



WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiological Unit,

Ministry of Healthcare & Nutrition

231, de Saram Place, Colombo 01000, Sri Lanka

Tele: (+94-011) 2695112, Fax: (+94,011) 2696583, E-Mail: epidunit@slt.net.lk

Epidemiologist: (+94-011) 2681548, E-mail: chepid@slt.net.lk

Vol. 34 No. 4

20th - 26th January 2007

Shigellosis: Evidence for Prevention

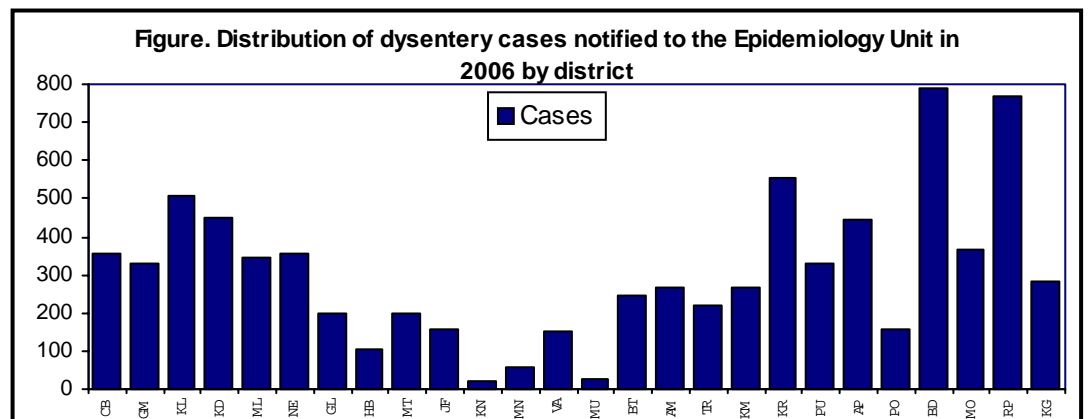
Shigella are the most important organisms causing dysentery, simply defined as diarrhoea containing blood. Shigellosis is endemic throughout the world where it is held responsible for some 165 million cases of severe dysentery. The overwhelming majority of these cases occur in the developing countries, mainly affecting children aged less than five years. More than one million people are estimated to die from *Shigella* infection each year. In addition, some 580 000 cases of shigellosis are reported among travellers and military personnel from developed countries. Since the late 1960s, pandemic waves of *Shigella* dysentery have hit sub-Saharan Africa, Central America and South and South-East Asia, often striking areas of political upheaval and natural disaster.

Shigella dysenteriae type 1 (Sd1), also known as the Shiga bacillus, is the most virulent of the different serogroups of *Shigella*. Sd1 is the cause of epidemic dysentery and can cause vicious outbreaks in confined populations, especially refugee camps. In addition to bloody diarrhoea, the illness caused by Sd1 often includes ab-

dominal cramps, fever and rectal pain. Other complications of infection with Sd1 include sepsis, seizures, renal failure and the haemolytic uraemic syndrome. Approximately 5-15% of Sd1 cases are fatal. A major obstacle to the control of Sd1 is its resistance to antimicrobial drugs.

S. flexneri is endemic in developing countries (60%). It is the most frequently isolated species worldwide. *S. sonnei* is the causative agent of most shigellosis in developed countries, where it accounts for 77% of cases (compared to 15% in developing countries). It also seems to have become predominant in countries such as Thailand in recent years, a phenomenon possibly linked to the level of development of the country.

Shigella species are transmitted by ingestion of contaminated food or water. Transmission through person-to-person contact is also common. The bacteria invade the colonic epithelium through M cells and then spread laterally from cell-to-cell. This invasive ability is due to sev-



Source: Weekly Return of Communicable Diseases

Contents

	Page
1. Leading Article - Shigellosis: Evidence for Prevention	1
2. Surveillance of vaccine preventable diseases & AFP (13 th - 19 th January 2007)	3
3. Summary of diseases under special surveillance (13 th - 19 th January 2007)	3
4. Summary of newly introduced notifiable diseases (13 th - 19 th January 2007)	3
5. Laboratory surveillance of dengue fever (13 th - 19 th January 2007)	3
6. Summary of selected notifiable diseases reported (13 th - 19 th January 2007)	4

eral virulence factors encoded by its genetic structure. In addition, *S. dysenteriae* secretes the Shiga toxin.

A large-scale population-based study by the International Vaccine Institute (IVI) (published in open access journal - PLoS Medicine - in September 2006) in 6 Asian countries has reported shigellosis to be widespread among the economically deprived populations of Asia than previously thought. Evidence have also suggested the emergence of antibiotic resistant strains of different species of *Shigella*. *Shigella* pathogen was isolated from 2,927 (5%) of 56,958 diarrhoea episodes. This was 2.1 episodes per 1,000 people per year in all ages. This rate was more than 6 times higher in children under 5 years of age (13.2 per 1,000).

The study involved over 600,000 people from low-income sites in Bangladesh, China, Pakistan, Indonesia, Vietnam and Thailand. The highest incidence was seen in Bangladesh where 46/1,000 children aged 0-4 years and nearly 8/1,000 persons of all ages had confirmed shigellosis per year. The overall incidence in the study was about 100 times that of developed countries. Another important finding reported by the study was that the incidence seemed to rise after the age of 40 years with persons aged 70 years and above having the second highest rate for incidence after those aged 0-4 years.

As expected, *S. flexneri* was the most frequently isolated species (68% of the confirmed cases) in all sites except Thailand where *S. sonnei* was the commonest (85%). The study also described the pattern of antibiotic resistance seen in these countries for *Shigella* species. *S. flexneri* isolated from all sites showed resistance to the first-line antibiotics amoxicillin and cotrimoxazole, rendering these inexpensive and commonly-used drugs ineffective. Drug resistance was also seen to be appearing for Ciprofloxacin, which is increasingly replacing the first-line antibiotics as the drug of choice.

The study investigators have highlighted the importance of focusing on the prevention of shigellosis to have an immediate impact on the burden of diarrhoeal diseases, especially in economically deprived settings of Asia.

In Sri Lanka, 7959 cases of dysentery were notified to the Epidemiology Unit in 2006. Districts of Badulla (789 cases) and Kegalle (769) reported the most cases for the year (Figure in page 1) (see page 3 for district codes). Two peaks were seen in the incidence during the monsoon rains, with the case load persisting throughout the inter-monsoonal period. During times of heavy rain, overflowing of septic tanks and contamination of drinking water sources cause an increase in the incidence of dysentery.

Culture and antibiotic sensitivity testing for *Shigella* species is being done at the Medical Research Institute (MRI) throughout the year. In 2006, *Shigella* species had been isolated

from 184 samples at MRI. The most common species identified has been *S. sonnei* (114, 61.9%). *S. flexneri* (68, 36.9%) and *S. dysenteriae* (2, 1.2%) were the other organisms identified.

Preventing shigellosis

Currently, there is no vaccine available to prevent shigellosis. However, the spread of *Shigella* from an infected person to other persons can be stopped by frequent and careful hand-washing with soap. Frequent, supervised handwashing of all children should be followed at home and in school with children who are not completely toilet-trained (including children in diapers). People who have shigellosis should not prepare food or handle water for others until they have been shown to no longer be carrying the *Shigella* bacterium.

If a child has shigellosis, everyone who changes the child's soiled clothes should be sure that such clothes are disposed of properly, and should wash his or her hands carefully with soap and clean water immediately afterwards. After use, the changing area should be cleaned with a disinfectant such as household bleach or bactericidal wipes. Basic food safety precautions and drinking boiled water prevents shigellosis.

It is important for the public health staff to know about cases of shigellosis. If many cases occur at the same time, it may mean that a restaurant, food or water supply has a problem which needs correction by the public health department. Sending stool samples for laboratory diagnosis of the type of species and subsequently the antibiotic sensitivity will help to control outbreaks. If a number of cases occur in a day-care center or a school, the public health staff may need to coordinate efforts to improve handwashing among the staff, children, and their families. When a community-wide outbreak occurs, a community-wide approach to promote handwashing and basic hygiene among children can stop the outbreak. Improvements in hygiene for vegetables and fruit picking and packing may prevent shigellosis caused by contaminated produce.

The editor wishes to acknowledge Dr. K. J. Cooray, (Consultant Microbiologist, Medical Research Institute) and Dr. J. Amarasekara (Medical Officer, Epidemiology Unit) for the assistance provided in the preparation of this article.

Reporting of food poisoning outbreak in Biyagama

A recent food poisoning outbreak involving over 200 staff in a BOI company has been reported to the Chief Epidemiologist by the Medical Officer of Health (MOH), Biyagama. After a systematic investigation, contaminated chicken had been identified as the probable cause for the outbreak. Subsequently, necessary control and preventive activities had been carried out by the public health team. We commend MOH Biyagama for the timely intervention, and also for submitting a concise outbreak investigation report.

Table 1: Vaccine-preventable diseases & AFP

13th - 19th January 2007 (3rd Week)

Disease	No. of Cases by Province								Number of cases during current week in 2007	Number of cases during same week in 2006	Total number of cases to date in 2007	Total number of cases to date in 2006	Difference between the number of cases to date between 2007 & 2006	
	W	C	S	NE	NW	NC	U	Sab						
Acute Flaccid Paralysis	01 GM=1	00	00	00	00	00	00	00	01 RP=1	02	05	06	06	00.0%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	00	00	00	00	00	00	00	00	00	01	00	01	-100.0%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	02	02	00.0%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	02	00	05	-100.0%
Tuberculosis	66	00	20	06	00	00	00	00	00	92	318	526	750	-29.9%

Table 2: Diseases under Special Surveillance

13th - 19th January 2007 (3rd Week)

Disease	No. of Cases by Province								Number of cases during current week in 2007	Number of cases during same week in 2006	Total number of cases to date in 2007	Total number of cases to date in 2006	Difference between the number of cases to date between 2007 & 2006	
	W	C	S	NE	NW	NC	U	Sab						
DF/DHF*	60	23	09	04	21	02	03	09	09	131	246	546	698	-21.8%
Encephalitis	03 GM=3	00	02 GL=1 MT=1	02 BT=1 TR=1	01 PU=1	02 AP=1 PO=1	00	00	00	10	03	25	06	+316.7%
Human Rabies	01 KL=1	01 KD=1	01 GL=1	00	00	00	00	00	00	03	01	07	05	+40.0%

Table 3: Newly introduced Notifiable Diseases

13th - 19th January 2007 (3rd Week)

Disease	No. of Cases by Province								Number of cases during current week in 2007	Total number of cases to date in 2007	
	W	C	S	NE	NW	NC	U	Sab			
Chickenpox	10 CB=5 GM=2 KL=3	04 NE=04	03 GL=2 HB=1	00	03 KR=3	00	00	00	03 KG=3	23	86
Meningitis	03 CB=1 GM=1 KL=1	00	02 HB=1 MT=1	00	01 PU=1	00	01 BD=1	00	05 RP=2 KG=3	12	34
Mumps	11 GM=2 KL=9	00	01 MT=1	00	03 KR=3	01 AP=1	00	00	02 BD=1 MO=1	18	29

*DF / DHF refers to Dengue Fever / Dengue Haemorrhagic Fever.
 NA= Not Available.
Sources:
Weekly Return of Communicable Diseases:
 Diphtheria, Measles, Tetanus, Whooping Cough, Human Rabies, Dengue Haemorrhagic Fever, Japanese Encephalitis, Chickenpox, Meningitis, Mumps.
Special Surveillance:
 Acute Flaccid Paralysis.
National Control Program for Tuberculosis and Chest Diseases:
 Tuberculosis.
 Details by districts are given in Table 5.

Provinces:

W=Western, C=Central, S=Southern, NE=North & East, NC=North Central, NW=North Western, U=Uva, Sab=Sabaragamuwa.

DPDHS 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.

Table 4: Laboratory Surveillance of Dengue Fever

13th - 19th January 2007 (3rd Week)

Samples	Number tested	Number positive	Serotypes				
			D ₁	D ₂	D ₃	D ₄	Negative
Number for current week	32	01	00	00	01	00	00
Total number to date in 2007	120	05	00	01	02	00	01

Source: Genetech Molecular Diagnostics & School of Gene Technology, Colombo.

Table 5: Selected notifiable diseases reported by Medical Officers of Health
13th - 19th January 2007 (3rd Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Returns Received Timely**
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	
Colombo	38	121	05	14	00	01	03	07	01	01	04	11	00	01	00	01	93
Gampaha	16	55	00	16	03	03	02	03	00	00	02	02	01	01	02	08	79
Kalutara	06	41	07	17	00	01	03	06	00	01	01	10	00	00	02	03	91
Kandy	14	90	02	21	00	00	02	04	01	01	04	07	05	07	02	07	73
Matale	07	24	06	22	00	00	00	00	00	00	02	05	01	01	03	14	83
Nuwara Eliya	02	10	09	20	00	00	03	04	00	00	00	03	00	02	09	22	86
Galle	04	20	04	13	01	01	01	01	00	00	03	09	01	05	03	03	81
Hambantota	01	05	00	01	00	00	00	01	00	01	02	04	03	10	01	02	90
Matara	04	20	05	20	01	01	00	03	00	00	00	13	06	20	00	01	94
Jaffna	00	00	00	07	00	00	00	16	00	00	00	00	00	13	00	01	00
Kilinochchi	00	00	00	00	00	00	00	00	00	00	00	00	00	00	01	01	50
Mannar	02	05	02	06	00	00	01	01	00	00	00	00	00	00	00	00	50
Vavuniya	00	04	02	08	00	00	00	04	03	03	02	02	00	00	01	03	100
Mullaitivu	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	20
Batticaloa	00	01	07	13	01	01	01	02	00	00	00	00	00	00	12	25	73
Ampara	00	00	02	14	00	00	00	00	00	00	00	00	00	00	00	01	43
Trincomalee	02	12	00	04	01	01	00	01	17	17	00	00	00	00	01	02	89
Kurunegala	10	39	08	30	00	00	01	05	00	00	00	04	01	09	01	03	71
Puttalam	11	34	03	13	01	08	03	08	00	00	01	02	00	00	01	07	100
Anuradhapura	00	04	04	10	01	04	01	07	00	00	01	05	02	02	02	08	89
Polonnaruwa	02	10	08	24	01	01	00	03	00	00	02	04	00	00	00	01	86
Badulla	02	04	08	19	00	00	02	05	00	00	01	04	04	06	08	16	93
Monaragala	01	02	02	18	00	00	00	05	00	00	01	08	01	05	00	00	90
Ratnapura	02	14	02	39	00	03	00	08	01	01	00	02	00	02	03	09	81
Kegalle	07	30	03	15	00	00	01	03	00	00	03	05	01	01	02	04	91
Kalmunai	00	01	00	07	00	00	00	02	00	00	00	00	00	00	04	08	25
SRI LANKA	131	546	89	371	10	25	24	99	06	25	29	100	26	85	58	150	77

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 27 Jan. 2007. Total number of reporting units = 290. Number of reporting units data provided for the current week: 224.

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

PRINTING OF THIS PUBLICATION IS FUNDED BY THE UNITED NATIONS CHILDREN'S FUND (UNICEF).

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@slt.net.lk.

ON STATE SERVICE

Dr. M. R. N. ABEYSINGHE
EPIDEMIOLOGIST
EPIDEMIOLOGICAL UNIT
231, DE SARAM PLACE
COLOMBO 10