



WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiology Unit
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Pneumonia, the child killer

Pneumonia is the single largest cause of death in children worldwide. Every year, it kills an estimated 1.8 million children under the age of five years, accounting for 20% of all deaths of children under five years old worldwide. More than 98% of these deaths occur in 68 developing countries. There are some 155 million cases of childhood pneumonia every year in the world. Pneumonia affects children and families everywhere, but is most prevalent in South Asia and sub-Saharan Africa.

In Sri Lanka, 21,111 and 21,811 cases of pneumonia and 1417 and 1448 deaths due to this disease had been reported for years 2005 and 2006 respectively. Forty percent of these pneumonia cases were among children under 4 years of age.

Causes of pneumonia

Data on the pathogen-specific causes of pneumonia are limited, and available information is often difficult to interpret. It is known that the bacterial pathogen *Streptococcus pneumoniae* is the leading cause of severe pneumonia among children across the developing world. Bacteria also contribute to non-severe pneumonia cases, but to a lesser extent, and more cases are probably of viral origin. Another major cause is the bacterial pathogen *Haemophilus influenzae* type b (Hib). Other pathogens include important viruses, less common bacteria and fungi. Causes of pneumonia can be summarized as follows.

- ***Streptococcus pneumoniae*** – the most common cause of bacterial pneumonia in children;
- ***Haemophilus influenzae* type b (Hib)** – the second most common cause of bacterial pneumonia;
- respiratory syncytial virus is the most common viral cause of pneumonia;
- in infants infected with HIV, ***Pneumocystis jirovecii*** is one of the commonest causes of pneumonia, responsible for at least one quarter of all pneumonia deaths in HIV-infected infants.

However, more specific information for the aetiology of childhood pneumonia is not available. Research is urgently needed to better describe the distribution of pneumonia by its causes. Knowing which pathogens lead to pneumonia is critical for guiding treatment and policies.

Symptoms

Children with pneumonia may have a range of symp-

oms depending on their age and the cause of infection. Bacterial pneumonia usually causes children to become severely ill with high fever and rapid breathing. Viral infections, however, often come on gradually and may worsen over time. Some common symptoms of pneumonia in children and infants include rapid or difficult breathing, cough, fever, chills, headaches, loss of appetite and wheezing. Children under five with severe cases of pneumonia may struggle to breathe, with their chests moving in or retracting during inhalation (known as 'lower chest wall indrawing'). Young infants may suffer convulsions, unconsciousness, hypothermia, lethargy and feeding problems.

How is pneumonia diagnosed?

Chest X-rays and laboratory tests are used to confirm the presence of pneumonia, including the extent and location of the infection and its cause. But in resource-poor settings without access to these technologies, suspected cases of pneumonia are diagnosed by their clinical symptoms. Children and infants are presumed to have pneumonia if they exhibit a cough and fast or difficult breathing. Caregivers, therefore, have an important role to play in recognizing the symptoms of pneumonia in children and seeking appropriate medical care as necessary.

Transmission

Pathogens causing pneumonia may reach the child's lungs through different routes. Although information on the pathogenesis of childhood pneumonia is limited, it is widely believed that common bacterial pathogens causing pneumonia are often already present in a child's nose or throat and are then inhaled into the lungs, causing infection. Pathogens may also be spread through contaminated air droplets or may result from blood-borne infections. During or shortly after birth, babies are at higher risk of developing pneumonia from coming into contact with organisms in the birth canal or from contaminated substances contacted during delivery.

Why are children vulnerable?

A healthy child has many natural defences that protect its lungs from the invading pathogens that cause pneumonia. However, children and infants with compromised immune systems have weakened defences. Undernourished children, particularly those not exclusively breastfed or with inadequate zinc intake, are at higher risk of developing pneumonia. Similarly, children and infants suf-

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fering from other illnesses, such as AIDS or measles, are more likely to develop pneumonia. Environmental factors, such as living in crowded homes and exposure to parental smoking or indoor air pollution, may also have a role to play in increasing children's susceptibility to pneumonia and its severe consequences.

Prevention

- Preventing children from developing pneumonia in the first place is essential for reducing child deaths.
- Immunization against Hib, pneumococcus, measles and whooping cough (pertussis) is the most effective way to prevent pneumonia.
- Adequate nutrition is key to improving children's natural defences, starting with exclusive breastfeeding for the first six months of life. This is also effective in preventing pneumonia and reducing the length of the illness.
- Addressing environmental factors such as indoor air pollution (by providing affordable clean indoor stoves, for example) and encouraging good hygiene in crowded homes also reduces the number of children who fall ill with pneumonia.
- In children infected with HIV, antibiotics can be given daily to decrease the risk of contracting pneumonia.
- Recent research also suggests that hand washing may play a role in reducing the incidence of pneumonia.
- To protect children from pneumonia globally, WHO and UNICEF have developed the Global Action Plan for the prevention and control of Pneumonia (GAPP). The aim of the GAPP is to increase awareness of pneumonia as a major cause of child death and spur action to deal more effectively with the problem.

The Global action plan for the prevention and control of pneumonia (GAPP) includes recommendations on what needs to be done, specific goals and targets, and estimates of what it will cost and how many lives will be saved. Its aim is to increase awareness of pneumonia as a major cause of child deaths, and it calls on global and national policy-makers, donor agencies and civil society to take immediate action to implement the plan.

The GAPP has a three-pronged vision:

- Protecting every child by providing an environment where they are at low risk of pneumonia (with exclusive breastfeeding for six months, adequate nutrition, preventing low-birth-weight, reducing indoor air pollution, and increasing hand washing);
- Preventing children from becoming ill with pneumonia (with vaccination against its causes: measles, pertussis, Streptococcus pneumoniae and Haemophilus influenzae b, as well as preventing and treating HIV in children, and providing zinc for children with diarrhoea);
- Treating children who become ill with pneumonia with the right care and antibiotics (in communities, health centres and hospitals).

Treatment

Prompt treatment of pneumonia with a full course of appropriate antibiotics is lifesaving. Cotrimoxazole and amoxicillin are effective drugs against bacterial pathogens and are often used to treat children with pneumonia in developing countries. Infants under two months with signs of pneumonia/sepsis are at risk of suffering severe illness and death more quickly than older children, and should be immediately referred to a hospital or clinic for treatment. Treatment regimens will need to be chosen based on their efficacy in local settings.

Once a child develops pneumonia, a caregiver must recognize the symptoms and seek appropriate care immediately. Since a large proportion of severe pneumonia cases in children of the developing world is caused by bacterial pathogens, prompt treatment with a full

course of effective antibiotics is the key to reducing pneumonia deaths.

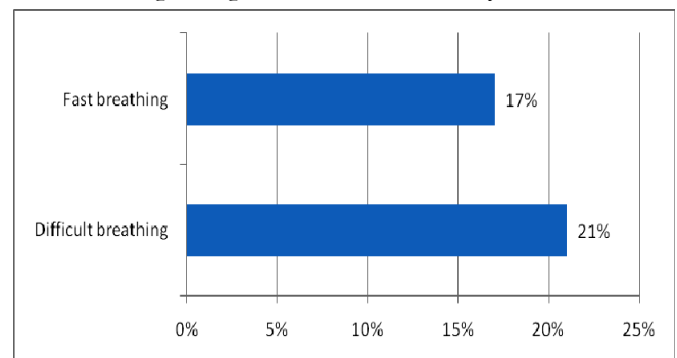
Three essential steps are needed to reduce deaths among children under five with pneumonia:

1. Recognize a child is sick
2. Seek appropriate care
3. Treat appropriately with antibiotics

RECOGNITION OF PNEUMONIA'S DANGER SIGNS

Recognizing the symptoms of pneumonia is the first step in reducing deaths among children under five. Caregivers play a critical role in recognizing pneumonia's symptoms and immediately seeking appropriate care for their sick children. Indeed, it is critical that caregivers understand the importance of this disease and the risk it poses to their children's health. Yet, even though pneumonia is the leading killer of children in the developing world, only 1 of every 5 caregivers knows the two tell-tale symptoms of pneumonia: fast breathing and difficult breathing.

The following graph shows the % caregivers who know that difficult or fast breathing is a sign to seek care immediately



Data from UNICEF-supported Multiple Indicator Cluster Surveys (MICS) 1999-2001

Home treatment of pneumonia

Treating children with severe pneumonia at home is just as effective as treating them in hospitals, a new study has found. The study results could significantly change the way the illness is managed in developing countries, saving a significant number of lives every year and taking pressure off health systems.

In a research, conducted in Pakistan by researchers from the Boston University School of Public Health and supported by WHO and the U.S. Agency for International Development (USAID), which was published in The Lancet medical journal, 2037 children with severe pneumonia were randomly assigned to get either injectable antibiotics in a hospital or antibiotic pills at home. The trial was the first to compare the outcomes of hospital treatment of severe pneumonia with home-based treatment, and the results demonstrate the safety and efficacy of treating it with oral antibiotics outside a hospital setting.

In the study, there were 87 (8.6%) treatment failures in the hospitalized group, and 77 (7.5%) in the group treated at home. Of the five children (0.2%) who died during the study, four were in the hospitalized group and one was at home.

This study confirmed the findings of three other trials in Africa, Asia, Europe and Latin America, which showed that oral antibiotics were just as effective as injectable antibiotics in treating hospitalized children with severe pneumonia.

Source:

Pneumonia the forgotten killer of children WHO/ UNICEF Annual health bulletin 2005-2006

Table 1: Vaccine-preventable Diseases & AFP

12th-18th September 2009 (38thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2009	Number of cases during same week in 2008	Total number of cases to date in 2009	Total number of cases to date in 2008	Difference between the number of cases to date in 2009 & 2008
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	00	00	00	00	00	00	00	00	02	49	73	-32.9%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	-
Measles	00	01	01	00	00	00	00	00	00	02	01	143	93	+53.8%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	19	27	-29.6%
Whooping Cough	00	00	00	00	00	01	00	00	01	01	01	51	39	+30.8%
Tuberculosis	128	34	50	00	04	38	03	12	13	302	210	7654	6387	19.8%

Table 2: Newly Introduced Notifiable Disease

12th-18th September 2009 (38thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2009	Number of cases during same week in 2008	Total number of cases to date in 2009	Total number of cases to date in 2008	Difference between the number of cases to date in 2009 & 2008
	W	C	S	N	E	NW	NC	U	Sab					
Chickenpox	12	07	05	01	12	10	08	04	07	66	88	12738	4016	+217.2%
Meningitis	10 KL=7 CB=3	00	04 GL=3 MT=1	0	01 KM=1	05 KR=5	04 AP=2 PO=2	00	11 RP=10 KG=1	35	13	903	995	-09.2%
Mumps	04	01	02	06	02	02	02	00	05	35	55	903	2214	-60.7%
Leishmaniasis	00	00	06 MT=2 HB=4	00	00	00	02 KN=1 PU=1	00	00	08	Not available*	544	Not available*	-

Key to Table 1 & 2

Provinces: W: Western, C: Central, S: Southern, N: North, E: East, NC: North Central, NW: North Western, U: Uva, Sab: Sabaragamuwa.
 DPDHS Divisions: CB: Colombo, GM: Gampaha, KL: Kalutara, KD: Kandy, ML: Matala, NE: Nuwara Eliya, GL: Galle, HB: Hambantota, MT: Matara, JF: Jaffna, KN: Killinochchi, MN: Mannar, VA: Vavuniya, MU: Mullaitivu, BT: Batticaloa, AM: Ampara, TR: Trincomalee, KM: Kalmunai, KR: Kurunegala, PU: Puttalam, AP: Anuradhapura, PO: Polonnaruwa, BD: Badulla, MO: Moneragala, RP: Ratnapura, KG: Kegalle.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps.

Special Surveillance: Acute Flaccid Paralysis.

Leishmaniasis is notifiable only after the General Circular No: 02/102/2008 issued on 23 September 2008.

Table 4: Surveillance of Communicable diseases among IDP's

12th-18th Sept 2009

Area	Disease	Dysentery	Enteric fever	Viral Hepatitis	Chicken Pox	Watery Diarrhoea
Vavunia		0	0	0	1	-
Chendikulam		39	26	15	165	392
Total		39	26	15	166	392

Table 4: Selected notifiable diseases reported by Medical Officers of Health
12th-18th September 2009 (38thWeek)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Returns Received Timely**
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	
Colombo	51	3432	9	170	0	11	8	174	2	47	128	785	0	5	3	101	0	4	92
Gampaha	36	3345	3	121	1	22	3	35	0	16	15	282	0	8	17	175	0	3	67
Kalutara	11	1332	3	287	0	11	0	49	0	44	56	321	0	1	2	67	0	2	75
Kandy	66	3603	8	227	0	6	0	23	0	56	4	171	4	142	4	102	0	0	84
Matale	16	1445	3	96	0	2	0	26	0	6	0	295	0	5	2	76	0	2	75
Nuwara Eliya	4	221	3	357	0	2	3	154	0	786	2	35	0	61	2	71	0	0	77
Galle	7	505	7	205	0	10	0	3	0	43	17	148	2	11	0	28	0	4	84
Hambantota	13	811	5	78	0	8	0	6	1	14	1	61	7	75	1	39	0	0	100
Matara	20	1036	4	225	0	4	1	6	0	16	12	139	5	121	1	52	1	2	100
Jaffna	0	15	0	91	0	3	0	213	0	30	0	0	0	124	0	161	0	2	0
Kilinochchi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mannar	0	5	4	79	0	1	2	97	0	4	0	0	0	0	0	55	0	0	75
Vavuniya	11	50	4	1552	0	25	3	592	0	2	1	6	0	5	1	3725	0	0	75
Mullaitivu	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Batticaloa	6	515	2	234	0	12	0	15	0	50	0	9	0	4	0	18	0	4	73
Ampara	0	211	5	52	0	0	0	12	0	8	0	11	0	2	0	29	0	0	100
Trincomalee	0	321	11	112	0	3	0	9	0	1	0	17	0	19	2	47	0	1	70
Kurunegala	17	2505	7	183	0	10	1	58	0	15	0	95	2	69	2	126	0	4	80
Puttalam	9	545	1	125	0	7	0	64	0	2	0	75	00	31	2	36	0	1	56
Anuradhapur	3	507	3	95	0	4	0	7	0	38	0	81	0	28	1	166	0	3	68
Polonnaruwa	3	152	10	69	0	4	0	21	3	9	0	58	0	9	1	65	0	0	100
Badulla	7	277	20	248	0	5	1	37	0	2	1	83	3	107	2	247	0	1	80
Monaragala	1	143	0	91	0	1	0	23	0	13	0	13	0	59	0	79	0	1	55
Ratnapura	19	1892	3	425	0	19	1	47	3	15	6	232	0	31	2	150	0	1	72
Kegalle	18	3474	11	153	0	8	0	36	0	6	13	196	1	27	5	201	0	1	64
Kalmunai	2	175	1	88	0	1	0	14	0	3	1	4	0	3	0	17	0	0	31
SRI LANKA	320	26517	127	5365	1	179	23	1722	09	1251	257	3117	24	947	50	5860	1	36	72

Source: Weekly Returns of Communicable Diseases WRCD).

*Dengue Fever / DHF refers to Dengue Fever / Dengue Haemorrhagic Fever.

**Timely refers to returns received on or before 18th September, 2009 Total number of reporting units =311. Number of reporting units data provided for the current week: 250

A = Cases reported during the current week. B = Cumulative cases for the year.

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