WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiology Unit
Ministry of Health, Nutrition & Indigenous Medicine

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Pneumonia in children

Global burden of pneumonia in childhood

Pneumonia is acute inflammation of the lung that primarily affects alveoli. It is considered to be the disease due to which most number of deaths among under 5 children occur. Pneumonia is responsible for 15% of childhood deaths where in 2015 alone it has killed 922 000 children. Although it is the single largest infectious cause of deaths worldwide it is mostly prevalent in South Asia and Sub Saharan Africa. However, the impact of this disease, both clinically and public health wise has not reached the general public where only one fifth of care givers know the pneumonia danger signs.

Only half of the affected children receive appropriate medical care while less than 20% of children with pneumonia are given antibiotics.

However, the potential to reach better disease outcomes are wide. Nearly 600 000 deaths can be prevented if appropriate antibiotic therapy is delivered universally. This amount can be doubled if appropriate treatment is combined with preventive strategies.

Causes of pneumonia

Bacteria, viruses and fungi are among the pathogens that cause pneumonia. Most bacteria cause severe pneumonia in children. The commonest bacterial cause of pneumonia in children is Streptococcus pneumoniae . Another common organism that cause childhood pneumonia is Haemophilus influenzae type B. Commonest viral pathogen of pneumonia is Respiratory Syncytial Virus. Pneumocystis jiroveci infection is responsible for one fourth of pneumonia deaths in children with HIV infection.

However it is needed to conduct more research on the specific aetiological agents that cause childhood pneumonia. Because knowing the pathogen responsible is critical to guide treatment and policies.

Transmission

Children can acquire the infection leading to pneumonia through several routes. Although exact details of them are lacking, it is believed that organisms which are already present in children's nose and throat can get inhaled and cause infection. Apart from that pathogens can also spread via contaminated air droplets. Shortly after birth neonates can develop pneumonia through blood borne infection.

Symptoms

Severity and clinical presentation of pneumonia can differ with the pathogen involved. Usually bacterial infection causes severe illness while viral infection tend to start as a mild illness and worsen over time. Children usually present with rapid or difficulty in breathing, cough, fever with chills, headache, loss of appetite and wheezing. Difficulty in breathing will be more apparent with lower chest wall indrawings. Young infants with severe infection can develop hypothermia, loss of consciousness, difficulty in feeding and convulsions.

Diagnosis of pneumonia is usually clinical specially in resource poor centers. However, chest

Contents *Page*

X rays are usually done to determine the severity as well as to locate the infection which will produce with clues to detect the pathogen. Diagnosis is also aided by blood investigations.

Risk factors

Children with reduced immunity are more prone to develop pneumonia. One of the most prevalent reasons why immunity can be reduced is malnutrition or under nutrition. In that context children with HIV or measles infection can develop pneumonia easily. Other than that several environmental triggers can also make children more susceptible for pneumonia such as living in crowded homes, indoor air pollution by cooking and heating biomass fuels (wood or dung) and parental smoking.

Prevention

Children's immune system can be made strong enough to fight against infection caused by common pathogens by vaccinating them for Hib, pneumococcus, measles and whooping cough. Nutrition of the children should be optimized with exclusive breast feeding for the first six months of life and adequate macro and micronutrient supplementation including Zinc. Apart from that the environmental risk factors can be modified. As a solution for indoor air pollution due to cooking and heating biomass fuels, affordable clean indoor stoves can be provided. In crowded homes, every family member should be encouraged to adhere to good hygienic practices. There are research evidence which suggest that hand washing is important to reduce children from getting pneumonia. Children with HIV infection should be given Cotrimoxazole daily in order to prevent them from getting pneumonia.

Treatment and trends in treatment

Primary mode of treatment of pneumonia is to give adequate dose of antibiotics. Usually the antibiotic of choice is Amoxicillin. But this can vary according to the local resistant pattern. Antibiotic therapy should be assisted with other supportive therapy like oxygen supplementation. Children with mild pneumonia can be managed with oral antibiotics at the community level. But severe cases specially infants below two months of age need urgent hospitalization.

In early 1990s, usage of antibiotics in pneumonia was as low as 19%. However some countries have improved the usage of antibiotics, where in Egypt it has increased from 25% to 75%. Rate of antibiotic usage is higher in children from urban areas than rural areas and more in children with well educated mothers than mothers with no formal education.

Key actions needed to reduce pneumonia deaths

First and foremost it is important to prevent pneumonia which will eventually reduce pneumonia deaths. However, prevention alone does not fulfill the purpose thus it is essential to take additional steps.

Only one fifth of caregivers are aware of the danger signs of pneumonia. This stresses the fact that it is important to educate them on this matter. This will ensure early seeking of treatment which will result in reduction of mortality. In addition to this, the role of caregiver in home based management needs to be defined and they should be educated on that. This health education process has to be conducted in a way that the caregiver understands the importance of the disease and its treatment and they are convinced of the treatment efficacy.

Once a child with danger signs is presented to a medical facility, it is important to make sure that the child's condition is appropriately diagnosed at this point. Therefore, it is essential to ensure that the health care personnel including community health workers are fully trained in diagnosing the condition. This is more of a value in resource poor settings where radiography and laboratory facilities are lacking. In order to support this guidelines have been developed to diagnose pneumonia and distinguish it from other respiratory illness.

After the diagnosis, prompt treatment should be commenced in order to reduce mortality. Therefore, it is of utmost importance to ensure that all the children diagnosed with pneumonia are managed with effective antibiotics. Not only the type of antibiotic but also in which setting—hospital or home, is it to be used has to be decided correctly for the balanced utilization of available resources. In addition to this it is also important not to treat children with simple cough and cold with antibiotics as it can lead to antibiotic resistance. Ample supply of antibiotics should also be ensured.

Based on local antibiotic resistance pattern, clinical outcome and other necessary data, efficacy of pneumonia treatment should be regularly assessed. Depending on that national treatment policies can be revised.

Sources

1. Pneumonia : The forgotten killer of children, available at *http://www.unicef.org/publications/files/Pneumonia_The_Forgotten_Killer_of_Children.pdf*

2. Pneumonia available *at http://www.who.int/mediacentre/factsheets/fs331/en/*

Compiled by Dr. S.A.I.K. Sudasinghe of the Epidemiology Unit

Table 1: Selected notifiable diseases reported by Medical Officers of Health 30th – 06th May 2016 (19th Week)

RDHS Division	Dengue Fever		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Chickenpox		Meningitis		Leishmani-asis		WRCD	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	T*	C**
Colombo	58	5736	2	55	0	0	0	24	0	19	0	81	0	3	0	15	0	0	3	193	0	22	0	0	**13**	**19**
Gampaha	0	1983	0	33	0	5	0	12	0	5	0	124	0	7	0	16	0	0	0	184	0	20	0	3	**0**	**0**
Kalutara	8	1132	0	35	0	2	0	15	0	15	0	226	0	4	0	12	0	0	0	101	0	31	0	0	**14**	**21**
Kandy	33	777	16	69	0	9	0	9	0	22	2	67	2	40	2	34	0	0	6	64	1	20	0	6	**96**	**96**
Matale	3	150	1	12	0	1	1	9	0	2	0	46	0	10	0	13	0	1	2	19	0	41	0	13	**54**	**92**
NuwaraEliya	4	121	4	37	0	1	0	20	0	12	0	18	0	28	1	16	0	0	3	59	1	20	0	0	**92**	**100**
Galle	26	667	0	29	1	5	0	1	0	2	4	131	0	39	0	4	0	0	6	121	0	21	0	1	**75**	**85**
Hambantota	8	271	1	17	0	1	0	0	0	48	2	59	1	34	1	14	0	0	2	105	1	7	3	140	**83**	**92**
Matara	6	336	1	27	0	3	0	5	2	33	2	79	1	21	0	13	0	0	5	87	0	5	4	99	**100**	**100**
Jaffna	16	1181	2	91	0	2	2	43	3	29	1	8	1	499	1	5	0	0	0	101	2	21	0	1	**100**	**100**
Kilinochchi	0	43	0	20	0	0	0	23	0	3	0	11	0	17	0	0	0	0	0	3	0	7	0	0	**25**	**75**
Mannar	1	70	0	8	0	4	0	12	0	2	0	8	0	35	0	0	0	0	0	7	0	1	0	0	**80**	**100**
Vavuniya	7	143	0	4	0	1	4	12	2	19	0	11	0	7	0	5	0	0	0	16	0	3	0	3	**100**	**100**
Mullaitivu	1	89	0	9	0	0	1	13	0	4	2	21	0	5	0	0	0	0	1	2	0	4	0	4	**80**	**80**
Batticaloa	5	257	2	118	0	0	0	14	1	85	1	24	0	4	0	8	0	0	5	49	0	5	0	1	**64**	**100**
Ampara	1	90	1	12	0	0	0	0	0	13	2	21	0	0	0	6	0	0	4	51	1	1	0	4	**71**	**86**
Trincomalee	3	238	4	24	0	0	0	9	0	21	2	13	0	11	0	28	0	1	7	88	0	6	0	2	**75**	**92**
Kurunegala	31	640	7	86	0	7	0	1	0	6	1	66	0	8	0	15	0	2	8	130	0	25	0	38	**76**	**90**
Puttalam	3	506	1	20	0	1	0	3	0	0	1	25	0	55	0	0	0	0	3	37	1	20	0	0	**62**	**85**
Anuradhapura	2	248	0	28	0	1	0	3	0	20	0	158	0	18	1	11	0	0	5	105	0	16	4	86	**79**	**95**
Polonnaruwa	4	158	0	12	0	2	0	8	0	5	1	49	0	1	0	2	0	0	0	39	1	6	9	60	**71**	**86**
Badulla	3	225	6	43	0	7	0	3	0	17	1	59	1	36	4	65	0	0	7	84	7	87	0	0	**71**	**82**
Monaragala	5	149	2	25	0	1	0	2	0	9	1	131	3	50	4	79	0	1	0	31	1	16	1	17	**100**	**100**
Ratnapura	18	758	2	115	0	15	0	16	0	15	9	187	0	16	3	69	0	0	3	86	2	57	0	1	**67**	**89**
Kegalle	19	524	5	25	0	10	0	15	12	38	4	88	1	12	1	12	0	0	2	152	0	20	0	0	**82**	**100**
Kalmune	7	334	0	33	0	3	0	4	1	14	1	9	0	0	0	2	0	4	5	44	2	12	0	0	**77**	**100**
SRILANKA	**272**	**16826**	**57**	**987**	**1**	**81**	**8**	**276**	**21**	**458**	**37**	**1720**	**10**	**960**	**18**	**444**	**0**	**9**	**77**	**1958**	**20**	**494**	**21**	**479**	**69**	**82**

Source: Weekly Returns of Communicable Diseases (WRCD).

*T=Timeliness refers to returns received on or before 06th May, 2016 Total number of reporting units 339 Number of reporting units data provided for the current week: 283 C**-Completeness

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

Table 2: Vaccine-Preventable Diseases & AFP

30th – 06th May 2016 (19th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2016	Number of cases during same week in 2015	Total number of cases to date in 2016	Total number of cases to date in 2015	Difference between the number of cases to date in 2016 & 2015
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	00	00	00	00	00	00	00	00	00	00	02	19	25	-24%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Mumps	00	01	02	00	00	01	01	02	01	08	08	163	147	+11.1%
Measles	01	00	00	00	01	02	00	00	00	04	49	252	865	-71.1%
Rubella	00	00	00	00	00	00	00	00	00	00	00	06	05	+20%
CRS**	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Tetanus	00	00	00	00	00	00	00	00	00	00	01	03	06	-50%
Neonatal Tetanus	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Japanese Encephalitis	00	00	00	00	00	00	00	00	00	00	00	00	07	-100%
Whooping Cough	00	00	00	00	00	01	00	00	00	01	01	28	31	-9.6%
Tuberculosis	60	19	22	10	04	44	00	08	42	209	84	3384	3345	+1.1%

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.

RDHS Divisions: **CB**: Colombo, **GM**: Gampaha, **KL**: Kalutara, **KD**: Kandy, **ML**: Matale, **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, Neonatal Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps., Rubella, CRS,

Special Surveillance: AFP* (Acute Flaccid Paralysis), Japanese Encephalitis

CRS** =Congenital Rubella Syndrome

AFP and all clinically confirmed Vaccine Preventable Diseases except Tuberculosis and Mumps should be investigated by the MOH

Number of Malaria Cases Up to End of April 2016,

15

All are Imported!!!

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Comments and contributions for publication in the WER Sri Lanka are welcome. However, the editor reserves the right to accept or reject items for publication. All correspondence should be mailed to The Editor, WER Sri Lanka, Epidemiological Unit, P.O. Box 1567, Colombo or sent by E-mail to **chepid@sltnet.lk. Prior approval should be obtained from the Epidemiology Unit before publishing data in this publication**

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