

**TRAINING FOR IMPROVED PRACTICE:
Public Health and Nutrition in Emergencies**

**COMMUNICABLE DISEASES:
ACUTE RESPIRATORY INFECTION**

UNICEF Core Corporate Commitments Training

In collaboration with:

Feinstein International Famine Center, Tufts University

Mailman School of Public Health, Columbia University

International Emergency and Refugee Health Branch,

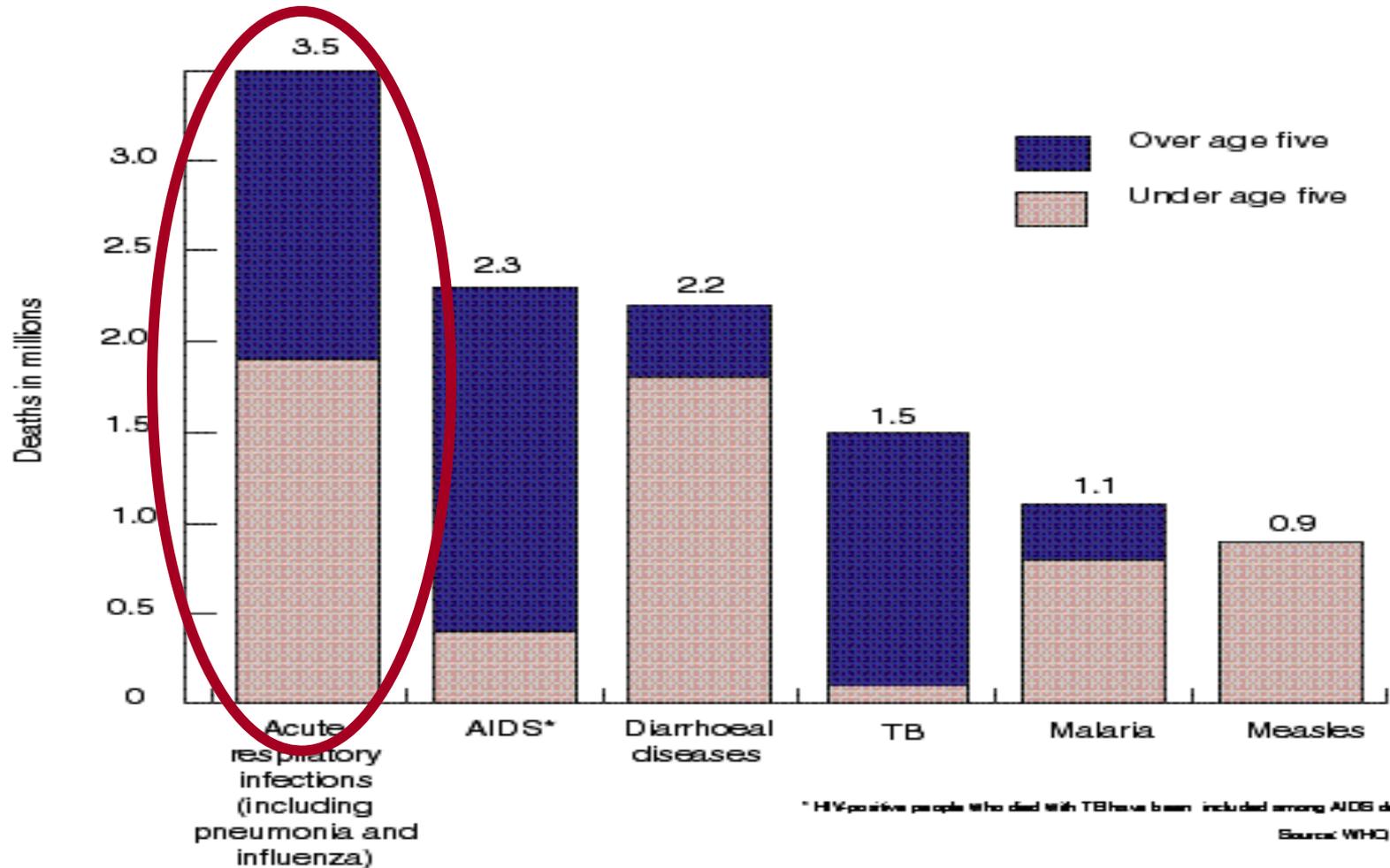
Centers for Disease Control

Overview of the Session

- Magnitude of the problem
- Children's risk factors for pneumonia or death from ARI
- Signs and symptoms of ARI / pneumonia
- Clinical treatment of a child with cough or difficulty breathing.
- Requirements of an ARI control program in emergency settings.

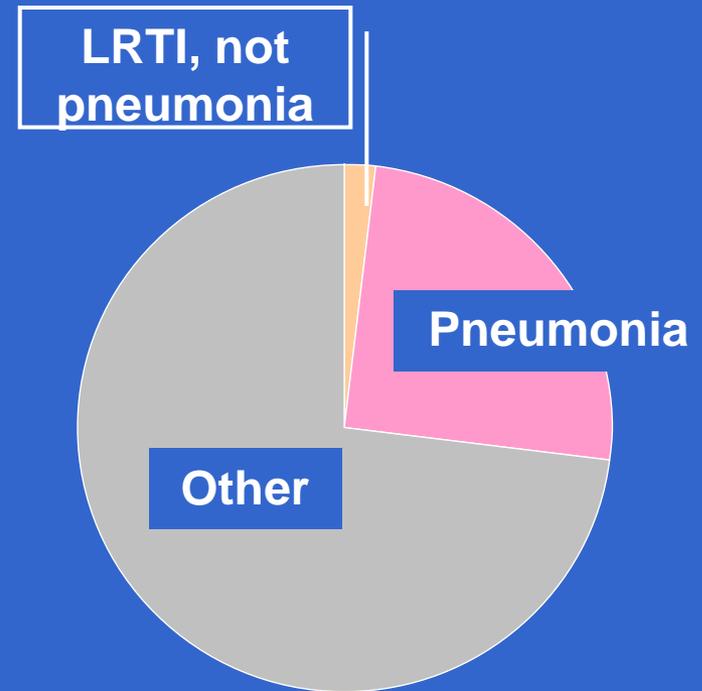
Leading infectious killers

Millions of deaths, worldwide, all ages, 1998



Acute Respiratory Infections

- Always a major cause of mortality in children.
 - 25-30% of deaths in <5 due to LRTI
 - 90% of these deaths are due to pneumonia



Causes of death in <5

Number of ARI Episodes Per Year in Urban Areas

PLACE	Age of Child (in years)		
	<1	1-2	3-5
San Jose, Costa Rica	5.9	7.2	4.2
Ibadan, Nigeria	7.5	7.1	6.3
Cruz, Guatemala	8.3	8.8	5.7
New Delhi, India	5.6	5.3	4.8
Tecumseh, USA	6.1	5.7	4.7
Seattle, USA	4.5	5.0	4.8

Summary: Incidence of ARI and Burden on Health Services

- 5-8 episodes per child per year in urban areas
- 3-5 episodes per child per year in rural areas
- Overall ARI incidence is the same in developed and developing countries
- ARI is usually the most common:
 - acute illness among children
 - reason for children to visit a health worker
 - reason for children to be admitted to hospital

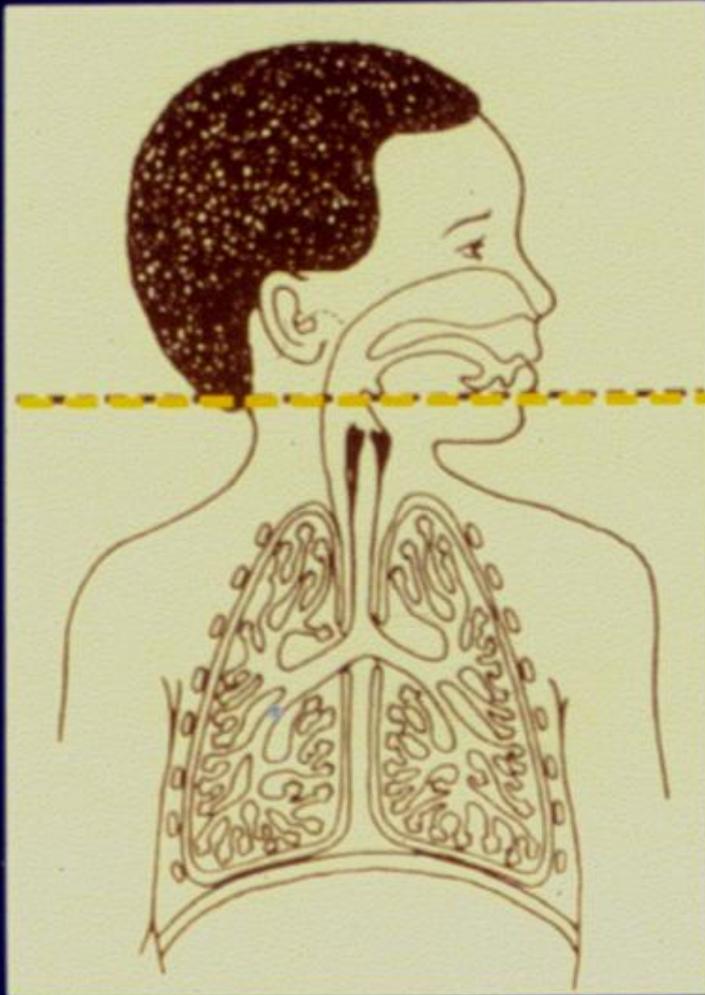
Antibiotic Treatment of Children with Cough and Cold (No Pneumonia)

Place	Treatment	% improved
Bangkok, Thailand	Penicillin	94%
	Placebo	95%
East Jakarta, Indonesia	Ampicillin	87%
	Supportive Care	88%
Rochester, USA	Sulfonamides	88%
	Penicillin	79%
	Supportive Care	85%

What are some signs and symptoms of ARI?

- blocked or runny nose
- sore throat
- ear ache or ear discharge
- cough
- fast breathing
- difficult breathing: chest indrawing
- noisy breathing: wheeze or stridor

Acute Respiratory Infections (ARI) Clinical Syndromes



Acute Upper Respiratory Infections (AURI)

- Cold
- Otitis media
- Pharyngitis

Acute Lower Respiratory Infections (ALRI)

- Epiglottitis
 - Laryngitis
 - Laryngotracheitis
 - Bronchitis
 - Bronchiolitis
 - Pneumonia
- Croup
(Conditions causing Stridor)

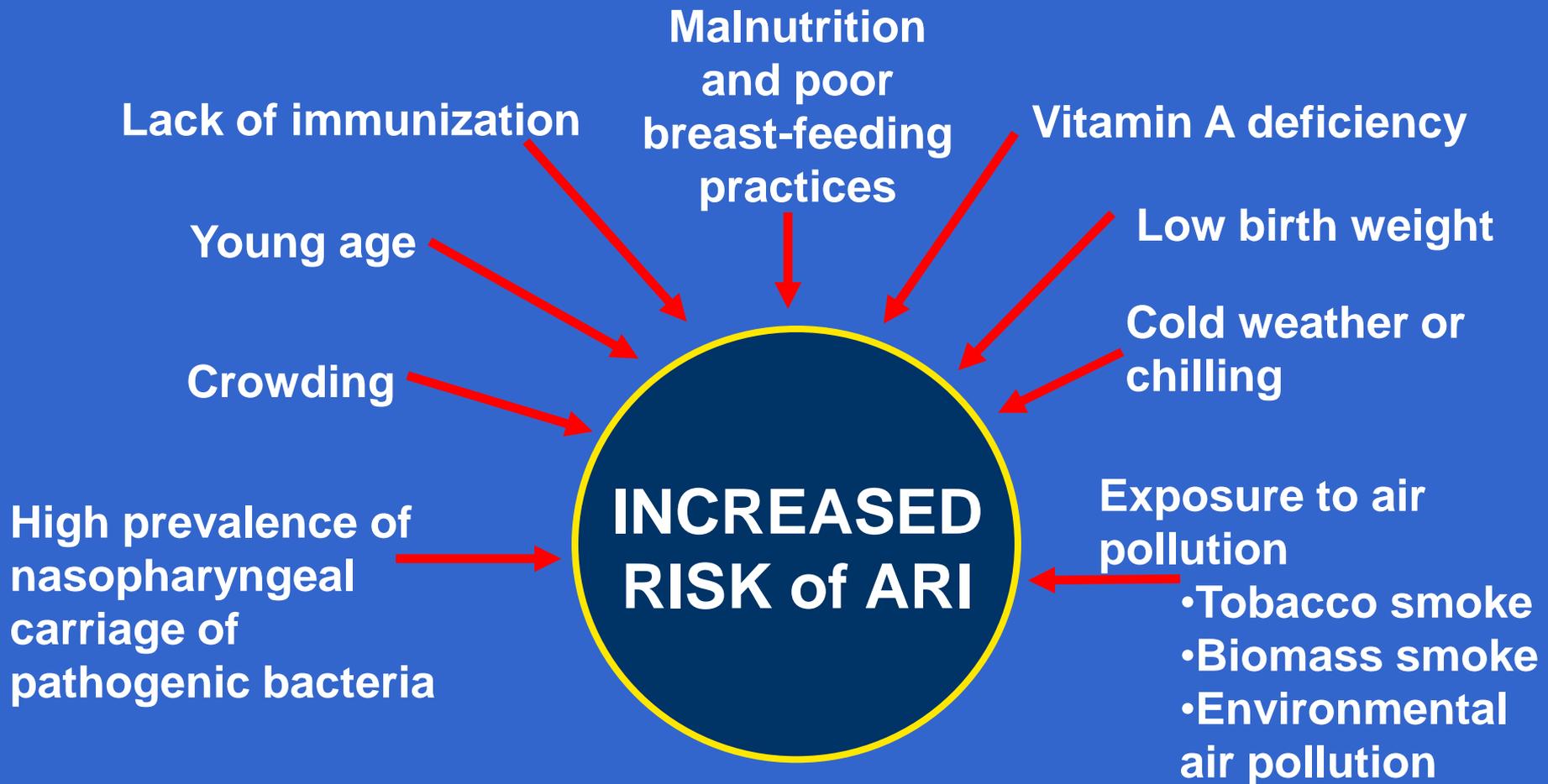
Pneumonia Episodes Per Year in Children Less than 5 Years Old

Place	Annual Pneumonia Incidence per 100
Chapel Hill, USA	3.6
Seattle, USA	3.0
Bangkok, Thailand	7.0
Gadchiroli, India	13.0
Basse, The Gambia	17.0
Maragua, Kenya	18.0

Summary: Incidence of Pneumonia

- Pneumonia is more frequent and severe in children of developing countries than in children of developed countries
- Annual incidence rate of pneumonia in children 0-4 years of age is:
 - 3-4 per 100 in developed countries
 - 7-18 per 100 in developing countries

Risk Factors for Pneumonia or Death from ARI



Risk factors for pneumonia in children

- low birth weight
- poor breast-feeding practices
- bad ventilation in shelters
- Vit A deficiency
- malnutrition
- chilling in infants
- overcrowding



Duration of Illness in Children Who Died From Pneumonia

- Duration of illness before death is often short (2-5 days)

To prevent deaths

▶ **Early maternal recognition of signs of pneumonia**

and

▶ **Prompt care seeking**

are essential.

How does one identify pneumonia?

- Simple clinical signs
 - fast breathing
 - +/- chest indrawing

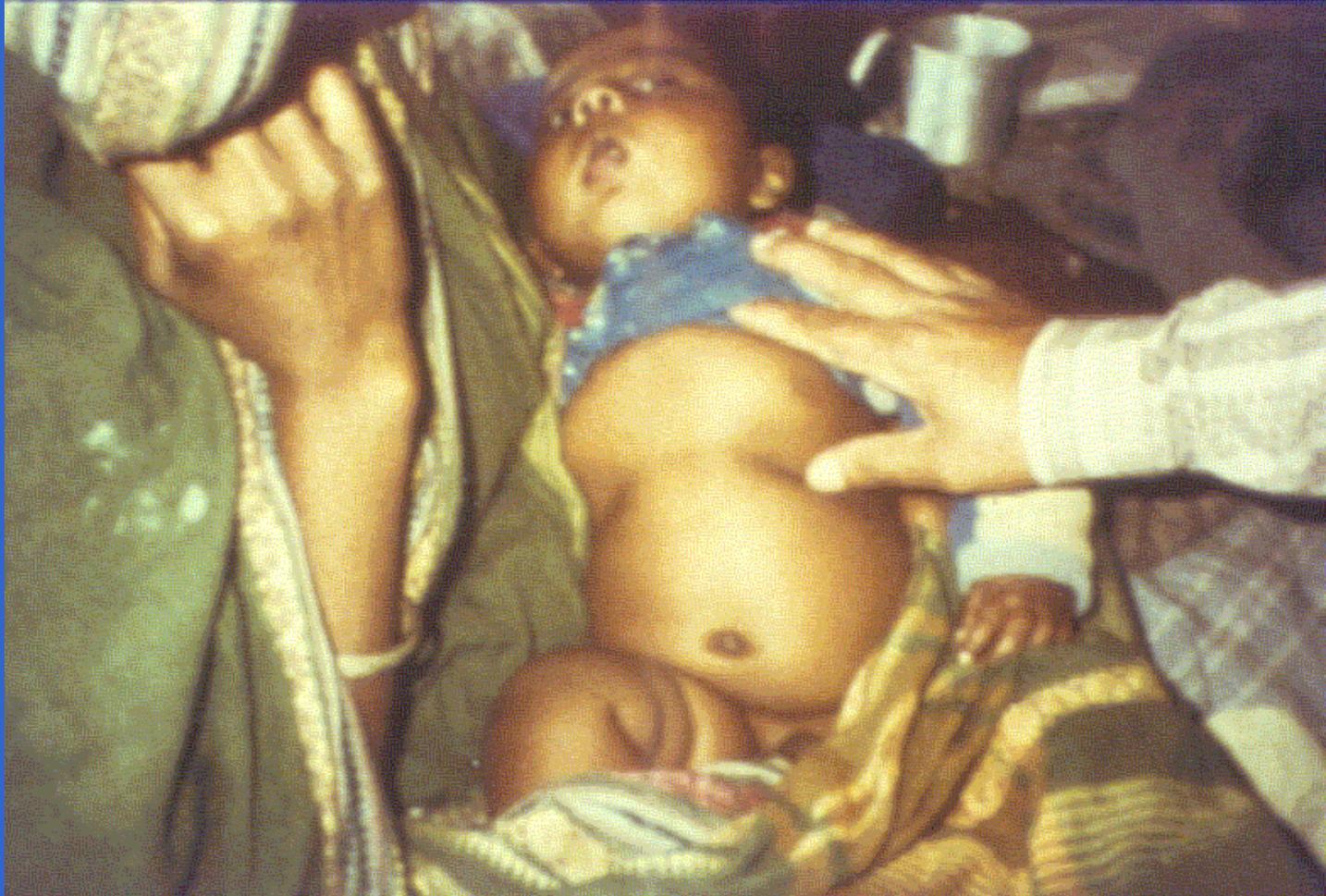
Sensitivity of Respiratory Rate for Prediction of Pneumonia

Place	RR>50 2-11 mos	RR>40 1-4 yrs
Goroka, Papua New Guinea	80%	74%
Vellore, India	89%	71%
Basse, The Gambia	85%	87%
Manila, Philippines	77%	78%
Maseru, Lesotho	79%	54%

Comparison of Methods for Detection of Pneumonia in Children

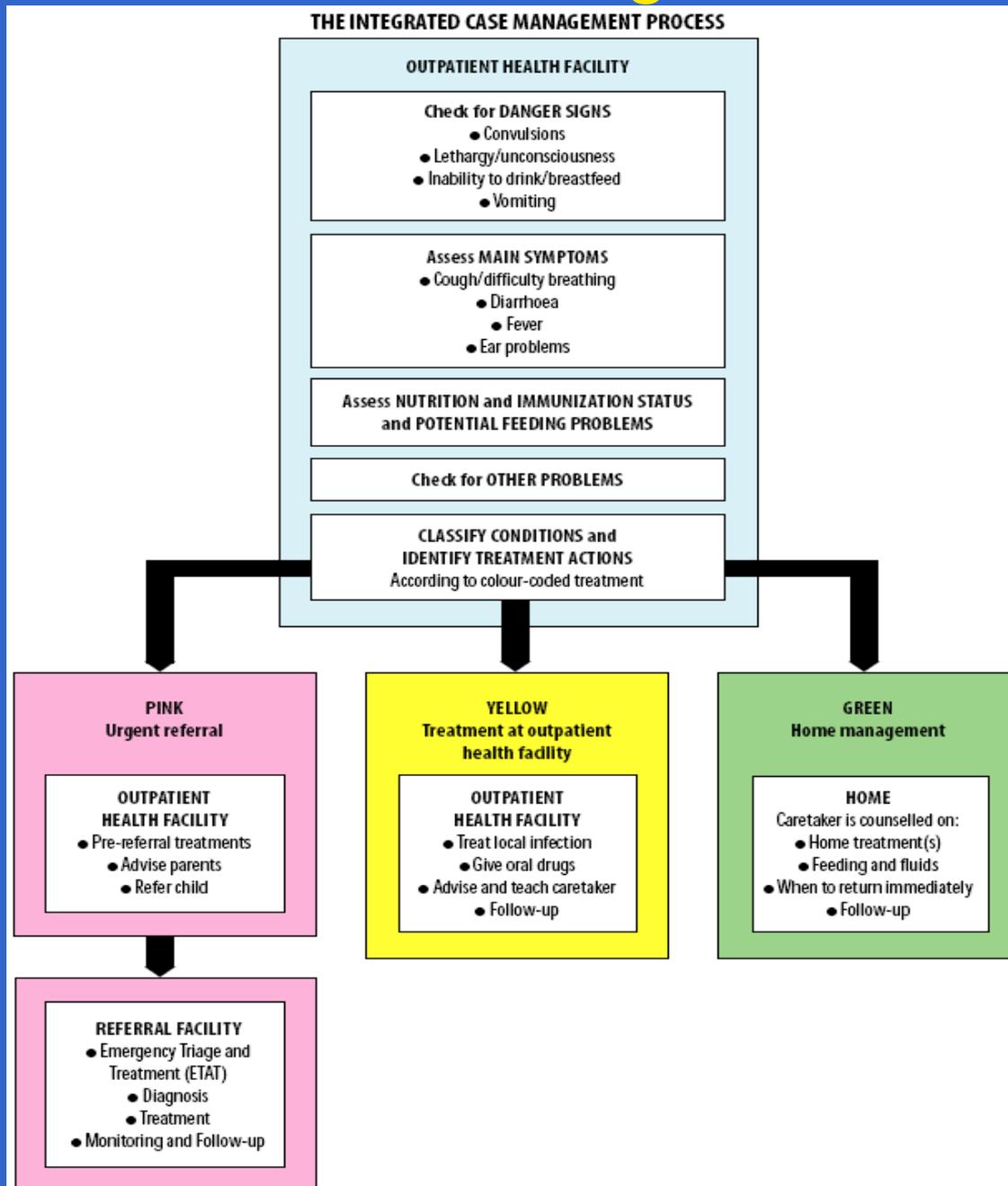
Method	Sensitivity	Specificity
Stethoscope (crepitations)	53%	59%
Simple clinical signs (fast breathing, +/- chest indrawing)	77%	56%

Chest Indrawing



A child has chest indrawing if the lower chest wall goes in when the child breathes in

Case Management

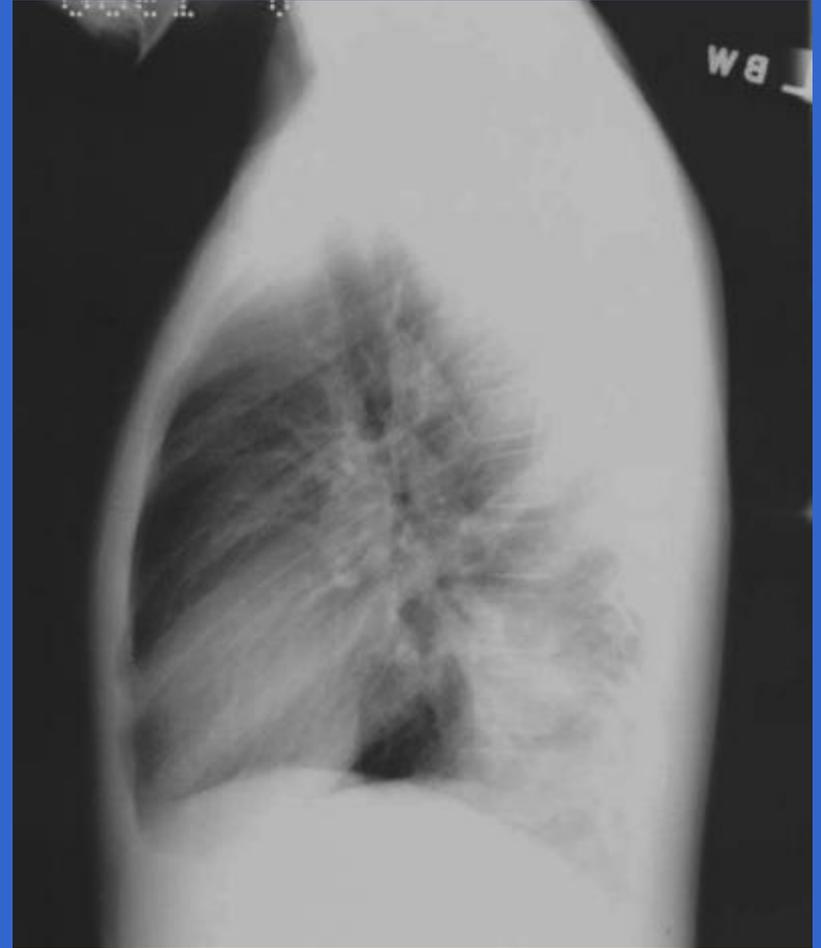


Management of the Child with Cough or Difficult Breathing

Signs:	<ul style="list-style-type: none"> • Chest indrawing <p>[If also recurrent wheezing go directly to</p> <p>↓ Treat wheezing]</p>	<ul style="list-style-type: none"> • NO chest indrawing <p>AND</p> <ul style="list-style-type: none"> • FAST breathing (50 per minute or more if child 2 months up to 12 months; 40 per minute or more if child 12 months up to 5 years) 	<ul style="list-style-type: none"> • NO chest indrawing <p>AND</p> <ul style="list-style-type: none"> • NO fast breathing (less than 50 per minute if child 2 months up to 12 months; Less than 40 per minute if child 12 months up to 5 years)
Classify as:	SEVERE PNEUMONIA	PNEUMONIA	NO PNEUMONIA, COUGH OR COLD

Acute lower respiratory infections (pneumonia) require antibiotic treatment.

- Causative organism - bacterial (mainly *H influenza* and *S Pnuemoniae*) or viral
- Difficult to prevent (except with measles & pertussis vaccination).
- Increased case fatality rate among malnourished children.
- Require prompt diagnosis & treatment.



Pneumonia case management

- Early recognition – trained clinicians
- Adequate treatment - antibiotics
- Antibiotic choice follows national MOH protocols and available drugs
- The New Emergency Health kit contains co-trimoxazole
- Alternatives are amoxicillin or chloramphenicol

Case management (cont.)

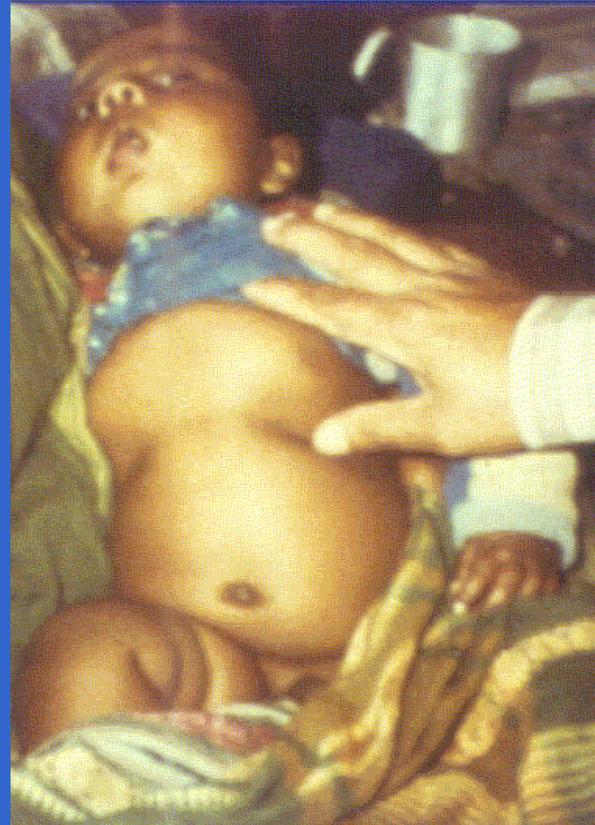
- Supportive measures
 - oral fluids to prevent dehydration,
 - continued feeding,
 - anti-pyretics and
 - protection from cold
- Measles, diphtheria and whooping cough vaccines are effective to reduce impact of ARIs

Home Compliance With Antibiotic Prescription by Mothers

- Mothers Need to Know:
 - How much to give
 - How many times a day
 - For how many days

Case management

- **Severe pneumonia**
 - injectable penicillin, ampicillin or chloramphenicol**must be used**



What about SARS?

- Severe acute respiratory syndrome (SARS) is a disease caused by SARS coronavirus (SARS-CoV).
- The majority of the cases are adults. **Children are rarely affected.**
- Nosocomial transmission of SARS CoV has been a striking feature of the SARS outbreak.
- **SARS Alert**
 - Two or more health care workers in the same health care unit fulfilling the clinical case definition of SARS and with onset of illness in the same 10-day period.

Summary

- Acute respiratory infections
 - are among the most frequent illnesses of children
 - place heavy burden on health services
- ARI incidence same everywhere in the world
- Pneumonia incidence 3-6 times higher in developing countries
- Childhood pneumonia is mostly bacterial. *S. pneumoniae* and *H. influenzae* are the most common causes

Summary

- Pneumonia is responsible for more than 75% of all ARI deaths.
- Most deaths occur a few days from onset because of late or no treatment.
- The risk of death from pneumonia is highest in infancy - the younger the child, the higher the risk.

Summary: Treatment of Childhood Pneumonia

- Inexpensive antimicrobials are available:
 - cotrimoxazole
 - amoxicillin
 - ampicillin
 - procaine penicillin
- Resistance causing treatment failure is not a problem in most countries

Summary: Treatment of Childhood Pneumonia

- Considerations of cost, compliance, and ease of administration usually favor cotrimoxazole
- A recent trial has shown the effectiveness of a 3-day course of amoxicillin

Standard Case Management of ARI is Necessary In Order To:

- Train health care workers.
- Encourage effective use of antibiotics.
- Use limited resources wisely.
- Reduce costs and adverse effects of cough and cold medicines.
- **REDUCE MORTALITY FROM PNEUMONIA!**

Summary

ARI Control in Emergency Settings

- Pneumonia is frequently the leading killer of children in emergencies but gets the least attention.
- Pneumonia is the form of ARI that requires the most attention.
- Prevention is difficult.
- Diagnosis can be made relatively simply, but requires training.

Summary

ARI Control in Emergency Settings

- Antibiotics are required for treatment -- should they be used in the community?
- A standardized approach to diagnosis and treatment is best
- What about Integrated Management of Childhood Illnesses in Emergencies?

Debate

- PRO

- IMCI should be the standard for child care in emergencies

- CON

- IMCI should NOT be the standard for child care in emergencies

Summary

ARI Control in Emergency Settings

- Early recognition and care-seeking is the key to lowering mortality
- **COMMUNITY-BASED PROGRAMS ARE ESSENTIAL IN EMERGENCIES AND MUST BE INSTITUTED AS EARLY AS POSSIBLE**

What should UNICEF do?

- ➡ Essential drugs
- ➡ Monitoring of drug use
- ➡ Funding & materials for training of basic health workers
- ➡ Funding & materials for the training of mothers