serves as an all-encompassing campaign for Pneumonia control efforts and will ensure focused initiatives towards eliminating Pneumonia burden annually. We have also institutionalized World Pneumonia Day, November 12th, for bringing attention to Pneumonia and collectively engaging in deliberations on reducing the Pneumonia burden. To achieve our goals, we will have to engage with the community through social mobilization effectively.

7. A wonderful opportunity has been created through Ayushman Bharat Yojana by creating and equipping Health & Wellness Centres in the country. These centres will become the hub of early detection, treatment and timely referral of serious cases of under-five childhood Pneumonia to tertiary centres for appropriate treatment, which will prove to be lifesaving. I am happy to note that experts have included practical methods of detecting oxygen deficiency in the community, which helps in the early referral of serious cases.

8. I hope that we all come together to work towards achieving the envisaged mission of eliminating the Pneumonia mortality burden and ensuring the mission of Hon'ble Prime Minister of India to reduce child mortality.

(Dr. Harsh Vardhan)

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अश्विनी कुमार चौबे
Ashwini Kumar Choubey

सत्यमेव जयते

सर्वेसन्तु निरामया

स्वच्छ भारत
एक कदम स्वच्छता की ओर

स्वास्थ्य एवं परिवार कल्याण राज्य मंत्री
भारत सरकार
MINISTER OF STATE FOR
HEALTH & FAMILY WELFARE
GOVERNMENT OF INDIA

सन्देश

भारत स्वास्थ्य के क्षेत्र में एक बड़े परिवर्तन की ओर अग्रसर है। भारत स्वास्थ्य संबंधित 'सतत विकास लक्ष्यों' को प्राप्त करने के लिए प्रतिबद्ध है। हालांकि २०१६ में, विश्व की आबादी का लगभग १८ प्रतिशत हिस्सा भारत में था, मगर जब हम बाल मृत्यु दर (कम श्वसन, दस्त और अन्य सामान्य संक्रामक रोगों के कारण) को देखें तो यह २६ प्रतिशत थी।

हमारी सरकार का मुख्य उद्देश्य स्वास्थ सुविधाओं ख़ासकर प्राथमिक सवास्थ सुविधाओं को सुदृढ़ करना है जिससे प्रत्येक व्यक्ति बिना किसी वित्तीय बोझ के इन सुविधाओं का लाभ आसानी से उठा सकता है | अनुमानित जीवन काल की वृद्धि और बेहतर स्वास्थ्य परिणाम के लिए प्राथमिक स्वास्थ सुविधाओं की भूमिका अहम हो जाती है | प्राथमिक स्वास्थय स्तर पर किये जाने वाले प्रयास किसी भी बीमारी का पूर्वानुमान लगाने में कारगर साबित हो सकता है जिससे स्वास्थय सम्बंधित खर्चे में कमी आएगी | हम निमोनिया के कारण होने वाले मृत्यु को काम करने के लिए प्रतिबद्ध है |

इस संबंध में, माननीय प्रधान मंत्री द्वारा स्थापित आयुष्मान भारत एक अग्रणीय पहल है। "आयुष्मान भारत" में,संपूर्ण भारत के लिए एक व्यापक प्राथमिक स्वास्थ्य चिकित्सा स्थापित करने के उद्देश्य हे हेल्थ एंड वेलनेस सेंटर्स (HWCs) की स्थापना की गई है।

निमोनिया की जल्दी पहचान एवं सुदृढ़ स्वास्थ्य केंद्रों में निमोनिया का उत्तम उपचार ही हमारा उद्देश्य है| निमोनिया को पूर्ण रूप से लड़ने के लिए हमने निमोनिया की रोकथाम और सुरक्षा को समान महत्व प्रदान किया हैं।

घर के अंदर होने वाला वायु प्रदुषण निमोनिया के मुख्य कारणों में से एक है | स्वच्छ ईंधन के उपयोग को बढ़ावा देने में प्रधानमंत्री उज्ज्वला योजना ने सफलता हासिल की है | बच्चों में होने वाली निमोनिया के रोकथाम के लिए हमे अशुद्ध जीवाश्म ईंधन के उपयोग में कमी सुनिश्चित करने हेतु सतत प्रयत्नशील रहना होगा |

मैं आशान्वित हूँ की बच्चो में होने वाले निमोनिया के रोकथाम और उपचार में साक्ष्य आधारित दिशानिर्देश के कारन बाल मृत्युदर में कमी आएगी |

मैं स्वास्थय मंत्रालय में अपने साथियो को बधाई देना चाहूंगा जिनके कठिन प्रयास से इस दिशानिर्देश का संकलन संभव हुआ है |

(अश्विनी कुमार चौबे)

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Ministry of Health and Family Welfare

Foreword

Over the last few years, India has achieved a significant reduction in child mortality rates, with under-five mortality rates reducing from 74 per 1000 live births to 37 per 1000 live births. However, despite the existence of effective treatment and vaccines, childhood Pneumonia continues to pose a major threat, leading to high under-five deaths in the country. The morbidity and mortality risks associated with Pneumonia calls for an urgent need to design an effective strategy to address this public health problem.

The Ministry of Health & Family Welfare is committed to improving health outcomes for children in line with the sustainable development goals (SDGs). While Protect, Prevent and Treat interventions such as the introduction of Pneumococcal conjugate vaccine (PCV), Vitamin A supplementation etc. have been around to tackle the Pneumonia burden, there is a need for a more concerted effort to strengthen Pneumonia control interventions across the country. The Pneumonia guidelines will serve as an effective tool for service providers and programme managers at all levels of implementation.

To ensure that Pneumonia is tackled in a focused manner, we intend to institutionalize World Pneumonia Day, November 12th, for organising events around Pneumonia each year. The key objective of these events would be to ensure that discussions, engagements & efforts towards Pneumonia programming remain in focus & do not lose momentum after the launch of the guidelines.

I congratulate all the experts who have pooled in their efforts to draft up-to-date evidence based guidelines.

I urge States, Union Territories and key stakeholders to prioritize this strategy to achieve long term health and economic outcomes and strengthen the efforts of Government of India in addressing the issue of childhood Pneumonia.

Preeti Sudan

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MESSAGE

The National Health Mission is committed to reducing the mortality burden for children under five years of age for which Pneumonia is a big contributor. To reduce the mortality burden of Pneumonia, we need to ensure systemic and efficient Pneumonia control programs across the country for timely prevention and management of Pneumonia cases. Hence, it was a felt need to develop holistic and updated Pneumonia control and management guidelines for reducing mortality and morbidity.

The Ministry of Health & Family Welfare has updated the Pneumonia control guidelines for the management of childhood Pneumonia. These guidelines have been developed by noted experts in the field of childhood diseases from Government medical colleges, development partners such as UNICEF, Clinton Health Access Initiative, and Save the Children. I am sure these guidelines will be of immense help in guiding program managers to properly detect Pneumonia cases early and treat Pneumonia cases effectively.

I hope that the recently created Health & Wellness Centres would prove to be useful in detection, treatment and referral of under-five Pneumonia cases. I am very happy to note that the launch of SAANS (Social Awareness & Action to Neutralize Pneumonia Successfully) campaign will give the desired visibility and attention to the Pneumonia control efforts.

The guidelines aim to provide state officials guidance in planning, capacity building, procurement and logistics management, IEC resources, strengthening relevant service delivery mechanisms and establishing channels for supervision and reporting.

I am confident that the guidelines will effectively enable both programme managers and service providers in accelrated reduction of Pneumonia deaths among under five children.

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PROLOGUE

India has made rapid strides in reducing child mortality rates from 126 per 1000 live births in 1990 to 37 per 1000 live births in 2017 (SRS). However, an estimated 1.4 lakhs children die due to Pneumonia annually in the country. We lose 385 children every single day due to Pneumonia in our country and most of these deaths are preventable. Pneumonia remains a low hanging fruit for us to make strides in eliminating the under-5 child mortality burden further. Considering the magnitude of the problem, the Ministry of Health & Family Welfare, committed to improving health for children has developed Pneumonia guidelines to ensure adequate protection, prevention and treatment for children against Pneumonia.

Timely recognition of severe Pneumonia cases and institution of antibiotic therapy along with availability of uninterrupted supply of oxygen is the mainstay for preventing childhood Pneumonia deaths. WHO, in 2014, released evidence based guidelines for classification and treatment of Pneumonia. Ministry of Health and Family Welfare set up an expert group to examine and update the guidelines for acute respiratory tract infection with special emphasis on Pneumonia. These guidelines have been developed after intensive discussions by the experts, which have been further endorsed by invited independent expert groups. The guidelines have imbibed the evidence based latest antibiotic therapy and simplified Pneumonia classification.

The guidelines encapsulate both technical and operational pillars, capturing guidance on diagnosis and treatment protocols, capacity building across all levels and regular monitoring and supervision. I am happy to note that to enhance visibility of Pneumonia control activities, the emphasis on SAANS (Social Awareness & Action to Neutralize Pneumonia Successfully) has been included in the guidelines. I take this opportunity to sincerely thank Ms. Preeti Sudan, Secretary Ministry of Health & Family Welfare for her guidance and encouragement to develop the revised guidelines. I thank the experts for their untiring efforts and time in thoroughly revising and updating the Pneumonia control guidelines based on the recent evidence.

I sincerely hope that the guidelines will work out to be an effective tool for States and grass-root health functionaries in realization of the aims and objectives of the program.

(Vandana Gurnani)

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Acknowledgement

Pneumonia is a respiratory infection, which makes it difficult for the child to breathe. Pneumonia is caused by a number of infectious agents, including viruses, bacteria and fungi. All Pneumonia cases present initially as non-severe Pneumonia; if untreated, non-severe Pneumonia cases can progress to severe Pneumonia. The majority of childhood Pneumonia deaths are due to severe Pneumonia. Reducing these deaths requires timely diagnosis and improved treatment of both non-severe and severe Pneumonia cases. To reduce overall morbidity and mortality of children under five years of age, prevention and control of Pneumonia is an essential step. The Pneumonia guidelines provide holistic information on programmatic management and treatment of Pneumonia.

The Childhood Pneumonia Management Guidelines have been prepared after intensive deliberations among members of Technical Resource Group on Childhood Pneumonia Management and Control led by Ministry of Health and Family Welfare with participation of domain experts and organizations namely UNICEF, WHO, USAID, Clinton Health Access Initiative (CHAI) and Save the Children.

I would like to acknowledge the guidance and vision provided by Ms. Preeti Sudan, Secretary (Health & Family Welfare), Mr. Manoj Jhalani, Special Secretary and Ms. Vandana Gurnani, Additional Secretary. I sincerely thank my colleagues Dr Sila Deb, Additional Commissioner (CH), Dr Aarti Garg,Assistant Commissioner (CH) and Dr Sheetal Rahi, Assistant Commissioner (C&AH) and the technical and communication team from MoHFW and CHAI, UNICEF and Save the Children, who have been instrumental in the finalization of these guidelines including SAANS (***Social Awareness and Actions to Neutralize Pneumonia Successfully)*** Campaign.

We hope that the guidelines are followed to streamline and strengthen Pneumonia control programs across the country. The guidelines are a resourceful tool outlining the various pillars required for effective Pneumonia treatment. I earnestly hope that these guidelines will ensure in reducing the burden of Pneumonia in the country and will provide a systemic framework to operationalize Pneumonia control programs effectively.

(Dr. Ajay Khera)

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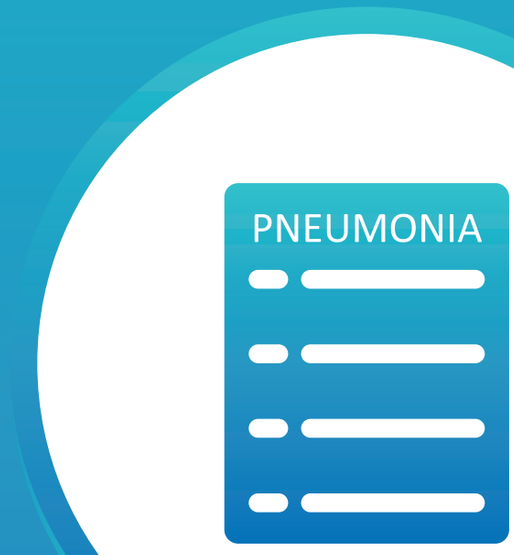
ACRONYMS

ARI	Acute Respiratory Infection
ALRI	Acute Lower Respiratory Infection
ANC	Antenatal Care
ANM	Auxiliary Nurse Midwife
ASHA	Accredited Social Health Activist
AV	Audio Visual
AWC	Anganwadi Centre
AWW	Anganwadi Worker
AYUSH	Ayurveda Unani Siddha & Homeopathy
BCC	Behavior Change Communication
BCM	Block Community Mobilizer
BDO	Block Development Officer
BMO	Block Medical Officer
BPM	Block Programme Manager
CDPO	Child Development Project Officer
CHAI	Clinton Health Access Initiative
CHO	Community Health Officer
CMO	Chief Medical Officer
CPHC	Comprehensive Primary Healthcare
DCM	District Community Mobilizer
DPM	District Programme Manager
DPT	Diphtheria Pertussis Tetanus
EBF	Exclusive Breastfeeding
ECCE	Early Childhood Care & Education
FAQ	Frequently Asked Questions
FBNC	Facility Based Newborn Care
F-IMNCI	Facility Based Integrated Management of Childhood Illness
FLHW	Front Line Health Worker
FRU	First Referral Unit
GAPPD	Global Action Plan for the Prevention & Control of Pneumonia & Diarrhea
HBNC	Home Based Newborn Care
HBYC	Home Based Care for Young Child
HMIS	Health management Information System
HNDs	Health and Nutrition Days
HWCs	Health and Wellness Centres
IAPPPD	Integrated Action Plan for the Prevention & Control of Pneumonia & Diarrhea
ICDS	Integrated Child Development Services
IDSP	Integrated Disease Surveillance Programme
IEC	Information Education & Communication
IPC	Inter-Personal Communication

ACRONYMS

IPD	Indoor Patient Department
IV	Intra Venous
JSSK	Jannani Shishu Suraksha Yojana
LHV	Lady Health Visitor
MCP	Mother & Child Protection Card
MCTS	Mother Child Tracking System
MDI	Metered-Dose Inhaler
MPW-F	Multi-Purpose Worker Female
MPW-M	Multi-Purpose Worker Male
MO	Medical Officer
MoHFW	Ministry of Health & Family Welfare
MWCD	Ministry of Women & Child Development
NGO	Non-Governmental Organization
NFHS	National Family Health Survey
NHM PIP	National Health Mission Programme Implementation Plan
NHSRC	National Health Systems Resource Centre
NRLM	National Rural Livelihood Mission
OPD	Outdoor Patient Department
PHC	Primary Health Centre
PNC	Post Natal Care
PPT	Protect, Prevent and Treat
PRI	Panchayati Raj Institution
PSBI	Possible Serious Bacterial Infection
PW	Pregnant Woman
RCHO	Reproductive & Child Health Officer
RIHFW	Regional Institute of Health & Family Welfare
RMNCH+A	Reproductive, Maternal, Newborn, Child Health and Adolescents
RMP	Registered Medical Practitioner
SAANS	Social Awareness & Action To Neutralize Childhood Pneumonia Successfully
SBCC	Social & Behavior Change Communication
SHC	Sub Health Centre
SIHFW	State Institute of Health & Family Welfare
TOT	Training of Trainers
TVC	Television Commercial
U5	Under-5
UNICEF	United Nations Children Fund
USHA	Urban Social Health Activist
VHSND	Village Health, Sanitation and Nutrition Day
VHSNC	Village Health Sanitation & Nutrition Committee
WHO	World Health Organization

CONTENTS



CHAPTER 1:
BACKGROUND & INTRODUCTION

Burden of childhood Pneumonia in India

Poor coverage

Of protective & preventive interventions leads to increased risk of Pneumonia in children

→

30 Million

episodes of ARI/Pneumonia annually

→

0.14 Million

Child deaths due to Pneumonia annually

Pneumonia is a lung infection caused by bacterial, viral or fungal infection, in which the air sacs (alveoli) at the end of airway tube (bronchioles) as shown below fill with pus and may become solid. The infection interferes with delivery of oxygen from air-sacs into the blood and removal of carbon dioxide from the blood. Childhood Pneumonia is caused by a combination of risk factors related to the host i.e. the child and infecting organisms (microbes). Within the child, low birth weight, malnutrition, non-exclusive breastfeeding (during the first 6 months of life), indoor air pollution, lack of measles, HiB, PCV immunization and concomitant diseases e.g. cleft palate, congenital heart disease, asthma all contribute towards Pneumonia. Pneumonia is inter-changeably used as Acute Lower Respiratory Tract Infection (ALRI) or Acute Respiratory Infections (ARI).

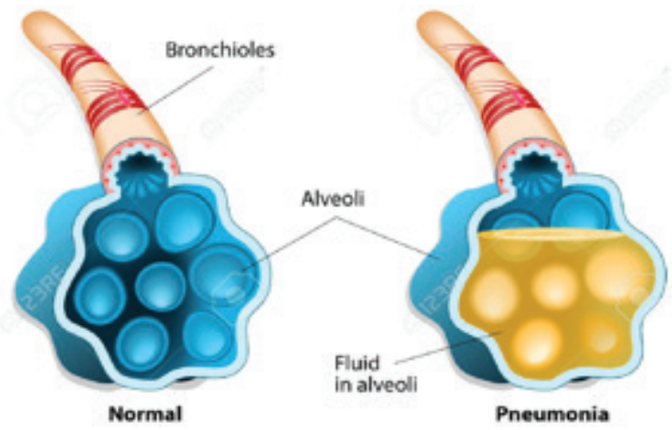


Figure-1.1

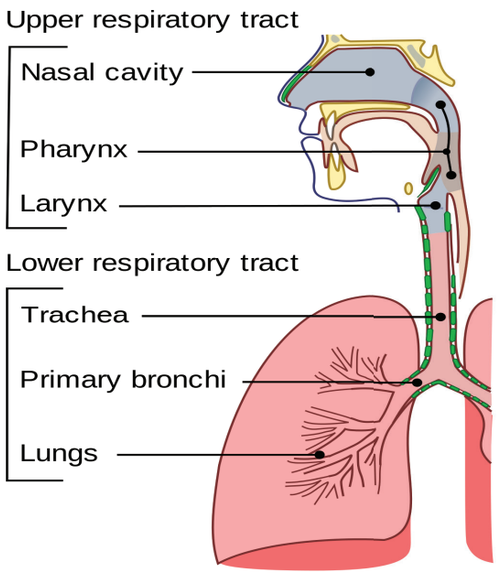


Figure-1.2

The common signs and symptoms of Childhood Pneumonia are cough, cold, fever, fast breathing and chest indrawing. Bacteria are the major cause of Pneumonia mortality in under 5 children. *Streptococcus Pneumonae* and Haemophilus Influenzae type b (Hib) are the common causes of bacterial Pneumonia in children beyond 2 months of age. *Staphyloccocus aureus* is another important bacteria, which though less common, can lead to severe and rapidly progressive Pneumonia. In infants under 2 months, gram negative enteric bacilli - *Escherichia Coli, Klebsiella spp* and gram positive organism like group B streptococcus are more often incriminated. Respiratory Syncytial Virus is the most common viral cause of Pneumonia and in infants infected with HIV, Pneumocystis Jiroveci is one of the most common causes. At all ages Mycobacterium Tuberculosis should be considered as cause of acute Pneumonia.

Community acquired Pneumonia is an acute infection of lungs, acquired outside of a hospital setting. The child should not have been hospitalized within 14 days prior to the onset of symptoms or may have been hospitalized for less than 4 days prior to onset of symptoms.

Childhood Pneumonia continues to be the topmost infectious killer among under-five children, contributing to 15 percent of under-five deaths in the country. Around 1.4 lakh[1] children die due to Pneumonia annually in the country.

Pneumonia morbidity & mortality in India

Number of episodes of ARI/Pneumonia every year[1]	30 Million
Incidence Rate (per child per year)[2]	0.22
Severe cases out of total cases	3 Million (10%)
Mortality Rate per 1000 live births[3]	5.7

Table-1.1

According to SRS 2017 report, the under-5 mortality is 37/1000 live births and the goal of National Health Policy 2017 is to reduce U5N to 23/1000 live births by 2025. In order to achieve the National Health Policy goals, the Pneumonia mortality needs to reduce to less than 3 per 1000 live births. This is also in tune with the goal of India Integrated Action Plan for Pneumonia & Diarrhoea (IAPPD).

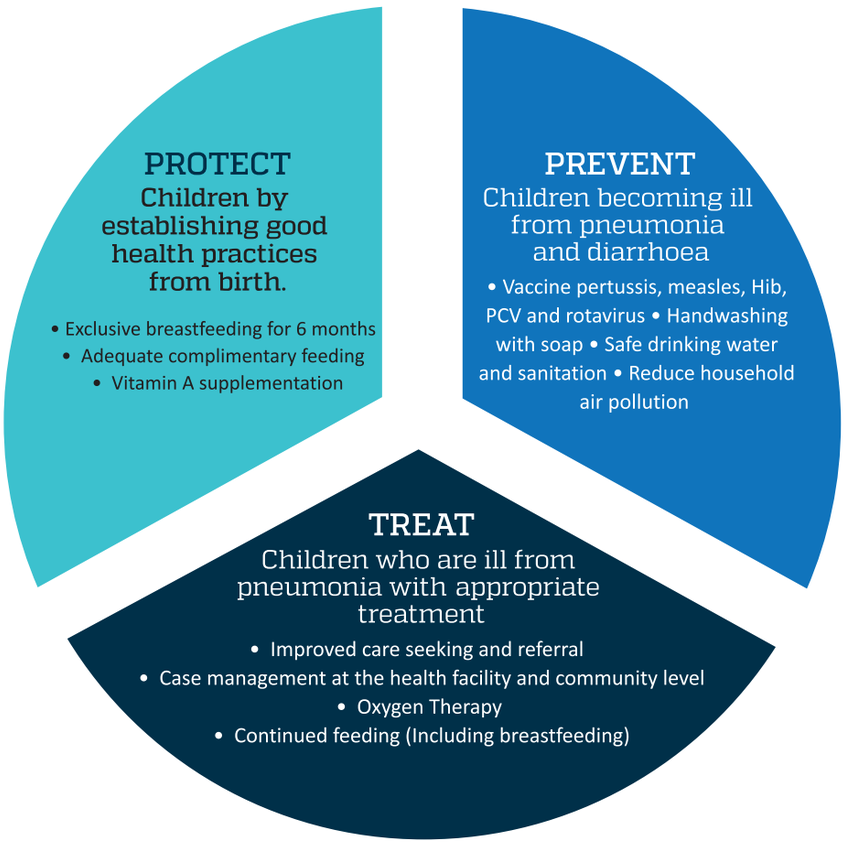
Key facts about Childhood Pneumonia

- Pneumonia deaths are usually clustered in winter months and the worst affected are children from poor socio-economic situations.
- Exposure to household air pollution almost doubles the risk of childhood Pneumonia and is responsible for 45% of all Pneumonia deaths in under-5 children[4].
- In India, according to analysis of NFHS4 data, 65% of cases of children suffering from ARI had unclean fuel use (wood/straw/kerosene/coal/charcoal/animal dung).
- Social factors are closely linked to childhood Pneumonia, for example prevalence of ARI cases were found to be 35% more in the lowest wealth quintile as compared to highest wealth quintile[5].
- Less number of girls were given treatment for Pneumonia compared to boys.
- Birth defects like cleft palate, Congenital Heart Disease etc. are important contributors of recurrent childhood Pneumonia.
- Untreated severe Pneumonia can lead to hypoxia, which is lack of oxygen in the body. Hypoxia causes death among children with Pneumonia.

[1] Lancet Volume 17, November 2017, Estimates of the global, regional and national morbidity, mortality, and aetiologies of lower respiratory tract infection in 195 countries: a systematic analysis for the Global Burden of Disease Study 2015
[2] Pneumonia Estimates based on Census 2011, SRS 2017 and Pneumonia morbidity data from Lancet Volume 17, November 2017
[3] Estimates based on Census 2011 population, SRS 2017 and Pneumonia mortality data from Lancet Volume 17, November 2017
[4] Household air pollution and health, WHO Factsheet 2018
[5] Global, Regional and National Causes of Child Mortality; An updated systematic analysis for 2010 with time trends since 2000. Liu et al Lancet 2012

CHAPTER 2:
Protect, Prevent and Treatment Strategy

Deaths due to PNEUMONIA are largely preventable if Protect, Prevent & Treat interventions (PPT interventions) are adequately and appropriately implemented. Majority of these PPT interventions are at family & community levels and requires strong linkages with equipped health facilities. The Protect, Prevent Treatment (PPT) approach for Pneumonia management is as follows:



Framework of Childhood Pneumonia adapted from GAPPD/IAPPD

The coverage of the PPT interventions of the States as per NFHS 4 is in Annexure 1.

The components of "Protect, Prevent and Treat" being of great significance are being dealt through various government schemes & programs. The table below denotes various National health programmes and interventions that have relevance in supporting Pneumonia control measures:

Name of the existing government program	Relation to PPT framework
Infant and Young Child Feeding Programme	Protect
Vitamin A supplementation	Protect
Universal Immunization Programme/Mission Indradhanush	Prevent
Poshan Abhiyan (National Nutrition Mission)	Protect & Treat
Mother's Absolute Affection (MAA) Program	Protect & Treat
Home Based Newborn Care (HBNC)	Protect, Prevent, & Treat
Home Based Young Child Care (HBYC)	Protect, Prevent, & Treat
Integrated Management of Neonatal and Childhood Illness (IMNCI)	Protect, Prevent, & Treat
Facility based Integrated Management of Neonatal and Childhood Illness	Protect, Prevent, & Treat
(F-IMNCI)	Protect, Prevent, & Treat
Facility Based Newborn Care (FBNC)	Treat
Health and Wellness Centres	Prevent
Pradhan Mantri Ujjwala Yojana	Prevent
RBSK identification and management of birth defects	Prevent

CHAPTER 3:
Community and Facility Case Management of Childhood Pneumonia

The objective of the guidelines is to provide a complete overview of the community and facility based approaches to managing children presenting with symptoms of cough, fast breathing and/or difficulty in breathing due to Pneumonia, at all levels of the health system. These guidelines are specific for children under five years of age.
Children under 5 years of age are managed in 2 age bands as clinical presentation, assessment and treatment differs in these two age groups:

Effective case management of Pneumonia includes:

- Early recognition of cases of Pneumonia
- Appropriate use of antibiotics against major causes of bacterial Pneumonia
- Prompt referral of cases of severe Pneumonia and providing pre-referral treatment
- Providing good supportive care including appropriate and effective use of oxygen in health facilities to treat hypoxia which is usually in the causal pathway of Pneumonia related deaths
- Appropriate use of bronchodilators in children with wheeze at health facility and identification of conditions mimicking Pneumonia for their rational therapy
- Recognition of cases that do not have Pneumonia and do not require antibiotics but may benefit from supportive treatment

Algorithm for 0-59 days and 2 months to 59 months children's management

The following section describes management algorithm for Pneumonia cases at community and facility level for age groups 0-59 days and 2 months to 59 months. The existing sub health centres and primary health centres are being transformed to Health and Wellness Centres for providing comprehensive primary health care closer to the families. The HWC are envisaged to provide preventive, promotive, rehabilitative and curative care for RMNCAH, Communicable diseases, Non-Communicable diseases, Ophthalmology, ENT, Dental, Mental, Geriatric care, Palliative care, treatment for acute simple medical conditions and emergency & trauma services. This guideline is integrating Pneumonia management and control services through the service delivery framework of HWCs. The team at the HWC includes a Community Health Officer (CHO) trained for 6 months who would serve as the team leader. Other members of the team include the ANM, second ANM or MPW (male), and the ASHAs of the area.

1. Community and facility based case management of infection in young infants (0-59 days)

It has been estimated that neonatal infections (sepsis, meningitis and Pneumonia) contribute to 33% of the neonatal deaths[5]. In the second month of life, Pneumonia is the leading cause of child death.
Even though in young infants, it is clinically difficult to differentiate between Pneumonia, sepsis and meningitis, the treatment of these conditions is quite similar and therefore these conditions are grouped as Possible Serious Bacterial Infection (PSBI).

[5]Global, Regional and National Causes of Child Mortality; An updated systematic analysis for 2010 with time trends since 2000. Liu et al Lancet 2012

1.1. COMMUNITY AND OUTPATIENT CASE MANAGEMENT OF YOUNG INFANT WITH PSBI

The Primary Health Care providers (ANMs/CHOs/Medical Officers) should assess, classify & treat young infants with PSBI as given in table below:

POINTS TO REMEMBER WHILE ASSESSING YOUNG INFANTS

- Respiratory rate should be measured in all sick young infants. Cough is not an essential criterion for screening of Pneumonia in this age group.
- Respiratory rate should be measured for a full minute. If the respiratory rate is fast i.e. respiratory rate > 60 breaths per minute counted for a complete one-minute period, the rate should be counted for a second time; fast breathing is significant only if second count is also 60 breaths per minute or more. The respiratory rate should be counted when the baby is calm and not crying or being fed.
- Normal young infants often have mild chest indrawing. However, severe chest indrawing is very deep and easy to see and is a sign of severe Pneumonia. In case of doubt, the infant should be observed in a different position, lying flat in the mother's lap or on a bed. Chest indrawing is significant if it is present all the time, in all positions and not only when the child is crying or upset but also when calm and peaceful.

Signs	Classify as	Treatment
• Not able to feed or • Convulsions or • Fast breathing [60 breaths per minute or more] or • Severe chest indrawing or • Axillary temperature 37.5°C or above (or feels hot to touch) or • Axillary temperature less than 35.5°C (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 injectable Gentamycin • Treat to prevent low blood sugar (breast feed/ age appropriate feed) • Warm the young infant if temperature less than 35.5°C (or feels cold to touch) while arranging referral • Advise mother how to keep young infant warm on the way to the hospital. • Refer URGENTLY to hospital

Details of treatment by Primary Health Care Providers (ANMs, CHOs and Medical Officers)

Young Infant's Weight	Amount of Gentamycin 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	1/4
Above 2.0 kg – up to 3.0 Kg	0.3 ml	2.5 ml	1/2
Above 3.0 kg – up to 4.0 Kg	0.4 ml	3 ml	1/2
Above 4.0 kg – up to 5.0 Kg	0.5 ml	4 ml	1/2

First dose of Oral Amoxicillin and Injectable Gentamycin
Table 1: Antibiotic Therapy for management of PSBI- Pre-referral dose or where referral is not feasible (0-2 months)

- Warm the young infant by skin to skin contact with mother/caregiver if temperature is less than 35.50C (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 is not feasible, management of illness should be done using oral Amoxicillin & injection Gentamicin for 7 days by Primary Health Care providers.
- ASHA during her home visits will identify young infants with PSBI and refer them to ANM/Medical officer for further management. She will also follow up young infants to ensure completion of antibiotic treatment.

Management of PSBI by Primary Health Care Providers

STEP 1: ASSESS

- Not able to feed or
- Convulsions or
- Fast breathing (60 breaths/minute or more) or
- Severe chest indrawing or
- Axillary temperature 37.5 C or above (Or feels hot to touch) or
- Axillary temperature is less than 35.5C or above (Or feels cold to touch) or
- Movement only when stimulated or no movement at all.

STEP 2: CLASSIFY

If one or more features present: Classify Possible Serious Bacterial Infections (PSBI)

STEP 3: PRE-REFERRAL DOSE & REFER

ASHA (Home based)

- Counsel the mother/caregiver for urgent referral to a healthy facility
- Arrange transport facility using JSSK Scheme

ANM

- Give Pre-Referral dose Inj. Gentamicin & Oral Amoxicillin
- Counsel the mother/caregiver for urgent referral to an indoor health facility (By ANM: to the nearest health facility)
- Arrange transport facility using JSSK Scheme
- Fill up the Treatment Card,and give counter slip for mother/caregiver to take them to the healthy facility equipped with standard in-patient treatment

Referral to health facility

STEP 4: MANAGE IF REFERRAL NOT POSSIBLE

ADMISSION/REFERRAL REFUSED OR NOT POSSIBLE

Medical officer/ANM to start Inj. Gentamicin and Oral Amoxicillin

ANM to inform Medical Officer/Nurse at health facility about the young infant's condition and the treatment

- Teach mother how to give Oral Amoxicillin at home for total 7 days
- Counsel the mother on how to keep young infant warm and breastfeed frequently
- Fill up the Treatment Card
- Inform concerned ANM/ASHA about the young infant's condition and the treatment, and plan for follow-up

STEP 5: FOLLOW UP

ANM (PHC/HSC Level)

- Ensure daily administration of Inj. Gentamicin and Oral Amoxicillin for total 7 days
- In case the young infant is unable to visit the health facility, the ANM should visit the home of the infant and administer Inj. Gentamicin
- Check young infant's condition and presence of danger signs
- ANM should inform Medical Officer/Nurse at the nearest health facility about the progress
- In case the young infant's condition worsens or there is no improvement within 24-48 hrs of starting treatment, refer to health facility where standard treatment is available immediately using JSSK scheme

1.2. FACILITY BASED MANAGEMENT OF YOUNG INFANTS WITH PSBI

Pneumonia in 0-59 days children is difficult to diagnose as the clinical presentation is non-specific & often overlaps with septicaemia. Even though it is clinically difficult to differentiate between severe Pneumonia, septicaemia & meningitis, the treatment of these conditions is quite similar.

Clinical classification of sick young infants aged 0 to 2 months:

Clinical category	Essential feature
Possible serious bacterial infection – (pneumonia, septicaemia or meningitis)	Not able to feed or convulsions or Fast breathing (Respiratory rate > 60 per minute) or Severe chest indrawing or Axillary temperature≥ 37.5°C (or feels hot to touch) or Axillary temperature <35.5°C (or feels cold to touch) or Movement only when stimulated or no movement at all.

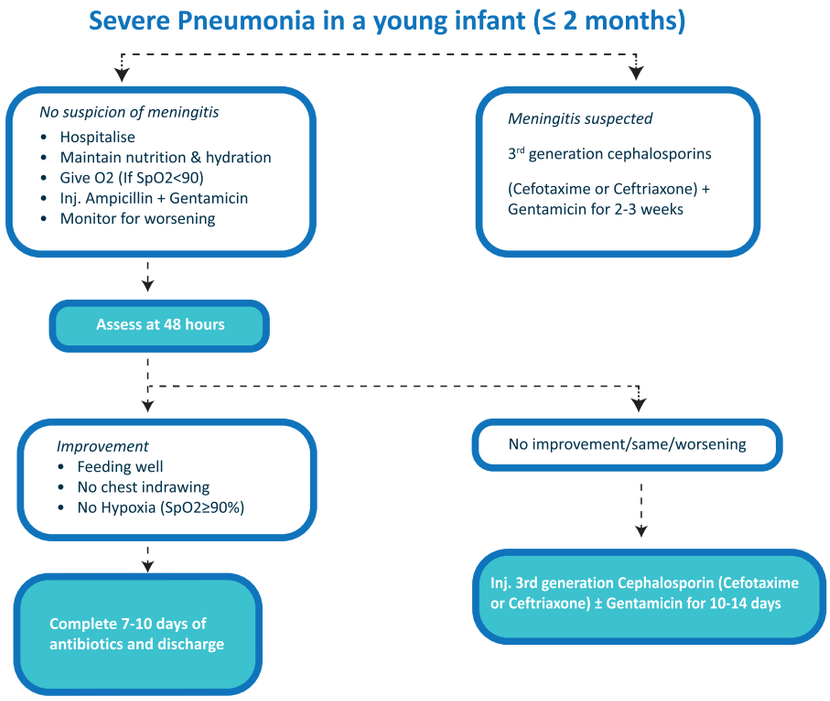
The steps for management of PSBI/Pneumonia in young infants admitted in health facilities are:

- 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.
- Oxygen should be given where required (presence of cyanosis, grunting, severe respiratory distress i.e. RR > 70/bpm, SpO2<90%).
- The infant should be kept warm.
- Breast-feeding should be continued to prevent hypoglycaemia. 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 it orally.

Table 2: ANTIBIOTIC THERAPY FOR PNEUMONIA/SEPSIS IN INFANTS <2 MONTHS

Antibiotic	Each Dose (mg/kg/dose)	Frequency		Route	Duration (Days)
		< 7days age	> 7days age		
Inj. Ampicillin*	50	12 hourly	8 hourly	IV, IM	7-10
And Inj. Gentamicin	5	24 hourly	24 hourly	IV, IM	7-10
Inj. Amikacin	15	24 hourly	24 hourly	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, Injection Cloxacillin 50mg/kg 8 hourly is to be added to the regime.



Flow Chart 2: Management of PSBI

2. Community and facility based case management in Children (2-59 months)

2.1. Management protocol for children(2 months to 59 months of age) with cough and/or difficulty in breathing by ASHA

ASHA worker being a community mobilizer would assess and classify children with cough and/or difficult breathing using the classification table given below and the MCP card (Annexure 6). ASHA would refer the children with classification of very severe disease/severe Pneumonia and Pneumonia to the appropriate health facility after giving first dose (pre-referral) of Oral Amoxicillin. In case of children with 'No Pneumonia', ASHA would counsel on home care. ASHA will also follow up children discharged from health facilities.

FAST BREATHING

The respiratory rate is a valuable clinical sign for identifying Pneumonia among children who are coughing and breathing fast. Respiratory rate should always be counted for full 1 minute when the baby is calm and not feeding. A respiratory rate of over 50 breaths per minute in children between 2 months to 1 year and over 40 breaths per minute in children 1 to 5 years of age is called as fast breathing and this simple clinical sign is used by the health worker to identify likely cases of Pneumonia in the community.

LOWER CHEST INDRAWING

Lower chest wall indrawing is a definite inward movement of the lower chest wall on breathing in. This identifies cases with severe disease in which lungs become stiffer. It is important to point out that the definition of chest indrawing does not include intercostal or supraclavicular retractions in which the soft tissue between the ribs or above the clavicle goes in when the child breathes. A child with chest indrawing may not have fast breathing because the respiratory rate can fall when Pneumonia becomes severe and the child is exhausted.

Pulse oximetry is an important tool to identify children with co-existent hypoxemia(SpO2<90%) and should be at least available up to the level of HWCs.

Signs	Classify As	Management by ASHA
• General danger signs (inability to breastfeed or drink, lethargy or reduced level of consciousness, convulsions) or • Chest indrawing	**Severe Pneumonia or very severe disease**	• Give pre-referral dose of Oral Amoxicillin • Refer urgently to health facility
• Fast breathing: (Respiratory rates: • 2-11 months ≥50/min •12-59 months ≥40/min)	**Pneumonia**	• Give pre-referral dose of Oral Amoxicillin • Refer urgently to health facility
• No signs of severe Pneumonia or Pneumonia	**No Pneumonia/ Cough or cold**	• Advice home care for cough and cold • If coughing for more than 14 days, refer for assessment

Dosage of Amoxicillin for Pneumonia

AGE or WEIGHT	Amount of Amoxicillin to be given per-orally as syrup (contains 125 mg. per 5 ml.)	Amount of Amoxicillin to be given per-orally as a tablet (contains 250 mg.)
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

Home Care for 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.

- **An infant below 6 months who is exclusively breast fed should not be given any home remedy.**
- Breast-feeding should be continued. The mother is advised to continue feeding the child during the illness.
- 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 home remedies. Avoid cough syrups.
- 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.
- She should look for signs of worsening of illness, like child becomes sicker or is not able to drink or breastfeed, fast breathing, difficult breathing or if child develops fever. If any of these signs appear, mother should immediately contact ASHA or ANM for referral to the nearest health facility.

2.2. Management protocol for children (2 months to 59 months of age) with cough & or difficult breathing by ANM

The ANM, based on the assessment for danger signs like respiratory rate and chest indrawing will classify these children into action-oriented categories.

GENERAL DANGER SIGNS

- Not able to breastfeed/drink
- Vomits everything
- Convulsions
- Lethargy or reduced level of consciousness

Presence of any one of the general danger signs mandates quick assessment, pre-referral treatment and urgent referral to a hospital.

The ANM based on the assessment for danger signs, respiratory rate and chest indrawing will classify these children into action oriented categories as given in table below.

Signs	Classify As	Management by ANM
• General danger signs (inability to breastfeed or drink, lethargy or reduced level of consciousness, convulsions) or • Chest indrawing	**Severe Pneumonia or very severe disease**	• Give pre-referral dose of Oral Amoxicillin & IM gentamicin • Refer urgently to hospital
• Fast breathing: (Respiratory rates: • 2-11 months ≥50/min •12-59 months ≥40/min)	**Pneumonia**	• Give Amoxicillin for 5 days • Advice home care for cough and cold • Follow up in 2 days*
• No signs of severe Pneumonia or Pneumonia	**No Pneumonia/ Cough or cold**	• Advice home care for cough and cold • If coughing for more than 14 days, refer for assessment

*For fast breathing Pneumonia, ANM to start oral amoxicillin and instruct for follow up in 2 days preferably at Health and Wellness centre. The Community Health Officer (CHO) will reassess the case and use pulse oximeter to decide on further course of action in consultation with Medical Officer (PHC). If the child is improving, then 5 days therapy is to be completed. However, if the child's condition is same or worsened, child should be referred to the next higher level facility. In case the Health and Wellness centre is yet to be functional, ANM assesses the cases after two days of antibiotic therapy and follows up under supervision of Medical Officer for further course of action. If the condition of child is same or improved, complete the five day course of amoxicillin and in case the condition of the case deteriorates, refer for indoor facility management. If referral is not feasible or refused, manage with oral amoxicillin and injection gentamicin for 7 days with daily assessment.

Table 3: 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

Table 4: Pre-referral dosage of antibiotics for very severe disease/severe Pneumonia

AGE or 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 month (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

2.3. Management protocol for children (2 months to 59 months of age) with cough & or difficult breathing by Community Health Officer (CHO) at Health and Wellness Centres (HWCs)

The case management process is similar to ANM and the CHO in addition assesses children for wheeze.

Signs	Classify As	Management
• General danger signs (inability to breastfeed or drink, lethargy or reduced level of consciousness, convulsions) or • Chest indrawing	**Severe Pneumonia or very severe disease*** **	• Refer urgently for hospitalization after pre-referral dosage of oral Amoxicillin& IM gentamicin • Give oxygen if saturation < 90%, while arranging referral*
• Fast breathing: • 2-11 months ≥ 50/min •12-59 months ≥ 40/min)	**Pneumonia**	• Give Oral Amoxicillin for 5 days in consultation with MO PHC • Treat wheeze if present** • Advise 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: Cough or cold**	• Advice home care for cough and cold • If coughing for more than 14 days, refer for assessment • Follow up after 5 days if not improving

*If oxygen saturation < 90%, refer as Severe Pneumonia or Very Severe Disease
**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 if there is improvement continue bronchodilators under monitoring
*** If referral is not feasible or refused, manage with oral amoxicillin twice a day and injection gentamicin once a day for 7 days in consultation with MO PHC and daily assessment (see table 4)

2.4. Management protocol for children (2 months to 59 months of age) with cough and/or difficult breathing by Medical Officer

The case management process is similar and the physicians in addition, assess children for stridor and wheeze. (They can use a stethoscope as wheezing is better heard with a stethoscope).
If the child has wheezing and either fast breathing or chest indrawing, they need to perform an additional assessment by giving a trial of rapid acting inhaled bronchodilator for up to three times 15–20 minutes apart. They need to reassess the child and then classify the problem. In addition, doctors should also use pulse oximetry to identify children with co-existent hypoxia (SpO2 < 90%).

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 • 2-11 months ≥ 50/min • 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

3. 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 it orally and therefore need to be given intravenous fluids and parenteral antibiotics.

- 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 it 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

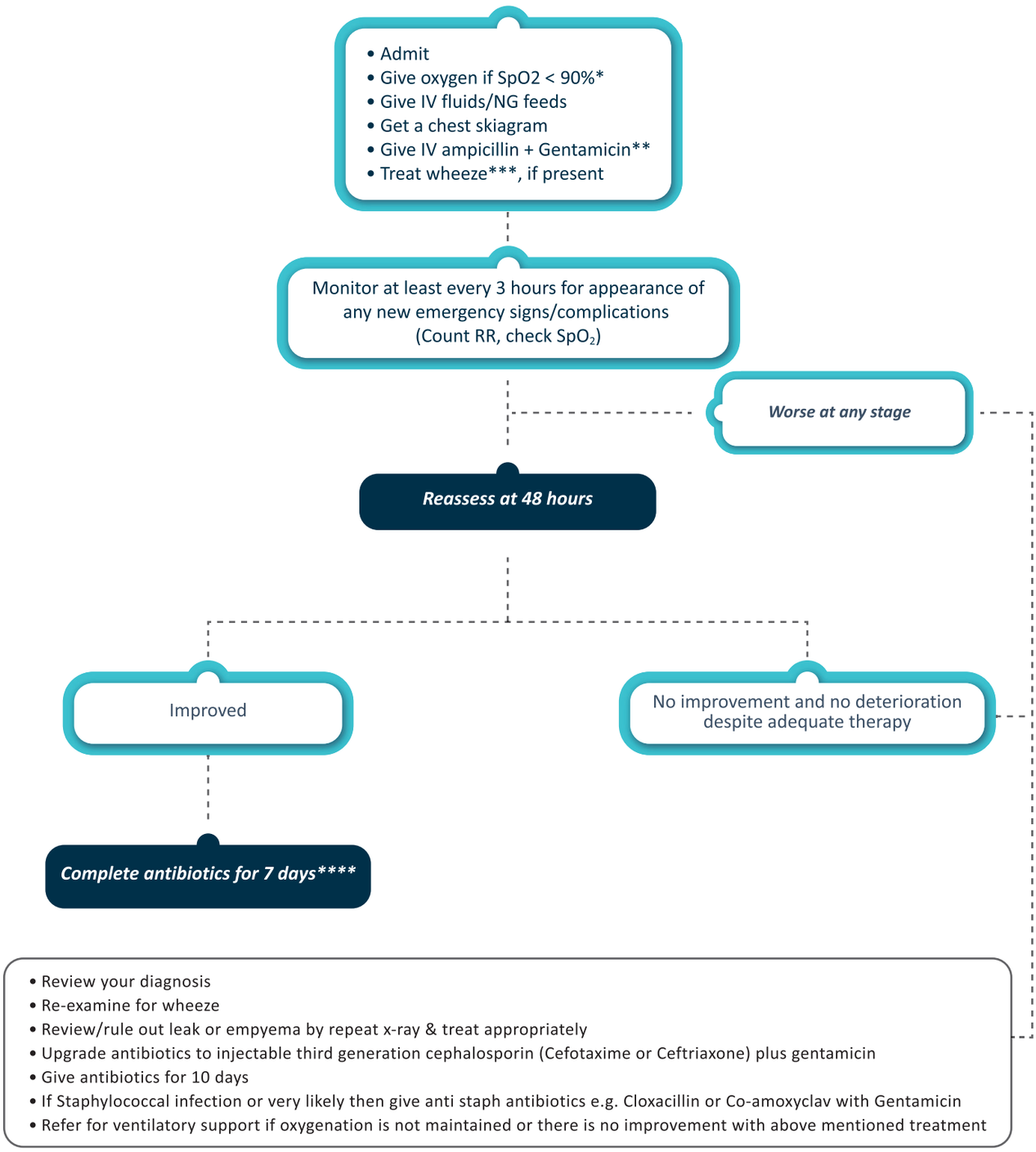
- Give oxygen to all children with oxygen saturation < 90% (< 94% if they also have other emergency signs like shock etc).
- Use nasal prongs as the preferred method of oxygen delivery to young infants; if not available, a nasal or nasopharyngeal catheter may be used.
- Use a pulse oximeter to guide 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.

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.

The following flow chart summarizes the steps for management of Severe Pneumonia cases admitted in health facilities by a paediatrician or a trained medical officer

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



* < 94% in presence of other emergency signs

** If staphylococcal infection is suspected, give anti-staph antibiotics like cloxacillin and gentamicin in case of severe pneumonia with septic shock consider ceftriaxone and vancomycin

*** In case the child improves significantly with bronchodilator therapy, review the diagnosis

****Shift to oral drugs as soon as the child is able to take orally

Flow Chart 3- Management of Severe Pneumonia cases (2-59 months) admitted in health facilities

Pneumonia in a child with severe acute malnutrition

Pneumonia is not only more common, but is also more likely to be fatal in children with severe acute malnutrition. Clinical presentation is less specific and may overlap with sepsis.

- The child should be admitted and be treated as a case of severe Pneumonia even though they may not have chest indrawing or signs of severe respiratory distress. Severely malnourished children sometimes can have Pneumonia without fast breathing though will have other signs of respiratory distress like accessory muscle use and nasal flaring.
- Inj. Ampicillin and Gentamicin is the antibiotic of choice. The antibiotics are to be given for 7-10 days. Inj. Cloxacillin should be added whenever there is suspicion of staphylococcal infection.
- Management of severe acute malnutrition i.e. maintaining temperature, prevention and treatment of hypoglycaemia and appropriate feeding is essential.
- Pulmonary tuberculosis and HIV should be a diagnostic consideration if the patient does not show expected response.

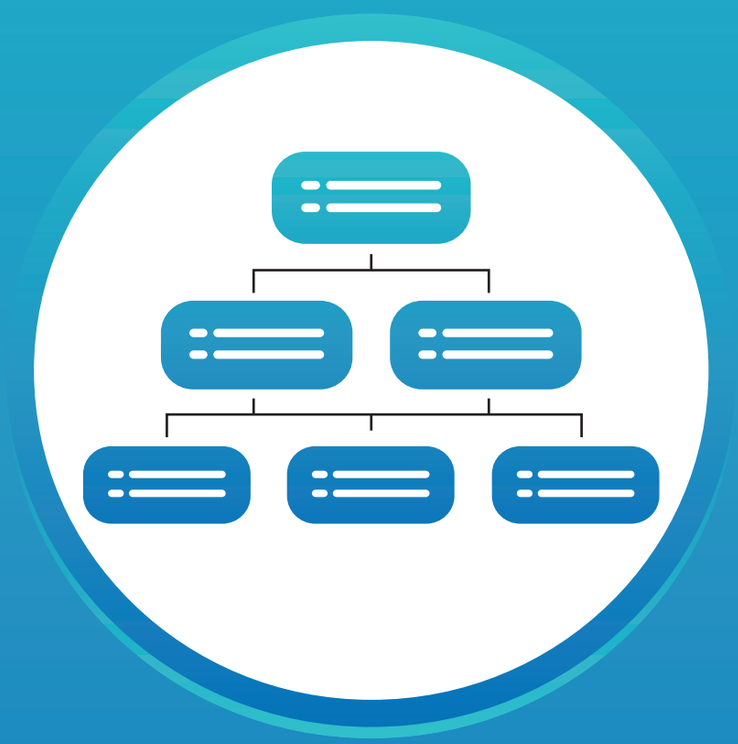
4. Summary Algorithm for management of Pneumonia

Summary Algorithm for Management of 0-59 days children with PSBI

	ASHA	ANM	CHO	MEDICAL OFFICER
PSBI	Refer	**Community and OPD** • Refer after pre-referral dose of Amoxicillin and Gentamycin • Manage with oral Amoxicillin and Gentamicin if referral not possible	**In OPD:** • Refer after pre-referral dose of Amoxicillin and Gentamycin • Manage with oral Amoxicillin and Gentamicin if referral not possible	**In OPD:** • Refer after pre-referral dose of Amoxicillin and Gentamycin • Manage with oral Amoxicillin and Gentamicin if referral not possible **In patient:** • Hospitalize and treat

Summary Algorithm for Management of 2-59 months children with cough and/or difficult breathing

	ASHA	ANM	CHO	MEDICAL OFFICER
Severe Pneumonia/ very severe disease	Refer after Pre-re-ferral dose of Amoxicillin Refer	Refer after Pre-referral dose of Amoxicillin and Gentamicin Refer	Refer after Pre-referral dose of Amoxicillin and Gentamicin	Hospitalize and treat
Pneumonia	Pre-referral dose of Amoxicillin Refer	Treat with Amoxicillin	Treat with Amoxicillin in consultation with MO PHC	Treat with Amoxicillin
No Pneumonia Cough or cold	Home care	Home care	Home care	Home care



CHAPTER 4:
INSTITUTIONAL ARRANGEMENTS

For successful implementation of **Childhood Pneumonia Management Guidelines** it is important that all the stakeholders are aware of planning process & their responsibilities. The following is a suggested roadmap for implementation at the state & district level.

3.1 Steps for planning & rolling out Guidelines

Situation Analysis of Childhood Pneumonia in State

State and district wise data on disease burden and service delivery to be made available (refer chapter 5 for formats)

↓

Constitute & Orient state, district & block planning teams (health departments, other ministries/depts., professional associations & development partners)

↓

Earmark/allocate budget for Pneumonia program in annual PIPs

↓

Translate Pneumonia guidelines. Print & distribute training materials, IEC materials/job aids, formats, checklists, reporting formats

↓

Procure commodities, ensure no stock out & maintenance of equipment (refer chapter 5)

↓

Capacity Building of health staff (refer to training plan as per chapter 4)

↓

Supportive supervision and Monitoring (Refer to Annexure 6)

↓

Reporting and Feedback mechanism (Refer Chapter 4)

↓

Periodic review of implementation by state/district/block committee

The key action points pertaining to planning & review meetings at various levels are detailed below:

Situation analysis of Childhood Pneumonia

To plan roll out of Pneumonia Guidelines at state and district level it is essential that data related to Pneumonia burden, facility mapping, training sites and logistics is available. Refer to Chapter 5 for details. Survey data like NFHS, SRS, CES, any local state level survey & HMIS should be referred for estimation.

State planning & review meetings

The implementation of the guidelines at the state level will be the responsibility of state Nodal Office Child health/RCH in co-ordination with nodal officers of other ministries & departments. State Nodal officer to constitute State Childhood Pneumonia Management Planning team under chairmanship of Mission Director (NHM) with participation of District Managers, technical institutes, medical colleges, academics, NGOs, training centres, procurement and IEC division and broad inter-ministerial participation.

The State Childhood Pneumonia Management Planning team should convene one day meeting under the chairmanship of the Mission Director NHM in the month of July and December every year to plan and review the implementation of Childhood Pneumonia Management guidelines. District managers are key members of these planning meeting should come prepared with details of health facilities providing both OPD & indoor care to sick children including PNEUMONIA as well provide updates on stock position of drugs and diagnostics and progress of training and IEC activities. The district teams should be instructed to hold similar district level Childhood Pneumonia Management meeting every quarter and to prepare the district action level plan & then submit it to the State during the review meetings. It is also suggested that the State assesses programmatic data on Childhood Pneumonia Management quarterly to assess progress and to address any bottlenecks.

District planning & review meetings

The district child health nodal officer/program manager should form a team consisting of key district officials from health & other departments, district hospital Superintendent/Paediatrician, nodal officer-IDSP, professional associations, development partners & NGOs to plan, implement & monitor Childhood Pneumonia Management. After the first State level meeting, the district should finalise & submit District Action Plan within 3-4 weeks. It is also suggested that District Childhood Pneumonia Management Planning team quarterly review the status of Pneumonia control measures in their district.

Activity	State Planning Meetings	District Planning Meetings
Duration	One day	One day
Organizer	Department of Health & Family Welfare under Chairmanship of Mission Director	Department of Health & Family Welfare under Chairmanship of District Collector
Objectives	• Constitution of state planning committee • Orienting the members of the committee on Pneumonia guidelines • Review of state key Pneumonia indicators • Identify roles and responsibilities of departments/other ministries and their nodal person for interdepartmental coordination • Review progress of operational plan and status of interventions against agreed targets • Identify next steps and person responsible with set timelines • Address challenges related to program implementation (such as finance, procurement, and HR related issues)	• Constitution of district planning committee • Orienting members of the committee on Pneumonia guidelines • Review of district key Pneumonia indicators • Identify roles and responsibilities of departments/ other ministries and their nodal person for interdepartmental coordination • Review progress of operational plan and status of interventions against agreed targets • Identify next steps and person responsible with set timelines • Address challenges related to program implementation (such as finance, procurement, and HR related issues)
Suggested Participants	• Department of Health & Family Welfare • Philanthropic organizations and NGO • Professional Associations Department of Women and Child Development (ICDS) • Department of Education • Ministry of Petroleum & Natural Gas	• Medical and Nursing Colleges • Development Partners • Department of Public Works (Municipal Corporation) • Panchayati Raj Institution
Frequency of Meetings	• Two times in July and December every year	• Once every 3 month at district Agenda to be developed by child health nodal officer
Expected Outcome	• All participants are sensitized about state's plan for Pneumonia control and their respective roles • Broader framework of state and district proposed rollout plan defined	• Identification of challenges and their timely redressal

Block Planning Committee

For effective implementation, it is suggested that block be considered as a unit. The block medical officer under the chairmanship of Block Development Officer (BDO) should form a block level committee by involving various departments and other key stakeholders. Purpose of this committee is to jointly monitor the Pneumonia control measures.

Roles & Responsibilities:

Effective implementation of the PNEUMONIA guidelines require all stake-holders to be sensitized on their roles and responsibilities as summarised below.

Who	Where	What
Program Managers	State/District/Block level	• Plan for orientation meetings • Plan for Capacity Building at all levels • Identify appropriate training centres (with boarding & lodging facilities) • Ensure regular supplies • Map the health facilities providing in patient care to Pneumonia cases • Compiled records from the Treatment Cards to be transferred to the MCTS • Collate information from the block/districts • Review PNEUMONIA management during review meetings • Ensure evidence based communication & social mobilization planning, including campaigns for community engagement(focused used of platforms such as VHSND & mother's meeting)
Medical Officer	PHC/CHC/District & Sub–District hospital	• OPD management • Facility management • Record daily treatment details in the Treatment Card for PSBI cases • Reporting: Counter slips of the Treatment Card should be collected by MOs & compiled at each block level • Orientation of ANMs & ASHA • Supervise VHNDs • Discuss & review management during monthly meetings • Ensure Orientation of ASHAs/ANMs on IEC & communication materials/job aid & MCP Card
Staff Nurse	PHC/CHC/District & Sub–District hospital	• Support facility management
Community Health Officer	Health & Wellness Centre	• OPD management in consultation with MO PHC • Record daily treatment details in the Treatment Card for PSBI cases • Reporting: Counter slips of the Treatment Card should be sent to MOs at PHC • Orientation of ANMs & ASHA • Supervise VHNDs • Discuss & review management during monthly meetings • Ensure Orientation of ASHAs/ANMs on IEC & communication materials/job aid & MCP Card
LHVs/ANM Supervisor	HWCs/Sub-centre & VHND/HWD	• Orientation of ANMs • Counter slips of Treatment Card to be collected & compiled at block level • On job mentoring & supportive supervision • Ensuring availability of supplies • Facilitate conducting monthly meetings at sub-centres
Block Community mobilizers/ASHA facilitators	Home visits by ASHA, Community Based Events	• Coordinate periodic orientation of ASHAs • On job mentoring & supportive supervision • Support community awareness campaigns • Reporting • District/village wise list of all events/local festivals etc that happen between October-January which can be used for disseminating key messages for PNEUMONIA • Plan activities on PNEUMONIA for existing community platforms such as Gram Sabhas/VHNSDs/ECE Days/mother's meeting etc. • Identify the Influencers–religious leaders, community leaders, panchayat/ward members and sensitize influencers through meetings on PNEUMONIA to support upcoming community events around PNEUMONIA

Who	Where	What
ANMs/MPW-F	Home visit for sick child Sub-centre clinics VHNDs/HWD Cases referred by ASHA	• Identification, classification and management • Referral of severe cases after pre-referral dose • Before & during referral, advise the mother/caretaker on how to keep the young infant warm and to continue breastfeeding • Management of cases where referral is not feasible or refused after informing CHO at HWC's • Inform the Medical officer (MO) at the health facility about the young infant's condition • Record treatment details in the Treatment Card • Follow cases on treatment to ensure completion of treatment • Inform ASHA about the young infant's condition and ensure regular follow-up visits • Supervision of ASHA • Conduct interpersonal communication with households who require additional information and motivate them to participate in the community meetings/VHNSDs • Ensure delivery of key messages on PNEUMONIA is reiterated to the relevant beneficiaries after immunization • Work with AWWs for Community awareness: HBNC programme, Village Health & Nutrition Day (VHND)/Health & Wellness Day (HWD) • Reporting: Counter slips of the Treatment Card should be collected by the ANM & compiled at each block level
ASHA	Home visits as per HBNC & HBYC program & VHNSDs/HWD, Community Based Events	• Identification, classification and appropriate referral of sick child • Before and during referral, advise the mother/caretaker on how to keep the young infant warm and to continue breastfeeding • Follow up of cases on treatment for compliance • Prepare village-wise list of all children under the age of 5, including those attending AWCs and private nursery schools, Madrasas, etc. • Identify and reach all socially vulnerable families in the respective areas. Update lists/ micro-plans/communication plans to include children in the 0-5 age group belonging to these vulnerable and marginalised families • Based on the updated due-lists of beneficiaries, visit the households and provide information about PNEUMONIA and orient caregivers and families on the PPT approach • Inform them about the date and venue of upcoming community meetings that will focus on PNEUMONIA • Conduct IPC under the Home-Based Care of Young Child (HBYC) schedule (at 3rd, 6th, 9th, 12th, 15th months of the child) should include counselling on identification and prevention of PNEUMONIA. Use the MCP Card to ensure key messages are reiterated and understood by caregivers • Mobilize children for VHNSDs/HWDs • Work with AWWs for Community awareness: HBNC programme, Village Health & Nutrition Day (VHND)
AWW	AWC, VHNSD/HWD, Community Based Events	• Breast Feeding • Complementary Feeding • Growth Monitoring • Care of sick child
Development Partners	Operational States/ Districts/Blocks	• Assist in implementation and monitoring • Operational research • Learning and sharing of best practices • Liaise with the community level partners to plan and organize mobilization activities. Key influencers from local clubs, partners need to be roped in • For socially vulnerable groups, identify their representatives/local/tribal leaders, etc. as key influencers to orient them on key messages on PPT approach and request them to mobilize their communities/group members/employees
Professional Bodies/Academia	As per geographical presence	• Disseminate/orient their members on the technical guidelines • Support training and mentoring • Adherence to the standard PNEUMONIA care guidelines • Encourage their members to give special focus to PNEUMONIA platforms such as World Pneumonia Day using standard IEC materials

Intersectoral Convergence for Childhood Pneumonia Program

Ministry	Role
Ministry of Women & Child development	• Growth monitoring • Exclusive breastfeeding for 6 months • Adequate complementary feeding • Improved care seeking & referral through AWWS & VHNDs • Health education and counselling
Ministry of Panchayati Raj & Rural Development	• Strengthening VHNSDs/HWD
Ministry of Environment, Forest & Climate Change	• Reduce household air pollution

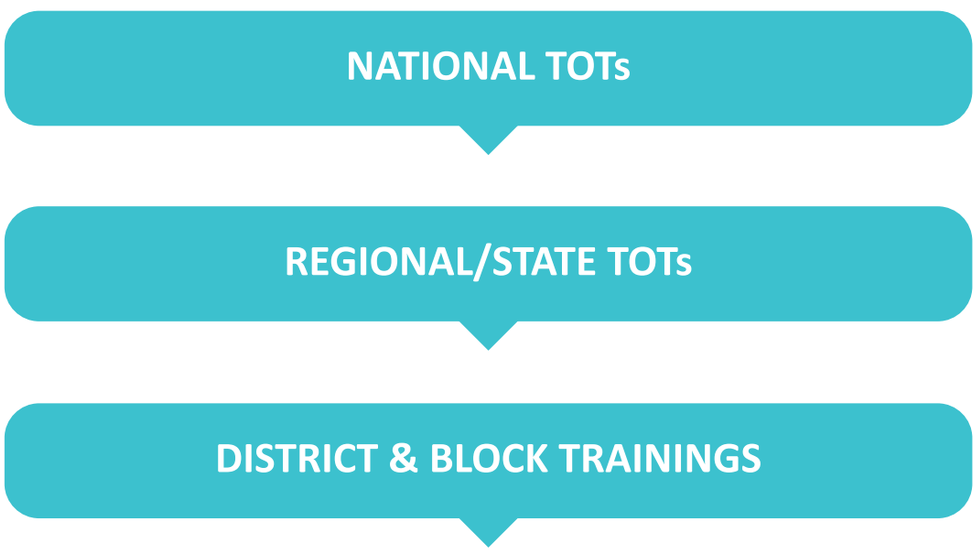
CHAPTER 5:
CAPACITY BUILDING

One of the key interventions to address high childhood Pneumonia mortality is early case identification and its appropriate management at all levels. The trained community health workers can easily identify, classify and manage cases of Pneumonia, using standard algorithms as outlined in Chapter 2. It is also essential to improve facility care for severe Pneumonia cases by strengthening health facilities. This can build trust of the community in the public health system and avoid delays in quality care and thus contribute to reduction in mortality.

It is desirable that all the medical officers/Mid-Level Healthcare Providers/ANMs/ASHAs are provided skill-based training on Pneumonia control and management for 2 days. Regular refresher sessions should be held during routine monthly meetings for Mid-Level Healthcare Providers, ANMs/MPW-F, MPW-M and ASHAs by the PHC Medical Officers.

The training venue should have lodging & boarding facilities with attached hospital near to an operational hospital. The training centre should have workstations for skill demonstrations.

National level TOTs will be organised to develop a pool of state master trainers. These state master trainers will subsequently facilitate roll out training at state/district levels.



- The State child health nodal officer would be overall in-charge for these training and needs to ensure the following: The training should be rolled out in a cascade manner.
- Finalize training plan, training dates, training venue and training agenda two weeks in advance.
- Conduct state level TOTs for developing a pool of 20-25 master trainers for the state.
- The participants of this master training batch should be identified State Pool of Trainers for Child Health Programs (IMNCI/FIMNCI/FBNC etc.).
- The trainer for this State level training batch would be from the State Medical Colleges/National Trainers.
- Identify the trainers' team with 4-5 facilitators per batch, with one of them acting as lead facilitator cum training co-ordinator. Each session of the training should be assigned to one facilitator and one co-facilitator, with their names duly inserted in training agenda. The Faculty should also prepare a back-up list in case one of the facilitators drop-out.
- Official communication for seeking nomination/deputation of (i) participants and (ii) trained facilitators & follow-up from time to time for confirming their nomination.

- Sitting arrangement should be either U-shaped or cluster-sitting at the training venue. The training venue can be medical college hospital/SIHFW/RIHFW/District Hospital/ANM Training centres etc.
- Functional logistics and training agenda to be organized as per Annexure 2.
- Arrange of all requisite work stations, equipment and other items (including handouts stationeries and printable items as per the number of participants) at the training venue.
- Arrange accommodation, refreshment, lunch and payments (TA/DA etc.).
- It is emphasized that all work stations and practical sessions must be arranged at the training venue itself.
- Clinical sessions are mandatory in this training. If the training is being organized in SIHFW/RIHFW/ANM training centre then pre information to the health facility to be visited for clinical sessions and travel arrangement should be ensured. Also, the health facility should be in close proximity of the training venue.

The following training plan is recommended for different categories of health service providers:

Category of health staff	Batch size	Venue	Master trainers (4-5 / batch)	Duration	Frequency
Medical Officers, Staff Nurses, Nursing Faculty	25-30	District and Sub-District Hospital/Medical College/Health and Family Welfare Training Centre	State trainers (Doctors and Nurse tutors) and District Pediatrician	2 days	One Time
CHO* , Health workers (LHV, ANM/MPW-F, MPW-M, DPM, DCM, BPM, BCM, ANMs, ASHA, ASHA supervisors and other)	25-30	Health and Family Welfare Training Centre/CHC/PHC/ District Hospital/ Sub-District Hospital/ ANM training centre/ Nursing training centre	Master Trainers/ Medical Officers/ LHVs/ASHA facilitators	1 day	One Time followed by regular re- orientation during monthly meetings at block level

*CHOs are trained and certified in Certificate Programme in Community Health. They will also be oriented on childhood Pneumonia management with more emphasis on use of pulse oximeters and nebulizers/MDI with spacers
**In case of on-going IMNCI/F-IMNCI training, the above Pneumonia training can be integrated with the same

District nodal officer - Child health should map the health facilities that provide in-patient care to Pneumonia cases. The trainers should inform all the categories of health staff on the referral mechanisms to these facilities.

CHAPTER 6:
DISTRICT OPERATIONAL PLAN

The objective of this chapter is to provide guidance to state and district managers for need based planning, forecasting and procuring (taking district as a unit).

A. Estimation of annual Childhood Pneumonia cases in a district

- The annual case load has been calculated based on the presumption that 60% of total episodes will be managed by the public health sector.

Steps	Sub Category	Methodology	Taking district with 20 Lakh Population as an example	Assuming 60% care seeking in the public health system
Estimation of severe Pneumonia cases				
Step 1	Under-five population of the district	Total population of the district X 10%	2 Lakh Under 5 children	2,00,000
Step 2	Estimated number of Pneumonia episodes for under 5 children in a year	Under-five population X 0.22 (incidence rate of India)	44,000 Pneumonia/ARI episodes for under 5 children in a year	26,400
Estimation of PSBI/Pneumonia episodes in children (0- 59 days)				
Step 3	Estimated number of annual live births	(Total population of the district X Crude Birth Rate)/ 1000	20,000 X Crude Birth Rate (20.4)/1000 = 40,800	24,480
Step 4	Estimated number of PSBI/Pneumonia cases in (0-59 days) old children	15% X Annual Live births	6,120	3,672
Step 5	Estimated number of PSBI/Pneumonia cases in (0-59 days) old children treated in health facility	50% X Estimated number of PSBI/Pneumonia cases in (0-59 days) old children	3,060	1,836
Step 6	Estimated number of PSBI/Pneumonia cases in (0-59 days) old children treated in community	50% X Estimated number of PSBI/Pneumonia cases in (0-59 days) old children	3,060	1,836
Estimated Pneumonia episodes in children 2-59 months				
Step 7	Estimated number of Pneumonia episodes for children 2-59 months in a year	Subtract figure of Step 4 from Step 2 (Step 2–Step 4)	44,000 – 6,120 = 37,880	22,728
Step 8	Severe Pneumonia episodes for Children 2-59 months in a year	10% X Step 7	3,788	2,273

B. Annual Logistics Requirement:

- Out of the 60%, it is assumed that 50% of the cases will seek care from ANM, and the remaining 50% will seek care from CHO/Medical Officer.

For Treatment of	Commodity	Methodology	Taking as district with 20 Lakh Population and 60% care seeking in public health as an example
PSBI/Pneumonia in 0-59 days	Inj. Gentamicin Vial (80 mg per 2 ml)	Estimated number of PSBI/Pneumonia episodes Step 5+Step 6) X 1.5 Vial per child for 7 days treatment	3,672 X 1.5 vial per child = 5,508 vials
PSBI/Pneumonia in 0-59 days	Syp Amoxicillin (30 ml bottle, 125 mg/5 ml)	Estimated number of PSBI/Pneumonia episodes (Step 5+Step 6) X 2 bottles per child for 7 days treatment	3,672 X 2 bottles per child = 7,344 bottles
Pneumonia cases in children 2-59 months	Amoxicillin Dispersible Tablet (250 mg) for ANM/HWC staff/MO	Estimated number of Pneumonia episodes X 50%* X 20 tablets (average 4 tablets per day for 5 days treatment)	22,728X 20 tablets for treatment = 4,54,560 tablets
Pneumonia cases	Estimated Pulse Oximeter in the Health facilities	1 per HWC and PHC, 2 per CHC and DH	450-500 per districts
ARI cases	Estimated Nebulizers/MDI with spacers in the Health facilities	2 per facility–HWC, PHC & CHC and 4 per DH	Approx. 600-700 per district
Severe Pneumonia cases	Oxygen Source–Oxygen cylinders/oxygen concentrators	2 per facility–HWC, PHC & CHC and 4 per DH	Approx. 600-700 per district

* It is presumed that 50% cases will be managed by ASHA and remaining 50% will be managed by ANM/MO. Ensure 20% additional buffer stock over and above the stock calculated to ensure regular supply, training needs and mitigate risks involved.

* It is presumed that 50% cases will be managed by ANM and remaining 50% will be managed by CHO/MO.
Ensure 20% additional buffer stock over and above the stock calculated to ensure regular supply, training needs and mitigate risks involved.
Additionally, each HWC needs to be provided with, Stop watch, Thermometer, 1 ml syringe with needle and Hub cutter.

ASHA should be provided with supplies of Syrup Amoxicillin (approx. 5 cases per year) and Amoxicillin Dispersible Tablet (for 25 cases per year) for providing pre-referral dose and stop watch, 1 ml syringe as per PSBI/HBNC/HBYC guidelines.

C. Training plan

Participants	In position	No. of training days	Venue of training	Dates of training
ASHA	1			
ANM/MPW-F, MPW-M	1			
CHO	1			
Staff nurse	2			
Medical Officers	2			

*In order to complete a batch size of 25-30 the above cadres can be clubbed. ASHA/ANM and CHO in one group and MO/SN in another group

D. Training venue preparedness plan

Sr. No.	Name of training venue	Pneumonia Skill station available	Attached to which hospital for case demonstration	No. of trained facilitators	No. of trainees at one time

E. Protocol display plan

Facilities	PSBI guidelines by primary health care providers	PSBI guidelines for facility care	Community management by ASHA/ANM/ MPW-F/MPW-M	OPD management by CHO/ Medical Officer	Facility based management of severe Pneumonia cases
	0-2 months			**2-59 months**	
Each Medical College	10	10	X	10	10
District Hospital	10	10	X	10	10
Each CHC	5	5	X	5	5
Each PHC	2	2	X	2	2
Each PHC	2	X	2	2	X
Each Sub centre (OPD)	2	X	2	X	X
Number of protocols to be printed: Total # of facilities X Requirement calculated for each facility					

CHAPTER 7:
COMMUNICATION STRATEGY and PLAN

The key focus of communication activities is on building awareness, sensitization & motivation of people to understand and identify PNEUMONIA, prompting them to take quick action. This section provides the various IEC material, job aids and audiovisual material which can be used to provide mileage to the awareness building and behaviour change efforts.

Communication Objectives

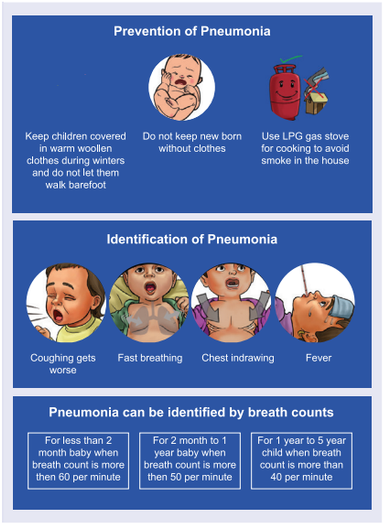
- Promote awareness amongst caregivers to accept and adopt protection and prevention interventions for their children and associating indoor air pollution with Pneumonia.
- Enable caregivers to identify and recognize the signs and symptoms on time and seek care immediately for on-time referral and treatment of Pneumonia.
- Promote confidence in safety and effectiveness of facility-level treatment.
- Address rumours and misinformation about Pneumonia.

Pneumonia Barrier Analysis

Target Audience	Perceptions/Challenges	Expected Outcome
Caregivers and families	Unable to identify signs and symptoms and delayed care seeking.	Increase knowledge and awareness regarding signs and symptoms of PNEUMONIA. Ensure timely and appropriate treatment.
	Low-risk perception from PNEUMONIA. Commonly associated with cough and cold. Generally old people and children get PNEUMONIA in winters.	Create risk perception regarding consequences and dispel myths.
	Over-reliance on home remedies and faith/traditional healers.	Dispelling myths/misconceptions and reliance on home remedies, create trust for facility-based services.
	Not linking PNEUMONIA with Household Air Pollution. Believe that switching to cleaner cooking mediums such as LPG will be expensive, unsafe and deprive family of kerosene subsidy.	Increase knowledge that household air pollution leads to/worsens PNEUMONIA and promote usage of clean cooking fuels (LPG).
Front-Line Workers	Unable to identify signs and symptoms.	Capacity Development including SBCC skills on all aspects of PPT interventions for improved case management.
	Limited skill and competency for counselling and preventive advice.	
	Lack of communication material with which to engage the community.	Developing relevant job aids/communication materials.
Informal Treatment Providers	Unable to identify signs and symptoms and its severity.	Advocacy for early referral of PNEUMONIA cases to medical facilities leading to reduction of mortality.
	Provide irrational treatment.	
	Lack of knowledge/access regarding diagnostic devices such as pulse oximeter which limits proper diagnosis and treatment.	Promoting Pneumonia guidelines among treatment providers leading to improved diagnosis and timely referral.

Source: CHAI Formative Study and UNICEF KAP Study

Key components of Pneumonia Communication Strategy



1. Building an **enabling environment** for a reduction in Pneumonia morbidity and mortality.

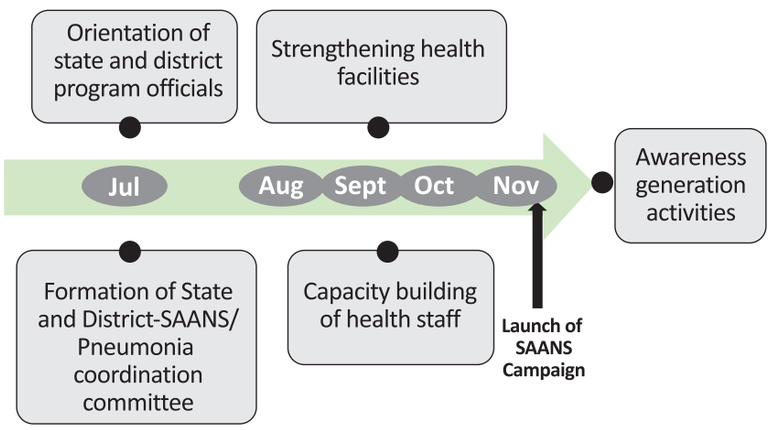
- At the household level, the ASHA will use Pneumonia section of the Mother and Child Protection card for counselling the families on prevention, identification of Pneumonia and its danger signs.
- The team at HWCs will use the card and IEC materials for creating community awareness.
- Similarly ANM will also use the card in the sub-centre and VHNSDs/HWDs to create community awareness and need for early care-seeking.
- Building community awareness and accountability through social behaviour change communication activities.
- Media engagement at all levels.

SAANS Campaign

In addition to the launch of the Pneumonia Guidelines, it is suggested that World Pneumonia Day is institutionalised by organising events on Pneumonia around November 12th each year. These events can be held under the umbrella of ***SAANS campaign (Social Awareness and Action To Neutralize Pneumonia Successfully).*** This will bring visibility and sustainability to Pneumonia programming. The key objective of SAANS campaign is to ensure that there are discussions, engagements and efforts towards Pneumonia programming and they remain in focus. The activities would be from both supply-side strengthening and awareness generation activities. The SAANS campaign will carry the tagline "Pneumonia nahi, toh bachpan sahi" which clearly establishes the positive impact of a Pneumonia free Childhood.

Annual Roadmap for rollout of SAANS communication campaign:

The supply-side interventions would include orientation of program officials, strengthening health facilities and capacity building of health staff.



Suggested awareness generation activities for SAANS Campaign

- TV & Radio Shows on Pneumonia by engaging medical experts at national, state and district level. Showcasing videos and TVCs on Pneumonia at the facility level.
- Dissemination of messages through IEC materials like poster, leaflet, sticker, tent card, banner, hoarding, flier etc. at the state, district, block and village level.
- Discussion on PPT interventions in upcoming VHNSD/mother's meeting etc.
- Conducting mid-media activities (such as plays, puppet show, folk songs, magic show etc.) at village level.
- Using Social/digital/transmedia platforms to enhance outreach.

2. **Advocacy with key stakeholders** such as public representatives, medical associations, religious leaders, local influencers/social and community groups, youth clubs, NGOs etc. to ensure widespread acceptance and ownership for the PNEUMONIA Communication Strategy. **For details on the modalities of engagement with key groups with whom Advocacy is important refer to Table in Chapter 3** (Roles & Responsibilities).

3. **Social and Community mobilization** to enhance outreach for the uptake of Protect, Prevent and Treat Interventions for PNEUMONIA at the community level. This would require improved planning and implementation of outreach activities regarding PNEUMONIA by using existing community platforms such as mothers' meetings, VHNSDs/HWDs and other community-level meetings.

IEC Materials and Resources for Community Engagement and Social Mobilization

Every communication activity should keep in mind the requirement of the target audience in terms of information needed & the manner in which it has to be disseminated. Multiple channels are essential to harness optimum results. For viewing the complete package of trans-media materials developed for PNEUMONIA refer to Annexure-3.

Key Message Themes:

Pneumonia Awareness: • Lack of awareness, knowledge and information about Pneumonia. • Create awareness to enable caregivers to recognise Pneumonia at an early stage and fill key information gaps related to what, how and protection of Pneumonia.	
Early Identification: • Caregivers practice traditional/home remedies resulting in worsening of the child's condition. • Build awareness of early identification to ensure that treatment begins before it is too late.	
Prevention of Pneumonia: • Dispel myth and notions, spread awareness on practices that protect children and precautions that can be taken to prevent the occurrence of Pneumonia.	

CHAPTER 8:
MONITORING & SUPPORTIVE SUPERVISION

Monitoring & Supportive Supervision

Tracking progress on efforts to control Childhood Pneumonia needs dedicated attention. The monitoring and supportive supervision involves:

1. Data monitoring through routine Health Management Information Systems (HMIS)
2. Supportive supervision in the field (Annexure 4)
3. Analysis of under-five deaths due to Pneumonia as a part of child death review and surveys child death review
   - Sample Registration System-Registrar General of India provides estimates of under-five deaths.
   - Various surveys/estimates that estimate the cause of death.

Data monitoring through routine health management information systems– geographical area wise, facility wise

Indicator number	Indicator
10.1	Number of cases in Childhood Diseases–Pneumonia
10.13	Children admitted with Upper respiratory infections
16.3.1	Number of Infant Deaths (1-12 months) due to Pneumonia
	Pneumonia in Children (0-5 years of age)
	Sepsis in Children (0-5 years of age)
16.4.1	Number of Child Deaths (1-5 years) due to Pneumonia
19.1	Paediatrics Antibiotics (Amoxicillin & Injectable Gentamicin) 1. Balance From Previous Month 2. Stocks Received 3. Unusable Stock 4. Stock Distributed 5. Total Stock

For accessing these indicators, the following steps may be followed:

1. Open website https://nrhm-mis.nic.in/SitePages/Home.aspx
2. Click on 'HMIS Standard Reports' under the 'Statistical Reports & Publications' section on the bottom left of the page
3. Select the relevant state and district and download the file for the indicators

Proposed indicators for Monitoring SAANS program

Category	Indicator	Numerator	Denominator
Incidence	Percentage of Children reported with Pneumonia	# of Children reported with Pneumonia	Total Children (0-59 months)
	Percentage of Children reported with Severe Pneumonia	# of Children reported with Severe Pneumonia	Total Children (0-59 months)
State level Operational indicators (for detail refer to Annexure 9)	Percentage of ASHAs trained on Pneumonia Guidelines	Number of ASHAS trained in the quarter	Number of ASHAS planned to be trained
	Percentage of ANMs trained on Pneumonia Guidelines	Number of ANMs trained in the quarter	Number of ANMs planned to be trained
	Percentage of SNs trained on Pneumonia Guidelines	Number of SNs trained in the quarter	Number of SNs planned to be trained
	Percentage of MOs trained on Pneumonia Guidelines	Number of MOs trained in the quarter	Number of MOs planned to be trained
Service Delivery (Treatment and Diagnostics)	Proportion of Children age (0-59 months) with Pneumonia receiving appropriate antibiotics on out-patient basis	# of Children age (0-59 months) with Pneumonia receiving appropriate antibiotics on out-patient basis	Total number of Pneumonia Children seen on out-patient basis in (0-59 months) children
	Proportion of Children age (0-59 months) with Severe Pneumonia receiving appropriate antibiotics on in-patient basis	# of Children age (0-59 months) with Severe Pneumonia receiving appropriate antibiotics on in-patient basis	Total number of Pneumonia Children (0-59 months) seen on in-patient basis
	Proportion of children with Pneumonia where pulse oximeters were used	Number of Pneumonia cases assessed by pulse oximeter	Total number of Pneumonia cases in under-five children
	Proportion of Severe Pneumonia cases receiving oxygen	# of Severe Pneumonia cases receiving oxygen	Total number of severe Pneumonia cases in under-five children
Logistics and Stock	Proportion of Health facilities admitting children with Severe Pneumonia having functional oxygen availability	# of health facilities admitting children with Severe Pneumonia cases having functional oxygen availability	Total # of health facilities admitting children with severe Pneumonia cases
	Proportion of Health facilities with functional Pulse oximeters	# of health facilities managing Pneumonia cases having functional Pulse oximeters	Total # of health facilities managing Pneumonia cases

CHAPTER 9:
FINANCIAL GUIDELINES

The estimated cost of SAANS programme includes cost for state and district level planning and monitoring, capacity building of ASHA, ANM, CHO, MO and Staff Nurse, SAANS communication campaign cost and printing of manuals and procurement. An estimated cost of Rs 86 lakhs will be required for an averaged sized district with population of 20 lakhs.

State Level estimated budget

S No.	Activity	Average Cost per district per year (INR Lakhs)	Budget Source
1.	State Launch Event on World Pneumonia Day (Annually)	2,00,000	9.5.2.2
2.	State Planning & Review Meeting	2,00,000	9.5.2.2
3.	Translation & Printing of Pneumonia guidelines (150 copies of Pneumonia guidelines)	20,000	12.2.2
4.	Translation & Printing of training module (200 nos) Treatment Protocols (200 Coloured A3 size per district)	50,000	9.1.6.1
5.	State Training for ASHAs in SAANS guidelines	1,50,000	3.1.2.9
6.	State Training of Trainers for 4 batches of 30 participants each	4,00,000	9.5.2.24
7.	Procurement for skill stations–4 pediatric mannequins, 4 Nebulizers, 4 Salbutamol MDI inhalers with spacer, 4 Pulse Oximeters, 2 Oxygen cylinder, 2 Oxygen Concentrator, 4 Oxygen hood, 4 Nasal Prongs, 4 Suction Catheters Annual Recurring cost	3,00,000 15,000	9.5.2.24
8.	IEC/BCC Activities (Avg Rs 1 lakh per district taking average number of districts to be 35)	35,00,000	11.5.4
9.	Monitoring, evaluation and miscellaneous activities (Rs 1 lakh per month for Supervision team constituted)	12,00,000	16.1.3.1.5
Grand Total		60,35,000	

District Level estimated budget

S No.	Activity	Average Cost per district per year (INR Lakhs)	Budget Source
1.	District Launch Event (Annually)	50,000	
2.	District Planning & Review Meeting (One time cost)	20,000	9.5.2.2
3.	Printing of training module (1500 Nos) Treatment Protocols (50 Coloured A3 size) (One time cost)	20,000	9.1.6.1
4.	Procurement for skill stations – 4 pediatric mannequins, 4 Nebulizers, 4 Salbutamol MDI inhalers with spacer, 4 Pulse Oximeters, 2 Oxygen cylinder, 2 Oxygen Concentrator, 4 Oxygen hood, 4 Nasal Prongs, 4 Suction Catheters (One time cost) Annual Recurring cost	2,50,000 15,000	6.1.1.2b
5.	Training for 50 batches (One time cost)	20,00,000	9.5.2.24
6.	IEC/BCC Activities (Wall painting, Radio jingles, folk shows) (recurring)	2,00,000	11.5.4
7.	Logistic and supplies a) Hand-Held Pulse Oximeter (200 Oximeter/district @ Rs 15,000) (One time cost) b) Nebulizer (100 Nebulizer/districts @Rs 1,000)	10,00,000 1,00,000	6.1.12b
8.	Monitoring, evaluation and miscellaneous activities (for 12 visits a year includes travel, food, stationary cost) (recurring)	50,000	16.1.3.3.3
Grand Total		35,55,000	

ANNEXURES

Annexure 1: States/UT wise coverage of Protect, Prevent and Treat interventions for childhood Pneumonia control as per NFHS 4

State	Protect Interventions				Prevent Interventions			Prevalence	Treat Interventions
	Exclusive breastfeeding	Breastfeeding children 6-23 months receiving adequate diet	Non Breastfeeding Children 6-23 months receiving adequate diet	Vitamin A Supplementation	DPT coverage	Measles coverage	Households using clean fuels for cooking	ARI	Treatment at health facility for ARI
Andaman & Nicobar Islands	66.8	13.5	17.6	69.3	83.5	76.4	63.5	1.5	75.8
Andhra Pradesh	70.2	6.5	11.9	72.1	89	89.4	62	0.5	77.3
Arunachal Pradesh	56.5	12.3	25.4	39.4	52.3	54.6	45	2.1	37.5
Assam	63.5	8.7	10.8	51.3	66.5	71.4	25.1	1.0	46.8
Bihar	53.5	7.3	9.2	62.3	80.2	79.4	71.4	2.5	59.8
Chandigarh	*	*	*	56.3	(95.9)	(95.9)	93.9	2.8	*
Chhattisgarh	77.2	11.1	8.4	70.2	91.4	93.9	22.8	2.2	70.1
Daman & Diu	(52.3)	6.2	(7.4)	68.4	74	79.1	73.6	0.6	(94.5)
Dadra & Nagar Haveli	(72.7)	0	*	59.3	73.3	81.7	56.1	1.9	
Delhi	49.8	4.8	9.5	54.2	83.7	90.5	97.7	2.6	81.7
Goa	(60.9)	9.1	(15.1)	89.5	94.2	96.5	84.1	1.4	89.0
Gujarat	55.8	5.8	2.8	71.2	72.7	75	52.6	1.4	70.2
Haryana	50.3	7	10	66.7	76.5	79	52.2	3.2	80.1
Himachal Pradesh	67.2	11.2	9.9	64.3	85	87.5	36.7	1.6	78.4
Jammu & Kashmir	65.4	21.8	32.1	64.7	88.1	86.2	57.6	5.4	78.5
Jharkhand	64.8	7.2	7.1	52.9	82.4	82.6	18.9	3.2	67.2
Karnataka	54.2	5.8	14.4	78.7	77.9	82.4	54.7	1.2	76.9
Kerala	53.3	21.3	22.3	74.4	90.4	89.4	57.4	0.8	90.1
Lakshadweep	(55.0)	12.2	*	52.3	94.2	92.5	34.8	1.1	(84.7)
Maharashtra	56.6	5.3	12.2	70.5	74.9	82.8	59.9	2.4	84.7
Manipur	73.6	19.3	14.1	32.1	77.8	74.2	42.1	1.7	39.1
Meghalaya	35.8	24.2	19.8	54.4	74	71.9	21.8	5.8	74.9
Madhya Pradesh	58.2	6.9	4.8	60.4	73.4	79.6	29.6	2.1	70.9
Mizoram	60.6	14.7	13.6	68.6	61.7	61.1	66.6	2.2	50.4
Nagaland	44.5	17.5	21.4	27.1	52	50.4	32.8	1.4	31.3
Odisha	65.6	8.9	5	69.1	89.2	87.9	19.2	2.4	72.9
Punjab	53	5.7	6.7	70.6	94.5	93.1	65.9	4.1	90.3
Puducherry	45.5	21.8	54.8	75	96	95.4	84.8	3.0	74.0
Rajasthan	58.2	3.4	3.7	39.6	71.6	78.1	31.8	2.1	82.6
Sikkim	54.6	23.1	*	84.3	93	93.3	59.1	0.3	(63.8)
Telangana	67.3	9.6	11.4	76.3	87.9	90.6	66.8	2.1	76.2
Tamil Nadu	48.3	21.4	47.1	68.3	84.5	85.1	73	2.8	82.2
Tripura	70.7	5.3	*	62.8	71.1	69.7	31.9	2.6	73.0
Uttarakhand	51	8.6	7.9	36.9	80	80.6	51	4.6	78.9
Uttar Pradesh	41.6	5.3	5.3	39.5	66.5	70.8	32.7	4.7	71.3
West Bengal	52.3	19.1	25.7	68.4	92.7	92.8	27.8	3.3	73.5
NATIONAL AVG.	54.9	8.7	14.3	60.2	78.4	81.1	43.8	2.7	73.2
NA: Not applicable									

Annexure 2: Training

Annexure 2.1: Logistics for Training of Medical Officer, Staff Nurse, CHO and Front Line Workers

S.No	Item	Quantity
1.	Print outs • PPTs, Pre & Post assessment test, case recording forms, Training feedback form	As per the number of participants
2.	Coloured Handouts for standard management protocols for Pneumonia	As per the number of participants
3.	Banner	2
4.	Mannequins for skill stations(Respiratory rate counting)	2
5.	Laptop and videos(Pen drive)	3
6.	Projector and screen	3
7.	Attendance Sheet	2
8.	Participant packets/folders–containing agenda, note book	As per the number of participants
9.	Flipchart	4
10.	Markers	10
11.	If required,Vehicles (to and fro movements of participants from venue to visualize real cases (CHC/District or Medical College Hospital) on day 2	As per the number of participant (6 cars @ 6 persons per vehicle)
12.	Hand washing • Big clothes pieces/handkerchief to blind fold the participants, Pairs of gloves and colouring agent- like povidone-iodine, potassium permanganate, etc., gentian violet, for hand washing demonstration like benzene, cobalt or phenolphthalein salts	• Water(running), soap or bucket and water dispenser • 30 clothes pieces • 3 bottles of the colouring agent
13.	Posters and Flow charts (IEC Materials, Management Protocols)	3 sets
14.	Other logistics for Front Line Workers: • Amoxicillin dispersible tablets and syrups, Mother & Child Protection card, Gentamicin vials/ampoules, 1 ml syringes with needles, alcohol swabs, Hub cutter, medicine measuring cups, spoons, droppers • Treatment card for PSBI management	• Amoxicillin dispersible (250 mg) Tablet 50 • Amoxicillin syrup 125 mg/5ml bottles-6 • 6 medicine measuring cups, 6 spoons, 6 droppers • Pediatric Gentamicin vials–6 • 1 ml syringe with needles 24 gauge-6 • Pulse oximeter (Only for ANMs training) • 10-20 MCP Cards • 10 Treatment cards for PSBI management
15.	Other logistics for Medical officers/Staff nurse/CHOs training Amoxicillin dispersible tablets and syrups, Mother & Child Protection card, Gentamicin vials/ampoules, 1 ml syringes with needles, alcohol swabs, Hub cutter, medicine measuring cups, spoons, droppers Treatment card for PSBI management Nebulizers/MDI Pulse Oximeters Oxygen cylinders Oxygen Hoods Nasal prongs Suction catheters (6, 8,10 FG)	• Amoxicillin dispersible (250 mg) Tablet 50 • Amoxicillin syrup 125 mg/5ml bottles-6 • 6 medicine measuring cups, 6 spoons, 6 droppers • Paediatric Gentamicin vials – 6 • 1 ml syringe with needles 24 gauge-6 • 10-20 MCP Cards • 10 Treatment cards for PSBI management • Nebulizers – 2 • Salbutamol MDI inhalers with spacer-2 • Pulse Oximeters-3 • Oxygen cylinder-1 • Oxygen Concentreator-1 • Oxygen hood- 2 • Nasal Prongs- 2 • Suction Catheters-3

Annexure 2.2: Training Agenda for CHOs/ANM/ASHA:

DAY 1		
Time	**Session**	**Methodology**
09:00-09:15	Registration	Registration
09:15- 09:30	Pre-test	
09:30-10:00	Introduction of participants and Expectations from the training	Discussion by Facilitator
10:00- 11:00	Assessment, Classification & Management of Pneumonia in children 2 months up to 5 years	Reading, Discussions, Videos
11:00-11:15	TEA BREAK	
11:15-12:00	Assessment, Classification & Management of Pneumonia in children 2 months up to 5 years-continued	Reading, Discussions, Videos
12:00-13:15	Assessment, Classification & Management of PSBI/Pneumonia in young infants 0–2 months	Reading, Discussion, Videos
13:15-13:30	Case studies (0-2 months and 2-59 months)	Discussions
13:30-14:00	LUNCH	
14:00-15:30	Skill Station • Respiratory rate counting and chest in-drawing • Treatment: Amoxicillin & Gentamicin dose and Injection technique • Usage of Pulse Oximeter	Demonstration and hands-on practice
15:30 -17:00	Hospital Visit with a rotation of groups	Demonstration and Discussion
17:00-17:30	Post-test, Wrap-up and Closing (Awarding certificates, a vote of thanks)	

Annexure 2.3: Training Agenda for MO/SN

DAY 1		
Time	**Session**	**Methodology**
09:00-09:30	Registration	Registration
09:30-09:45	Introduction of participants and expectation from the training	Flip Chart and Discussion
09:45-11:15	Pre-training evaluation at the skill stations	Assessment by the facilitator at each skill station
11:15-11:30	TEA BREAK	
10:30-10:50	Overview of Global Action plan for Pneumonia and Diarrhea-GAPPD/IAPPD	Presentation and Discussion
10:50-11:20	Classification of Pneumonia- Cough & Cold/Pneumonia/Severe & very severe Pneumonia	Presentation and Discussion
11:20-13:30	• Management Protocols of pneumonia • OPD/Home-Based Care • Timely Referral through Identification of Danger Signs • Inpatient Management Protocols	Presentation and Discussion
13:30-14:15	Identification of the: • Signs of Pneumonia • Respiratory rate counting • Chest in drawing • Other danger signs	Present Presentation, Videos and discussion
14:15-14:45	LUNCH	
14:45-15:15	• Prevention against Pneumonia • Role of Hygiene & Sanitation in prevention and control of Pneumonia including Indoor air pollution association with Pneumonia	Presentation, Videos and discussion
15:15-15:45	Case studies on Pneumonia	Demonstration and hands-on practice in groups
15:45-17:30	Skill Station • Hand Washing with Soap and Water • Respiratory rate counting • Amoxicillin dose • Gentamicin dose and Injection technique • Filling and use of Treatment card for PSBI • Use of Nebulizers/MDIs Use of Pulse Oximeters •Oxygen Delivery	
DAY 2		
Time	**Session**	**Methodology**
09:00-09:30	Recap of Day-1	Flip-chart/White board
09:30-12:30	Hospital Visit with rotation of groups Group 1. Pediatric ward Sign and symptoms of very severe disease/PSBI Pneumonia (1-2 cases) Group 2. OPD Sign and symptoms of severe Pneumonia (1-2 cases)	

DAY 2		
Time	Session	Methodology
12:30-13:00	LUNCH	
13:00-13:45	Group Discussion- Each group to discuss the cases and leaning with whole group along with important findings.	Discussion
13:45-15:30	• Session on counselling and use of IEC materials • Role Plays on Counselling and creating awareness among caregivers	Discussion and Demonstration
15:30-15:45	TEA BREAK	
15:45- 16:45	• Hand washing • Respiratory Counting • Amoxicillin dose • Gentamicin dose and Injection technique • Filling and use of Treatment card for PSBI • Use of Nebulizers/ MDIs • Use of Pulse Oximeters • Oxygen Delivery	Practice/Assessment
16:45-17:30	Post-test, wrap-up, feedback to improve such training further and Key Take Home Messages	
17:30-17:45	Closing (Awarding certificates, vote of thanks)	

Annexure 3: IEC Materials and Resources for Community Engagement and Social Mobilization

The following package of trans-media materials has been developed for Childhood Pneumonia:

Communication Material for Childhood Pneumonia

Sr. No.	Material
1.	**Audio-visual/TV Spots/Radio Spots/Scroll for Local Cable TV** Target Audience: General audience Installation/Activation Points: National, State and Local TV Channels/cable operators
2.	**Press Ad:** Identificaiton of Pneumonia and SAANS branding Target Audience: To be parents of under-five children Installation/Activation Points: Newspapers, Vernaculars, Magazines and Paper inserts
3.	**Mother and Child Protection Card** Target Audience: To be parents of under-five children Installation/Activation Points: Homes, VHNSD Quantity of the Material Required: 1 each for each under-five child, Target Audience: Mother/Caregivers
4.	**Poster:** Identification of Pneumonia and DO's and DON'T's Target Audience: To be given to FLHW during training, Mothers/Caregivers, Influencers Installation/Activation Points: AWC, All health facilities, Medical College(OPD), Panchayat Ghar Quantity of the Material Required: 1 each for AWC, All health facilities, Medical College(OPD), Panchayat Ghar
5.	**Canopy:** Identification of Pneumonia Target Audience: To be used during activities, events Installation/Activation Points: VHNSD/Community Event Site, Panchayat events, DH/CH Quantity of the Material Required: 1 each for AWC, All health facilities, Medical College(OPD) and Panchayat Ghar
6.	**Tent Card/Sticker:** Connection between HAP and benefits of switching to clean fuels Target Audience: To be placed at key areas within the facility (preferably near OPD) Installation/Activation Points: All health facilities Quantity of the Material Required: As per State/District/Block level requirement
7.	**Banners/Hoardings/Wall painting** Target Audience: Parents, General Public Installation/Activation Points: Panchayats offices, schools, Anganwadi centres/GAK, all health facilities, railway stations, bus stops, post offices, District Administration Offices, on buses, bus stations, chemist shops, banks, etc. Quantity of the Material Required: As per requirement
8.	**Leaflet for ASHA, Anganwadi workers and Private practitioners** Installation/Activation Points: To be given during training/orientation Quantity of the Material Required: 1 for each ASHA, AWW, Private practitioner
9.	**FAQs for Health Facility Staff** Target Audience: All health staff Installation/Activation Points: To be giving during Training

Annexure-4: Supervisory Checklists (to be integrated with state checklists)

Household Checklist for Pneumonia Cases for Families with Under-5 Children

Knowledge Awareness Households	1 (Y/N)	2 (Y/N)	3 (Y/N)	4 (Y/N)	5 (Y/N)	Total (Y)
• Can the mother tell at least two danger signs of Pneumonia?						
• Is she aware of whom to approach on recognizing the danger signs?						
• Can the mother tell any preventive measures for Pneumonia? (tick appropriate response) o Exclusive BF o Complementary feeding o Immunization o Avoiding exposure to Household Air pollution						

HWC Checklist - Pneumonia

Equipment					
S. No	Equipment	Available & Functional	Available but not Functional	Not Available	Remarks
1.	Pulse oximeter				
2.	Thermometer				
3.	Stopwatch				

Essential Drugs and supplies				
S. No	Availability of at least 2 months stock	Yes	No	Remarks
1.	Amoxicillin dispersible tablets/Syrup			
2.	Inj. Gentamicin 80mg/2ml			
3.	1 ml syringe with needles			

Service Delivery in the last two quarters				
S. No	Service utilization parameter	Q1	Q2	Remarks
1.	No. of PSBI cases referred (0-2 months)			
2.	No. of PSBI cases (0-2 months) completed 7 days of antibiotics where referral not feasible			
3.	No. of Pneumonia cases identified (2-59 months)			
4.	No. of Pneumonia cases managed (2-59 months)			
5.	No. of Pneumonia cases referred (2-59 months)			
6.	Neonatal deaths recorded, if any			
7.	Number of VHNSDs/HWDs attended			

Quality parameters of the facility				
S. No	Essential skill set	Knowledge	Skill	Remarks
1.	Provide essential newborn care (thermoregulation, breastfeeding and asepsis)			
2.	Correctly identifies signs of Pneumonia			
3.	Correctly measures dose of amoxicillin			
4.	Correctly measures dose of Inj. Gentamicin			
5.	Awareness of mechanisms for referral to PHC and FRU			

Record Maintenance					
S. No	Record	Available & correctly maintained	Available but not maintained	Not Available	Remarks
1.	Treatment card for PSBI cases				
2.	MCP cards				
3.	Referral Registers (In and Out)				
4.	VHNSD/HWD plan				
5.	Record maintained to capture Pneumonia cases information, who sought services				

Referral linkages in last two quarters					
S. No		Mode of transport (Govt./Pvt)	No. of sick young infants transported	No. of children (2-59 months) with Pneumonia	Remarks
1.	Home to facility				
2.	Interfacility				

IEC display				
S. No	Material	Yes	No	Remarks
1.	Pneumonia protocols and posters			

Previous supervisory visits			
S. No	Name & Designation of supervisor	Place of posting of supervisor	Date of visit
1.			
2.			

To be filled by monitor(s) at the end of activity			
Key Findings	Actions taken/proposed	Persons responsible	Timelines

PHC Monitoring Checklist - Pneumonia

Physical Infrastructure				
S. No	Infrastructure	Yes	No	Remarks
1.	Electricity with power back up			
2.	Running 24*7 water supply			

Training Status of HR			
S. No	Training	Number trained	Remarks
1.	IMNCI		
2.	F-IMNCI		
3.	FBNC		
4.	Pneumonia Training		
5.	HBYC		
6.	MCP Card		

Equipment				
S. No	Equipment	Yes	No	Remarks
1.	Functional neonatal, Pediatric Resuscitation kit			
2.	Functional Weighing Machine (infant/newborn)			
3.	Functional Radiant Warmer			
4.	Neo-natal ambu bag			
5.	Functional Facility for Oxygen Administration			
6.	Functional Pulse Oximeters			
7.	Functional Nebulizers			

Essential Drugs and Supplies				
S. No	Essential Medical supplies	Yes	No	Remarks
1.	Amoxicillin dispersible tablets/Syrup			
2.	Inj. Gentamicin 80mg/2ml			
3.	Inj. Ampicillin/Amoxicillin			
4.	Salbutamol Nebulizer solution			
5.	Oral/Injectable Corticosteroids			

S. No	Service Utilization Parameter	Q1	Q2	Remarks
1.	PSBI cases seen in OPD (0-2 months)			
2.	PSBI cases admitted in IPD (0-2 months)			
3.	Pneumonia cases seen in OPD (2-59 months)			
4.	Severe Pneumonia cases admitted in IPD (2-59 months)			
5.	No of sick young infants referred			
6.	No. of severe Pneumonia cases 2-59 months referred			

Record Maintenance					
S. No	Record	Available and Updated	Available, not filled	Not available	Remarks
1.	OPD Register				
2.	IPD Register				
3.	Drug Stock Register				
4.	Referral Registers (In and Out)				

Referral linkages in last two quarters					
S. No		Mode of transport Govt./Pvt.	No. of sick young infants transported	No. of sick children with Pneumonia transported	Free/Paid
1.	Home to facility				
2.	Inter facility				
3.	Facility to Home				

IEC Display				
S. No	Material	Yes	No	Remarks
1.	Pneumonia Protocol Posters			
2.	Pneumonia posters			
3.	JSSK Benefits			

Previous Supervisory visits			
S. No	Name & Designation of the supervisor	Place of posting of the supervisor	Date of visit
1.			
2.			

To be filled by monitor (s) at the end of activity			
Key Findings	Actions taken/proposed	Persons responsible	Timelines

Supervisory Checklist for Assessing Paediatric Pneumonia Care at CHC/District Hospital

Infrastructure			
S. No	Item	Available	Remarks
1.	Pediatric triage & emergency area clearly delineated & equipped	Yes/No	
2.	Provision of separate Paediatric OPD (as per guideline)	Yes/No	
3.	Recommended number of beds (8% of total beds) are allocated to Paediatric ward (as per guideline)	Yes/No	
4.	Provision of toilet and washing facilities in Ward area	Yes/No	
Equipment and Supplies			
S. No	Item	Available	Remarks
1.	Weighing scales for infants and children	Yes/No	
2.	Examination couch	Yes/No	
3.	Pulse oximeter	Yes/No	
4.	Resuscitation equipment	Yes/No	
5.	Nebuliser	Yes/No	
6.	Oxygen supply (concentrator; or oxygen cylinder) with regulator, pressure gauge and flow meter	Yes/No	
7.	Digital thermometers in use (at least 2-3)	Yes/No	
8.	IV-giving sets with chambers for Paediatric use (Paediatric drip set)	Yes/No	
Drugs & Commodities			
S. No	Item	Available	Remarks
1.	Inj. Ampicillin/Amoxicillin	Yes/No	
2.	Inj. Gentamicin	Yes/No	
3.	3rd generation Cephalosporin (Cefotaxime, Ceftriaxone)	Yes/No	
4.	Corticosteroids IV or Oral	Yes/No	
5.	Salbutamol nebuliser solution	Yes/No	
6.	Nasogastric tubes (sizes 6, 8,10,16 fr)	Yes/No	
7.	Oxygen tubing, nasal prongs or catheters	Yes/No	
8.	Paediatric Maintenance fluid (Isolyte-p)	Yes/No	
9.	Paracetamol syrup	Yes/No	
10.	Amoxicillin dispersible tablets/Syrup	Yes/No	

Maintenance of records & data			
S. No	Item	Available	Remarks
1.	Register in place, with individual patient details recorded legibly both in OPD and Ward	Yes/No	
2.	OPD cards available	Yes/No	
3.	Standard inpatient patient case record format available	Yes/No	
4.	Reports prepared in standard reporting format	Yes/No	
Support system and housekeeping protocol			
S. No	Item	Available	Remarks
1.	24x7 power backup available	Yes/No	
2.	Housekeeping: floor, walls cleaned once in each shift	Yes/No	
Processes assessment			
S. No	Item	Available	Remarks
1.	Computerized registration system in place	Yes/No	
2.	Trained Pediatrician/Medical Officer available in Pediatric OPD and ward	Yes/No	
3.	Nurses available in Ward in every shift as per guideline (1 nurse for 6 beds)	Yes/No	
4.	Prescription of medicines & fluids is as per weight, in the inpatient	Yes/No	
5.	Provision of free diet for inpatients	Yes/No	
6.	Referrals transport provided for inter facility referral	Yes/No	
7.	Essential lab tests (as per guideline) performed	Yes/No	

Annexure 5: Pulse Oximeter - Rapid measurement of SpO2

A pulse oximeter is a medical device used to monitor the oxygen saturation of a patient's blood percutaneously in a non-invasive fashion.

Suggested specifications for Pulse Oximeter

Source: Refer to NHSRC website on the address below

http://nhsrcindia.org/category-detail/technical-specifications/ODgz

(Within this, *Technical Specifications Of Medical Devices For Special Neonatal Care Unit folder)*

Version No.:		2.0
Date:		SEPT 2014
DONE BY: (name/ institution}		HCT/NHSRC
NAME & CODING		
GMDN name		Pulse oximeter
GMDN code(s)		CT 1446
GENERAL		
	1. USE	
1.1	Clinical purpose	Measurement and display of haemoglobin oxygen saturation (SpO2)
1.2	Used by clinical department/ ward	All
1.3	Overview of functional requirements	Continuously displays patient oxygen saturation in real time using an external probe on the skin. Contains adjustable alarms to alert when either saturation or heart rate is low. Reusable, sterilisable probes are robust and easily connected and disconnected. Operates from mains voltage or from internal rechargeable battery.
TECHNICAL		
	2. TECHNICAL CHARACTERISTICS	
2.1	Technical characteristics (specific to this type of device)	a) SpO2 measurement range at least 40-70 and 70 to 99%, minimum gradation 1%. b) Accuracy of SpO2 better than ± 1% for range 40-70 and better than ± 3% for range 70-99. c) Pulse rate range at least 30 to 240 bpm, minimum gradation 1bpm. d) Accuracy of pulse rate better than ± 5 bpm. e) Signal strength or quality to be visually displayed. f) Audiovisual alarms required: high and low SpO2 and pulse rate (operator variable settings), sensor disconnected sensor failure, low battery. g) TFT screen. h) Plethysmograph (may be in form of bar) display is mandatory.
2.2	Settings	Should have minimum 24 hrs trend memory for SpO2 & PR.
2.3	User's interface	Easily accessible touch button to operate the machine.
2.4	Software and/or standard of communication	In built.
	3. PHYSICAL CHARACTERISTICS	
3.1	Dimensions (metric)	NA
3.2	Weight (lbs, kg)	Should be less than 5kg
3.3	Configuration	Case is to be hard and splashproof. Display must allow easy viewing in all ambient light levels. Supplied in protective case for clean storage and safe transport.
3.4	Noise (in dBA)	<50dBA
3.5	Heat dissipation	Dispersed through exhaust
3.6	Mobility, portability	Mobile

4. ENERGY SOURCE (electricity, UPS, solar, gas, water, CO2….)		
4.1	Voltage (value, AC or DC, monophase or triphase)	220 to 240V, 50 Hz
4.2	Battery operated	Internal, replaceable, rechargeable battery allows operation for at least four hours in the event of power failure. Battery charger to be integral to mains power supply, and to charge battery during mains power operation of unit.
4.3	Tolerance (to variations, shutdowns)	Voltage corrector/stabilizer/UPS to allow operation at ± 30% of local rated voltage.
4.4	Protection	Electrical protection by resettable circuit breakers in both live and neutral supply lines. Alarms should include Power failure.
4.5	Power consumption	50-100 W.
4.6	Other energy supplies	Mains supply cable to be at least 3m in length.
5. ACCESSORIES, SPARE PARTS, CONSUMABLES		
5.1	Accessories (mandatory, standard, optional)	Two reusable probes each for adult, paediatric and infant use, Y Probes with clips for infant use and Forehead SpO2 sensors for detection of low saturation levels (less than 70%)/flex probe with provision of fixation.
5.2	Spare parts (main ones)	Two sets of spare fuses (if non-resettable fuses used).
5.3	Consumables/reagents (open, closed system)	NA
6. ENVIRONMENTAL AND DEPARTMENTAL CONSIDERATIONS		
6.1	Atmosphere/Ambiance (air conditioning, humidity, dust etc.)	Operating condition: Capable of operating continuously in ambient temperature of 0 to 50 deg C and relative humidity of 15 to 90% in ideal circumstances.
6.2	User's care, Cleaning, Disinfection & Sterility issues	Cleanable with alcohol or chlorine wipes
7. STANDARDS AND SAFETY		
7.1	Certificates (pre-market, sanitary etc.), Performance and safety standards (specific to the device type); Local and/or international	Should be FDA/CE approved product ISO 80601-2-61-2011: Medical Electrical equipment- part 2-61: Particular requirements for the basic safety and essential performance of pulse oxymeter. Electrical safety conforms to standards for electrical safety IEC-60601-1, EMC safety confirms to IEC 60601-1-2 standard requirement. Manufacturer/supplier should have ISO 13485 certificate for quality standard.
8. TRAINING AND INSTALLATION		
8.1	Pre-installation requirements: nature, values, quality, tolerance	Electrical sockets
8.2	Requirements for sign-off	Supplier to perform installation, safety and operation checks before handover. Local clinical staff to affirm completion of installation.
8.3	Training of staff (medical, paramedical, technicians)	Training of users in operation and basic maintenance shall be provided. Advanced maintenance tasks requried shall be documented.
8.4	Others	

9. WARRANTY AND MAINTENANCE		
9.1	Warranty	3 years
9.2	Maintenance tasks	Maintenance manual detailing complete maintaining schedule.
9.3	Service contract clauses, including prices	Warranty of three year with free servicing (min. 3) during warranty.
9.4	Others	The spare price list of all spares and accessories (including minor) required for maintenance and repairs in future after guarantee/warranty period should be attached.
10. DOCUMENTATION		
10.1	Operating manuals, service manuals, other manuals	"User and manitenance manuals to be supplied in English language. Certificate of calibration and inspection to be provided. List to be provided of equipment and procedures required for local calibration and routine maintenance list to be provided of important spares and accessories, with their part numbers and cost. Contact details of manufacturer, supplier and local service agent to be provided."
10.2	Other accompanying documents	User/Technical/Maintenance manuals to be supplied in English.
11. NOTE		
11.1	Other information	Any contract (AMC/CMC/ad-hoc) to be declared by the manufacturer.
11.2	Recommendations or warnings	Any recommendations for best use and supplementary warning for safety should be declared.

Annexure 6: MCP Card

MINISTRY OF HEALTH AND FAMILY WELFARE
MINISTRY OF WOMEN AND CHILD DEVELOPMENT

MOTHER AND CHILD PROTECTION CARD (MCP CARD)

Be Wise! Get your child fully immunized

POSHAN Abhiyaan
PM's Overarching Scheme for Holistic Nourishment
सही पोषण - देश रोशन

Keep this card safe and carry along with you during every visit to Village Health Sanitation and Nutrition Day, Anganwadi Centre, Health Centre and Hospital

2018 Version

Prevention of Pneumonia

Keep children covered in warm woollen clothes during winters and do not let them walk barefoot

Do not keep new born without clothes

Use LPG gas stove for cooking to avoid smoke in the house

Identification of Pneumonia

Coughing gets worse

Fast breathing

Chest indrawing

Fever

Pneumonia can be identified by breath counts

For less than 2 month baby when breath count is more then 60 per minute	For 2 month to 1 year baby when breath count is more then 50 per minute	For 1 year to 5 year child when breath count is more than 40 per minute

Annexure 7: DOSAGES OF DRUGS USED FOR ARI/ PNEUMONIA

	Dosage	Form	Dosage according to body weight (kg)			
			3-<6 kg	6-<10 kg	10-<15 kg	15-<20 kg
Aminophylline for asthma	Loading dose: IV: 5-6 mg/kg (max. 300 mg) slowly over 20-60 minutes	250 mg/10 ml vial	1 ml	1.5 ml	2.5 ml	1.5 ml
	Maintenance dose: IV: 5 mg/kg up to every 6 hours OR by continuous infusion 0.9 mg/kg/hour		**1 ml Calculate EXACT dose**	**1.5 ml**	**2.5 ml**	**3.5 ml**
Amoxicillin for Pneumonia	25 mg/kg two times a day or 15 mg/kg/dose thrice a day	250 mg tablet Syrup (containing 125 mg/5 ml)	½ 5 ml	1 10 ml	1 ½ 15 ml	2 -
Ampicillin	IM/IV: 50 mg/kg every 6 hours	Vial of 500 mg mixed with 2.1 ml sterile water to give 500 mg/2.5 ml	1 ml	2 ml	3 ml	5 ml
Cefotaxime	IM/IV:50 mg/kg every 6 hours	Vial of 500 mg mixed with 2 ml sterile water OR vial of 1 g mixed with 4 ml sterile water OR vial of 2 g mixed with 8 ml sterile water	0.8 ml	1.5 ml	2.5 ml	3.5 ml
Ceftriaxone	IM/IV:50 mg/kg every 1 -2 hours (max single dose 4 g) OR IM/IV:100 mg/kg once daily		2 ml 4 ml	4 ml 8 ml	6 ml 12 ml	9 ml 18 ml
Cloxacillin	IV:25-50 mg/kg every 6 hours IM	Vial of 500 mg mixed with 8 ml sterile water to give 500 mg/10 ml Vial of 250 mg mixed with 1.3 ml sterile water to give 250 mg/1.5 ml	2-(4) ml 0.6 (1.2) ml	4-(8) ml 1 (2) ml	6-(12) ml 1.8 (3.6) ml	8-(16) ml 2.5 (5) ml
	4 mg trimethoprim /kg and 20 mg	Oral: pediatric tablet (20 mg TMP +100 mg SMX)	1	2	3	3
Cotrimoxazole* (trimethoprim-sulfamethoxazole, TMP-SMX	sulfamethoxazole/kg two times per day	Oral: Syrup (40 mg TMP+200 mg SMX per 5 ml)	2 ml	3.5	6 ml	8.5 ml
	Note: For interstitial Pneumonia in children with HIV give 8 mg/kg a day for 3 weeks. TMP and 40 mg SMX/kg 3 times					
Dexamethasone for several viral croup	Oral: 0.6 mg/kg single dose	0.5 mg tablets IM:5 mg/ml	0.5 ml	0.9 ml	1.4 ml	2 ml

	Dosage	Form	Dosage according to body weight (kg)			
			3-<6 kg	6-<10 kg	10-<15 kg	15-<20 kg
Epinephrine (adrenaline) for wheeze	0.01 ml/kg (up to a maximum of 0.3 ml) of 1:10000 solution (or 0.1 ml/kg of 1:10000 solution) given subcutaneously with a 1 ml syringe					-
For severe viral croup	A trial of 2 ml of 1:10000 nebulized solution					-
For anaphylaxis	0.01 ml/kg of 1:1000 solution or 0.1 ml/kg of 1:10000 solution given subcutaneously with a 1 ml syringe		-	2 ml	2 ml	2 ml
Gentamicin	7.5 mg/kg once per day	IM/IV: vial containing 20 mg (2 ml at 10 mg/ml) undiluted	2.25-3.75 ml	4.5-6.75 ml	7.5-10.5 ml	-
		IM/IV: vial containing 80 mg (2 ml at 40 mg/ml) mixed with 6 ml sterile water	2.25-3.75 ml	4.5-6.75 ml	7.5-10.5 ml	-
		IM/IV: vial containing 80 mg (2 ml at 40 mg/ml)	0.5-0.9 ml	1.1-1.7 ml	1.9-2.6 ml	2.8-3.5 ml
Benzylpenicillin - (penicillin G) general dosage	IV: 50000 units/kg every 6 hours	Vial of 600 mg mixed with 9.6 ml sterile water to give 1000000 units/10 ml Vial of 600 mg (1000000 units)	2 ml	3.75 ml	6 ml	8.5 ml
		Mixed with 1.6 ml sterile water to give 1,000,000 units/2 ml	0.4 ml	0.75 ml	1.2 ml	1.7 ml
Salbutamol	Oral: 1 mg per dose <1 yr	Syrup: 2 mg/5 ml	2.5 ml	2.5 ml	5 ml	5 ml
	2 mg per dose 1-4 yrs	Tablets:2 mg	½	½	1	1
	Acute episode 6-8 hourly	Tablets: 4mg	¼	¼	½	½
	Inhaler with spacer: 2 doses contains 200 µg	Metered dose inhaler containing 200 doses 5 mg/ml solution 2.5 mg in 2.5 ml single dose units				
	Nebulizer: 2.5 mg/dose yr					

Annexure 8: Use of Salbutamol (Bronchodilator)

(a) Nebulized Salbutamol

Liquid salbutamol can be nebulized by means of an oxygen source or an electric air compressor. The gas flow should be at least 6-9 litres per minute. When using an air pump, give oxygen simultaneously through nasal cannula during any moderate to severe attack.

The bronchodilator solution is put the nebulizer chamber and sterile normal saline is added to make a volume more than the minimal fill volume of the chamber (usually 3-4 ml). Nebulize until the liquid is almost all used up. The dose of Salbutamol is 2.5 mg (i.e. 0.5 ml of the 5 mg/ml nebulizer solution). This can be given 1-4-hourly initially, reducing to 6-8 hourly once the child's condition improves. If necessary in severe cases, it can be given more frequently.

- The top of the nebulizing chamber is unscrewed and 0.5 ml of the salbutamol respiratory solution and 2.5 ml of normal saline are filled in it.
- An oxygen tubing is attached to the bottom of the nebulizer and the other end is hooked to an electric air compressor or oxygen source.
- The nebulising chamber outlet at top is attached either to a mask or T-piece.
- For infants and young children who cannot cooperate, aerosol mask is preferred. It is not necessary for the mask to be tightly sealed to the child's face. Older children can inhale through mouth using the T-piece.
- The child should be treated until the liquid in the nebulizer has been nearly used up. This usually takes 10-15 minutes.
- The mask is washed with non-residue soap (such as dish washing detergent) prior to reuse. Similarly the tubing and nebulising chamber should also be washed daily. Boiling or autoclaving will destroy the tubing. Sterilization can be done by immersing in 2% Glutaraldehyde solution (e.g. Cidex(r)) for 4 hours.

(b) Salbutamol by metered-dose inhaler with a spacer device

Salbutamol by metered dose inhaler is as efficient as by a nebulizer. Infants and young children lack the coordination to use a metered dose inhaler by themselves. Metered dose inhalers with a spacer device can be used for such children. Spacer devices are available commercially (250-750 ml volume) or can be made by modifying locally available containers e.g. plastic bottles (750-1000 ml).

The metered dose inhaler is attached to the opposite end of the spacer device and one puff is actuated at one time. The patient is asked to breathe for 3-5 breaths. Then the next puff is repeated similarly as needed.

- The cap of the metered-dose inhaler (MDI) is removed after shaking it.
- The spacer is placed in the child's mouth making a good seal around it. In a younger child a face mask is attached to the spacer.
- The child's neck should be supported in slight extension.
- A puff (100 micrograms) of Salbutamol is released into the spacer chamber after attaching the MDI to the other end of the spacer.
- The child is allowed normal breathing for 3-5 breaths. A slow deep breath is preferred but may not be feasible if the child is not trained earlier. If the child is crying, the drug delivery may be severely compromised.
- Salbutamol inhalation by MDI-spacer needs 4 puffs (100mcg/puff) at 2-3 min interval to get an equivalent dose for a single salbutamol nebulisation.

Annexure 9: Operational indicators format for State/District

Sr. No.	Material	
1	Name of District/State:	
2	No. of Districts conducted training on Pneumonia Guidelines/ Total No. of Districts in the state	...../.....
3	State launch undertaken for guidelines (Yes/No)	
4	No. of Districts where District training was undertaken	
5	No. of batches of ASHAs oriented on Pneumonia Guidelines/ No. of batches as per plan for ASHAs in District/State	...../.....
6	No. of batches of ANMs oriented on Pneumonia Guidelines/ No. of batches as per plan for ANMs in District/State	...../.....
7	No. of batches of MOs oriented on Pneumonia Guidelines/ No. of batches as per plan for MOs in District/State	...../.....
8	No. of batches of Staff Nurse's oriented on Pneumonia Guidelines/ No. of batches as per plan for Staff Nurse's in District/State	...../.....
9	Total No. of villages in District/State	
10	No. of one day orientation meeting conducted at PHC	
11	No. of one day orientation meeting held at block level	
12	No. of one day orientation meeting held at District level	

Signature of Child Health Nodal Officer_____