

# Acute Respiratory tract Infections

Facilitator:

**Dr. NAVPREET**

Assistant Professor, Department of Community Medicine  
Govt. Medical College & Hospital, Chandigarh.

# Specific Learning Objectives

- At the end of session, the learner shall be able to:
  - Describe magnitude of problem of ARI
  - Classification of ARI
  - Management of ARI
  - Prevention and control of ARI

# Introduction

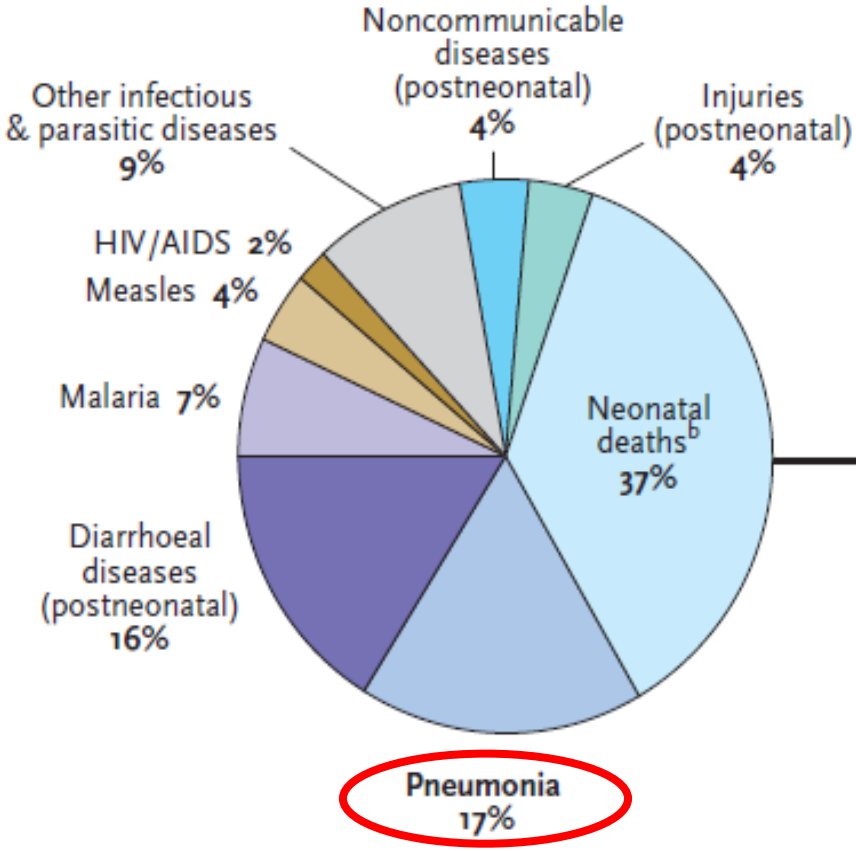
- Acute Respiratory Infections especially pneumonia:
  - a significant problem in communities
  - a high rate of under-five mortality
  - a huge burden on families and the health system.
  - a priority and is essential in achieving **MDG – 4**
    - **To reduce the under-five mortality rate by two thirds by 2015, compared to 1990.**

# Pneumonia – the number 1 killer of young children

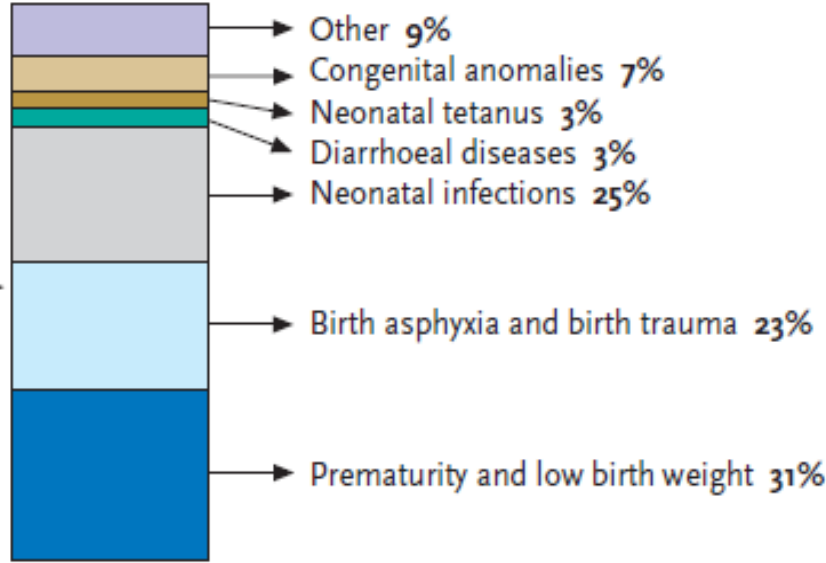
- Pneumonia kills more **children under five years** of age than any other illness in every region of the world.
- Of the estimated 9 million child deaths in 2007, around 20% were due to pneumonia

# Causes of Death in Neonates and Children Under Five in the World (2004)

Deaths among children under five



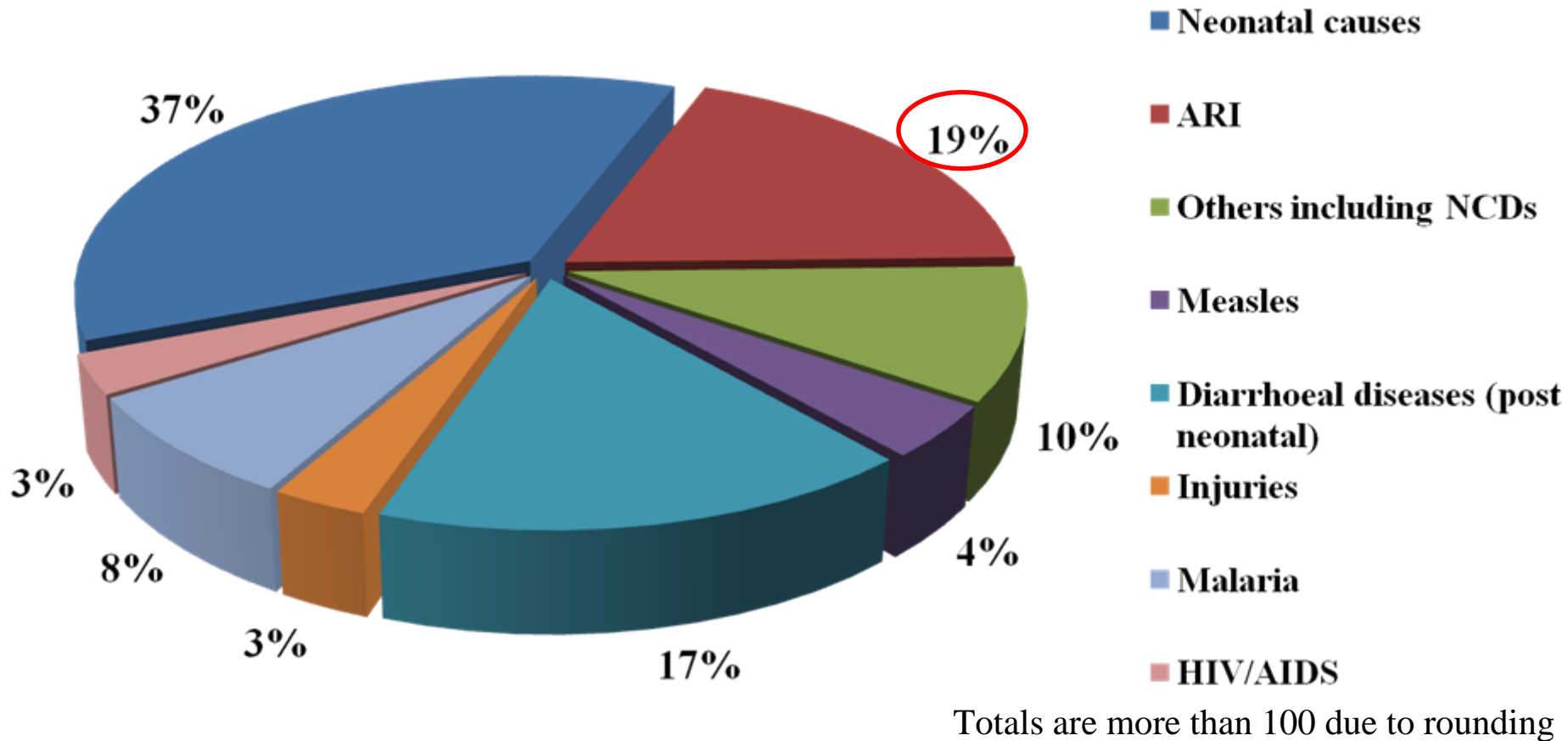
Neonatal deaths



**35% of under-five deaths are due to the presence of undernutrition<sup>c</sup>**

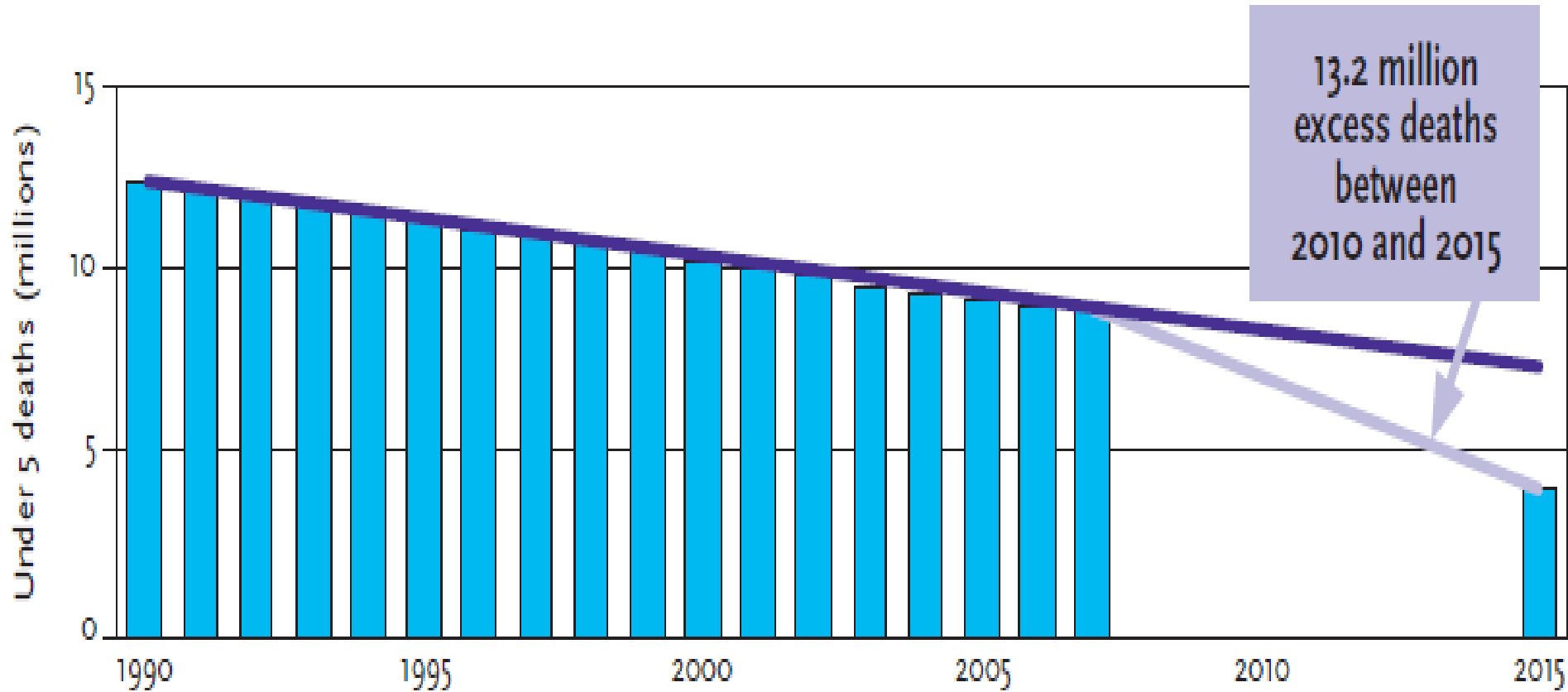
<sup>a</sup> WHO. *The Global Burden of Disease: 2004 update*. Geneva, WHO, 2008.  
<sup>b</sup> 3% of the neonatal deaths are estimated to be due to pneumonia.  
<sup>c</sup> Black R et al. Maternal and child undernutrition: global and regional exposures and health consequences. *Lancet*, 2008, 371:243-260.

# Causes of death of children under five (2000-2003)



- At the millennium Summit in 2000, the United Nations Member States committed to achieving **Millennium Development Goal 4 (MDG4)**.
- Since then, substantial progress has been made in reducing child mortality.
- If the current trend continues, an **estimated 13.2 million excess deaths** will occur between 2010 and 2015

# Cost of failure to reach MDG4



Source: WHO



- In addition to preventive interventions such as
  - routine vaccination,
  - exclusive breastfeeding and
  - complementary feeding,
- Strategies that rely on community capacity development can reduce pneumonia mortality in developing countries.

# Quality of care at first-level public health facilities

- Improving quality of care at first-level public health facilities and ensuring they are financially, logistically and geographically **accessible**.
- Even then, there may be barriers preventing parents from using the facilities.

# Improving quality of care in the private sector

- In many settings, especially in urban areas, children are often treated in the private sector.
- Although active collaboration between public and private sector is a relatively new strategy, and there is no conclusive evidence showing which approach is most effective, interventions involving private practitioners should continue to be pursued.

# Increasing access to quality care

- Increasing access to quality care can be achieved through community-based care.
- Community health workers can be trained to:
  - assess sick children for signs of pneumonia;
  - select appropriate treatments;
  - administer the proper dosages of antibiotics;
  - counsel parents on how to follow the recommended treatment regimen and provide supportive home care; and
  - follow-up sick children and refer them to a health facility in case of complications.

- The ARI Control Programme was started in India in 1990. It sought to introduce scientific protocols for case management of pneumonia with Co-trimoxazole.
- Since 1992 the Programme was implemented as part of CSSM and later with RCH.
- **Integrated Management of Neonatal and Childhood Illnesses (IMNCI)** offers a comprehensive package for the management of the most common causes of childhood illnesses i.e sepsis, measles, malaria, diarrhoea, **pneumonia** and malnutrition.

# **Management of child with cough or difficult breathing**

1. Assessing the child by asking
2. Classifying the illness of the child
3. Decision for treatment
4. Follow up of cases

# Assess

- **Ask:**
  - How old is the child?
  - Is the child coughing or having difficult breathing?
  - For how long?

<b>Age of child</b>	<b>History for <b>danger signs</b></b>
Age 2 months to 5 years	Is the child able to drink?
Age less than 2 months	Has the child stopped feeding well?
	For how long?
	Has the child had convulsions?
	Has the child had fever?

- **Look; Listen; and Feel**

- Count the breaths in one minute
- Look for the chest indrawing
- Look and listen the stridor
- Look and listen the wheeze
- See if the child is abnormally sleepy or difficult to wake up
- Feel for fever or low body temperature
- Look for severe malnutrition

<b>Age of the child</b>	<b>Fast breathing is present if RR is</b>
Less than 2 months	60 breaths per minute or more
2 months up to 12 months	50 breaths per minute or more
12 months up to 5 years	40 breaths per minute or more



# Classify the illness

- Purpose:
  - To make decision about severity of disease
  - Choose line of action or treatment
- It is done on basis of danger signs and respiratory rate

# Colour coding

- Based on signs, the child is classified into:

	<b>Colour Code</b>	<b>Treatment</b>
<b>Very severe disease</b>	<b>Pink</b>	<b>Refer urgently to hospital</b>
<b>Severe Pneumonia</b>	<b>Pink</b>	<b>Refer urgently to hospital</b>
<b>Pneumonia (not severe)</b>	<b>Yellow</b>	<b>Give an antibiotic and home care</b>
<b>No pneumonia</b>	<b>Green</b>	<b>Home care</b>

# Treatment Guidelines and Follow Up

- Young infants (0-2 months)
- Children 2 months to 5 years

# Young infant (0-2 months)

<b>Signs</b>	<ul style="list-style-type: none"> <li>• Stopped feeding well</li> <li>• Convulsions</li> <li>• Abnormally sleepy or difficult to wake</li> <li>• Stridor in calm child</li> <li>• Wheezing, or</li> <li>• Fever or low body temperature</li> </ul>	<ul style="list-style-type: none"> <li>• Severe chest indrawing, or</li> <li>• Fast breathing</li> </ul>	<ul style="list-style-type: none"> <li>• No severe chest indrawing and</li> <li>• No fast breathing</li> </ul>
<b>Classify as</b>	<b>VERY SEVERE PNEUMONIA</b>	<b>SEVERE PNEUMONIA</b>	<b>NO PNEUMONIA Cough or Cold</b>
<b>Treatment</b>	<ul style="list-style-type: none"> <li>• Refer URGENTLY to hospital</li> <li>• Keep young infant warm</li> <li>• Give first dose of an antibiotic</li> </ul>	<ul style="list-style-type: none"> <li>• Refer URGENTLY to hospital</li> <li>• Keep young infant warm</li> <li>• Give first dose of an antibiotic (if referral is not feasible, treat with an antibiotic and follow closely)</li> </ul>	<p>Advise mother:</p> <ul style="list-style-type: none"> <li>• Keep young infant warm</li> <li>• Breastfeed frequently</li> <li>• Clear nose if it interferes with feeding</li> <li>• Return quickly if: <ul style="list-style-type: none"> <li>• Breathing becomes difficult; or fast</li> <li>• Feeding becomes a problem</li> <li>• Young infant becomes sicker</li> </ul> </li> </ul>

# Child age 2 months to 5 years

<b>Signs</b>	<ul style="list-style-type: none"> <li>•Not able to drink</li> <li>•Convulsions</li> <li>•Abnormally sleepy or difficult to wake</li> <li>•Stridor in calm child, or</li> <li>•Fever or low body temperature</li> </ul>	Chest indrawing (if also recurrent wheezing, go directly to treat wheezing)
<b>Classify as</b>	<b>VERY SEVERE DISEASE</b>	<b>SEVERE PNEUMONIA</b>
<b>Treatment</b>	<ul style="list-style-type: none"> <li>•Refer URGENTLY to hospital</li> <li>•Give first dose of an antibiotic</li> <li>•Treat fever, if present</li> <li>•Treat wheezing, if present</li> <li>•If cerebral malaria is possible, give an antimalarial</li> </ul>	<ul style="list-style-type: none"> <li>•Refer URGENTLY to hospital</li> <li>•Give first dose of an antibiotic</li> <li>•Treat fever, if present</li> <li>•Treat wheezing, if present</li> </ul> (if referral is not feasible, treat with an antibiotic and follow closely)

# Child age 2 months to 5 years

<b>Signs</b>	<ul style="list-style-type: none"> <li>•No chest indrawing, and</li> <li>•Fast breathing</li> </ul>	<ul style="list-style-type: none"> <li>•No chest indrawing</li> <li>•No fast breathing</li> </ul>
<b>Classify as</b>	<b>PNEUMONIA</b>	<b>NO PNEUMONIA COUGH OR COLD</b>
<b>Treatment</b>	<ul style="list-style-type: none"> <li>•Advise mother to give home care</li> <li>•Give an antibiotic</li> <li>•Treat fever, if present</li> <li>•Advise mother to return with child in 2 days for reassessment, or earlier if the child is getting worse.</li> </ul>	

*Reassess in two days a child who is taking an antibiotic for pneumonia*

<b>Signs</b>	<ul style="list-style-type: none"> <li>•<b>WORSE:</b> Not able to drink Has chest indrawing Has other danger signs</li> </ul>	<b>SAME</b>	<ul style="list-style-type: none"> <li>•<b>IMPROVING:</b> Breathing slower Less fever Eating better</li> </ul>
<b>Treatment</b>	<ul style="list-style-type: none"> <li>•Refer <b>URGENTLY</b> to hospital</li> </ul>	Change antibiotic or Refer	Finish 5 days of antibiotic

# Treatment of Pneumonia in Young infants **aged less than 2 months**

Antibiotic	Dose	Frequency	
		Age <7 days	Age 7 days to 2 months
Inj. Benzyl Penicillin <b>OR</b>	50,000 IU/kg/dose	12 hourly	6 hourly
Inj. Ampicillin <b>AND</b>	50 mg/kg/dose	12 hourly	8 hourly
Inj. Gentamycin	2.5 mg/kg/dose	12 hourly	8 hourly

# Treatment of Severe Pneumonia in children aged 2 months to 5 years

	Antibiotics	Dose	Interval	Mode
A	First 48 hours Benzyl Penicillin OR Ampicillin OR Chloramphenicol	50,000 IU/kg/dose  50 mg/kg/dose  25 mg/kg/dose	6 hourly  6 hourly  6 hourly	IM  IM  IM
B	If condition IMPROVES, then for the next 3 days: Procaine penicillin OR Ampicillin OR Chloramphenicol If NO IMPROVEMENT, for next 48 hours: CHANGE ANTIBIOTIC	50,000 IU/kg  50 mg/kg/dose  25 mg/kg/dose	Once  6 hourly  6 hourly	IM  Oral  Oral
C	Provide symptomatic treatment for fever and wheezing, if present			
D	Monitor fluid and food intake			
E	Advise mother on home management on discharge.			



# Treatment of Pneumonia

## Daily Dose Schedule of **Cotrimoxazole**

<b>Age/Weight</b>	<b>Paediatric Tablet: Sulphamethoxazole 100mg and Trimethoprim 20mg</b>	<b>Paediatric syrup: Each spoon (5ml) contains: Sulphamethoxazole 200mg and Trimethoprim 40mg</b>
< 2 months (wt. 3-5 kg)	One tab BD	Half spoon BD
2-12 months (wt. 6-9 kg)	Two tab BD	One spoon BD
1-5 years (wt. 10-19 kg)	Three tab BD	One and half spoon BD

# Home Care

- Mother should
  - Keep the baby warm
  - Continue breast feeding and feeding the child
  - To increase feeding after recovery
  - To clear the nose if it interferes with feeding
  - Proper dose of antibiotic for 5 days
  - Cough can be relieved by home made decoctions
  - To bring back the child after 2 days for reassessment
  - To watch for danger signs

# Key strategies for treating, preventing and protecting from pneumonia

- Case management at all levels
- Improvement of nutrition and reduction of low birth weight
- Vaccination
- Control of indoor air pollution
- Prevention and management of HIV infection

These interventions, if implemented, have the potential to reduce pneumonia mortality and morbidity by more than half.

- Effective case management at the community and health facility levels is an essential part of pneumonia control.
- Countries with significant rates of under-five mortality should adopt plans to expand adequate case management of pneumonia at hospital, health facility and community levels to achieve 90% coverage within a predetermined time frame.

- Promotion of **exclusive breastfeeding** and **zinc supplementation** are an important element of pneumonia prevention.
- Strategies to reduce rates of low birth weight and malnutrition will prevent pneumonia and should be encouraged.

- All countries should take steps to achieve Global Immunization Vision and strategy (GIVs) targets for measles and pertussis containing vaccines;
- Countries that have not yet done so should add Hib and conjugate pneumococcal vaccines to their national immunization programmes, especially if they have high child mortality.

- **Indoor air pollution** increases the risk of pneumonia.
- New technologies can reduce indoor air pollution, and additional research is needed to demonstrate the health benefits of these interventions.
- Strategies to reduce indoor air pollution may prevent pneumonia and should be encouraged.

- Strategies to prevent mother-to-child transmission of HIV and to improve the management of HIV infection and *P. jiroveci pneumonia prophylaxis in children* should be promoted in countries where HIV is prevalent.



