WEEKLY EPIDEMIOLOGICAL REPORT

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Childhood Diarrhoea

Introduction

Diarrhoea in children is important not only because it is commoner in that age group but also due to its likelihood of giving rise to devastating consequences like dehydration. Diarrhoea is the second leading cause of death in children under 5 years of age. Diarrhoea is usually a symptom of gastrointestinal infection or food poisoning. It is defined as the passage of three or more loose or liquid stools per day or more frequently than normal for the individual. Clinically there are three types of diarrhoea

- Acute watery diarrhoea– includes Cholera
- Acute bloody diarrhoea/ dysentery
- Persistent diarrhoea– lasts 14 days or more

Diarrhoea is a major cause of morbidity and mortality during humanitarian crisis situations like natural and man made disasters. Overcrowding and congestion of people in an environment where safe food and water, proper sanitation, proper hygienic practices and adequate health care facilities are lacking provides convenient ways in which pathogens can spread and cause diarrhoea.

Global burden of childhood diarrhoea

Although mortality due to diarrhoea among under 5 children has declined over the past two decades, it still kills nearly 760 000 children per year. However, incidence of diarrhoea has remained the same over the past two decades. Annually 2.5 billion cases of diarrhoea are reported worldwide. Nearly half of these cases are reported from Africa and South Asia. Therefore diarrhoeal illness have a significant impact on mortality and morbidity status in children especially in developing countries. Nearly 780 million individuals lacking access to improved drinking water and 2.5 billion lacking improved sanitation provides a platform on which diarrhoea can be widely prevalent.

In today's context 40% of all childhood deaths are caused by diarrhoea and Pneumonia together.

Causes of diarrhoea

As mentioned above, diarrhoea is usually a symptom of gastrointestinal tract infection. These infections are mostly caused by viruses while bacteria and parasitic organisms are also among the culprits. Out of the above, the commonest cause for acute watery diarrhoea is Rota virus where 40% of all hospital admissions due to diarrhoea among children under 5 years are caused by Rota virus. According to the clinical type of diarrhoea, the pathogen can differ.

- Acute watery diarrhoea– commonest organisms that cause this are Vibrio cholerae, E.coli and Rota virus. In this disease entity there is a high risk of going in to sudden severe dehydration due to significant fluid loss in a shorter time period.
- Acute bloody diarrhoea/ dysentery– mostly bacterial infections are responsible for this which includes Shigella, Salmonella and Campylobacter jejuni. This is associated with intestinal damage which can result in blood and pus in stools.

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·Persistent diarrhoea– diarrhoea which lasts for more than 14 days is commonly seen in children with HIV infection. This can lead to malnutrition and worsen the diarrhoeal condition on the other hand.

Dehydration

Diarrhoea not only is a distressing symptom but also can give rise to devastating consequences mainly dehydration, leading to shock. So much so that main aim of treatment of diarrhoea is to prevent and treat dehydration. Some children are more vulnerable to develop dehydration which includes Infants below six months of age, Low Birth Weight infants, children who have passed more than six diarrhoeal stools or vomited more than 3 times in the previous 24 hours, children who cannot tolerate or who are not given additional fluids and malnourished children. Dehydration is commoner in children because their insensible fluid loss is high due to high surface area to body weight ratio (300ml /m^2 per day) and their kidneys are incapable of preserving water.

Dehydration occurs when there is excess fluid and electrolyte (Sodium, Potassium, Chloride, Bicarbonate) lose mainly through liquid stools and vomit and additionally through sweat, urine and breathing which is not properly compensated by fluid and electrolyte replacement. For clinical assessment and ease of treatment, three degrees of dehydration are defined– no clinical dehydration, clinical dehydration and shock.

Prevention and treatment of diarrhoea and where it stands today

Main mode of transmission of gastrointestinal infection leading to diarrhoea is faeco-oral. Therefore improving access to safe drinking water, providing adequate sanitation facilities and proper hygienic practices are key preventive strategies to control the spread of diarrhoea. However, these strategies have not been established successfully, especially in developing countries. According to a WHO/UNICEF report, in 2006 (the latest year for which data are available) nearly 2.5 billion people were lacking improved sanitation facilities. There has always been the problem of indiscriminate or open defecation, unsafe disposal of children's faeces (children's stools tend to carry a higher pathogen load than adult's) and children playing in areas where stools are frequently found. Although improved drinking water is a basic human right, almost 1 billion people lack access to it. Adding to that, proper storing and treating of household water supplies are rarely seen in most of the disease prevalent countries.

Undernourished children are more prone to develop diarrhoea and as a result of it their nutritional status is worsened. Therefore exclusive breastfeeding for the first six months of life and micronutrient supplement are important to prevent diarrhoea. Although exclusive breastfeeding in first six months of life had shown to be improved in the past few decades, still the rate of exclusive breast feeding is only 37% in developing countries.

Among the micronutrients, Vitamin A is important for normal vision, immunity and reproduction. Several research studies have shown that supplementation of Vitamin A every six monthly will reduce mortality and severity of diarrhoea. Coverage of Vitamin A supplementation has increased overtime. Supplementation of at least one dose of Vitamin A to children aged between 6 months to 5 years has increased by 50% since 1999.

Zinc reduces childhood diarrhoea and helps normal growth and development. However, importance of Zinc supplementation as a preventive measure is yet to be established.

Due to the fact that Rota virus is the commonest infective pathogen, Rota virus vaccination is a major preventive strategy against diarrhoea. However only few countries , mainly high and middle income have included this vaccine in their national immunization schedule.

Main mode of treatment of diarrhoea is continuous assessment of hydration status and rehydrating the child. Oral Rehydration Salt (ORS) solution along with other fluids aid in this. ORS is considered as one of the most successful and cost effective medical inventions in the history as it showed a dramatic reduction of mortality due to diarrhoea. It is a mixture of clean water, salt and sugar which acts on the Sodium– Glucose co transporter in the intestinal epithelial cells. By that it facilitates water absorption through the intestinal wall and prevent dehydration. However, use of ORS solution in treatment of diarrhoea is still low in developing countries where in Africa and South Asia only 35% and 37% of children are given ORS respectively.

Sources

1. Diarrhoea : Why Children are still dying and what can be done, available at http://www.unicef.org/media/files/Final_Diarrhoea_Report_October_2009_final.pdf

2. Diarrheal disease, available at http://www.who.int/mediacenter/factsheets/fs330/en/

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

Table 1: Selected notifiable diseases reported by Medical Officers of Health 23rd – 29th April 2016 (18th 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	192	5678	2	53	0	0	3	24	2	19	3	81	0	3	0	15	0	0	13	190	4	22	0	0	**81**	**81**
Gampaha	41	1966	0	30	0	5	0	12	0	5	2	121	1	7	0	16	0	0	8	178	0	19	0	3	**60**	**87**
Kalutara	38	1083	2	34	0	2	0	15	0	15	8	224	0	4	1	12	0	0	8	100	2	31	0	0	**79**	**100**
Kandy	26	744	5	53	0	9	0	9	4	22	2	65	0	38	1	32	0	0	2	58	0	19	0	6	**96**	**100**
Matale	4	146	0	11	0	1	0	8	0	2	0	46	0	10	1	13	0	1	0	17	1	40	0	13	**85**	**100**
NuwaraEliya	3	117	2	33	0	1	1	20	4	12	1	18	2	28	0	15	0	0	6	56	1	19	0	0	**100**	**100**
Galle	23	636	3	29	1	4	0	1	0	2	5	127	0	39	0	4	0	0	10	114	1	21	0	1	**90**	**100**
Hambantota	12	259	2	16	0	1	0	0	0	48	3	57	1	33	1	13	0	0	3	102	2	6	8	137	**83**	**100**
Matara	14	330	3	26	1	3	0	5	0	31	3	77	0	20	0	13	0	0	1	82	0	5	1	95	**100**	**100**
Jaffna	18	1165	2	89	0	2	0	41	0	26	0	7	4	498	0	4	0	0	5	101	3	19	0	1	**100**	**100**
Kilinochchi	1	43	3	19	0	0	0	22	0	3	0	11	0	17	0	0	0	0	0	3	0	7	0	0	**50**	**75**
Mannar	3	69	2	8	0	4	0	12	1	2	0	8	0	35	0	0	0	0	0	7	0	1	0	0	**60**	**80**
Vavuniya	8	135	0	4	1	1	0	8	4	17	0	11	0	7	0	5	0	0	0	16	0	2	1	3	**75**	**100**
Mullaitivu	2	88	1	9	0	0	0	12	0	4	1	19	0	5	0	0	0	0	0	1	0	4	0	4	**80**	**100**
Batticaloa	3	251	1	112	0	0	2	14	0	84	0	22	0	4	0	8	0	0	0	33	0	5	0	1	**71**	**100**
Ampara	2	77	0	10	0	0	0	0	0	13	0	18	0	0	0	6	0	0	2	38	0	0	0	4	**43**	**71**
Trincomalee	7	229	1	20	0	0	1	9	0	21	1	11	0	11	0	24	0	1	0	80	0	6	0	2	**83**	**92**
Kurunegala	23	597	4	78	0	7	0	1	0	6	0	65	0	8	0	15	0	2	6	118	4	23	2	38	**86**	**93**
Puttalam	9	500	0	19	0	1	0	3	0	0	0	24	0	55	0	0	0	0	1	34	2	19	0	0	**69**	**85**
Anuradhapura	6	235	1	28	0	1	1	3	0	20	6	154	3	18	0	10	0	0	6	98	1	16	5	75	**58**	**100**
Polonnaruwa	10	148	0	12	0	2	0	8	0	5	0	47	0	1	0	2	0	0	1	38	0	5	0	51	**57**	**86**
Badulla	10	218	1	36	0	7	0	3	12	17	2	58	1	35	4	61	0	0	2	77	3	80	0	0	**65**	**88**
Monaragala	4	137	4	21	0	1	0	2	0	9	0	126	3	46	1	72	0	1	1	31	1	14	4	15	**73**	**100**
Ratnapura	14	684	4	98	0	15	1	13	0	15	5	163	0	14	1	62	0	0	2	73	1	49	0	0	**44**	**94**
Kegalle	22	498	3	20	0	10	0	15	4	26	8	84	1	10	1	11	0	0	4	148	2	20	0	0	**100**	**100**
Kalmune	8	318	3	32	0	3	0	3	5	13	0	8	0	0	0	2	0	4	3	38	0	10	0	0	**69**	**92**
SRILANKA	**503**	**16351**	**49**	**900**	**3**	**80**	**9**	**263**	**36**	**437**	**50**	**1652**	**16**	**946**	**11**	**415**	**0**	**9**	**84**	**1831**	**28**	**462**	**21**	**449**	**78**	**94**

Source: Weekly Returns of Communicable Diseases (WRCD).

*T=Timeliness refers to returns received on or before 29th April, 2016 Total number of reporting units 339 Number of reporting units data provided for the current week: 325 C**-Completeness

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

Table 2: Vaccine-Preventable Diseases & AFP

23rd – 29th April 2016 (18th 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*	01	01	00	00	00	00	00	00	00	02	01	19	23	-17.3%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Mumps	03	00	03	03	00	01	00	01	00	11	10	150	138	+8.6%
Measles	03	00	00	00	01	00	02	01	01	08	36	243	794	-69.3%
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	05	-40%
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	02	00	00	00	00	00	00	02	00	27	30	-10%
Tuberculosis	73	24	22	07	12	07	15	12	32	204	60	3175	3261	-2.6%

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

Dengue Prevention and Control Health Messages

Look for plants such as bamboo, bohemia, rampe and banana in your surroundings and maintain them

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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**

ON STATE SERVICE

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