WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiological Unit,

Ministry of Healthcare & Nutrition

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WER SRI LANKA 2008

FLASHBACK 2007

The year 2007 was marked with resounding successes, emerging challenges and novel experiences for the Epidemiology Unit. Driven by its motto to improve health, and to enhance quality of life of the people of Sri Lanka, the dedicated technical and support staff of the Unit will strive even harder to turn each new challenge into a success story in 2008. It has become pertinent in this backdrop to briefly enumerate on the events of last year.

Two surveillance reviews were carried out in Moneragala and Kandy. The findings were shared with district teams to improve surveillance activities in the districts. Consultative meetings, district-level reviews and experts meetings were held to strengthen surveillance of Acute Flaccid Paralysis (AFP), Measles, Rubella, Dengue Fever/Dengue Haemorrhagic Fever (DF/DHF) and other endemic diseases

The sentinel site surveillance project for Pneumococcal, Rota virus and Hib infections were continued with the assistance of the South Asian Pneumococcal Network (SAPNA), International Vaccine Institute (IVI) and World Health Organization (WHO).

Data on three newly introduced notifiable diseases namely, Chickenpox, Mumps and Meningitis were gathered and necessary action was taken accordingly. Draft National guidelines for strengthening sentinel surveillance of communicable diseases were published as a booklet and disseminated among all the stakeholders. This was a prerequisite for further strengthening the disease surveillance system and expanding the system to include non-communicable diseases in future.

Forecasting of possible outbreaks was made and preventive action taken. Outbreaks of hepatitis A and fever turnedout to be Chikungunaya were successfully controlled in Gampola and Galnewa areas respectively. In latter part of the year 2007, routine notification and reports from sentinel surveillance sites have indicated an increasing number of leptospirosis patients in the Colombo, Gampaha , Kalutara, Matara, Galle, Kegalle, Ratnapura and Kandy districts. Considering this alarming situation, the Epidemiology Unit has guided the district & divisional health staff to take necessary measures to prevent and control possible leptospirosis outbreak in the respective areas.

In response to the few reported sporadic cases of poliomyelitis in Bihar state in India [where Buddhagaya is situated] steps were taken to immunize all pilgrims going to India on pilgrimage with OPV. .

The website of the Epidemiology Unit was improved and regularly updated with the disease surveillance data. It was rated as the 7th most popular website in Sri Lanka in year 2007.

Expanded Programme on Immunization (EPI)

In year 2007 too Sri Lanka was able to maintain near 100% coverage for all EPI vaccines. No shortage of vaccines was reported during the year and the Unit was able to ensure timely and adequate supplies of vaccines island wide including conflict areas. District level immunization coverage and wastage were reviewed quarterly with REE. Joint detailed EPI reviews were conducted with the Family Health Bureau in all

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except Jaffna, Mullaitive, Kilinochchi, Batticoloa and Kalmunai.

The Epidemiology Unit of Sri Lanka had organized an EPI Summit with the participation of all stakeholders of the programme in January 2007. The main objectives of this forum were to initiate a national dialogue on current and future strategies for the national immunization programme, agree on appropriate immunization schedules and time frames for the introduction of new vaccines after taking into consideration the priorities, cost, safety and programmatic feasibility and to reach a consensus on the national immunization policy for the next 5 to 10 years.

Epidemiology Unit has been able to solicit support of Global Alliance for Vaccine & Immunization [GAVI] to introduce combined Hib vaccine [Pentavelent] into the National Immunization Programme in Sri Lanka. During this year the Unit was able to successfully accomplish all the ground work including procument of Pentavelent vaccine, distribution of vaccine to the service provider level and training of staff with a view to introducing new vaccine to the National Immunization programme. with effect from January 2008.

With the acquisition of the new crew cab vaccine distribution vehicle and completion of construction of central vaccine store our vaccine distribution and vaccine storing capacity were greatly enhanced.

Dengue Fever/Dengue Hemorrhagic Fever (DF/DHF)

Based on the routine surveillance data Dengue alerts were sent periodically regarding possible outbreaks. Provincial level dengue review meetings were held in all the high risk provinces with the collaboration of the National dengue control Unit to help them to asses their dengue control activities. In addition dengue surveillance review meetings were held in high risk MOH areas in the western province.

Avian influenza [AI] : Training of hospital staff of the 20 hospitals identified as sentinel sites for AI preparedness was completed. Development of isolation units in these hospitals which will be funded by Health Sector Development Project [HSDP] of world bank, was initiated.

A national workshop on Table Top Exercises on AI was conducted with all key stakeholders to evaluate the existing National Avian/Pandemic Influenza Preparedness Plan [NIPP].

Monthly meetings of the National Technical Committee on Ai preparedness were held to review progress of preparedness activities in the country. Provincial Technical committees were formed in Western, Eastern, Central and North Western Provinces.

The behavioral research study on community behavior regarding AI was completed and the final report was prepared. This was one of the key activities under the communication strategy on AI preparedness. Routine Human influenza surveillance was established in the hospitals identified as sentinel sites for AI preparedness. This activity which is complementary to animal influenza surveillance activities carried out by DAPH, will identify current circulating strains of influenza viruses in the country and will act as an early warning system for a possible AI outbreak.

Control on Diarrhoeal Diseases [CDD] : No major outbreaks of diarrhoeal diseases were reported in year 2007. Two district reviews on diarrhoeal diseases and Hepatitis were carried out in Kandy and Nuwera-Eliya districts with the participation of the relevant central, provincial, district and divisional level stakeholders.

Health Sector Development Project [HSDP] - Immunization Sub component : Epidemiology Unit has embarked on a special project, with assistance from the World Bank funded HSDP project to enhance the quality of immunization services in Sri Lanka. In relation to this, training programmes were completed in 21 out of 26 health administrative districts in the country. Subsequently, the baseline Immunization Quality Assessment Survey also was completed in Field MCH Clinics in all MOH areas except for those in the Northern Province. This was followed by the selection of "Best Performing Immunization Clinics". Project proposals to develop facilities and infrastructure of the selected clinics were developed and funds amounting to a total of Rs.23,700,000 were released to the districts in 2007.Majority of the districts have utilized the funds totally.

Research ; Our unit functions as the main national research centre on epidemiology and a training centre for postgraduate research students and fellows involved in epidemiological studies. Following were some of the research activities carried out in 2007. Apart from these, national surveys on immunization coverage and cold chain maintenance are routinely carried out by the unit.

1.Study on safety and immunogenecity of SA 14-14-2 live JE vaccine to facilitate evidence-based decision on introducing the same in the National Programme

2.Cardiovascular risk assessment study to determine the percentage of population in each cardiovascular risk category based on the WHO/ISH risk prediction charts. (multi-centre)

3.Study on the transmission pattern of tuberculosis infection among household contacts to identify the potential risk factors by DNA finger-printing of mycobacterium

4.Determining the sero-prevalence of Chikungunya among adults in the age group of 20-50 years in the Colombo Municipality area

5.Development and testing a programme for opportunistic screening and management of high blood pressure in hospital setting using the total risk approach

6.Determining the prevalence of carcinogenic Human Papilloma Infection [HPV] and burden of cervical cancer attributable to HPV infection.

Table 1: Vaccine-preventable Diseases & AFP

22nd - 28th December 2007 (52nd 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	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	00	00	00	00	00	00	00	00	03	85	123	-30.9%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	00	00	01	00	00	00	00	00	01	01	81	40	+102.5%
Tetanus	01 C0=1	00	00	00	00	00	00	00	00	01	00	39	49	-20.4%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	47	72	-34.7%
Tuberculo-sis	123	00	09	04	07	00	00	00	10	153	120	9817	10016	-1.9`%

Table 2: Newly Introduced Notifiable Diseases

22nd - 28th December 2007 (52nd 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	N	E	NW	NC	U	Sab		
Chicken-pox	04	05	11	00	19	04	05	02	04	54	3435
Meningitis	04 CO=1 KL=3	00	03 GL=2 MT=1	00	02 AM=1 KA=1	05 KU=5	02 AP=1 PO=1	01 MO=1	01 KG=1	18	783
Mumps	02	03	02	00	70	10	03	00	00	90	2314

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=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 3: Laboratory Surveillance of Dengue Fever

22nd - 28th December 2007 (52nd Week)

Samples	Number tested	Number positive *	Serotypes				
			D_1	D_2	D_3	D_4	Negative
Number for current week	05	01	00	00	01	00	00
Total number to date in 2007	477	55	01	25	19	00	09

Source: Genetech Molecular Diagnostics & School of Gene Technology, Colombo. * Not all positives are subjected to serotyping.

NA= Not Available.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Whooping Cough, Human Rabies, Dengue Haemorrhagic Fever, Japanese Encephali - tis, Chickenpox, Meningitis, Mumps.

Special Surveillance: Acute Flaccid Paralysis.

National Control Program for Tuberculosis and Chest Diseases: Tuberculosis.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

22nd - 28th December 2007 (52nd Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptos-pirosis		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	40	1865	05	361	00	11	03	124	00	96	04	163	00	05	01	155	00	02	**00**
Gampaha	30	980	03	324	00	30	02	88	00	64	01	311	00	19	01	212	00	08	**43**
Kalutara	16	425	05	488	00	06	02	65	00	43	18	221	00	03	00	64	00	05	**00**
Kandy	06	415	01	316	00	06	00	66	00	16	02	150	00	87	03	1975	00	03	**27**
Matale	03	121	00	252	00	06	01	40	00	13	12	172	00	05	01	141	00	02	**42**
Nuwara Eliya	00	41	01	237	00	02	00	122	00	369	00	14	02	38	01	561	00	01	**29**
Galle	01	100	01	173	00	13	00	26	02	44	03	169	00	27	01	24	00	05	**19**
Hambantota	04	102	02	200	00	06	02	24	00	20	01	57	01	74	00	29	00	02	**18**
Matara	03	236	02	298	00	10	02	54	00	25	04	289	03	220	00	35	00	02	**19**
Jaffna	05	239	02	175	00	02	01	439	02	15	00	00	05	134	01	30	00	01	**50**
Kilinochchi	00	01	00	01	00	00	01	07	00	00	00	00	00	02	00	04	00	02	**50**
Mannar	00	07	00	32	00	00	04	116	00	00	00	02	00	00	00	26	00	01	**50**
Vavuniya	01	41	03	86	00	04	00	21	00	65	00	03	00	00	00	14	00	00	**00**
Mullaitivu	00	00	00	40	00	08	00	21	00	02	00	00	00	00	00	17	00	00	**100**
Batticaloa	00	79	00	477	01	12	00	24	00	10	00	00	00	22	02	1176	01	06	**55**
Ampara	00	05	15	204	00	00	00	06	00	02	00	08	00	03	00	37	00	00	**71**
Trincomalee	01	63	11	335	00	04	00	30	00	25	00	12	02	23	03	121	00	02	**67**
Kurunegala	18	791	08	532	00	09	01	73	00	37	03	87	01	46	04	109	00	08	**22**
Puttalam	31	372	01	217	00	17	03	106	00	09	00	31	02	09	01	84	00	00	**44**
Anuradhapur	18	276	01	203	00	10	00	22	00	17	00	41	00	20	02	48	00	03	**47**
Polonnaruwa	01	70	00	170	00	03	00	14	00	64	00	22	00	00	00	52	00	00	**14**
Badulla	05	83	16	651	00	07	02	99	00	13	00	49	00	169	03	400	00	01	**13**
Monaragala	03	57	07	363	00	02	03	60	01	40	01	56	00	93	00	47	00	02	**10**
Ratnapura	04	449	04	602	00	20	01	79	00	24	00	82	00	32	00	105	00	03	**44**
Kegalle	00	444	02	312	00	11	00	69	00	10	00	246	00	46	03	270	00	00	**36**
Kalmunai	00	09	01	243	01	04	00	10	00	14	00	02	00	02	00	133	00	00	**46**
SRI LANKA	**190**	**7271**	**91**	**7292**	**02**	**203**	**28**	**1805**	**05**	**1037**	**49**	**2187**	**16**	**1079**	**27**	**5869**	**01**	**59**	**33**

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 5 January. 2008 Total number of reporting units =290. Number of reporting units data provided for the current week: 238

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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.

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WER SRI LANKA 2008

Immunization against diseases of public health importance

The benefits of immunization : Vaccines - which protect against disease by inducing immunity are widely and routinely administered around the world based on the common sense principle that it is better to keep people from falling ill than to treat them once they are ill. Suffering, disability, and death are avoided. Immunization averted about two million deaths in 2002. In addition, contagion is reduced, strain on health-care systems is eased, and money is frequently saved that can be used for other health services.

Immunization is a proven tool for controlling and even eradicating disease. An immunization campaign carried out by the World Health Organization (WHO) from 1967 to 1977 eradicated the natural occurrence of smallpox. When the programme began, the disease still threatened 60% of the world's population and killed every fourth victim. Eradication of poliomyelitis is within reach. Since the launch by WHO and its partners of the Global Polio Eradication Initiative in 1988, infections have fallen by 99%, and some five million people have escaped paralysis. Between 1999 and 2003, measles deaths dropped worldwide by almost 40%, and some regions have set a target of eliminating the disease. Maternal and neonatal tetanus will soon be eliminated in 14 of 57 high-risk countries.

New vaccines also have been introduced with significant results, including the first vaccine to help prevent liver cancer, hepatitis B vaccine, which is now routinely given to infants in 77% of WHO's Member States. Rapid progress in the development of new vaccines means protection will be available in the near future against a wider range of serious infectious diseases.

History : Introducing a small amount of smallpox virus by inhaling through the nose or by making a number of small pricks through the skin (variolation) to create resistance to the disease appears to have begun in the 10th or 11th century in Central Asia. The practice spread; in Asia and Africa, the method was nasal, while in Europe it involved skin punctures. Variolation was introduced in England in 1721. There, in 1798, Edward Jenner, having studied the success of variolation with cowpox a mild illness in protecting against smallpox, began to carry out inoculations against smallpox, the first systematic effort to control a disease through immunization.

Commonly used vaccines: In 1885, Louis Pasteur developed the first vaccine to protect humans against rabies. Toxoids against diphtheria and tetanus were introduced in the early 1900s; the bacillus Calmette-Guérin vaccine (against tuberculosis) in 1927; the Salk polio vaccine in 1955; and vaccines against measles and mumps in the 1960s.

Routine vaccination is now provided in all developing countries against measles, polio, diphtheria, tetanus, pertussis, and tuberculosis. To this basic package of vaccines, which served as the standard for years, have come new additions. Immunization against hepatitis B is now recommended by WHO for all nations, and currently is offered to infants in 147of 192 WHO Member States. Immunization against Haemophilus influenzae type b (Hib) is recommended where the burden of disease is established and resources permit its use; it is provided in 89 countries .

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In industrialized countries a wider span of protection is typically provided than in developing countries, often including vaccines against influenza, predominant strains of pneumococcal disease, and mumps (usually in combination with measles and rubella vaccine). Immunization programmes may be aimed at adolescents or adults - depending on the disease concerned as well as at infants and children.

Global immunization coverage : Coverage has greatly increased since WHO's Expanded Programme on Immunization began in 1974. In 2003, global DTP3 (three doses of the diphtheria-tetanus-pertussis combination vaccine) coverage was 78% — up from 20% in 1980. However, 27 million children worldwide were not reached by DTP3 in 2003, including 9.9 million in South Asia and 9.6 million in sub-Saharan Africa. Those who miss out on routine vaccination programmes tend to be people living in remote locations, urban slums and border areas. They also include indigenous groups, displaced populations, those lacking access to vaccination because of various social barriers, those lacking awareness or motivation to be vaccinated and those who refuse.

An estimated 2.1 million people around the world died in 2002 of diseases preventable by widely used vaccines. This toll included 1.4 million children under the age of five. Among these childhood deaths, over 500 000 were caused by measles; nearly 400 000 by Hib; nearly 300 000 by pertussis; and 180 000 by neonatal tetanus.

Vaccines under development: Numerous new vaccines with major potential for improving health in developing countries will be shortly in use. They include vaccines for rotavirus diarrhoea, which kills 300 000 to 600 000 children under age five every year; human papilloma virus, a leading cause of cervical cancer, which afflicts some 500 000 women each year, 80% of them in developing countries; and pneumococcal disease, which causes a large fraction of the world's approximately two million annual deaths from childhood pneumonia. In addition, a conjugate vaccine now in development should be much more effective against Group A meningococcal disease (Men A), a frequently fatal form of meningitis that causes recurring epidemics in a number of countries in sub-Saharan Africa. Several of these vaccines — those against rotavirus, pneumococcal disease, and Men A — may be available in developing countries by 2008.

Effectiveness and safety: All vaccines used for routine immunization are very effective in preventing disease, although no vaccine attains 100% effectiveness. More than one dose of a vaccine is generally given to increase the chance of developing immunity. Vaccines are very safe, and side effects are minor — especially when compared to the diseases they are designed to prevent. Serious complications occur rarely. For example, severe allergic reactions result at a rate of one for every 100 000 doses of measles vaccine. Two to four cases of vaccine associated paralytic polio have been reported for every one million children receiving oral polio vaccine.

The cost-effectiveness of immunization : Immunization is considered the most cost-effective of health investments. There is a well-defined target group; contact with the health system is only needed at the time of delivery; and vaccination does not require any major change of lifestyle.

A recent study estimated that a one-week "supplemental immunization activity" against measles carried out in Kenya in 2002 in which 12.8 million children were vaccinated would result in a net saving in health costs of US$ 12 million over the following ten years; during that time it would prevent 3 850 000 cases of measles and 125 000 deaths. In the US, cost-benefit analysis indicate that every dollar invested in a vaccine dose saves US$ 2 to US$ 27 in health expenses.

The cost of immunizing a child : In mid-1990s, vaccines to provide "basic" coverage for tuberculosis, polio, diphtheria, tetanus, pertussis, and measles cost about US$ 1 per child. Inclusion of vaccines for hepatitis B and Hib, raises the vaccine cost alone to US$ 7-13 per child (not including administration and injection equipment) in the developing world. When vaccine administration is included, the costs amount to between US$ 20-40 per child. It has become a significant challenge for low-income countries and international health agencies to find ways to introduce more highly-priced vaccines such as those for hepatitis B and Hib, which can greatly increase the costs of national immunization programmes. With many new vaccines expected to be available in the near future, issues of financing and financial sustainability will become ever more important.

Financing immunization : Many developing countries have difficulties affording vaccines. International initiatives such as the Vaccine Fund and the Global Alliance for Vaccines and Immunization (GAVI) have provided impetus, funding, and technical support that have helped increase immunization coverage and the number of vaccines provided The economics of vaccine development have tended to run against the interests of the world's poorer countries. Vaccines are much less profitable than medicines, and pharmaceutical firms understandably have been reluctant to make the high investments necessary to research and develop vaccines against infectious diseases, realizing that the largest pool of potential customers are governments that likely could not afford to pay enough for these products to ensure a profit. For the same reason, when new vaccines have been developed, limited quantities often have been manufactured, increasing the cost per dose. Part of the difficulty for manufacturers is in forecasting demand and in accounting for various market uncertainties.

Source : Immunization against diseases of public health importance—WHO Fact sheet [http://www.who.int/mediacentre/factsheets/fs288/en/index.html]

Table 1: Vaccine-preventable Diseases & AFP

29th Dec - 4th Jan 2008 (1st Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	01 NE=1	01 GL=1	00	01 BT=1	00	00	01 BD=1	00	04	00	04	00	+400.0%
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	00	00	00	00.0%
Tetanus	00	00	00	00	00	01 PU=1	00	00	00	01	00	01	00	+100.0%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Tuberculo-sis	76	119	03	02	24	35	38	14	00	311	162	311	162	+91.9`%

29th Dec - 4th Jan 2008 (1st Week)

Table 2: Newly Introduced Notifiable Diseases

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	15	03	10	00	13	10	03	01	16	71	05	71	05	+1320.0%
Meningitis	04 GM=3 KL=1	01 KD=1	03 GL=1 MT=2	00	03 AM=3	04 KU=2 PU=2	02 AP=1 PO=1	02 MO=1	06 RP=2 KG=4	25	10	25	10	+150.0%
Mumps	02	03	10	00	07	06	02	02	04	36	01	36	01	+3500.0%

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=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 3: Laboratory Surveillance of Dengue Fever

29th Dec - 4th Jan 2008 (1st Week)

Samples	Number tested	Number positive *	Serotypes				
			D_1	D_2	D_3	D_4	Negative
Number for current week	02	00	00	00	00	00	00
Total number to date in 2008	02	00	00	00	00	00	00

Source: Genetech Molecular Diagnostics & School of Gene Technology, Colombo. * Not all positives are subjected to serotyping.

NA= Not Available.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Whooping Cough, Human Rabies, Dengue Haemorrhagic Fever, Japanese Encephali - tis, Chickenpox, Meningitis, Mumps.

Special Surveillance: Acute Flaccid Paralysis.

National Control Program for Tuberculosis and Chest Diseases: Tuberculosis.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

29th Dec - 4th Jan 2008 (1st Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Returns Re-ceived Timely**
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	49	49	05	05	00	00	05	05	00	00	04	04	00	00	00	00	00	00	**92**
Gampaha	44	44	00	00	00	00	01	01	00	00	05	05	00	00	02	02	00	00	**86**
Kalutara	13	13	04	04	00	00	01	01	00	00	03	03	00	00	00	00	00	00	**91**
Kandy	07	07	05	05	00	00	00	00	02	02	07	07	01	01	05	05	00	00	**86**
Matale	03	03	05	05	00	00	01	01	00	00	08	08	00	00	01	01	00	00	**75**
Nuwara Eliya	00	00	01	01	00	00	00	00	00	00	01	01	01	01	04	04	00	00	**71**
Galle	06	06	03	03	00	00	01	01	00	00	18	18	01	01	00	00	00	00	**88**
Hambantota	01	01	04	04	00	00	01	01	00	00	01	01	00	00	00	00	00	00	**82**
Matara	10	10	03	03	00	00	09	09	00	00	02	02	04	04	00	00	01	01	**100**
Jaffna	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	**00**
Kilinochchi	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	**25**
Mannar	00	00	00	00	00	00	07	07	00	00	00	00	00	00	00	00	00	00	**75**
Vavuniya	03	03	03	03	00	00	00	00	00	00	00	00	00	00	00	00	00	00	**75**
Mullaitivu	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	**60**
Batticaloa	00	00	02	02	00	00	00	00	00	00	00	00	00	00	03	03	00	00	**100**
Ampara	00	00	05	05	00	00	00	00	00	00	01	01	00	00	00	00	00	00	**100**
Trincomalee	01	01	03	03	00	00	00	00	01	01	00	00	00	00	00	00	00	00	**67**
Kurunegala	16	16	17	17	00	00	01	01	00	00	01	01	00	00	02	02	00	00	**94**
Puttalam	15	15	07	07	00	00	01	01	01	01	01	01	00	00	00	00	00	00	**89**
Anuradhapur	14	14	00	00	01	01	01	01	02	02	00	00	02	02	00	00	00	00	**79**
Polonnaruwa	04	04	02	02	00	00	00	00	00	00	00	00	00	00	02	02	00	00	**86**
Badulla	01	01	02	02	00	00	02	02	00	00	01	01	01	01	01	01	00	00	**87**
Monaragala	00	00	11	11	00	00	00	00	00	00	01	01	00	00	00	00	00	00	**70**
Ratnapura	03	03	07	07	00	00	01	01	41	41	00	00	00	00	00	00	00	00	**75**
Kegalle	10	10	09	09	01	01	00	00	00	00	05	05	00	00	04	04	00	00	**91**
Kalmunai	00	00	00	00	00	00	00	00	00	00	00	00	00	00	01	01	00	00	**62**
SRI LANKA	**200**	**200**	**98**	**98**	**02**	**02**	**32**	**32**	**47**	**47**	**59**	**59**	**10**	**10**	**25**	**25**	**01**	**01**	**81**

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 12 January. 2008 Total number of reporting units =290. Number of reporting units data provided for the current week: 238

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WEER SRI LANKA 2008

WEEKLY EPIDEMIOLOGICAL REPORT

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Vol. 35 No. 3 **12th -18th January 2008**

Epidemiology of Rotavirus infection

Conservative estimates place the death toll from diarrhoeal diseases at four to six million deaths per year, with most deaths occurring in young children. In some developing countries, children have more than 12 episodes of diarrhoea per year and diarrhoeal diseases account for 15–34% of all deaths. The diversity of bacterial and viral infections that may cause diarrhoea complicates accurate surveillance and diagnosis, especially in developing countries with little or no access to modern laboratory procedures. The specific disease burden attributable to a particular infectious agent is especially complex, given the multiplicity of these agents and their serotypes, and depends largely on laboratory facilities. While, in the long term, access to clean water, better hygiene, adequate nutrition, and improvement of sanitary measures would certainly have the greatest impact on diarrhoeal diseases, immunizations against specific diseases are the best hope for the short and mid term. This is particularly true for viral diseases such as rotavirus, present in both high and low hygiene-level countries.

Public health impact of Rotavirus infection:

Rotavirus infection has a worldwide distribution, and is the most common cause of severe diarrhoea in young children. Almost all children are infected by the age of 3-5 years. More than 125 million cases of diarrhoea each year are attributed to rotavirus. It is estimated that rotavirus causes 25% of all deaths due to diarrhoeal disease, and 6% of all deaths in children aged < 5 years. The disease follows an incubation period of 1-2 days, and is characterized by acute onset of vomiting, fever and profuse watery diarrhoea. Although the infection is usually mild, severe disease may rapidly result in life-threatening dehydration if not appropriately treated. The greatest disease burden is in developing countries, where 20%-40% of annual hospitalizations for childhood diarrhoea, and about 600 000 deaths each year, are associated with this infection.

In developing countries most cases of severe rotavirus disease occur in infants whereas in the industrialized world the majority of severe cases occur beyond the first year of life. In Australia, England and Wales, Japan and the United States, rotavirus infection is shown to be responsible for 34%-52% of hospitalizations for childhood gastroenteritis, but mortality from rotavirus diarrhoea is extremely rare in these countries.

In tropical developing countries, rotavirus disease occurs throughout the year. Several viral serotypes may operate simultaneously in the same geographical area, and infection with more than one strain in individual patients is common. In industrialized countries in temperate climates, rotavirus infections peak during the winter season and mixed infections are uncommon.

Rotavirus is transmitted by the faecal-oral route and a small inoculum may cause infection. Animal reservoirs for human rotavirus infection are not known to exist, and asymptomatic human carriers do not seem be a major source of sporadic cases. Rotavirus may cause hospital infections in children, and are associated with diarrhoea in travellers, the elderly and careers of small children.

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The pathogen :

Rotaviruses belong to the Reoviridae family and are 70 nm, non-enveloped viruses with 11 segments of doublestranded RNA. Groups are specified by inner capsid antigen and only group A is an important cause of disease in children. The 2 structural proteins of the outer capsid, the VP7 glycoprotein (or G protein) and the VP4 proteasecleaved protein (or P protein) define the serotypes of the virus against which neutralizing antibodies are derived. Worldwide, G1-G4 are the serotypes most commonly linked to rotavirus diarrhoea, although additional serotypes appear to play a role in some settings. Cross-reactivity between human and several animal rotavirus antigens has been recorded and occasionally, rotavirus strains isolated from humans are shown to be reassortants between human and animal strains. However, it is unlikely that this phenomenon has had a significant impact on the natural history of rotavirus infection or disease, and humans appear to be the only reservoir of human strains. Rotavirus is not inhibited by existing antiviral drugs.

Simple and inexpensive immunoassays are available for detection of rotavirus in the stool.

Protective immune response:

The immune correlates of protection to rotavirus infection are not well defined. Neutralizing antibodies to the 2 outer capsid antigens VP7 and VP4, and IgG or IgA antibodies to the inner capsid antigen, VP6, have each been correlated with protective immunity by some investigators. A rotavirus-specific IgA response to VP6 is believed to be essential for protective immunity in the intestinal mucosa. It is likely that cell-mediated immunity is related to clearing infection. Immunogenicity of rotavirus vaccines is usually measured by serum IgA sero conversion or by level of neutralizing antibodies to the vaccine strain. A child's first rotavirus infection results in a serotype specific immune response, which is broadened upon subsequent exposures. Immunity acquired during these first infections protects against severe disease on subsequent exposures to rotavirus of different serotypes. Breastfeeding may provide some protection against the disease in the very young infants. Symptomatic rotavirus infection occurs primarily in the first 2-3 years of life, during which time most children worldwide develop immunity to rotavirus diarrhoea.

The justification for vaccine control:

Rotavirus diarrhoea represents an important global public health problem, and the accelerated development and introduction of rota virus vaccines have been given high priority by WHO and other stakeholders. As the incidence of rotavirus diarrhoea does not differ dramatically between developing and developed countries, it is unlikely that environmental improvements will have a great impact on the disease incidence, although mortality due to rotavirus decreases with improvement in standard of living. Oral rehydration is the treatment of choice and can be life-saving, but does not reduce dissemination of the virus. Specific antirotavirus chemotherapy is currently not available. Natural immunity has been demonstrated by the immunity conferred by 1 or several natural infections, and a decade of experience with different candidate vaccines clearly supports the concept of immune prophylaxis through vaccination. In industrialized countries, experimental oral rotavirus vaccines have shown a protective efficacy of 80% or more against severe disease. Except for mild to moderate fever in about 20% of the vaccinees on day 4, there have been minimal adverse reactions following vaccination, and cost-effectiveness studies indicate that, depending upon the price, a rotavirus vaccine could be cost-effective.

WHO position on rotavirus vaccines:

The WHO steering committee on diarrhoeal disease vaccines

maintains rotavirus vaccine development as its first priority. Although WHO encourages worldwide introduction of rotavirus vaccines, emphasis is on countries with the highest disease burden. However, because of differences in epidemiology, health priorities and economic capacity, rotavirus vaccines will be introduced at different rates into national immunization programmes. The background information presented above shows that rotavirus disease is a considerable medical and socioeconomic problem worldwide. Ample evidence shows that currently available vaccines provide efficient protection against severe rotavirus disease in children aged < 2 years in industrialized countries. Similar encouraging results have been obtained in limited number of trials conducted in different patrts of the world. The Rota virus vaccine is safe, and easily adapted to national childhood immunization programmes. Oral administration is important from the logistic point of view. So far, no lasting substantial interference with simultaneously administered vaccines has been reported. Introduction into industrialized countries of safe and efficacious rotavirus vaccines should be welcomed as an important first step towards global control.

Before rotavirus vaccines may be recommended for large-scale immunization in developing countries, it is essential that protective efficacy be documented in developing country settings. Hence, efficacy studies are strongly encouraged, particularly in Africa and Asia. If affordable prices for the vaccines can be achieved, rotavirus immunization is likely to be given high priority in all areas where rotavirus infection is recognized as a public health problem.

Source:

Weekly Epidemiological Record, World Health Organization No. 5, 1999;74,33 - 40.

[http://www.who.int/wer]

The editor wishes to acknowledge Dr Ranjan Wijesinghe—Consultant Epidemiologist for the assistant provided in the preparation of this article.

Table 1: Vaccine-preventable Diseases & AFP

5th - 11th Jan 2008 (2ndWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	01 GM=1	00	00	00	00	00	00	00	00	01	02	05	02	+150.0%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	01	01	00	00	00	01	00	00	00	03	00	03	00	+300.0%
Tetanus	00	00	00	00	00	00	00	00	00	00	01	01	01	00.0%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Tuberculo-sis	120	15	04	02	54	12	03	16	18	244	272	555	434	+27.9`%

5th - 11th Jan 2008 (2ndWeek)

Table 2: Newly Introduced Notifiable Diseases

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	22	05	15	00	03	05	02	11	05	68	48	155	54	+187.0%
Meningitis	06 GM=4 KL=1 CO=1	00	10 GL=6 MT=2 HB=2	00	02 AM=1 TR=1	05 KU=5	03 PO=3	05 MO=3 BD=2	14 RP=7 KG=7	45	09	70	19	+268.4%
Mumps	15	03	06	00	09	07	01	04	07	52	08	91	09	+911.0%

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=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 3: Laboratory Surveillance of Dengue Fever

5th - 11th Jan 2008 (2ndWeek)

Samples	Number tested	Number positive *	Serotypes				
			D_1	D_2	D_3	D_4	Negative
Number for current week	04	00	00	00	00	00	00
Total number to date in 2008	06	00	00	00	00	00	00

Source: Genetech Molecular Diagnostics & School of Gene Technology, Colombo. * Not all positives are subjected to serotyping.

NA= Not Available.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Whooping Cough, Human Rabies, Dengue Haemorrhagic Fever, Japanese Encephali - tis, Chickenpox, Meningitis, Mumps.

Special Surveillance: Acute Flaccid Paralysis.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

5th - 11th Jan 2008 (2nd Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Returns Re-ceived Timely**
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	44	93	03	08	01	01	03	08	03	03	01	05	00	00	04	04	00	00	**100**
Gampaha	24	71	00	00	00	00	02	03	00	00	02	07	00	00	00	02	00	00	**79**
Kalutara	05	18	02	06	00	00	01	02	00	00	04	07	00	00	03	03	00	00	**100**
Kandy	04	11	05	10	00	00	01	02	00	02	04	11	00	01	03	08	00	00	**75**
Matale	01	04	01	06	00	00	02	03	00	00	13	22	00	00	00	01	00	00	**42**
Nuwara Eliya	00	00	00	01	00	00	02	02	00	00	00	01	00	01	00	04	00	00	**67**
Galle	06	12	06	09	00	00	02	03	00	00	09	27	00	01	01	01	00	00	**88**
Hambantota	01	02	03	08	00	00	00	01	00	00	01	02	04	04	00	00	00	00	**91**
Matara	06	16	06	09	00	00	01	10	00	00	06	08	05	09	00	00	00	01	**100**
Jaffna	00	00	00	00	00	00	00	00	00	00	00	00	02	02	01	01	00	00	**25**
Kilinochchi	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	01	00	00	**25**
Mannar	00	00	00	00	00	00	04	11	00	00	00	00	00	00	01	01	00	00	**50**
Vavuniya	00	03	01	04	00	00	00	00	00	00	00	00	00	00	00	00	00	00	**50**
Mullaitivu	00	00	00	00	00	00	00	01	00	00	00	00	00	00	00	01	00	00	**60**
Batticaloa	00	00	01	03	00	00	00	00	00	00	00	00	00	00	02	05	00	00	**45**
Ampara	00	00	07	12	00	00	00	00	00	00	00	01	00	00	00	00	00	00	**57**
Trincomalee	02	03	00	03	00	00	00	00	00	01	00	00	00	00	01	01	00	00	**67**
Kurunegala	15	31	20	38	02	02	02	03	00	00	00	01	02	02	00	02	00	00	**83**
Puttalam	05	20	02	09	00	00	00	02	00	01	00	01	00	00	00	01	00	00	**56**
Anuradhapur	03	19	05	05	00	01	00	01	00	02	00	00	00	02	00	00	00	00	**58**
Polonnaruwa	04	08	05	08	00	00	00	00	00	00	00	00	00	00	00	02	00	00	**100**
Badulla	03	05	17	19	00	00	03	05	00	00	02	03	04	05	04	05	00	00	**80**
Monaragala	01	01	03	14	00	00	00	00	03	03	06	07	04	05	01	01	00	00	**90**
Ratnapura	05	12	03	11	01	01	00	02	00	41	02	02	01	01	01	01	00	00	**63**
Kegalle	07	17	09	18	03	04	01	01	00	00	02	07	00	00	01	05	00	00	**82**
Kalmunai	00	00	02	02	00	00	00	00	00	00	00	00	00	00	00	01	00	00	**54**
SRI LANKA	**136**	**346**	**101**	**203**	**07**	**09**	**24**	**60**	**06**	**53**	**52**	**112**	**22**	**33**	**23**	**51**	**00**	**01**	**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 19 January. 2008 Total number of reporting units =290. Number of reporting units data provided for the current week: 238

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WEEKLY EPIDEMIOLOGICAL REPORT

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WER SRI LANKA 2008

Surveillance of Rotavirus diarrhoea in Sri Lanka

South Asia remains a high risk area in terms of morbidity and mortality due to rota virus diarrhoea, and is a prime target for intervention .This is associated with the dense population, low socio economic status of the majority of people and prevailing unsanitary conditions. More than 50 percent of deaths due to rota virus occur in the Asian continent. Six out of 10 countries with the highest number of deaths due to rota virus are located within Asia. Therefore, in terms of reduction of the burden of rota virus disease and deaths, Asia is a key centre of action. Keeping this in mind, Asian Rotavirus Surveillance Network (ARSN) was initiated to establish foundation of epidemiological data and facilitate exchange of expertise with a view to helping decision making regarding prevention of rota virus diarrhoea. Primary prevention of the disease through vaccination has been promoted as the key tool in this regard.

Secular trend analysis of diarrhoeal diseases morbidity and mortality in Sri Lanka indicates that there has been a dramatic reduction in diarrhoea specific mortality and case fatality ratio in Sri Lanka over the years. This is attributed to the improvement of case management, use of Oral Rehydration Solution (ORS) to prevent dehydration and improved health seeking behaviour of the population. Despite the above mentioned achievements in terms of reduction of diarrhoea associated deaths, proportionately diarrhoea specific morbidity rate has not declined. Diarrhoea specific morbidity rate has remained high and static over the last two decades. The admission rates to government hospitals for diarrhoea were in the range of 676.1-961.3 per 100000 admissions during this period. Moreover, according to Indoor Morbidity and Mortality Data, diarrhoeal disease is the sixth leading cause of hospitalisation in Sri Lanka. Thus, it is quite obvious that diarrhoeal diseases continue to be a public health problem in the country. With looming unplanned urbanisation resulting in deteriorating sanitary conditions, it is assumed that this trend will continue to be a challenge for public health practitioners in Sri Lanka.

It is quite certain that policy makers, and public health practitioners will have to address this issue in the future in a setting where many communicable diseases including traditional, vaccine preventable diseases have been contained. Immunisation against Rota virus will be one of the measures in a multiple intervention package to address control of diarrhoeal diseases. This will be a reality rather than a dream as there is a global movement to advocate for introducing benefits of vaccines offered to children in developed countries to children in developing countries. International agencies such as the World Health organisation , Global Alliance for Vaccines and Immunisations (GAVI) and the Children's Vaccine programme of the Program for Appropriate Technology in Health (PATH) have identified the accelerated development and introduction of rotavirus vaccines as a priority. Several new safe and effective ,live oral vaccine candidates are already available while others are being field tested. Sri Lanka is in a unique position to consider these vaccine options, if necessary, in the future as our mature EPI has achieved universal coverage for basic antigens and experts have already looked into the

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possibility of introducing new vaccines and the financial sustainability of their introduction in the country. Sri Lanka needs evidence of the burden of the rotavirus diarrhoea , cost of the disease burden and cost effectiveness data on the rotavirus vaccine before making a policy decision on introduction of rota vaccine. However, there is a paucity of data on the disease in the country. Though it is obvious that diarrhoeal diseases continue to be a public health problem, the proportion of rotavirus diarrhoea among them is not known, nor is the local epidemiology of rotavirus diarrhoea. With the exception of a handful of cases, diagnosis of rota virus is rarely made. On the other hand ,as diarrhoea is managed with ORS regardless of the cause , diagnosis may not be required . As a result, no specific preventive and control measures against rotavirus are carried out. Thus, if we are to consider new vaccine options such as Rota vaccine, initiation of surveillance to determine the local epidemiology of the disease and disease burden is paramount. Understanding the importance of bridging the existing gap in data pertaining to rota virus diarrhoea, Epidemiology Unit of the Ministry of Health in collaboration with the International Vaccine Institute (IVI) has initiated Rota Virus surveillance activities at the Lady Ridgeway Hospital in 2005.

The objectives of surveillance were to describe the local epidemiology of Rota viral diarrhoea among children under five years of age admitting to the LRH with diarrhoea. This includes determination of the proportion of rota virus diarrhoea among diarrhoeal cases and determination of serotypes. Rotavirus strain surveillance is important, in a setting like ours where vaccine has not been introduced, to determine prevalent serotypes and to see if rare sero- types are present. After the introduction of vaccine, surveillance will indicate the impact of the vaccine on changes in serotypes, emergence of new sero types, circulation of vaccine strains among children, breakthrough strains that appear and re assorted vaccine and wild virus strains .

At the LRH, stool samples were collected as a part of ongoing survey from all inpatient, under five children hospitalised for diarrhoeal episodes during a period of 24 months in April 2005 to March 2007. These specimens were sent to the Medical Research Institute where faecal specimens were frozen to -20C. Rotavirus aetiology was then confirmed by Rotavirus antigen detection enzyme immunoassay. The subsequent stage was determination of strains at the laboratory of the Royal Children Hospital in Melbourne, Australia.

At the end of the conclusion of the first phase of the Rotavirus surveillance at the LRH, proportion of rota viral diarrhoea among diarrhoeal children admitted to the LRH was 23.9%. The commonest G serotypes detected were G3 and G9 while P8 was the predominant P serotype. In contrast to surveillance data from the Asian Rotavirus Surveillance Network (ARSN) in which Sri Lanka is a member, a unique feature was the unusual high number of Non Typeable (NT) strains. In relation to phenotype, every third detected rotavirus strain in Sri Lanka was a non typeable strain while for the genotype ,every sixth detected strain was non typeable. Epidemiologically, the rota viral diarrhoea was mostly present among children aged 6-11 months followed by those who were in the age group of 1- 2 years. There was a seasonal pattern in hospitalisation of rota viral diarrhoea cases. Unlike in temperate countries, surveillance data demonstrated that children with rota viral diarrhoea were hospitalised throughout the year. However , there was a prominent

increase in rota viral diarrhoea episodes during the period from January to March. This increase was consistent with the increase in the number of hospitalised diarrhoea patients.

Nearly a half of the patients tested positive for Rota virus (41%) had a temperature recording below 37.5 C. The majority (65%) of rota virus diarrhoea cases were admitted with vomiting. However, the duration of vomiting was less than 3 days in a great majority of them (80%). The same applied for the duration of diarrhoea. In fifty six percent of children with rotavirus diarrhoea, the duration of diarrhoea was less than 3 days while 11% had diarrhoeal episodes lasting over five days. Two thirds of the children tested positive for rotavirus had no dehydration while those who manifested severe dehydration were negligible (0.7%). Ninety percent of these patients had been treated with Oral Rehydration Solution (ORS). Intravenous fluid administration was present in 16% of the patients while 5% had been treated with antibiotics.

As a result of the collaborative work, Sri Lanka now has preliminary data pertaining to rota virus diarrhoea. Ensuing question that arises is " What will be the future directions of Rotavirus surveillance in Sri Lanka? ". This direction was discussed in the National Immunization Summit held on 5th January 2007. In this summit, stakeholders decided that Sri Lanka needs to continue surveillance at the LRH with possible extension to other sites depending on the availability of financial resources. For the purposes stated above in this article, even continuation of surveillance in the post vaccine implementation stage is essential. Conducting a morbidity cost studies and a cost effectiveness studies are also vital before making a decision and the Epidemiology Unit is , currently, engaged in this sphere.

Reference:

Bresee J S, Hummelman E, Nelson E A S and Glass R I. Rotavirus in Asia: The value of surveillance for Informing Decisions about the Introduction of New Vaccines. The Journel of Infectious Diseases 2005;192 [Supplement 1] : S1—S5.

This article was prepared by Dr Ranjan Wijesinghe, consultant Epidemiologist and coordinator Rotavirus surveillance project in Sri Lanka.

Table 1: Vaccine-preventable Diseases & AFP

12th - 18th Jan 2008 (3rdWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	01 GL=1	00	00	00	00	00	00	01	02	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	01	00	00	00	01	00	04	00	+400.0%
Tetanus	00	00	00	00	00	00	00	00	01 RP=1	01	00	02	02	00.0%
Whooping Cough	01	00	00	00	00	00	00	00	00	01	00	01	00	+100.0%
Tuberculo-sis	52	07	80	66	03	00	08	03	00	219	92	774	526	+47.1`%

12th - 18th Jan 2008 (3rdWeek)

Table 2: Newly Introduced Notifiable Diseases

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	16	02	12	01	01	08	03	05	05	53	23	226	86	+162.6%
Meningitis	06 GM=1 KL=2 CO=3	00	12 GL=8 MT=2 HB=2	00	00	01 PU=1	00	01 BD=1	12 RP=3 KG=9	32	12	107	34	+214.7%
Mumps	04	01	06	00	01	05	01	02	03	23	18	124	29	+327.6%

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.

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 3: Laboratory Surveillance of Dengue Fever

12th - 18th Jan 2008 (3rdWeek)

Samples	Number tested	Number positive *	Serotypes				
			D_1	D_2	D_3	D_4	Negative
Number for current week	06	00	00	00	00	00	00
Total number to date in 2008	12	00	00	00	00	00	00

Source: Genetech Molecular Diagnostics & School of Gene Technology, Colombo. * Not all positives are subjected to serotyping.

NA= Not Available.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Whooping Cough, Human Rabies, Dengue Haemorrhagic Fever, Japanese Encephali - tis, Chickenpox, Meningitis, Mumps.

Special Surveillance: Acute Flaccid Paralysis.

National Control Program for Tuberculosis and Chest Diseases: Tuberculosis.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

12th - 18th Jan 2008 (3rd Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Returns Re-ceived Timely**
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	23	116	05	13	01	02	02	10	41	44	04	09	00	00	06	10	00	00	**100**
Gampaha	24	105	03	05	02	02	00	03	00	00	03	14	00	00	07	14	00	00	**86**
Kalutara	12	30	10	16	00	00	02	04	00	00	05	12	01	01	01	04	00	00	**100**
Kandy	02	13	06	16	00	00	00	02	01	03	02	15	01	02	01	11	00	00	**67**
Matale	02	07	05	16	00	00	00	04	00	00	21	53	01	01	00	01	00	00	**83**
Nuwara Eliya	00	00	00	01	00	00	01	03	00	00	00	01	00	01	02	06	00	00	**44**
Galle	03	15	01	11	00	00	00	03	00	00	04	31	00	01	00	01	00	00	**81**
Hambantota	03	06	04	12	01	01	00	01	00	00	08	10	01	05	00	00	00	00	**91**
Matara	07	23	02	11	00	00	00	10	00	00	04	12	07	16	01	01	00	01	**88**
Jaffna	02	16	03	06	00	00	06	17	00	02	00	00	08	38	01	07	00	00	**75**
Kilinochchi	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	01	00	00	**00**
Mannar	00	00	00	00	00	00	04	16	00	00	00	00	00	00	00	01	00	00	**50**
Vavuniya	02	05	00	04	00	00	00	00	00	00	00	00	00	00	01	01	00	00	**75**
Mullaitivu	00	00	01	01	00	00	00	01	00	00	00	00	00	00	00	01	00	00	**60**
Batticaloa	00	01	01	05	00	00	00	01	00	00	00	00	00	00	01	07	00	00	**100**
Ampara	00	00	04	17	00	00	00	00	00	00	00	01	00	00	00	00	00	00	**43**
Trincomalee	01	06	00	04	00	00	00	00	00	01	00	00	00	00	01	02	00	00	**44**
Kurunegala	12	54	04	42	00	02	01	05	00	00	01	02	00	02	01	03	00	00	**94**
Puttalam	10	37	02	12	00	00	02	09	00	01	00	02	02	02	00	02	00	00	**89**
Anuradhapur	08	30	03	10	01	02	00	01	00	02	01	04	01	03	00	00	00	00	**68**
Polonnaruwa	02	10	00	08	00	00	01	01	00	00	00	00	00	00	00	02	00	00	**71**
Badulla	02	07	04	27	00	00	01	06	00	01	00	03	01	06	08	13	00	00	**87**
Monaragala	00	01	02	16	00	00	02	02	00	03	02	09	01	06	00	01	00	00	**80**
Ratnapura	03	16	00	11	00	01	02	05	00	41	01	03	01	03	00	02	00	00	**50**
Kegalle	07	27	14	36	01	05	00	01	00	00	01	09	01	01	07	13	00	00	**82**
Kalmunai	00	00	02	05	00	00	00	00	00	00	00	00	00	00	02	03	00	00	**62**
SRI LANKA	**125**	**525**	**76**	**305**	**06**	**15**	**24**	**105**	**42**	**98**	**57**	**190**	**26**	**88**	**40**	**107**	**00**	**01**	**76**

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 26 January. 2008 Total number of reporting units =290. Number of reporting units data provided for the current week: 238

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Rotavirus vaccines: current perspectives

Vaccination against rotavirus has been considered as one of the best cost effective method for prevention of morbidity and mortality due to rotavirus diarrhoea. This is primarily due to the fact that improvements in hygiene as well as provision of safe potable water are not as effective in the prevention of rotavirus diarrhoea as bacterial enteritis. Therefore, an accelerated development and introduction plan has been established since 2003 with the involvement of the WHO, CDC-USA and PATH with a view to reducing child mortality and morbidity from rotavirus diarrhoeal diseases by accelerating the availability of rotavirus vaccines appropriate for use in developing countries.

An ideal rotavirus vaccine should protect against moderate to severe disease, preventing deaths, hospitalisation, reducing all direct and indirect costs associated with the disease and attenuating the severity as well as the duration of the breakthrough disease. Monovalent, live attenuated, human rotavirus strain vaccines and rotavirus reassortant vaccines (combined human and animal strains) are the current, leading rotavirus vaccine candidates in the world. The SAGE of the WHO recommends that the regional and phased introduction of the rotavirus vaccine is appropriate on the basis of successful phase III study results. Lessons of introduction and post marketing surveillance in early introducing regions will be valuable to the others. However, communication strategies are equally important to prevent misconceptions about the efficacy of rotavirus vaccine against all cause diarrhoeal morbidity and mortality. WHO emphasises the need of efficacy data in Africa and Asia for global recommendation of rotavirus vaccines. Currently, large scale phase III trials are underway in South Africa, Malawi, Mali, Ghana Bangladesh and Vietnam. Results are expected to be released from 2008 to 2010.

Globally, almost all children are exposed to rotavirus and acquire antibodies by the age 3-5 years with the most severe symptomatic disease occurring at 3-24 months. If a vaccine is introduced, logically, children in the age group of 3-24 months should be targeted for maximum results. The strategy of reducing morbidity and mortality due to rotavirus diarrhoea through vaccination is based on the fact that the initial, wild type rotavirus infection protects against subsequent rotavirus diarrhoeal episodes. Primary infection induces homotypic immunity. This immunity appears to be serotype specific. Generated serum neutralising antibodies (SNA) are homologus to the infecting serotype. Degree of protection increases with the number of previous infections. Subsequent infections provide heterotypic protection against multiple rotavirus strains. The greatest protection is conferred to moderate and severe cases of rotavirus infections, less protection to mild infections and the least protection against asymptomatic infections. Proponents of the monovalent, live attenuated, human rotavirus vaccine argue that human strain vaccines provide better protection than reassortants because it is closely related to the naturally occurring human strains.

RIX 4414, monovalent, live attenuated Rotavirus vaccine:

This vaccine has been developed from the 89-12 rota virus strain, an isolate from an infected infant in Cincinnati by cloning and further attenuating it by passing it in Vero cells.

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This contained G1P 1A serotype and P8 genotype.

Selection of the human vaccine candidate was based on evidence that natural infection provides excellent heterotypic protection against subsequent severe illness regardless of infecting serotypes. RIX 4414, monovalent, live attenuated rotavirus vaccine is a lyophilised, oral vaccine administered as two doses within the first six month of life. The first dose may be administered from the age of 6 weeks (between 6-14 weeks). The second dose should be given by 24 weeks (between 14-24 weeks) . There should be an interval of at least 4 weeks between doses. The vaccine should be stored at a temperature of 2-8 ^{0} C.

Efficacy : Vaccination with two doses was associated with 85% reduction in overall severe rotavirus gastroenteritis and a 91% reduction in rotavirus diarrhoea due to homologous G1 strains. Vaccine efficacy has been reported to be up to 100% against the most severe gastroenteritis. Furthermore, its ability to elicit cross protection has also been reported.

Immunogenicity : The vaccine was found to be highly immunogenic in a two dose regimen. It has been demonstrated that the vaccine was more immunogenic when the first dose was given at 10-14 weeks, although it was still immunogenic when given at 6-10 weeks of age. Monovalent, live attenuated rota virus vaccine is no way reported to have interfered with the immune response to concomitantly administered EPI vaccines including Oral Polio Vaccine.

Safety : In safety studies, the vaccine has been well tolerated. The reactogenicity profile of the vaccine in terms of solicited symptoms (diarrhoea, fever, vomiting, irritability and loss of appetite) was similar to the placebo groups in studies.

The withdrawal of the first licensed rhesus human reassortment vaccine earlier due to reported association with intussusception has raised concerns regarding the safety of subsequent vaccine candidates. There is no evidence to the effect that natural rotavirus infections cause intussusception. Therefore, it is theoretically impossible for the monovalent, live attenuated rotavirus vaccine to cause intussusception.

<u>Pentavalent human-bovine reassortant rotavirus vaccine (HBRV)</u>

Pentavalent HBRV is a live, oral vaccine given in a three dose regimen. The development of this vaccine is based on the fact that vaccination at a young age with a multivalent vaccine directed against most prevalent serotypes is likely to provide the most comprehensive protection against rotavirus diarrhoea. Thus, HBRV is directed against most prevalent serotypes in the world namely G1, G2, G3, G4 and P1.

HBRV has been developed by reassortment of bovine rota virus strain, Wister calf 3 (WC3) with human rota virus. Though viable efficacy was demonstrated, WC 3 vaccine did not induce cross reacting Serum Neutralising Antibodies (SNA) against the outer surface G proteins of the common human rotavirus serotypes. Therefore, the reassortment ensured the combination of acceptable safety and immunogenicity of the WC 3 vaccine with the antigenic specificity of the prevalent human rotavirus serotypes. The vaccine formulation includes a buffer to protect vaccine degradation from gastric acid and a stabiliser to allow for a 24 month shelf life and for storage at refrigerator temperature.

Efficacy : It has been demonstrated that vaccine prevented 100% of episodes of severe rotavirus gastroenteritis, 75% of any rotavirus gastroenteritis regardless of the severity during rotavirus season after vaccination. The efficacy of the 3 doses of the high, middle and low potencies of the pentavalent HBRV was 69%, 77% and 59% respectively against any rotavirus gastroenteritis regardless of the severity.

Immunogenicity : Immunogenicity of the vaccine was measured in terms of SNA response to human outer protein (G1 G2 G3 G4 P1) and bovine outer protein (G6, P7) and serum anti rota virus Ig A. HBRV induces a significant serum anti rota virus Ig A response in 88%-99% of recipients. A significant faecal anti rota virus Ig A has also been reported.

Safety : In safety studies, HBRV has been well tolerated. Though fever, vomiting, diarrhoea, behavioural changes have been reported as adverse events, these were not reported to be greater among recipients than among placebo groups. Shedding of the vaccine strains in the faeces of vaccine recipients was uncommon.

Schedule: Clinical trials have evaluated 2, 4, 6 months and 2, 3, 4 month schedules for the vaccine.

In addition to these two leading vaccine candidates, currently, research is underway to produce a hexavalent, human rotavirus bovine reassortent vaccine to be used in developing countries. The Indian researchers are also involved in developing a vaccine with the use of Indian strains. Rotavirus vaccines have already been introduced in the public sector in some Latin American countries: Brazil, Panama, Venezuela, Mexico, El Salvador, Ecuador and Nicaragua. The experiences of these countries will be important for the rest of the developing countries in their pursuit for reducing morbidity and mortality due to rotavirus diarrhoea through vaccination. However, the challenge of creating context for rotavirus vaccines for developing countries is to affirm that rota virus vaccine is only a part of a comprehensive package of strategies directed at enhancing diarrhoeal disease control in their respective countries.

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Rotavirus in Asia. Journal of Infectious Diseases 2005:192 (supplement 1)

Proceedings of the 6th workshop of the members of the Asian Rotavirus Surveillance Network held in Bangkok, Thailand on 3 -4, December, 2007

Rotavirus vaccine, the global burden of rotavirus disease: responding to the challenge. A monograph published by GSK, Singapore

This article was compiled by Dr Ranjan Wijesinghe, Consultant Epidemiologist and the coordinator of rotavirus surveillance in Sri Lanka under the ARSN.

Table 1: Vaccine-preventable Diseases & AFP

19th - 25th Jan 2008 (4th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	01 CO=1	00	00	00	00	00	00	00	00	01	02	07	08	-12.5%
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	00	04	00	+400.0%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	03	02	+50.0%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	01	01	02	-50.0%
Tuberculo-sis	85	02	09	17	05	10	04	00	06	138	237	912	763	+19.5`%

19th - 25th Jan 2008 (4th Week)

Table 2: Newly Introduced Notifiable Diseases

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	30	04	16	00	01	12	06	18	07	94	54	327	142	+130.3%
Meningitis	05 GM=3 CO=2	01 KD=1	07 GL=6 MT=1	00	00	06 KR=6	01 PO=1	02 BD=2	04 RP=2 KG=2	26	01	143	35	+308.6%
Mumps	04	02	04	00	12	05	09	03	07	46	13	184	43	+327.9%

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=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 3: Laboratory Surveillance of Dengue Fever

19th - 25th Jan 2008 (4th Week)

Samples	Number tested	Number positive *	Serotypes				
			D_1	D_2	D_3	D_4	Negative
Number for current week	04	00	00	00	00	00	00
Total number to date in 2008	16	00	00	00	00	00	00

Source: Genetech Molecular Diagnostics & School of Gene Technology, Colombo. * Not all positives are subjected to serotyping.

NA= Not Available.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Whooping Cough, Human Rabies, Dengue Haemorrhagic Fever, Japanese Encephali - tis, Chickenpox, Meningitis, Mumps.

Special Surveillance: Acute Flaccid Paralysis.

National Control Program for Tuberculosis and Chest Diseases: Tuberculosis.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

19th - 25th Jan 2008 (4th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Returns Re-ceived Timely**
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	38	154	01	14	01	03	03	13	00	44	00	09	00	00	00	10	00	00	**85**
Gampaha	15	125	01	07	00	02	01	04	00	00	01	15	00	00	01	16	00	00	**93**
Kalutara	18	48	19	35	00	00	00	04	00	00	01	13	00	01	00	04	00	00	**100**
Kandy	04	18	02	20	01	01	00	02	01	04	04	22	02	04	10	21	00	00	**83**
Matale	02	09	05	21	00	00	01	05	00	00	09	66	00	01	00	01	00	00	**75**
Nuwara Eliya	00	00	01	02	00	00	00	03	00	00	00	01	01	05	01	08	00	00	**67**
Galle	05	20	05	18	00	00	00	03	00	00	01	33	01	02	00	01	00	00	**88**
Hambantota	08	14	01	13	00	01	01	02	00	00	02	13	01	06	00	00	00	00	**91**
Matara	05	28	02	13	00	00	01	11	00	00	03	15	07	23	00	01	00	01	**94**
Jaffna	00	16	02	08	00	00	07	24	00	02	00	00	03	41	00	07	00	00	**50**
Kilinochchi	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	01	00	00	**25**
Mannar	00	00	00	00	00	00	03	19	00	00	00	00	00	00	00	01	00	00	**75**
Vavuniya	02	07	02	06	01	01	00	00	00	00	00	00	00	00	00	01	00	00	**100**
Mullaitivu	00	00	00	01	00	00	01	02	00	00	00	00	00	00	00	02	00	00	**60**
Batticaloa	08	09	02	07	00	00	00	01	00	00	00	00	00	00	06	13	00	00	**73**
Ampara	00	00	04	22	00	00	00	00	00	00	00	01	00	00	00	00	00	00	**43**
Trincomalee	14	20	03	08	00	00	00	00	00	01	00	00	00	00	00	02	00	00	**89**
Kurunegala	12	74	06	48	00	02	02	07	00	00	00	02	01	03	03	06	00	00	**89**
Puttalam	12	50	03	15	00	00	03	13	00	01	00	02	00	02	02	04	00	00	**100**
Anuradhapur	03	33	01	12	00	02	00	01	00	02	02	07	00	03	01	01	00	00	**84**
Polonnaruwa	03	14	04	14	01	01	01	02	01	01	02	03	00	00	01	03	00	00	**86**
Badulla	01	08	10	37	00	00	00	06	00	01	00	03	01	07	05	18	00	00	**93**
Monaragala	01	02	04	20	00	00	01	03	00	03	00	09	02	08	01	02	00	00	**90**
Ratnapura	02	19	03	15	00	02	00	05	00	41	01	06	00	03	00	02	00	00	**50**
Kegalle	02	30	09	46	03	08	01	02	00	00	01	10	05	06	01	14	00	00	**73**
Kalmunai	00	00	06	11	00	00	00	00	00	00	00	00	00	00	01	04	00	00	**77**
SRI LANKA	**155**	**698**	**96**	**413**	**07**	**23**	**26**	**132**	**02**	**100**	**27**	**230**	**24**	**115**	**33**	**143**	**00**	**01**	**81**

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 2 February . 2008 Total number of reporting units =290. Number of reporting units data provided for the current week: 238

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WEER SRI LANKA 2008

WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiological Unit,

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Vol. 35 No. 6 **2nd – 8th February 2008**

Immunization of HIV-infected individuals

Global Advisory Committee on Vaccine safety [GACVS] has reviewed the current policy on the use of bacilli Calmette-Guerin [BCG] vaccination for children infected with HIV in the light of new evidence. According to the new policy BCG vaccine should not be used in children who are known to be HIV infected. This article will describe the WHO position on immunization of HIV– infected individuals with special emphasis on this new change.

The epidemic of human immunodeficiency virus [HIV] infection and acquired immune deficiency syndrome [AIDS] has had a number of implications for immunization services. With some notable exceptions, immunization is generally safe and beneficial for HIV-infected children. The majority of children born to HIV-infected women do not acquire HIV infection. However, identifying those who do contract the infection requires tests that are not readily available in most countries. Screening for HIV status should therefore not be carried out before immunization.

The efficacy of immunization is variable for HIV-infected individuals. The immune suppression caused by HIV may result in less benefit from the vaccine than for children who are not infected with the virus. Most HIV-infected children have the capacity to mount both cellular and humoral immune responses during the first two years of life; decline in these responses occurs during the next two years. Studies of the immunogenicity of recommended vaccines have shown satisfactory seroconversion rates in the early stages of infection. However, the proportion of responders decreases with progression from HIV infection to AIDS.

As HIV– infection results in a deterioration of the immune system, there has been concern that the use of live vaccines could result in severe vaccine-associated disease in these individuals. To date, there have been only rare and isolated reports of adverse reactions in HIV– infected persons to the live vaccines OPV and Measles, and no increase in rates of reactions to DTP and hepatitis B vaccines [that contain no live organisms]. Although simultaneous administration of multiple antigens [even inactivated vaccines] might theoretically accelerate the HIV disease process, clinical and laboratory data do not support this.

WHO Perspective

The decreased immune response to vaccines with increasing age for HIV-infected children emphasizes the need for immunization as early in life as possible for children born to HIV-infected women. Individuals with symptomatic HIV infection can receive all the standard vaccines except for BCG and vaccine against yellow fever. As for any severely ill child, severely ill HIV-infected children should not be vaccinated.

Special issues

Earlier position on BCG : BCG should not be given to children with symptomatic HIV infection [i.e. AIDS] . In asymptomatic children, the decision to give BCG should be based on the local risk of tuberculosis:

- .Where the risk of tuberculosis is high, BCG is recommended at birth or as soon as

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possible thereafter, in accordance with the standard poli cies for immunization of non HIV-infected children.

- In areas where the risk of tuberculosis is low but BCG is recommended as a routine immunization, BCG should be withheld from individuals known or suspected to be infected with HIV.

Safety of BCG vaccine in HIV-infected children

The committee has reviewed the policy on the use of bacilli Calmette–Guérin (BCG) vaccination for children infected with HIV in the light of new evidence. Data from retrospective studies from Argentina and South Africa indicate that there is a substantiated higher risk of disseminated BCG disease developing in children infected with HIV who are vaccinated at birth and who had later developed AIDS. The reported risk associated with vaccinating HIV-infected children may outweigh the benefits of preventing severe tuberculosis, especially since the protective effect of BCG against tuberculosis in HIV-infected children is not known.

WHO currently recommends administering a single dose of BCG vaccine to all infants living in areas where tuberculosis is highly endemic as well as to infants and children at particular risk of exposure to tuberculosis in countries with low endemicity. BCG vaccine is contraindicated in people with impaired immunity, and WHO does not recommend BCG vaccination for children with symptomatic HIV infection.

Current position on BCG vaccination

GACVS has concluded that the recent findings indicated that there is a high risk of disseminated BCG disease developing in HIV- infected infants and therefore BCG vaccine should not be used in children who are known to be HIV infected.

The committee recognizes the difficulty in identifying infants infected with HIV at birth in settings where diagnostic and treatment services for mothers and infants are limited. In such situations, BCG vaccination should continue to be given at birth to all infants regardless of HIV exposure, especially considering the high endemicity of tuberculosis in populations with high HIV prevalence. Close follow up of infants known to be born to HIV-infected mothers and who have received BCG at birth is recommended in order to provide early identification and treatment of any BCG-related complication. In settings with adequate HIV services that could allow for early identification and administration of antiretroviral therapy to HIV-infected children, consideration should be given to delaying BCG vaccination in infants born to mothers known to be infected with HIV until these infants are confirmed to be HIV negative.

Measles vaccination

Children with known or suspected HIV infection are at increased risk of severe measles and should be offered measles vaccine as early as possible. Such infants should receive measles vaccine at six months of age, followed by an extra dose at nine months. The overall risk to them of the vaccine causing adverse events is low compared with the risk of measles infection and its complications. Where the chance of contracting wild-type measles virus infection is almost non-existent, countries with the capacity to monitor an individual's immune status may consider withholding measles vaccine from severely immunocompromised, HIV-infected children, but children with moderate levels of immune suppression should continue to receive measles vaccine.

OPV Vaccine

Individuals with known or suspected HIV infection should be immunized with OPV according to standard schedules.

Hepatitis B Vaccine

Early immunization is especially important because the risk of becoming a chronic carrier is higher for HIV - infected children and adults than for uninfected persons.

Varicella Vaccine

The public health impact of varicella and zoster may be increasing in regions with high rates of HIV endemicity. Indications, including the results of vaccination studies in certain immunodeficient groups, are encouraging. The public health as well as the socioeconomic impact of this vaccine would increase drastically if proved to protect against zoster in the general population. In industrialized countries considerable amounts of money are spent on medical care in complicated cases of zoster in HIV-affected areas is well documented.

Yellow fever vaccine

Individuals with symptomatic HIV infection should generally not received live, attenuated yellow fever vaccine. It should be withheld from HIV-symptomatic individuals until such time more information is available on its safety when given to HIV-infected individuals. Where the risk from yellow fever disease is high, medical practitioners may consider the risk to an individual from the vaccine to be less than that from the disease, and may consider giving the vaccine.

Referances

1. WHO (World Health Organization). 2002. *Core Information for the Development of Immunization Policy, 2002 Update* . WHO/V&B/02.28. Geneva: WHO. http:// www.who.int/vaccines-documents/DocsPDF02/ www557.pdf .

2. Weekly Epidemiological Record, World Health Organization. No 3, 2007; 82,:17-24 .

http:// www.who.int/wer

The editor wishes to acknowledge Dr T.S.R. Peris—Assistant Epidemiologist for the assistance provided in the preparation of this article.

Table 1: Vaccine-preventable Diseases & AFP

26th Jan– 1st Feb 2008 (5th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	00	00	00	00	00	00	00	00	01	07	09	-22.2%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	00	00	00	00	00	01	00	00	01	00	05	00	+500.0%
Tetanus	00	00	00	00	00	00	00	00	00	00	01	03	03	00.0%
Whooping Cough	00	00	00	01 MN=1	00	00	00	00	00	01	02	02	04	-50.0%
Tuberculo-sis	102	15	00	01	05	00	00	00	02	125	123	1037	886	+17.0`%

Table 2: Newly Introduced Notifiable Diseases

26th Jan– 1st Feb 2008 (5th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	30	08	22	00	18	12	06	05	14	115	61	452	212	+113.2%
Meningitis	04 GM=3 CO=1	00	07 GL=2 MT=2 HB=3	00	00	13 KR=10 PU=3	01 AP=1	04 BD=2 MO=2	04 RP=2 KG=2	33	00	184	35	+425.7%
Mumps	13	01	08	00	04	07	08	05	03	49	17	236	64	+268.6%

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.

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 3: Laboratory Surveillance of Dengue Fever

26th Jan– 1st Feb 2008 (5th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	07	01	02	00	00	00	00	00	00	00	00	00	02	00
Total number to date in 2008	23	12	02	05	00	00	00	01	00	00	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]
* Not all positives are subjected to serotyping.

NA= Not Available.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Whooping Cough, Human Rabies, Dengue Haemorrhagic Fever, Japanese Encephali - tis, Chickenpox, Meningitis, Mumps.

Special Surveillance: Acute Flaccid Paralysis.

National Control Program for Tuberculosis and Chest Diseases: Tuberculosis.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

26th Jan– 1st Feb 2008 (5th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Returns Re-ceived Timely**
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	38	195	05	20	00	03	04	19	00	44	00	09	00	00	04	14	00	00	**100**
Gampaha	24	150	07	14	00	02	01	05	00	00	02	17	00	00	02	18	00	00	**86**
Kalutara	10	58	06	41	01	01	01	05	03	03	02	15	00	01	00	04	00	00	**100**
Kandy	05	23	05	25	00	01	02	04	02	06	01	23	03	07	03	24	00	00	**83**
Matale	01	10	02	23	00	00	01	06	00	00	09	72	00	01	00	01	00	00	**50**
Nuwara Eliya	02	02	09	11	00	00	04	07	00	00	02	03	01	06	07	15	00	00	**89**
Galle	00	20	00	19	02	02	00	03	00	00	03	36	03	05	00	01	00	00	**100**
Hambantota	06	20	05	18	00	01	00	02	00	00	01	14	03	09	00	00	00	00	**100**
Matara	10	38	09	22	00	00	00	11	00	00	02	17	04	27	01	02	00	01	**94**
Jaffna	00	18	00	11	00	00	00	27	00	02	00	00	00	49	00	07	00	00	**00**
Kilinochchi	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	01	00	00	**00**
Mannar	00	00	00	00	00	00	07	26	00	00	00	00	00	00	01	02	00	00	**50**
Vavuniya	02	09	02	08	00	01	00	00	00	00	00	00	00	00	00	01	00	00	**25**
Mullaitivu	00	00	00	01	00	00	00	02	00	00	00	00	00	00	00	02	00	00	**00**
Batticaloa	09	18	02	09	00	00	00	01	00	00	00	00	00	00	02	15	01	01	**45**
Ampara	02	02	04	30	00	00	00	00	00	00	01	03	00	00	00	00	00	00	**57**
Trincomalee	06	26	03	13	00	00	01	01	00	01	01	01	01	01	02	04	00	00	**78**
Kurunegala	07	82	16	64	00	02	02	09	00	00	02	04	01	04	01	07	00	00	**89**
Puttalam	01	51	02	17	00	00	00	13	00	01	00	02	00	02	00	04	00	00	**89**
Anuradhapur	05	38	01	13	00	02	00	01	00	02	05	12	01	04	00	01	00	00	**74**
Polonnaruwa	00	14	02	16	00	01	00	02	00	01	00	03	00	00	00	03	00	00	**57**
Badulla	03	11	08	45	01	01	02	08	00	01	00	03	01	08	04	22	00	00	**100**
Monaragala	01	03	04	25	00	00	03	06	02	05	00	09	03	13	00	02	00	00	**90**
Ratnapura	02	24	04	21	02	04	07	12	00	41	00	09	02	06	00	02	00	00	**63**
Kegalle	05	35	05	51	01	09	01	03	00	00	00	10	02	08	17	31	00	00	**91**
Kalmunai	00	00	03	14	00	00	00	00	00	00	00	00	00	00	00	05	00	00	**46**
SRI LANKA	**139**	**847**	**104**	**531**	**07**	**30**	**36**	**173**	**07**	**107**	**27**	**262**	**25**	**151**	**44**	**188**	**00**	**02**	**75**

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 9 February . 2008 Total number of reporting units =290. Number of reporting units data provided for the current week: 238

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Foodborne disease surveillance - Part I

In developing countries, infectious diseases transmitted by contaminated food and water are a constant and frequently fatal threat to health. The diseases concerned range from the well-known diarrhoeal diseases, cholera, and hepatitis A to the more exotic parasitic trematode infections that affect an estimated 40 million people and are a leading cause of liver cancer. Diarrhoeal diseases alone are estimated to cause an annual 2.7 billion cases and 1.9 million deaths, mostly in infants and young children.

When the causes of these infections and deaths are considered, the strategy for improving food safety in the developing world appears straightforward: prevent faecal contamination of human food. However, the difficulty of implementing such a strategy in impoverished settings makes food safety a part of the broader development problems of water supply, sanitation, household hygiene, food security, and poverty. Poverty also greatly increases the risk that people will consume unsafe food even when fully aware of the consequences. For example, cassava, a food staple throughout much of sub-Saharan Africa, is known to contain a potent cyanide toxin that is eliminated through traditional food preparation practices. In times of food shortage and social instability, large outbreaks of acute poisoning leading to neuropathy and paralytic disease have occurred when desperate populations consumed inadequately processed cassava.

Foodborne diseases are also a pervasive, though far less lethal, threat in the industrialized world, where sporadic and usually mild infections affect an estimated 30% of the population each year. Most affluent countries rely on sophisticated systems of regulatory control, testing, and inspection to safeguard the food supply, and many of these measures are based on international safety standards issued jointly by FAO and WHO. Such measures are largely invisible until an outbreak of foodborne disease occurs, and food safety flares into the headlines accompanied by public panic, huge economic losses, and probing questions about the ability of governments to protect consumer health.

In recent years, traditional measures for safeguarding the food supply have been undermined by several trends. These include the globalization of the food supply, advances in food production and processing technologies, changes in agricultural and animal husbandry practices, and the emergence of new foodborne pathogens. Foodborne pathogens are now found in a broader range of foods, at greater frequency, and with far more severe consequences for health. Deaths from kidney failure and progressive brain and nerve disorders have now joined debilitating complications, such as arthritis and paralysis, as reasons to fear foodborne disease. The result has been a series of increasingly frequent and frightening outbreaks that have taken governments by surprise and shaken public confidence in the safety of the food supply. Following the events of September 2001, some governments have expressed concern that food and water supplies might be targeted by terrorists seeking to incapacitate large numbers of people and incite widespread panic.

A food chain of unprecedented complexity

Demographic changes, most notably ageing of the population, have greatly increased the

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Number of people susceptible to severe and sometimes fatal consequences of Foodborne disease. Other factors influencing host susceptibility in the general population include increases in the number of immunocompromised patients and the greatly increased use of immunosuppressive agents, particularly among persons receiving cancer chemotherapy or undergoing organ transplantation. Persons with weakened immune systems become infected with foodborne pathogens at lower doses than their healthy counterparts and are more susceptible to severe complications. Infections that are normally mild can be rapidly fatal in these groups. Advanced age and underlying disease also increase the risk of severe and potentially fatal infections.

Global food trade is increasing, and with it the potential to disseminate foodborne pathogens between countries and continents. While globalization of the food supply offers consumers a wider variety of quality foods, it has also resulted in a food chain of unprecedented length and complexity. Consumers purchasing food from the local grocer risk exposure to pathogens native to remote parts of the world. In such an environment, tracing the origin of all ingredients in a meal has become virtually impossible, creating an enormous challenge for the control of foodborne disease.

Another trend is the integration and consolidation of agriculture and food industries. This consolidation, combined with increasing global trade, means that large amounts of food from a single source are distributed over far greater distances than ever before, creating the possibility for larger and more widespread outbreaks of foodborne illness. The 1999 dioxin crisis in Belgium, involving meat and poultry products, illustrates the potential for widespread contamination from a single source. On this occasion, potentially carcinogenic dioxins entered the food chain when animal fat contaminated with industrial oil was used in livestock feed. More than 1 500 farms in Europe received feed from a single source in a two-week period. The incident caused widespread consumer alarm and cost the country's food industry an estimated US$ 767 million.

Changes in lifestyle also play a role. Greater numbers of people eat outside their homes in restaurants and fast food outlets where mass catering practices introduce multiple opportunities for food contamination to occur. The growth of fast food chains with a wide geographical reach and huge numbers of customers has likewise enhanced the potential of a single contaminated source to affect large numbers of people over a wide geographical area. It has also enlarged the complexity of outbreak investigation and increased the quantities of food that may need to be recalled. In the USA, spectacular outbreaks of *Escherichia* co//Q157:H7 in 1993,1997, and 2002 prompted the nationwide recall of millions of tonnes of ground beef. The 1993 outbreak alone, linked to deficient cooking practices in a fast food chain, resulted in the closing of restaurants and the recall of more than 250 000 hamburger patties.

On another front, intensive farming practices have greatly increased the risk of contamination of the food supply with residues of veterinary drugs and chemicals in fertilizers and pesticides. Intensive farming practices could also have influenced the prevalence in herds and animals of certain zoonotic pathogens, including *Salmonella* and *Campylobacter*, possibly helping to explain the significant increases in human disease caused by these microorganisms over recent decades. Intensive farming practices, notably the use of meat and bones from cattle and other ruminant carcasses in the preparation of cattle feed, are now known to be the driving force behind the epidemic of bovine spongiform encephalopathy (BSE), or "mad cow disease". Cases, first recognized in the UK in 1986, have subsequently been detected in 19 countries.

When we consider the food born disease situation in Sri Lanka, for the year 2007 total number of 5869 viral hepatitis cases , 1037 food poisoning cases, 1805 enteric fever cases and 7292 dysentery cases were notified to the epidemiology unit from the different parts of the country.

During this period Medical Research Institution has analyzed 1848 water samples collected from different parts of the country and found 53% were unsatisfactory. Out of 1768 food samples analyzes, 31% were unsatisfactory [Source-MRI].

Emerging foodborne diseases

Of all the recent trends affecting the safety of the food supply, the emergence of foodborne pathogens causes the greatest alarm. Emerging foodborne pathogens include newly identified infectious agents transmitted by food, infectious agents newly associated with foodborne transmission, and well-known foodborne pathogens behaving in new ways that allow them to circumvent conventional control measures.

f. co//0157:H7, also known as enterohaemorrhagic £ *coli*, was first identified as a pathogen in 1982 in an outbreak of bloody diarrhoea traced to hamburgers from a fast food chain in the USA. The pathogen has since emerged as a major foodborne agent causing large and serious outbreaks on several continents. Its ability to cause haemolytic uraemic syndrome, renal failures and death, especially in young children, has made the profile of foodborne diseases distinctly more sinister.

Reference : Global defense against the infectious disease threat. Global Disease 2002, World Health Organization, Geneva, 2003.

The editor wishes to acknowledge Dr. K. J. Cooray (Consultant Microbiologist, MRI) for the assistance provide in the preparation of this article.

Part II of this article will be continued in the next issue.

Table 1: Vaccine-preventable Diseases & AFP

2nd – 8th Feb 2008 (6th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	00	00	00	00	00	00	01 RT=1	01	03	08	12	-33.3%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	02	00	00	00	00	03	00	00	00	05	01	11	01	+1000.0%
Tetanus	00	00	00	00	01 TR=1	00	00	00	00	01	02	05	05	00.0%
Whooping Cough	00	00	01 MT=1	00	00	00	01 PO=1	00	00	02	01	04	06	-33.3%
Tuberculosis	78	41	03	02	07	00	29	00	00	160	127	1197	1013	+18.2`%

Table 2: Newly Introduced Notifiable Diseases

2nd – 8th Feb 2008 (6th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	19	04	15	00	05	06	08	10	16	83	46	554	272	+103.7%
Meningitis	05 GM=1 CO=3 KL=1	01 NE=1	03 GL=3	00	03 BT=2 KM=1	08 KR=6 PU=2	04 PO=4	02 BD=2	09 RP=2 KG=7	35	00	227	35	+548.5%
Mumps	07	05	09	00	01	06	02	00	02	32	11	276	78	+253.8%

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=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 3: Laboratory Surveillance of Dengue Fever

2nd – 8th Feb 2008 (6th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	04	01	01	00	00	00	01	00	00	00	00	00	00	00
Total number to date in 2008	27	13	03	05	00	00	01	01	00	00	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]
* Not all positives are subjected to serotyping.
NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

2nd – 8th Feb 2008 (6th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Returns Re-ceived Timely**
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	35	230	00	20	01	04	03	22	00	44	02	11	00	00	02	16	00	00	**85**
Gampaha	24	182	03	17	00	02	03	08	10	10	02	19	00	00	02	23	00	00	**93**
Kalutara	17	75	07	48	01	02	02	07	01	04	08	23	01	02	03	07	00	00	**100**
Kandy	05	28	03	28	00	01	01	05	01	07	03	26	04	11	08	32	00	00	**88**
Matale	01	11	03	35	00	00	00	07	00	00	11	94	00	01	00	01	00	00	**100**
Nuwara Eliya	00	02	00	11	00	00	02	09	00	00	01	04	01	07	01	16	00	00	**67**
Galle	00	20	04	23	02	04	00	03	00	00	02	40	01	06	01	02	01	01	**94**
Hambantota	05	25	04	22	01	02	00	02	00	00	02	16	05	14	01	01	00	00	**100**
Matara	02	40	03	25	00	00	00	11	00	00	02	19	01	28	00	02	00	01	**88**
Jaffna	00	19	00	16	00	00	01	38	00	02	00	00	00	54	00	07	00	00	**25**
Kilinochchi	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	01	00	00	**00**
Mannar	00	00	00	00	00	00	00	26	00	00	00	00	00	00	00	02	00	00	**00**
Vavuniya	00	09	00	08	00	01	00	00	00	00	00	00	00	00	01	02	00	00	**75**
Mullaitivu	00	00	00	01	00	00	00	02	00	00	00	00	00	00	00	02	00	00	**00**
Batticaloa	05	29	01	10	00	00	01	02	00	00	00	00	00	00	07	22	00	02	**91**
Ampara	02	04	05	37	00	00	00	00	00	00	02	05	00	00	00	01	00	00	**57**
Trincomalee	09	35	01	14	00	00	00	01	00	01	00	01	02	03	00	04	00	00	**89**
Kurunegala	02	84	07	71	01	03	02	11	00	00	00	04	01	05	01	08	00	00	**89**
Puttalam	07	58	04	21	00	00	03	16	00	01	00	02	01	03	01	06	00	00	**89**
Anuradhapur	07	45	03	16	00	02	01	03	00	02	03	17	01	05	00	01	00	00	**95**
Polonnaruwa	02	16	02	18	00	01	01	03	02	03	01	04	00	00	01	04	00	00	**100**
Badulla	00	11	12	59	00	01	05	13	00	01	02	05	05	13	05	26	00	00	**100**
Monaragala	01	04	00	27	00	00	00	06	00	05	00	09	01	14	00	02	00	00	**90**
Ratnapura	14	53	04	29	03	07	11	23	00	42	06	17	13	35	06	08	00	00	**94**
Kegalle	06	41	15	67	01	09	00	03	00	00	01	11	00	08	21	52	00	00	**91**
Kalmunai	01	02	11	30	00	00	00	00	00	00	00	00	00	01	00	06	00	00	**92**
SRI LANKA	**145**	**1023**	**92**	**653**	**10**	**39**	**36**	**221**	**14**	**122**	**48**	**327**	**37**	**210**	**61**	**254**	**01**	**04**	**85**

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 16 February . 2008 Total number of reporting units =290. Number of reporting units data provided for the current week: 238

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ON STATE SERVICE

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WEER SRI LANKA 2008

WEEKLY EPIDEMIOLOGICAL REPORT

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Vol. 35 No. 8 **16th – 22nd February 2008**

Foodborne disease surveillance - Part II

Emerging foodborne diseases

Cydosporiasis, a foodborne disease caused by the microscopic *Cychspora cayetanensis* parasite, caused its first outbreak in 1996, when at least 1465 people in the Canada and the USA and Canada became infected following the consumption of fresh raspberries imported from a Central American country. The infection is debilitating as it is characterized by protracted and often relapsing gastroenteritis. The disease returned in 1997, causing a second multi-location outbreak with more than 1 000 reported cases. Although the outbreaks were comparatively small, they were accompanied by large economic losses as consumers effectively boycotted not only imported raspberries but also domestically produced raspberries and strawberries. Trade in raspberries with the exporting country was not resumed for three years.

Campy/obacterspectK, known to cause disease in animals since the beginning of the 20lh century, have only recently been recognized as a cause of human disease. Since 1990, they have rapidly emerged to become the leading cause of bacterial disease in humans, affecting an estimated 2.4 million people each year in the USA alone. In developing countries, campylobacteriosis is widespread and causes significant morbidity, with a case-fatality rate in young children as high as 4 per 1 000 infections. The disease is known to cause arthritis and septicaemia in immuno-compromised populations. Additional concerns are raised by The number of newly described *Campy/obacter species*, as well as the increasing number of antibiotic-resistant strains of the common species, *C jejuni*. As yet another concern, the paralytic condition Guillain-Barre syndrome has recently been identified as a serious complication of k serotype *enteritidis* appeared simultaneously around the world in the 1980s and has since undergone a 20-fold increase in Europe and North America. Infections with this bacteria are often associated with contaminated poultry or eggs. As many dishes prepared in restaurants and institutional kitchens are made from pooled eggs, a single contaminated egg can contaminate foods distributed to a large number of persons, and fatalities associated with outbreaks in institutions caring for the elderly have become a serious problem. Another serotype, *Salmonella typhimnrium* DT104, which is resistant to five commonly prescribed antibiotics, has recently spread throughout many countries. In the USA, muItidrug-resistant strains of *Salmonella newport*- the third most common serotype in that country - have increased by more than 30% in less than a decade. Studies conducted in 2002 indicated resistance to at least nine antibiotics, including third-generation cefalosporins commonly used to treat serious infections. Some well-known pathogens have only recently been shown to be predominantly foodborne. *Listeria monocytogenes \s* considered emerging because the role of food in its transmission is newly recognized. Infections in pregnant women can cause abortion and stillbirth. In infants and persons with a weakened immune system, infection may cause life-threatening septicemia and meningitis.

Some of the more spectacular recent outbreaks of foodborne disease in industrialized countries have been due to changes in the behaviour of a pathogen that allowed it to circumvent the defenses of public health.

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Examples include £ frc//01 B7:H7, normally associated with undercooked beef, thriving in highly acidic foods and beverages such as mayonnaise and cider, and the BSE agent surviving all conventional deactivation procedures. *Listeria monocytogenes* can proliferate at low temperatures and thus endanger foods such as soft cheeses and processed meat products, even when properly stored in refrigerators. Surprises have also come from the increasing association of outbreaks with foods such as raspberries, cantaloupe, vegetable sprouts, and lettuce, which are generally considered healthy and above suspicion.

WHO first drew attention to trematode infections as a major public health problem in 1995. These infections, now clearly linked to an increased risk of liver cancer, are acquired via the consumption of raw or inadequately processed freshwater fish, shellfish, and aquatic plants contaminated with oocysts of trematode parasites, most notably the liver fluke. WHO estimates that 40 million persons are infected in Asia, Eastern Europe and Latin America.

Antimicrobial resistance: another food-related risk

Following the discovery that antibiotics promote growth as well as prevent disease in farm animals, the use of antibiotics in farms, aquaculture, and livestock production has escalated considerably. Today, approximately half of the total tonnage of antimicrobials is used to treat diseased animals, prevent disease and promote growth in livestock, and rid cultivated foodstuffs of various destructive organisms.

Continuous and often low-level dosing in the latter two applications provides ideal conditions for the development of drug-resistant strains of bacteria. Antibiotic use for prophylaxis or growth-promotion can select resistant forms of bacteria in the ecosystem, and resistant bacteria and resistance genes can be exchanged between humans and animals. In several disturbing cases, multiresistant bacteria infecting humans have been directly linked to resistant organisms in animals. Resistant forms of *Salmonella* and *Campylobacter* are of particular concern. The consequences for human medicine include increased incidence of human infections caused by resistant pathogens, and more frequent therapeutic failures.

A consultation held in 2000 elaborated 40 guiding principles aimed at minimizing problems for human health arising from the use of antimicrobial agents in food producing animals while recognizing the ongoing need for antimicrobial treatment of diseased animals. This work continued in 2002, when WHO issued recommendations on the monitoring of antimicrobial usage in food animals for the protection of human health.

Chemical contaminants:

Safety requires constant vigilance. Food safety is of particular public health concern because the exposure to possible infectious or toxic agents in food is universal and daily. Large numbers of people can be sickened during an outbreak. For example, a 1994 outbreak of salmonellosis in the USA associated with contaminated ice cream affected an estimated 224 000 persons. In 1988, an outbreak of hepatitis A, resulting from consumption of contaminated clams, affected some 200 000 persons in China.

All populations are at potential risk of long-term health consequences following daily exposure to toxic chemical agents that may be present in food. In fact, the concept of the "balanced diet" was originally put forward to protect populations from overexposure to potentially toxic agents carried by a single food. Chemicals such as additives and contaminants introduced during processing, and residues of veterinary drugs and pesticides are of concern because of the possibility that exposure over time to even small quantities could increase the risk of several serious diseases. Adverse health effects linked to chemical exposures include various cancers, damage to the nervous system, disorders of the immune system, disturbances in reproductive function, and adverse effects on infant and child development.

The safety of food chemicals is kept under constant evaluation by a joint FAO/WHO mechanism. To date, acceptable daily intakes and other toxicological endpoints have been established for more than 1 500 food additives, 40 contaminants, 90 veterinary drug residues, and 230 pesticides. These international food safety standards are widely used by regulatory and trade bodies. Mechanisms set up to ensure that food products on the market comply with international safety standards work well to safeguard public health from chemical hazards associated with commercial food processing. Comparison of levels of exposure with established safe or tolerable levels provides assurance that long-term adverse effects due to chemicals will not occur. However, in many countries, levels for some chemicals are too high or 'may not be known at all.

In addition, major threats have arisen following the accidental contamination or deliberate adulteration of the food supply with dangerous chemicals. For example, in the winter of 1971-1972, an outbreak of mass poisoning took place in Iraq when seed grain treated with a methylmercury fungicide and intended for planting was used instead to prepare bread. The outbreak resulted in more than 6 000 hospitalizations and 400 deaths.

WHO is now leading efforts to understand the nature and extent of risks posed by the newly discovered chemical hazard and what measures can be used to reduce or eliminate such risks. Like surveillance of foodborne diseases, assuring safety of the food supply from toxic chemicals requires constant vigilance for both expected and unexpected hazards.

Reference

Global defense against the infectious disease threat. Global Disease 2002, World Health Organization, Geneva, 2003.

Table 1: Vaccine-preventable Diseases & AFP

9th – 15th Feb 2008 (7th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	00	00	00	00	01 AP=1	00	00	01	01	09	13	-30.8%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	02	00	00	00	00	03	00	00	00	00	03	11	03	+333.3%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	05	07	-28.6%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	05	06	-16.6%
Tuberculosis	36	08	15	33	18	18	00	20	00	148	359	1345	1372	-1.9`%

Table 2: Newly Introduced Notifiable Diseases

9th – 15th Feb 2008(7th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	40	06	27	04	13	15	08	04	14	131	69	690	351	+96.6%
Meningitis	07 GM=2 CO=3 KL=2	00	03 GL=2 HB=1	00	01 AM=1	06 KR=6	03 PO=3	01 BD=1	10 RP=2 KG=8	31	01	266	36	+638.9%
Mumps	09	06	04	00	04	05	02	01	04	35	09	313	88	+255.7%

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=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 3: Laboratory Surveillance of Dengue Fever

9th – 15th Feb 2008 (7th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	09	02	01	00	00	00	01	00	00	00	00	00	00	00
Total number to date in 2008	36	15	04	05	00	00	02	01	00	00	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]
* Not all positives are subjected to serotyping.
NA= Not Available.
Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

9th – 15th Feb 2008 (7th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Returns Re-ceived Timely**
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	36	268	05	25	00	04	03	25	03	47	03	14	00	00	06	22	00	00	**85**
Gampaha	13	195	02	19	00	02	03	11	03	13	02	22	01	01	02	25	00	00	**71**
Kalutara	18	93	12	60	02	04	02	09	00	04	09	32	00	02	02	09	00	00	**92**
Kandy	03	31	04	32	00	01	01	06	00	07	02	28	01	12	01	33	00	00	**79**
Matale	02	13	02	37	00	00	01	08	00	00	06	100	00	01	03	04	00	00	**75**
Nuwara Eliya	01	03	03	14	00	00	03	14	00	00	01	05	03	11	07	24	00	00	**77**
Galle	02	22	01	24	02	06	00	03	00	00	02	43	00	06	00	02	01	02	**100**
Hambantota	03	28	01	23	00	02	00	02	00	00	01	17	03	17	02	03	00	00	**100**
Matara	05	46	10	35	01	01	00	11	02	02	03	22	05	33	00	02	00	01	**94**
Jaffna	01	20	01	17	00	00	05	43	00	02	00	00	04	58	00	07	00	00	**38**
Kilinochchi	00	00	00	01	00	00	00	00	00	00	00	01	00	00	00	01	00	00	**25**
Mannar	05	06	00	00	00	06	06	40	00	00	00	00	00	00	01	03	00	00	**50**
Vavuniya	00	09	01	09	00	01	00	00	00	00	00	00	00	00	00	02	00	00	**100**
Mullaitivu	00	00	00	01	00	00	00	03	00	00	00	00	00	00	00	03	00	00	**40**
Batticaloa	05	34	01	11	00	00	01	03	00	00	00	00	00	00	06	28	00	02	**73**
Ampara	01	06	08	46	00	00	00	00	00	00	00	05	00	00	00	01	00	00	**71**
Trincomalee	20	55	00	14	00	00	00	01	00	01	02	03	01	04	02	06	00	00	**70**
Kurunegala	06	90	07	78	01	04	01	12	00	01	00	04	02	07	01	09	00	00	**83**
Puttalam	10	68	00	21	01	01	00	16	00	01	00	02	03	06	00	06	00	00	**67**
Anuradhapur	02	47	01	17	01	03	00	03	02	04	00	17	00	05	00	01	00	00	**79**
Polonnaruwa	02	18	00	18	00	01	02	05	01	04	01	05	00	00	01	05	00	00	**100**
Badulla	01	12	11	70	00	01	04	17	00	01	00	05	04	17	10	36	00	00	**87**
Monaragala	02	06	01	28	00	00	00	06	00	05	01	10	01	15	02	04	00	00	**64**
Ratnapura	07	60	04	33	00	07	00	23	00	42	00	17	00	35	02	10	00	00	**63**
Kegalle	04	45	11	89	01	11	01	04	00	00	01	12	04	12	16	68	00	00	**91**
Kalmunai	01	03	08	38	00	00	00	00	03	03	00	00	00	01	00	06	00	00	**62**
SRI LANKA	**150**	**1178**	**94**	**760**	**09**	**55**	**33**	**265**	**14**	**137**	**34**	**364**	**32**	**243**	**64**	**320**	**01**	**05**	**78**

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 23 February . 2008 Total number of reporting units =290. Number of reporting units data provided for the current week: 238

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Vol. 35 No. 9 **23rd – 29th February 2008**

EPIDEMIOLOGY OF JE—PART I

Japanese encephalitis (JE) is a vector-borne, viral zoonosis that may also affect humans. JE occurs in practically all Asian countries, whether temperate, subtropical, or tropical, and has episodically intruded upon areas without enzootic transmission such as the Torres Strait Islands off the Australian mainland. Nearly 3 billion people live in JE-endemic regions, where more than 70 million children are born each year. However, the annual incidence of clinical disease differs considerably from one country to the other as well as within affected countries, ranging from <10 to >100 per 100 000 population. The disease periodically becomes hyperendemic in areas such as northern India, parts of central and southern India, southern Nepal, northern Viet Nam as well as in areas of South-East Asia where vaccination programmes have not yet been instituted, e.g. Cambodia.

Anthropophilic culicine mosquitoes transfer the virus to humans from animal amplifying hosts, principally domestic pigs and wading birds. *Culex tritaeniorhyncus*, the most important vector species, breeds in water pools and flooded rice fields. Although majority of the human cases occur in rural areas, transmission can also occur in peri-urban and urban centers.

In temperate locations, the period of transmission typically starts in April or May, and lasts until September or October. In tropical and subtropical areas, transmission exhibits less seasonal variation, or intensifies with the rainy season. Where irrigation permits mosquito breeding throughout the year, transmission may occur even in the dry season. In many Asian countries, major outbreaks of JE occur at intervals of 2–15 years. So far, no evidence that JE epidemics follow major floods, including tsunamis, has been found. Several aspects of the JE epidemiology require further studies.

Whereas all age groups have been affected in regions where the virus has been introduced recently, serological surveys show that most people living in JE-endemic areas are infected before the age of 15 years. Only 1 in 250–500 JE viral infections are symptomatic. In hyperendemic areas, half the number of JE cases occur before the age of 4 years, and almost all before 10 years of age. Some endemic regions where childhood JE vaccination has been widely implemented have experienced a shift in the age distribution of cases towards an increasing proportion of cases occurring in older children and adults.

In countries such as Japan and Korea, and in some regions of China, the incidence of JE has decreased during several decades, primarily as a result of extensive use of JE vaccines. Improved socioeconomic conditions, changed life styles and control measures such as centralized pig production and the use of insecticides may also have contributed to this development.

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Permethrin-impregnated mosquito nets have been shown to provide some protection against JE in one study. However, mosquito nets and other adjunctive interventions should not divert efforts from childhood JE vaccination. Whereas JE is believed to be grossly underreported among residents of endemic regions, the disease is very uncommon among short-term visitors and tourists to such areas.

The pathogen :

Japanese encephalitis virus belongs to the mostly vector borne Flaviviridae, which are single-stranded RNA viruses. JE virus is antigenically related to several other flaviviruses that are prevalent in Asia, including dengue virus and West Nile virus. The envelope glycoprotein of the JE virus contains specific as well as cross-reactive, neutralizing epitopes. The major genotypes of this virus have a different geographical distribution, but all belong to the same serotype and are similar in terms of virulence and host preference. Following an infectious mosquito bite, the initial viral replication occurs in local and regional lymph nodes. Viral invasion of the central nervous system occurs probably via the blood. Confirmation of a suspected case of JE requires laboratory diagnosis.

The etiological diagnosis of JE is mainly based on serology using IgM-capture ELISA which detects specific IgM in the cerebrospinal fluid or in the blood of almost all patients within 7 days of the onset of disease. Other methods include conventional antibody assays on paired sera for the demonstration of a significant rise in total JE-specific antibody, as well as a dot-blot IgM assay, suitable for use in the field. The virus is rarely recovered in tissue culture from blood or CSF, but may be found in encephalitic brains at autopsy. JE-viral RNA is rarely demonstrated in the CSF.

Protective immune response:

Protection against JE is associated with the development of neutralizing antibodies. Based on animal models as well as on clinical vaccine trials, a threshold of neutralizing antibodies 1:10 has been accepted as evidence of protection. A role for cell-mediated immune mechanisms in protection against JE virus has been demonstrated in experimental studies on mice.

Clinical picture:

Clinical JE follows an incubation period of 4–14 days and is mostly characterized by sudden onset of fever, chills, myalgia, mental confusion and sometimes nuchal rigidity. In children, gastrointestinal pain and vomiting may be the dominant initial symptoms and convulsions are very common. JE may present as a mild disease, leading to an uneventful recovery, or may rapidly progress to severe encephalitis with mental disturbances, general or focal neurological abnormalities and coma. Out of the approximately 50 000 cases of JE that are estimated to occur each year, about 10 000 end fatally, and about 15 000 of the survivors are left with neurological and/or psychiatric sequelae, requiring rehabilitation and continued care. Reports of JE disease in pregnant women are limited, as most infections occur in childhood, but studies from Uttar Pradesh (India), indicate a high risk of JE-associated abortion during the first two trimesters. The potential impact of concurrent infections, in particular HIV, on the outcome of JE virus infection is not yet established.

Treatment options

There is no specific therapy for Japanese encephalitis so the care for JE patients is only supportive. JE requires excellent critical care and careful attention for early rehabilitation. By providing diligent care, case fatality rates can be greatly reduced. In India in a retrospective study of 12,506 cases, the commonest causes of death were aspiration, hypoxia, hypoglycemia, and uncontrolled seizures. Supportive care, therefore, focuses on airway management, seizure control, decreasing cerebral oedema, fluids and nutrition, fever control, and managing secondary infections.

Different approaches to control JE :

Control programs for JE have been focused on four major areas;

vaccination.
mosquito control,
amplifying host (pig) control,
Environmental control and

Sources:

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Part II of this article will be continued in the next issue

Table 1: Vaccine-preventable Diseases & AFP

16th – 22nd Feb 2008 (8th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	01 KD=1	01 HB=1	00	00	00	00	00	00	02	00	10	13	-23.1%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	00	01	06	00	00	00	00	00	07	03	18	07	+157.1%
Tetanus	00	00	00	00	00	01 KR=1	00	00	00	01	02	06	09	-33.3%
Whooping Cough	00	00	00	00	00	00	00	00	01 RP=1	01	01	06	07	-14.3%
Tuberculosis	63	09	07	01	15	09	05	11	107	227	108	1572	1480	+6.2`%

Table 2: Newly Introduced Notifiable Diseases

16th – 22nd Feb 2008(8th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	16	13	11	01	09	09	05	07	20	91	64	801	420	+90.7%
Meningitis	06 GM=1 CO=3 KL=2	03 KD=2 NE=1	05 GL=1 MT=1 HB=3	01 VA=1	01 KM=1	02 KR=2	02 PO=2	02 BD=2	11 KG=8	33	00	305	36	+747.2%
Mumps	05	03	05	00	09	07	03	01	04	37	15	351	104	+237.5%

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=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 3: Laboratory Surveillance of Dengue Fever

16th – 22nd Feb 2008 (8th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	07	03	01	01	00	00	01	01	00	00	00	00	00	00
Total number to date in 2008	43	18	05	06	00	00	03	02	00	00	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]
* Not all positives are subjected to serotyping.
NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

16th – 22nd Feb 2008 (8th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Returns Re-ceived Timely**
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	34	312	02	28	00	04	03	32	02	49	00	19	00	00	01	24	00	00	**92**
Gampaha	13	212	03	23	01	03	00	13	00	13	03	26	00	01	01	28	00	00	**86**
Kalutara	07	100	05	65	00	04	01	10	00	04	03	35	00	02	01	10	00	00	**83**
Kandy	09	41	10	44	00	01	01	07	00	07	03	34	02	15	05	38	00	00	**88**
Matale	03	16	01	42	00	00	01	09	00	00	06	115	00	01	02	06	00	00	**100**
Nuwara Eliya	01	04	07	21	00	00	11	33	00	00	03	09	00	11	04	31	00	01	**100**
Galle	00	22	03	27	00	06	01	04	00	00	01	44	00	06	00	02	00	02	**76**
Hambantota	04	32	00	23	00	02	00	02	01	01	02	19	01	18	00	03	00	00	**91**
Matara	09	55	04	39	00	01	02	13	00	02	06	28	06	39	00	02	01	02	**94**
Jaffna	00	20	04	21	00	00	03	46	00	02	00	00	06	64	00	07	00	00	**63**
Kilinochchi	00	00	00	01	00	00	00	00	00	00	00	01	00	00	00	01	00	00	**25**
Mannar	02	08	01	01	00	06	03	49	00	00	00	00	00	00	00	04	00	00	**50**
Vavuniya	00	09	00	09	00	01	01	01	02	02	00	00	00	00	00	02	00	00	**100**
Mullaitivu	00	00	00	01	00	00	00	03	00	00	00	00	00	00	01	04	00	00	**60**
Batticaloa	02	36	03	16	00	00	00	03	00	00	00	00	00	00	01	30	00	02	**73**
Ampara	00	06	08	54	00	00	00	00	00	00	00	05	00	00	00	01	00	00	**86**
Trincomalee	19	74	01	15	00	00	01	02	00	01	00	03	00	04	00	06	00	00	**70**
Kurunegala	10	103	05	85	01	05	01	13	00	01	02	06	03	10	00	10	00	00	**89**
Puttalam	23	96	01	22	00	01	01	27	00	01	00	02	01	07	01	08	00	00	**78**
Anuradhapur	05	53	01	18	00	03	00	03	00	04	00	17	00	06	00	02	00	00	**63**
Polonnaruwa	03	21	04	22	00	01	02	07	00	04	00	05	00	00	03	08	00	00	**100**
Badulla	00	13	04	75	00	01	01	18	00	01	00	06	03	20	01	37	00	01	**73**
Monaragala	01	09	09	39	00	01	00	07	02	07	00	11	06	23	00	05	00	00	**82**
Ratnapura	02	69	03	41	02	12	00	27	00	42	00	20	02	42	12	23	00	00	**75**
Kegalle	09	55	14	103	01	12	02	06	00	00	02	14	00	12	11	79	00	00	**91**
Kalmunai	00	03	01	39	00	00	00	00	00	03	00	00	00	01	03	09	00	00	**62**
SRI LANKA	**156**	**1369**	**94**	**874**	**05**	**64**	**35**	**335**	**07**	**144**	**36**	**419**	**30**	**282**	**47**	**380**	**01**	**08**	**81**

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 1 March , 2008 Total number of reporting units =290. Number of reporting units data provided for the current week: 238

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WEEKLY EPIDEMIOLOGICAL REPORT

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Vol. 35 No. 10 **1st – 7th March 2008**

WER SRI LANKA 2008

EPIDEMIOLOGY OF JE—PART II

Environmental control : It has been proposed that urbanization and economic development have led to decreased JE transmission but this has not been well documented. In Singapore the urbanization of the entire country has stopped viral transmission; however, this model is hard to replicate elsewhere. Recent viral transmission in wild pigs on the outlying islands has raised concern about the potential for human exposure. Prior to the availability of vaccines, vector and environmental control were the only options to control JE. Multiple reviews have shown that these measures are not sustainable, not cost-effective, and have limited temporary impact. As JE virus is a part of the ecosystem with multiple hosts and vectors, eradication is not possible.

Mosquito control

Mosquito control includes spraying, draining mosquito habitats, personal protection, and the use of bed nets. Spraying is both resource-intensive and expensive while frequently ineffective. To be effective, control measures must cover all mosquito habitats, which include paddy fields, puddles and drainage areas. This is difficult especially during the monsoon season, and in rural paddy growing areas where JE is most common. The time taken for a *Culex* mosquito to develop from an egg to an adult is 10-12 days. Therefore, in addition to the large area to be included in control programs, spraying must also be repeated very frequently (every 10-12 days) to control mosquito populations. An average paddy field can produce 30,000 mosquitoes in one day which presents an incredible challenge. Indoor residual spraying has not been shown to be effective and fogging has only resulted in reducing the mosquito population for one day with complete recovery in four days.

With increasing resistance to pesticides, it is now recognized that chemical control of JE mosquito populations for disease control is not effective. Similarly, non-chemical options, including alternative wet dry irrigation and biological control measures, have shown a temporary drop in mosquito populations. But none has been linked to a decrease in JE cases. Regardless of its effectiveness against JE, vector control is important for the control of many vector borne diseases and should be maintained for the control of those diseases.

Bed nets are only effective for young children that may be in bed in the early evening as the *Culex* mosquito bites in the twilight hours. The population at-risk for Japanese encephalitis is aged 1-15 years, and usually this population is still active during these peak hours resulting in a large portion of the at-risk population still being exposed despite the use of bed nets.

Amplifying host control

As the vector of JE is hard to control, additional efforts have been directed to the main amplifying host, the pig. Pig control has been attempted in three ways; segregation, slaughtering, or vaccination. Segregation is not practical in many settings. Slaughtering has a high economic impact and affects the livelihood of many families. Vaccination of pigs is costly, difficult, and time consuming. The window of opportunity for immunization is limited as pigs are often slaughtered at 6-8 months of age and vaccinating too

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early has interference from maternal antibodies. Pig vaccination, therefore, has not been shown to have a significant impact on human cases of JE. In addition to the challenges of controlling pigs, many other animal hosts exist in the life cycle of JE virus.

For examples, birds have been implicated in several outbreaks in different settings. So even with excellent control of pigs the risk of transmission is still prevalent.

Prevention of JE with vaccination

JE control through vaccination has been well established in many countries. The success of this intervention is best illustrated by the experience of Thailand. From 1973 to 1983, a vertical control program for JE with vector control, case detection, and outbreak response was used without much effect on the disease burden. From 1983 this program was integrated into the primary health care system as a horizontal control program which also had little effect. However, when JE vaccine was introduced in a phased manner and as coverage increased, the incidence of JE fell dramatically. At a Biregional meeting on JE, held in 2004 in Bangkok, control strategies were reviewed for all countries from both South-East Asia and Western Pacific Regions. One of the main conclusions of this consultation was the general agreement that a preventative campaign in high risk populations followed by introduction of JE vaccine into the routine EPI in endemic regions is an appropriate strategy. This strategy mirrors the approach used for yellow fever which is also a mosquito borne flavivirus. Recent work has shown that JE immunization is not only cost effective but also cost saving.

Inactivated JE vaccines have been available since several decades and have shown their capacity to control the disease in countries including Sri Lanka where they have been used programmatically. However, despite their proven efficacy, overall utilization of these vaccines have remained low, which is primarily due to their relatively high cost and the need for multiple doses and booster immunizations. Moreover, lack of reliable disease-burden data has contributed to low prioritization of JE vaccination.

More cost effective and safe vaccines are now available and technical support through WHO and partners can help countries control JE throughout Asia. One vaccine, the live attenuated SA 14-14-2, now has a specific public sector pricing available for the JE endemic countries of Asia with GNP less than US $1000 to allow increased access. With the availability of safe effective and affordable vaccines, JE control is now possible as an integrated part of the public health system; vaccination now provide an effective and reliable public health intervention.

Sri Lankan and Thailand experienceS clearly show the dramatic effect that the two countries had, following the introduction of inactivated JE vaccine.

Vaccine licensing or registration:

Currently no JE vaccines are WHO pre-qualified. However, WHO pre-qualification is not required for use of vaccines in countries as long as the vaccines are known to be of assured quality. Such an assurance comes when a country has a functional National Regulatory Authority (NRA). Countries should consider and license JE vaccine through their NRA.

General WHO position on vaccines

Vaccines for large-scale public health interventions should meet the current WHO quality requirements; be safe and have a significant impact against the actual disease in all target populations; if intended for infants or young children, be easily adapted to the schedules and timing of national childhood immunization programmes; not interfere significantly with the immune response to other vaccines given simultaneously; be formulated to meet common technical limitations, e.g. in terms of refrigeration and storage capacity; and be appropriately priced for different markets.

WHO position on JE vaccines

The need for increased regional and national awareness of JE and for international support to control this disease is . With increasing availability of efficacious, safe and affordable vaccines, JE immunization should be integrated into the EPI programmes in all areas where JE constitutes a public health problem. The most effective immunization strategy in JE-endemic settings is one time catch-up campaigns including child health weeks or multi-antigen campaigns in the locally-defined primary target population, followed by incorporation of the JE vaccine into the routine immunization programme. This approach has a greater public health impact than either strategy separately.

JE surveillance is critical for characterizing the epidemiology, measuring the burden of disease, identifying high-risk areas and areas of new disease activity, as well as for documenting the impact of control measures. Realizing the need to harmonize surveillance efforts in different countries, WHO has developed surveillance standards that also include specific recommendations on JE surveillance.

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[F:/JE/WHO Vector—Borne Viral infections.htm]

Proceedings of the Sri Lanka National Immunization Summit—2007 , Epidemiology Unit , Ministry of Health Sri Lanka.

The Editor wishes to acknowledge Dr Ranjan Wijesinghe - Consultant Epidemiologist for the assistance provided in the preparation of this article.

Table 1: Vaccine-preventable Diseases & AFP

23rd – 29th Feb 2008 (9th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	02 HB=1 MT=1	00	00	00	00	00	00	02	01	12	14	-14.3%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	00	01	00	00	00	00	00	02	03	02	27	09	+200.0%
Tetanus	00	00	00	00	02 BT=2	00	00	00	00	02	00	08	08	00.0%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	07	08	-12.5%
Tuberculosis	66	12	04	21	05	24	13	00	05	150	195	1722	1675	+2.8`%

Table 2: Newly Introduced Notifiable Diseases

23rd – 29th Feb 2008(9th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	42	07	29	10	05	10	08	10	16	137	49	973	478	+103.6%
Meningitis	00	02 KD=1 ML=1	01 GL=1	03 JF=1 MN=1 VA=1	01 TR=1	03 KR=2 PU=1	02 PO=1 AP=1	02 BD=2	06 KG=6	20	01	333	38	+776.3%
Mumps	03	04	02	01	07	05	04	02	04	32	10	396	114	+247.4%

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=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,

Table 3: Laboratory Surveillance of Dengue Fever

23rd – 29th Feb 2008 (9th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	07	00	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	50	18	05	06	00	00	03	02	00	00	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]
* Not all positives are subjected to serotyping.
NA= Not Available.
Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

23rd – 29th Feb 2008 (9th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal -itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Returns Re-ceived Timely**
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	29	341	05	33	00	04	03	35	02	51	06	25	00	00	00	24	00	00	**77**
Gampaha	16	234	03	26	00	03	02	15	00	13	05	34	00	01	05	34	00	00	**57**
Kalutara	12	114	07	80	01	06	02	20	00	04	04	43	00	02	02	12	00	00	**92**
Kandy	03	44	04	49	00	01	04	11	00	07	04	39	01	16	02	40	00	00	**71**
Matale	03	19	09	51	00	00	01	10	00	00	04	119	00	01	03	09	00	00	**58**
Nuwara Eliya	00	05	10	34	00	00	10	51	62	62	00	09	04	20	02	41	00	01	**92**
Galle	04	26	02	30	00	06	00	04	00	00	08	53	00	06	00	02	00	02	**88**
Hambantota	05	37	01	24	00	02	00	02	00	01	03	22	05	23	01	04	00	00	**100**
Matara	03	58	05	45	01	02	02	15	00	02	03	32	05	44	00	02	00	01	**82**
Jaffna	02	29	04	30	00	00	17	96	00	02	00	00	08	83	05	16	00	00	**88**
Kilinochchi	00	00	00	01	00	00	00	00	00	00	00	01	00	00	00	01	00	00	**25**
Mannar	00	08	00	01	00	06	12	66	00	00	00	00	00	00	03	08	00	00	**75**
Vavuniya	01	10	00	09	00	01	00	01	02	04	00	00	00	00	00	02	00	00	**75**
Mullaitivu	00	00	00	01	00	00	00	05	00	00	00	00	00	00	00	04	00	00	**80**
Batticaloa	01	37	03	19	00	00	00	03	00	00	00	00	00	00	04	34	00	02	**55**
Ampara	00	06	05	59	00	00	01	01	00	00	00	05	00	00	00	01	00	00	**100**
Trincomalee	14	88	00	19	00	00	00	02	00	01	01	04	02	07	01	07	00	00	**80**
Kurunegala	02	105	09	94	00	05	02	15	00	01	02	08	00	10	00	10	01	01	**78**
Puttalam	14	115	03	25	00	01	01	28	01	02	00	02	02	09	01	09	00	00	**78**
Anuradhapur	07	60	01	19	00	03	00	03	00	04	02	19	01	07	02	04	00	00	**74**
Polonnaruwa	01	22	02	24	00	01	00	07	00	04	01	06	00	00	00	08	00	00	**100**
Badulla	00	15	09	85	00	01	03	25	00	01	00	06	03	26	04	42	00	01	**73**
Monaragala	02	18	06	46	00	01	03	10	00	07	01	15	05	29	00	06	00	00	**100**
Ratnapura	04	73	06	49	00	12	02	29	00	42	04	24	01	43	00	23	00	00	**81**
Kegalle	08	63	06	109	01	13	00	06	00	00	01	16	04	16	12	91	00	00	**82**
Kalmunai	00	03	00	39	00	00	00	00	00	03	00	00	00	01	00	09	00	00	**54**
SRI LANKA	**131**	**1530**	**100**	**1001**	**03**	**68**	**65**	**460**	**67**	**211**	**49**	**482**	**41**	**344**	**47**	**443**	**01**	**08**	**78**

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 8 March , 2008 Total number of reporting units =290. Number of reporting units data provided for the current week: 238

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WER SRI LANKA 2008

JE– Sri Lankan situation

Though there have been speculations about a possible outbreak of Japanese encephalitis [JE] in Ceylon in 1948 (Tsai et al, 1990), JE virus was isolated for the first time in Sri Lanka in 1968. However, the first recorded major outbreak occurred in Sri Lanka in 1985-86 in the North Central Province.

Three hundred and eighty five cases were reported in the outbreak with 64 deaths due to the disease with a case fatality rate (CFR) of 17%. Predominantly affected age groups in this out break were 5-9 years and 20-29 years. The sex ratio of the affected was 2:1 (male: female).The disease occurred in epidemic proportions in 1986-87 and 1987-88 too. The latter outbreak was the largest outbreak reported so far with 812 cases and 192 deaths (CFR- 24%). What was noteworthy in the above said epidemic was the spread of the disease outbreak to two new districts adjoining the North Central Province [Kurunegala and Putttalam].

Epidemiologically, these enzootic viral transmission areas have intensive paddy cultivation supported by moderate to heavy rainfall and a network of irrigation canals. The increase in incidence of JE was reported to be consistent with the rainy season. Though the disease occurs throughout the year it shows a marked increase with the North-East monsoonal rains [November to February] as a result of increased mosquito breeding, due to water logging in paddy fields and ground pools. Man mosquito contact is also observed to be high when adult insect densities build up to a maximum during this period.

Deforestation and expansion of agricultural areas at a very rapid rate with new canals being built or reconstructed from ancient remnants have attributed extensively to the emergence of JE in outbreak proportions. State sponsored colonization programmes with a view to expanding agricultural activities has attracted a vast majority of non immune people from various parts of the country posing a threat of an outbreak among susceptible population .Another disposing factor to the disease was pig breeding in closer proximity to residential areas providing amplifying hosts. These dynamic changes in conditions receptive to viral transmission have been a key for JE transmission in Sri Lanka.

While it was apparent that JE was endemic in certain areas of Sri Lanka gradually it was becoming prevalent in areas where low level of enzootic transmission previously maintained or in new areas. Therefore, immunization appeared to be the most cost effective public health tool to cope with this emerging challenge of JE. Thus, as a remedy, immunization against JE was introduced on phase basis in 1988 in Sri Lanka. The target group identified for vaccination was children in the age group of 1-10 years living in Anuradhapura, Polonnaruwa Kurunegala and Putttalam divisions. They were vaccinated with four doses of the Nakayama strain of the inactivated JE vaccine during the inter epidemic period. Vaccination has been carried out by using campaign approach in high endemic districts.

This continued till 1994 when the Ministry of health shifted from Nakyama strain to Beijing strain.

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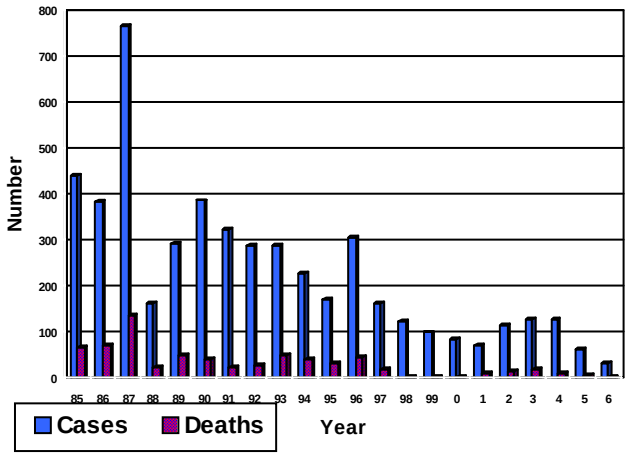
Similar to trends exhibited by other EPI antigens, over the years immunizationcoverage increased and simultaneously the incidence of the disease started to decrease.

However, disease has emerged in other areas where immunisation has not been carried out. The latest outbreak occurred in the district of Ratnapura in 2002. Emergence of the disease in areas where enzootic viral transmission was low or non existent and highlighted the need for introduction of vaccination as the major means of prevention . Accordingly, Ratnapura and Jaffna districts were also added to the JE vaccination programme. Based on the JE surveillance data , currently JE immunization programme is conducted in western, Northwestern, North central, Eastern provinces and Rathnapura and Jaffna districts [18 high risk districts] targeting children of 1 –10 years.



Reported JE Cases, Sri Lanka, 1995-2006 (Source Epidemiology Unit)

Epidemiology Unit has noted a relatively increased trend of reported AEFIs with inactivated JE vaccine compared to other routine EPI vaccines during the recent years. Overall improved reporting of AEFIs in the country may be partly responsible for this increased reporting..

When we consider the cost factor, the price per dose of inactivated JE vaccine for the Sri Lankan government in year 2006 was US$4.50. Given the 3-dose primary series and a booster dose required at 5 years of age, the annual cost of JE vaccine in Sri Lanka is now well over the three-quarters of the Sri Lankan government's entire budget for all vaccines. Thus, the cost of inactivated JE vaccine is becoming prohibitive and jeopardizing the Sri Lankan government's ability to sustain a public policy of immunization against JE.

JE Surveillance

In accordance with the routine disease surveillance system, all the clinically suspected cases of encephalitis are reported from the health institutions to the relevant MOH offices where field investigations are carried out to confirm or discard the JE cases. Further to the field investigations during routine surveillance of JE, special investigation is carried out by using special investigation form for each clinically confirmed case of JE. Special investigations are aimed at obtaining more details than the data available through the routine preliminary field investigations. Information targeting through the special investigation includes patient's clinical presentation, laboratory investigations, Clinical conclusions and immunization details. It also helps to select the confirmed cases out of the notified suspected cases. MOH and his team are responsible for investigating these cases [for the second time] and for sending the dully completed special investigation forms back to the Epidemiology Unit. Same time all the clinicians who are attending to the suspected patient with JE are suppose to send a blood sample to the Virology Department of the MRI for the confirmation of the diagnosis.

According to the JE surveillance data, for the year 2007, a total of 44 laboratory confirmed cases of JE were reported from medical institutions and there were two deaths giving a case fatality rate of 4.5%. More than half of the total cases was reported in 1—24 years age group. There was a one casesin the under 1 year age group.

A programme for immunization of pigs was also carried out in some areas by the Department of Animal Husbandry, with the assistance of the Public Health Veterinary Services Unit of the Ministry of Health.

The Entomology Department of the MRI and regional entomology teams in the RDHS divisions carried out entomological surveillance activities in high risk areas. Health education activities are carried out by the MOH, the Health Education Bureau and other specialized units of the Ministry of Health.

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The Editor wishes to acknowledge Dr Nihal Abeysinghe—Chief Epidemiologist and Dr Ranjan Wijesinghe - Consultant Epidemiologist for the assistance provided in the preparation of this article.

Table 1: Vaccine-preventable Diseases & AFP

1st – 7th March 2008 (10th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	01 Gm=1	01 ML=1	00	00	00	00	00	01 BD=1	01 KG=1	04	02	17	16	+6.25%
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	27	10	+170.3%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	08	09	-11.1%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	02	07	10	-30.0%
Tuberculosis	43	01	14	07	04	00	03	15	00	87	224	1809	1899	-4.7`%

Table 2: Newly Introduced Notifiable Diseases

1st – 7th March 2008 (10th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	30	07	16	06	06	13	03	04	23	108	74	1099	554	+98.3%
Meningitis	06 GM=2 CO=4	00	00	01 VA=1	02 BT=2	04 KR=3 PU=1	02 PO=2	00	10 RP=2 KG=8	25	07	363	46	+689.1%
Mumps	07	02	04	00	07	03	00	01	11	35	19	436	134	+225.3%

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=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 3: Laboratory Surveillance of Dengue Fever

1st – 7th March 2008 (10th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	09	01	01	00	00	00	01	00	00	00	00	00	00	00
Total number to date in 2008	36	19	04	06	00	00	02	02	00	00	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]
* Not all positives are subjected to serotyping.
NA= Not Available.
Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

1st – 7th March 2008 (10th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Returns Re-ceived Timely**
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	25	372	02	35	00	04	03	38	01	53	07	34	00	00	01	27	01	01	**92**
Gampaha	14	254	05	32	00	03	01	17	01	16	09	46	00	01	03	37	00	00	**100**
Kalutara	09	123	07	87	00	06	05	26	07	11	08	51	00	02	01	13	00	00	**92**
Kandy	06	50	02	52	00	01	00	11	01	08	04	43	01	17	03	42	00	00	**71**
Matale	02	25	02	55	00	00	01	11	00	00	03	124	00	01	01	11	00	00	**83**
Nuwara Eliya	00	05	07	41	00	00	13	64	00	62	01	10	01	21	01	42	00	01	**100**
Galle	02	29	00	30	00	06	05	09	00	37	07	60	00	06	01	03	00	02	**94**
Hambantota	01	38	00	25	00	02	02	04	05	06	02	24	00	24	00	03	00	00	**91**
Matara	03	61	06	51	00	02	00	15	00	02	10	43	01	47	00	02	00	02	**100**
Jaffna	00	29	00	30	00	00	00	96	00	02	00	00	00	83	00	16	00	00	**00**
Kilinochchi	00	00	00	01	00	00	00	00	00	00	00	01	00	00	00	01	00	00	**00**
Mannar	02	10	00	01	00	06	02	68	00	00	00	00	00	00	00	08	00	00	**50**
Vavuniya	00	10	00	09	00	01	00	01	00	04	00	00	00	00	00	02	00	00	**100**
Mullaitivu	00	00	00	01	00	00	00	05	00	00	00	00	00	00	00	04	00	00	**40**
Batticaloa	06	43	00	19	00	00	01	04	03	03	00	00	00	00	03	40	01	02	**73**
Ampara	00	06	03	62	00	00	00	01	00	00	00	05	00	00	00	01	00	00	**100**
Trincomalee	06	94	01	20	00	00	02	04	00	01	01	05	02	09	01	08	00	00	**70**
Kurunegala	06	115	03	97	00	05	01	16	00	01	00	08	01	11	01	11	00	00	**72**
Puttalam	16	133	01	26	00	01	00	35	01	03	00	02	00	09	03	14	00	00	**78**
Anuradhapur	09	70	00	19	00	03	00	04	00	04	03	23	00	07	00	04	00	00	**89**
Polonnaruwa	02	24	07	31	00	01	02	09	00	04	00	06	00	00	02	10	00	00	**86**
Badulla	02	17	13	99	00	01	01	26	00	01	00	06	00	28	01	43	00	01	**80**
Monaragala	00	18	04	50	00	01	00	10	00	07	00	15	00	29	00	06	00	00	**73**
Ratnapura	04	77	08	57	01	13	03	32	00	42	01	25	01	44	01	24	00	00	**81**
Kegalle	08	72	14	123	00	13	02	08	00	00	03	19	04	20	13	104	00	00	**91**
Kalmunai	01	04	01	41	00	00	00	00	00	03	00	00	00	01	01	10	00	00	**46**
SRI LANKA	**124**	**1679**	**86**	**1094**	**01**	**69**	**44**	**514**	**19**	**270**	**59**	**550**	**11**	**360**	**37**	**486**	**02**	**09**	**79**

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 15 March , 2008 Total number of reporting units =290. Number of reporting units data provided for the current week: 238

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WEEKLY EPIDEMIOLOGICAL REPORT

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Vol. 35 No. 12 **15th – 21st March 2008**

WER SRI LANKA 2008

Vaccines against Japanese Encephalitis

It was decided to make all efforts to introduce live attenuated JE vaccine [LJEV] to the National EPI schedule at the earliest replacing the currently used killed JE vaccine. This decision was taken, at the National immunization Summit held in Colombo in January 2007 with the participation of all stakeholders of the programme .

With a view to implementing this decision currently with the support from PATH, the Epidemiology Unit has initiated a clinical trial in the Colombo district to ascertain the safety and immunogenicity of LJEV. Based on the preliminary results, the Advisory Committee on Communicable Diseases has at its last meeting in March 2008 decided to introduce live JE vaccine in place of the inactivated vaccine.

Type of JE vaccines

Three types of JE vaccines are currently in use in several JE endemic countries of the Asia-Pacific Region. They are namely:

(1) Mouse brain-derived inactivated vaccine;
(2) Cell culture-derived inactivated vaccine.
(3) Cell culture-derived live attenuated vaccine

Mouse brain-derived inactivated vaccine

The mouse brain-derived inactivated JE vaccine is produced in several Asian countries. Until recently, this has been the only type of JE vaccine commercially available in the international market. The commercially available mouse brain-derived JE vaccine is based either on the Nakayama strain, which was isolated in Japan in 1935, or on the Beijing-1 strain. Currently the mouse brain-derived vaccine is used in China, India, Sri Lanka and Thailand.

The mouse brain-derived JE vaccine [Beijing strain used in the public sector]is given subcutaneously in doses of 0.25 ml or 0.5 ml, the lower dose being for children aged 1-3years. Due to likely interference with remaining maternal antibodies, children are usually not vaccinated before the age of 1 year. The manufacturers of the internationally marketed vaccine recommend that primary childhood immunization involve 2 injections at an interval of 1-2 weeks. In several Asian trials, primary immunization has had a disease-preventing efficacy of > 95%; 91% efficacy was achieved in a placebo-controlled trial. There is no reduction of seroconversion rates when other childhood vaccines are given simultaneously. However, the primary vaccination schedules vary considerably among different Asian countries.

Cell culture-derived inactivated vaccine

This vaccine is manufactured in China and based upon the Beijing P-3 strain of JE virus. Primary immunization of infants with this formalin-inactivated vaccine results in about 85% protection. The vaccine is inexpensive, and 90 million doses are distributed for internal use in China every year. However, in China this vaccine will be gradually replaced by the cell culture-derived live attenuated vaccine.

Cell culture-derived live attenuated vaccine :

This Chinese vaccine is based on a stable neuro-attenuated strain of the JE virus (SA-14-14-2). In non-endemic areas, 1 single dose of this

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vaccine induced an antibody response in 83%-100% of children aged 6-7 years, and in older children when immunized twice at intervals of 1-3 months, 94%-100% showed a serological response. Side-effects are reported to be minimal. Although at least two doses are recommended, there is evidence that even a single dose can stimulate adequate immune response in the recipient of the vaccine as demonstrated more recently in Nepal.

Apart from hundreds of millions of doses used in China, India began introduction of this vaccine in eleven high endemic districts in five states.

The live attenuated SA 14-14-2 vaccine is recommended to be given as a single dose to children older than 8 months of age followed with a second opportunity at 2 years of age. However, the WHO recommendation at present is to give the vaccine to children above one year of age. The age of the first dose should be based on local age distribution of cases and the immunization schedule. The live JE vaccine has no additional contraindications to other live vaccines.

The SA 14-14-2 vaccine virus is a JE viral strain that has shown effectiveness in vitro against the P3; Nakayama; 12 Chinese JE field isolates; and JE strains from Thailand, Nepal, Vietnam, Indonesia, India, Japan, and the Philippines. This vaccine has been licensed in China for 18 years, and over 200 million doses have been given without any recorded significant adverse event. The safety of the vaccine has been evaluated in several studies in more than 600,000 children (ages 1 to 15 years). Fever occurred in less than 1 in 500, and no associated encephalitis cases emerged. In one study of 25,000 children who were closely followed, the vaccinated group showed no difference in symptoms compared to the control group. This vaccine is produced inexpensively in China.

Studies in China have shown protective efficacy of 96% to 98% up to 17 years after a two-dose regimen. While the present national recommendation is for two doses given one year apart, followed by a booster at age six , this may change in the light of the most recent data showing efficacy of a single dose. A study from Nepal has reported a 99.6% efficacy rate with a single dose given within one week of an outbreak. A further study showed 98.5% protection 12 to 15 months after vaccination.

As no JE vaccine including the SA 14-14-2 vaccine is yet prequalified by WHO, this vaccine is not available for purchase through UN agencies like UNICEF for broader international use, although prequalification is expected in 2008. However, India, South Korea, and Nepal already have licensed this vaccine for use. In Sri Lanka, LJEV has been given provisional registration for use in clinical studies in the public sector.

Recently the Programme for Appropriate Technology in Health [PATH] entered into an agreement with the supplier of live attenuated SA 14-14-2 vaccine and this agreement has enabled the low – income countries who are supported by the Global Alliance of Vaccine & Immunization to have a **public price** for the vaccine. Already India and Nepal has received the benefit of this agreement and they are using the vaccine for a very low price making millions of children protected against JE. The Government of Napal has gone a step beyond and has vaccinated even adults to protect them from this deadly disease.

The price per dose of inactivated JE vaccine for the Sri Lankan government in year 2006 was US$4.50. Given the 3-dose primary series and a booster dose required , the annual cost of JE vaccine in Sri Lanka is now well over three-quarters of the Sri Lankan government's entire budget for all vaccines. Thus, the cost of inactivated JE vaccine is becoming prohibitive and jeopardizing the Sri Lankan government's ability to sustain a public policy of immunization against JE. If LJEV is given full licensure in Sri Lanka, at a price of below US$0.75 LJEV would be a sustainable part of the Sri Lankan immunization programme and also would save the large sum of money for the Sri Lankan public health system annually.

Once the Immunogenecity and safety of the LJEV is confirmed through the results of the ongoing clinical trial done in Colombo , Ministry of Health would be in a very strong position to work out a public price for LJEV vaccine like in India and Nepal, Sri Lanka would thus be able to introduce it to the National EPI programme and protect its adult population too from this deadly disease and also it would be an important landmark in the history of immunization in Sri Lanka

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Table 1: Vaccine-preventable Diseases & AFP

8th – 14th March 2008 (11th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	00	00	00	00	00	00	00	00	03	17	18	+5.6%
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	26	12	+116.7%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	08	09	-11.1%
Whooping Cough	00	00	00	00	00	01 KR=1	00	00	00	01	02	08	12	-33.3%
Tuberculosis	91	02	11	01	05	11	05	00	00	126	145	1935	2044	-5.3`%

Table 2: Newly Introduced Notifiable Diseases

8th – 14th March 2008 (11th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	25	08	12	15	03	02	01	10	25	101	64	1206	659	+83.0%
Meningitis	01 GM=1	00	04 GL=3 HB=1	01 JF=1	01 TR=1	05 KR=4 PU=1	03 PO=3	0I BD=1	07 RP=3 KG=4	23	00	392	46	+752.2%
Mumps	04	17	03	00	04	02	00	01	07	38	24	477	160	+198.1%

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.
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 3: Laboratory Surveillance of Dengue Fever

8th – 14h March 2008 (11th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	03	02	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	39	21	04	06	00	00	02	02	00	00	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]
* Not all positives are subjected to serotyping.
NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

8th – 14th March 2008 (11th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Returns Re-ceived Timely**
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	26	400	01	36	00	04	03	41	03	56	05	39	00	00	02	29	00	01	**69**
Gampaha	12	266	05	37	00	03	00	17	00	16	09	55	00	01	00	37	00	00	**57**
Kalutara	11	134	08	95	00	06	06	32	00	11	21	72	00	02	01	14	00	00	**100**
Kandy	08	61	08	60	01	02	01	12	00	08	03	46	07	24	05	49	00	00	**67**
Matale	01	26	06	61	00	00	01	12	00	00	05	129	00	01	00	11	00	00	**58**
Nuwara Eliya	00	05	06	47	00	00	02	66	00	62	00	10	03	24	03	45	00	01	**38**
Galle	02	31	02	32	01	07	01	10	04	42	06	66	00	06	01	04	00	02	**71**
Hambantota	00	38	01	26	00	02	01	05	00	06	03	27	01	25	00	03	00	00	**91**
Matara	07	68	02	53	00	02	04	19	00	02	19	62	08	55	00	02	00	01	**76**
Jaffna	00	29	04	34	00	00	10	106	00	02	00	00	08	91	01	17	00	00	**75**
Kilinochchi	00	00	00	01	00	00	00	00	00	00	00	01	00	00	00	01	00	00	**00**
Mannar	00	10	00	01	00	06	00	68	00	00	00	00	00	00	00	08	00	00	**00**
Vavuniya	00	10	01	10	00	01	00	01	00	04	00	00	00	00	00	02	00	00	**75**
Mullaitivu	00	00	00	01	00	00	00	05	00	00	00	00	00	00	00	04	00	00	**00**
Batticaloa	03	46	00	19	00	00	00	04	00	03	00	00	01	01	00	40	00	02	**27**
Ampara	00	06	00	62	00	00	00	01	00	00	00	05	00	00	00	01	00	00	**14**
Trincomalee	00	94	01	21	00	00	00	04	00	01	01	06	00	09	00	08	00	00	**40**
Kurunegala	03	125	01	98	00	05	00	16	01	02	01	12	00	11	01	13	00	01	**50**
Puttalam	13	147	02	28	00	01	01	37	00	03	00	02	02	11	00	14	00	01	**56**
Anuradhapur	04	75	01	20	00	03	00	04	00	04	00	23	00	07	01	05	00	00	**53**
Polonnaruwa	02	26	00	31	00	01	04	13	00	04	01	07	00	00	00	10	00	00	**71**
Badulla	00	17	05	106	01	03	06	32	00	01	00	06	02	31	03	46	00	01	**60**
Monaragala	02	20	01	51	00	01	01	11	01	08	00	15	07	37	01	07	00	00	**82**
Ratnapura	02	82	01	58	00	13	02	34	00	42	02	27	00	45	01	26	00	00	**69**
Kegalle	08	80	07	132	00	13	02	10	00	00	03	25	02	22	10	114	00	00	**82**
Kalmunai	01	05	07	49	00	00	00	00	00	03	00	00	00	01	00	10	00	00	**54**
SRI LANKA	**105**	**1801**	**70**	**1169**	**03**	**73**	**45**	**560**	**09**	**280**	**79**	**635**	**41**	**404**	**30**	**520**	**00**	**10**	**60**

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 22 March , 2008 Total number of reporting units =290. Number of reporting units data provided for the current week: 238

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WER SRI LANKA 2008

Vol. 35 No. 13 **22nd – 28th March 2008**

Global tuberculosis control

24th March is the World TB Day. World TB Day is an occasion to urge action to stop tuberculosis, a disease which still kills an appalling 4,000 people globally every day. The man-made multi-drug resistant strain and its even more lethal form, extensively drug-resistant TB, are both spreading.

If we are to prevent a virtually untreatable tuberculosis epidemic, we must tackle the roots of the problem: poor services, poor supplies, poor prescribing and poor use of drugs. That is why the theme of this year's Day is "I am Stopping TB". This is a fight that can be won only with the collective commitment of millions of individuals – donors and researchers, doctors and health care workers, patients and family members.

Tuberculosis (TB) is a contagious disease. Like the common cold, it spreads through the air. Only people who are sick with TB in their lungs are infectious. When infectious people cough, sneeze, talk or spit, they propel TB germs, known as bacilli, into the air. A person needs only to inhale a small number of these to be infected.

Left untreated, each person with active TB disease will infect on average between 10 and 15 people every year. But people infected with TB bacilli will not necessarily become sick with the disease. The immune system "walls off" the TB bacilli which, protected by a thick waxy coat, can lie dormant for years. When someone's immune system is weakened, the chances of becoming sick are greater.

- Someone in the world is newly infected with TB bacilli every second.
- Overall, one-third of the world's population is currently infected with the TB bacillus.
- 5-10% of people who are infected with TB bacilli (but who are not infected with HIV) become sick or infectious at some time during their life.

Global and regional incidence : The World Health Organization (WHO) estimates that the largest number of new TB cases in 2005 occurred in the South-East Asia Region, which accounted for 34% of incident cases globally. However, the estimated incidence rate in sub-Saharan Africa is nearly twice that of the South-East Asia Region, at nearly 350 cases per 100 000 population.

It is estimated that 1.6 million deaths resulted from TB in 2005. Both the highest number of deaths and the highest mortality per capita are in the African Region. The TB epidemic in Africa grew rapidly during the 1990s, but this growth has been slowing each year, and incidence rates now appear to have stabilized or begun to fall.

In 2005, estimated per capita TB incidence was stable or falling in all six WHO regions. However, the slow decline in incidence rates per capita is offset by population growth. Consequently, the number of new cases arising each year is still increasing globally and in the WHO regions of Africa, the Eastern Mediterranean and South-East Asia.

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HIV and TB

HIV and TB form a lethal combination, each speeding the other's progress. HIV weakens the immune system. Someone who is HIV-positive and infected with TB bacilli is many times more likely to become sick with TB than someone infected with TB bacilli who is HIV-negative. TB is a leading cause of death among people who are HIV-positive. In Africa, HIV is the single most important factor contributing to the increase in incidence of TB since 1990.

Drug-resistant TB

Until 50 years ago, there were no medicines to cure TB. Now, strains that are resistant to a single drug have been documented in every country surveyed; what is more, strains of TB resistant to all major anti-TB drugs have emerged. Drug-resistant TB is caused by inconsistent or partial treatment, when patients do not take all their medicines regularly for the required period because they start to feel better, because doctors and health workers prescribe the wrong treatment regimens, or because the drug supply is unreliable. A particularly dangerous form of drug-resistant TB is multidrug-resistant TB (MDR-TB), which is defined as the disease caused by TB bacilli resistant to at least isoniazid and rifampicin, the two most powerful anti-TB drugs. Rates of MDR-TB are high in some countries, especially in the former Soviet Union, and threaten TB control efforts.

While drug-resistant TB is generally treatable, it requires extensive chemotherapy (up to two years of treatment) with second-line anti-TB drugs which are more costly than first-line drugs, and which produce adverse drug reactions that are more severe, though manageable.

The emergence of extensively drug-resistant (XDR) TB, particularly in settings where many TB patients are also infected with HIV, poses a serious threat to TB control, and confirms the urgent need to strengthen basic TB control and to apply the new WHO guidelines for the programmatic management of drug-resistant TB.

The Stop TB Strategy, the Global Plan to Stop TB, 2006–2015 and targets for TB control

In 2006, WHO launched the new Stop TB Strategy. The core of this strategy is DOTS, the TB control approach launched by WHO in 1995. Since its launch, more than 22 million patients have been treated under DOTS-based services. The new six-point strategy builds on this success, while recognizing the key challenges of TB/HIV and MDR-TB. It also responds to access, equity and quality constraints, and adopts evidence-based innovations in engaging with private health-care providers, empowering affected people and communities and helping to strengthen health systems and promote research.

The six components of the Stop TB Strategy are:

1. **Pursuing high-quality DOTS expansion and enhancement.** Making high-quality services widely available and accessible to all those who need them, including the poorest and most vulnerable, requires DOTS expansion to even the remotest areas.

2. **Addressing TB/HIV, MDR-TB and other challenges.** Addressing TB/HIV, MDR-TB and other challenges requires much greater action and input than DOTS implementation and is essential to achieving the targets set for 2015

3. **Contributing to health system strengthening.** National TB control programmes must contribute to overall strategies to advance financing, planning, management, information and supply systems and innovative service delivery scale-up.

4. **Engaging all care providers.** TB patients seek care from a wide array of public, private, corporate and voluntary health-care providers. To be able to reach all patients and ensure that they receive high-quality care, all types of health-care providers are to be engaged.

5. **Empowering people with TB, and communities.** Community TB care projects have shown how people and communities can undertake some essential TB control tasks. These networks can mobilize civil societies and also ensure political support and long-term sustainability for TB control programmes.

Enabling and promoting research. While current tools can control TB, improved practices and elimination will depend on new diagnostics, drugs and vaccines.

In Sri Lanka TB and respiratory disease control is implemented by a decentralized unit which functions through a network of 23 district Chest Clinics and 2 Chest Hospitals in close coordination with other general health institutions.

There has not been a significant decline in the incidence of TB over the years. Around 8,500—9000 new cases of TB are detected annually and it still continues to pose a major public health challenge in Sri Lanka.

During the year 2007, 8814 new TB cases, 229 relapses, and 65 treatment failures were reported. Out of the new cases, 78 per cent were cases of pulmonary TB. 205 TB related deaths were notified for the year. Western province has reported the highest number of TB cases for 2007. Male to femal sex ratio was 2.1 :1

Lowest number of cases were belonged to the under 15 age group [4%]. 36% were between 15—39 years old age group.

Source : National Control Program for Tuberculosis and Chest Diseases

Source :

Tuberculosis—WHO Fact sheet [Fact sheet No 104] [http://TB/WHO Tuberculosis. htm]

Table 1: Vaccine-preventable Diseases & AFP

15th – 21st March 2008 (12th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	00	00	00	00	00	00	00	00	00	17	19	-10.5%
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	01	01	00	28	13	+115.4%
Tetanus	01 Gm=1	00	00	00	00	00	00	00	00	01	00	11	09	+22.2%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	08	13	-38.5%
Tuberculosis	20	14	00	00	02	21	00	07	00	70	175	2005	2219	-9.6`%

Table 2: Newly Introduced Notifiable Diseases

15th – 21st March 2008 (12th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	20	15	13	01	10	18	06	05	10	98	64	1356	736	+84.2%
Meningitis	02 GM=1 CO=1	00	05 GL=2 MT=3	00	01 KM=1	05 KR=4 PU=1	02 PO=1 AP=1	02 BD=2	04 KG=4	21	00	418	46	+808.7%
Mumps	01	11	06	00	11	03	04	02	03	41	34	531	198	+168.2%

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=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 3: Laboratory Surveillance of Dengue Fever

15th – 21st March 2008 (12th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	03	02	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	42	23	04	06	00	00	02	02	00	00	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

15th – 21st March 2008 (12th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Returns Re-ceived Timely**
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	23	428	01	40	00	04	02	44	00	56	12	57	00	01	06	36	00	01	**92**
Gampaha	14	285	02	40	00	03	00	19	00	16	08	73	00	01	01	38	00	00	**79**
Kalutara	11	145	04	99	00	06	00	32	00	11	04	76	00	02	01	15	00	00	**92**
Kandy	03	64	04	64	00	02	02	14	13	21	03	49	02	26	01	50	00	00	**84**
Matale	02	28	05	67	00	00	01	14	00	00	11	142	00	01	00	11	00	00	**75**
Nuwara Eliya	00	05	04	53	00	00	03	69	44	106	00	10	00	24	01	48	00	01	**85**
Galle	04	36	00	32	01	08	00	10	00	42	07	77	01	07	00	04	00	02	**88**
Hambantota	00	38	00	26	01	03	00	05	00	06	00	27	00	26	00	03	00	00	**100**
Matara	04	72	02	56	00	02	00	19	00	02	08	76	02	57	01	03	00	01	**94**
Jaffna	00	32	03	40	00	01	06	129	00	02	00	00	03	103	00	17	00	00	**88**
Kilinochchi	00	00	00	02	00	00	00	00	00	00	00	01	00	00	00	01	00	00	**25**
Mannar	00	12	00	01	00	06	01	76	00	00	00	00	00	00	00	09	00	00	**25**
Vavuniya	00	10	00	12	00	01	00	01	00	04	00	01	00	00	00	02	00	00	**25**
Mullaitivu	00	00	00	01	00	00	00	05	00	00	00	00	00	00	00	04	00	00	**00**
Batticaloa	00	50	00	20	00	01	01	05	00	17	00	00	00	01	00	45	01	03	**73**
Ampara	00	06	00	63	00	00	00	01	00	00	00	06	00	00	00	01	00	00	**00**
Trincomalee	11	112	00	22	00	00	00	04	00	01	00	06	00	09	00	08	00	00	**50**
Kurunegala	12	143	00	101	00	05	00	16	00	02	03	15	01	12	01	14	00	01	**89**
Puttalam	09	157	03	31	01	02	01	38	00	03	00	02	03	14	00	15	01	02	**89**
Anuradhapur	01	79	02	22	00	03	00	08	00	04	00	24	01	09	00	05	00	00	**63**
Polonnaruwa	00	26	00	31	00	01	00	13	00	04	00	07	00	00	00	10	00	00	**71**
Badulla	01	18	03	110	00	03	01	34	00	01	01	08	02	34	00	46	00	01	**87**
Monaragala	01	22	05	57	00	01	01	13	00	08	00	16	00	38	00	07	00	00	**91**
Ratnapura	01	83	02	63	00	13	00	35	00	42	04	33	00	45	01	27	00	00	**75**
Kegalle	06	86	12	144	00	13	01	11	00	00	03	28	02	24	13	127	00	00	**100**
Kalmunai	00	08	01	50	00	00	00	02	00	03	00	00	00	01	00	10	00	00	**62**
SRI LANKA	**103**	**1945**	**53**	**1247**	**03**	**78**	**20**	**617**	**57**	**351**	**64**	**734**	**17**	**435**	**26**	**556**	**02**	**12**	**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 29 March , 2008 Total number of reporting units =290. Number of reporting units data provided for the current week: 238

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WER SRI LANKA 2008

Climate Change and Human Health – Part I

In 2008, World Health Day focuses on the need to protect health from the adverse effects of climate change. WHO selected this theme in recognition that climate change is posing ever growing threats to global public health security.

Climate change is a significant and emerging threat to public health, and changes the way we must look at protecting vulnerable populations.

The most recent report of the Intergovernmental Panel on Climate Change confirmed that there is overwhelming evidence that humans are affected by the global climate, and highlighted a wide range of implications for human health. Climate variability and change cause death and disease through natural disasters, such as heatwaves, floods and droughts. In addition, many important diseases are highly sensitive to changing temperatures and precipitation. These include common vector- borne diseases such as malaria and dengue; as well as other major killers such as malnutrition and diarrhoea. Climate change already contributes to the global burden of disease, and this contribution is expected to grow in the future.

The impacts of climate on human health will not be evenly distributed around the world. Developing country populations, particularly in Small Island States, arid and high mountain zones, and in densely populated coastal areas, are considered to be particularly vulnerable.

Fortunately, much of the health risk is avoidable through existing health programmes and interventions. Concerted action to strengthen key features of health systems, and to promote healthy development choices, can enhance public health now as well as reduce vulnerability to future climate change.

Weather and climate: changing human exposures

In discussing "climate change and health" we must distinguish between the health impacts of several meteorological exposures: weather, climate variability and climate change

Weather is the continuously changing condition of the atmosphere, usually considered on a time scale that extends from minutes to weeks. Climate is the average state of the lower atmosphere, and the associated characteristics of the underlying land or water, in a particular region, usually spanning at least several years. Climate variability is the variation around the average climate, including seasonal variations and large-scale regional cycles in atmospheric and ocean circulations such as the El Niño/ Southern Oscillation (ENSO) or the North Atlantic Oscillation.

Climate change occurs over decades or longer time-scales. Until now, changes in the global climate have occurred naturally, across centuries or millennia, because of continental drift, various astronomical cycles, variations in solar energy output and volcanic activity. Over the past few decades it has become increasingly apparent that human actions are changing atmospheric composition, thereby causing global climate change .

Contents ***Page***

The Climate System : Earth's climate is determined by complex interactions between the Sun, oceans, atmosphere, cryosphere, land surface and biosphere. The Sun is the principal driving force for weather and climate.
The uneven heating of Earth's surface (being greater nearer the equator) causes great convection flows in both the atmosphere and oceans, and is thus a major cause of winds and ocean currents.

Five concentric layers of atmosphere surround this planet. The lowest layer (troposphere) extends from the ground level to around 10-12 km altitude on average. The weather that affects Earth's surface develops within the troposphere. The next major layer (stratosphere) extends to about 50 km above the surface. The ozone within the stratosphere absorbs most of the sun's higher-energy ultraviolet rays. Above the stratosphere are three more layers: mesosphere, thermosphere and exosphere.

Overall, these five layers of the atmosphere approximately halve the amount of incoming solar radiation that reaches Earth's surface. In particular, certain "greenhouse" gases, present at trace concentrations in the troposphere (and including water vapour, carbon dioxide, nitrous oxide, methane, halocarbons, and ozone), absorb about 17% of the solar energy passing through it. Of the solar energy that reaches Earth's surface, much is absorbed and reradiated as longwave (infrared) radiation. Some of this outgoing infrared radiation is absorbed by greenhouse gases in the lower atmosphere, which causes further warming of Earth's surface. This raises Earth's temperature by 33ºC to its present surface average of 15ºC. This supplementary warming process is called "the greenhouse effect" .

Greenhouse Gases : Human-induced increases in the atmospheric concentration of GHGs are amplifying the greenhouse effect. In recent times, the great increase in fossil fuel burning, agricultural activity and several other economic activities have greatly augmented greenhouse gas emissions. The atmosphere concentration of carbon dioxide has increased by one-third since the inception of the industrial revolution .

Climate change will erode foundations of health

Scientists tell us that evidence of Earth warming is "unequivocal." Increases in global average air and sea temperature, ice melting and rising global sea levels all help us understand and prepare for the coming challenges. In addition to these observed changes, climate-sensitive impacts on human health are occurring today. They are attacking the pillars of public health and are providing a glimpse of the challenges public health will have to confront on a large scale .

The core concern is succinctly stated: climate change endangers human health .The warming of the planet will be gradual, but the effects of extreme weather events -- more storms, floods, droughts and heat waves -- will be abrupt and acutely felt. Both trends can affect some of the most fundamental determinants of health: air, water, food, shelter and freedom from disease.

Human beings are already exposed to the effects of climate-sensitive diseases and these diseases today kill millions. They include malnutrition, which causes over 3.5 million deaths per year, diarrhoeal diseases, which kill over 1.8 million, and malaria, which kills almost 1 million.

Examples already provide us with images of the future:

- **European heat wave, 2003:** Estimates suggest that approximately 70 000 more people died in that summer than would have been expected.
- **Rift Valley fever in Africa:** Major outbreaks are usually associated with rains, which are expected to become more frequent as the climate changes.
- **Hurricane Katrina, 2005:** More than 1 800 people died and thousands more were displaced. Additionally, health facilities throughout the region were destroyed critically affecting health infrastructure.
- **Malaria in the East African highlands:** Over the last 30 years, warmer temperatures have also created more favourable conditions for mosquito populations in the region and therefore for transmission of malaria.
- **Epidemics of cholera in Bangladesh:** They are closely linked to flooding and unsafe water.

These trends and events cannot be attributed solely to climate change but they are the types of challenges we expect to become more frequent and intense with climate changes. They will further strain health resources which, in many regions, are already under severe stress.

Although climate change is a global phenomenon, its consequences will not be evenly distributed. In short, climate change can aggravate problems that are already huge, largely concentrated in the developing world, and difficult to control.

Source :

Climate change and human health - risks and responses. Summary. WHO, 2003, ISBN 9241590815
[http://WHO Climate change and human health - risks and responses_ Summary- 1.htm]

This article was compiled by Dr Samitha Ginige - Consultant Epidemiologist.

Part II of this article will be continued in the next issue

Table 1: Vaccine-preventable Diseases & AFP

22nd – 28th March 2008 (13th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	00	00	00	00	00	00	01 RP=1	01	01	18	20	-10.0%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	00	01	00	00	00	00	00	00	01	03	30	16	+87.5%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	11	09	+22.2%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	02	08	15	-46.7%
Tuberculosis	86	09	09	31	00	00	02	00	10	151	158	2156	2377	-9.3`%

Table 2: Newly Introduced Notifiable Diseases

22nd – 28th March 2008 (13th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	25	23	17	34	12	11	14	06	24	166	54	1526	817	+86.8%
Meningitis	05 GM=3 CO=1 KL=1	03 KD=1 ML=1 NE=1	05 GL=3 HB=2	01 VA=1	01 KM=1	07 KR=5 PU=2	02 PO=2	02 BD=2	06 KG=5 RP=1	32	01	451	49	+820.4%
Mumps	08	18	07	00	19	05	03	03	05	68	46	604	250	+141.6%

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.

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 3: Laboratory Surveillance of Dengue Fever

22nd – 28th March 2008 (13th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	11	00	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	53	23	04	06	00	00	02	02	00	00	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

22nd – 28th March 2008 (13th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Returns Re-ceived Timely**
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	54	492	04	45	00	04	01	45	00	56	49	110	00	01	05	41	00	01	**92**
Gampaha	15	308	04	46	00	03	01	20	49	65	10	86	01	02	01	39	00	01	**86**
Kalutara	07	152	03	102	00	06	01	33	04	15	13	89	00	02	00	15	00	00	**83**
Kandy	03	68	04	68	00	02	00	15	01	22	05	55	05	31	03	53	00	00	**72**
Matale	02	31	05	73	00	00	00	14	00	02	09	156	00	01	01	12	00	00	**75**
Nuwara Eliya	01	06	07	60	00	00	12	81	00	107	01	11	03	27	02	50	00	01	**100**
Galle	00	36	03	35	00	08	00	10	00	42	14	91	00	07	00	04	00	02	**100**
Hambantota	01	39	01	27	00	03	00	05	00	06	05	32	05	31	00	03	00	00	**91**
Matara	03	75	03	59	00	02	00	19	00	02	10	87	04	61	00	03	00	01	**82**
Jaffna	00	32	01	41	00	01	09	138	00	02	00	00	02	105	00	17	00	00	**63**
Kilinochchi	00	00	00	02	00	00	00	00	00	00	00	01	00	00	00	01	00	00	**25**
Mannar	03	20	00	07	00	06	03	80	00	00	00	00	00	00	00	09	00	00	**50**
Vavuniya	00	10	00	12	00	01	00	01	02	06	01	02	00	00	00	02	00	00	**100**
Mullaitivu	00	00	00	01	00	00	00	05	00	00	00	00	00	00	00	04	00	00	**40**
Batticaloa	03	55	02	22	00	01	02	07	00	17	00	00	00	01	02	47	02	05	**82**
Ampara	00	06	02	66	00	00	01	02	00	00	00	06	00	00	00	01	00	00	**57**
Trincomalee	08	123	03	25	00	00	00	04	00	01	01	07	00	09	00	08	00	00	**90**
Kurunegala	16	159	06	107	01	07	01	17	00	02	04	19	01	13	00	14	02	03	**94**
Puttalam	13	170	01	32	00	02	01	39	00	03	00	02	00	14	01	16	00	02	**78**
Anuradhapur	03	84	01	23	01	04	00	08	00	04	00	24	00	09	01	06	00	00	**74**
Polonnaruwa	01	27	00	32	00	01	01	14	00	04	00	07	00	00	02	12	00	00	**100**
Badulla	02	20	04	114	00	03	03	37	00	01	01	09	10	44	03	49	00	01	**67**
Monaragala	02	24	07	64	00	01	00	14	01	09	07	23	05	44	00	07	00	00	**91**
Ratnapura	04	88	07	70	02	15	00	35	00	42	05	38	01	46	01	28	00	00	**75**
Kegalle	09	95	08	152	02	15	03	14	00	00	11	39	04	28	48	175	00	00	**100**
Kalmunai	04	12	02	52	00	01	01	03	00	03	00	00	00	01	00	10	00	00	**54**
SRI LANKA	**154**	**2132**	**78**	**1337**	**07**	**86**	**40**	**660**	**57**	**411**	**146**	**894**	**41**	**477**	**70**	**626**	**04**	**17**	**80**

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 5 April , 2008 Total number of reporting units =290. Number of reporting units data provided for the current week: 213

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ON STATE SERVICE

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WEEKLY EPIDEMIOLOGICAL REPORT
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WER SRI LANKA 2008

Vol. 35 No. 15 **5th - 11th April 2008**

Climate Change and Human Health – Part II

The effects of climate change on health ; To a large extent, public health depends on safe drinking water, sufficient food, secure shelter, and good social conditions. A changing climate is likely to affect all of these conditions. Reviews of the likely impacts of climate change by the IPCC suggest that a warming climate is likely to bring some localized benefits, such as decreased winter deaths in temperate climates, and increases in food production in some, particularly high altitude, regions. Public health services and high living standards would protect some populations from specific impacts; for example it is unlikely that climate change would cause malaria to become re-established in northern Europe or North America. Overall, however, the health effects of a rapidly changing climate are likely to be overwhelmingly negative, particularly in the poorest communities, which have contributed least to greenhouse gas emissions. Some of the health effects include:

- Increasing frequencies of heatwaves: recent analyses show that human-induced climate change significantly increased the likelihood of the European summer heatwave of 2003.
- More variable precipitation patterns are likely to compromise the supply of freshwater, increasing risks of water-borne disease.
- Rising temperatures and variable precipitation are likely to decrease the production of staple foods in many of the poorest regions, increasing risks of malnutrition.
- Rising sea levels increase the risk of coastal flooding, and may necessitate population displacement. More than half of the world's population now lives within 60km of the sea.
- Changes in climate are likely to lengthen the transmission seasons of important vector-borne diseases, and to alter their geographic range, potentially bringing them to regions that lack population immunity and/or a strong public health infrastructure.

Measurement of health effects from climate change can only be very approximate. Nevertheless, a WHO quantitative assessment, taking into account only a subset of the possible health impacts, concluded that the effects of the climate change that has occurred since the mid-1970s may have caused over 150 000 deaths in 2000. It also concluded that these impacts are likely to increase in the future.

Climate, weather, El Niño and infectious diseases : Both temperature and surface water have important influences on the insect vectors of vector-borne infectious diseases. Of particular importance are vector mosquito species, which spread malaria and viral diseases such as dengue and yellow fever. Mosquitoes need access to stagnant water in order to breed, and the adults need humid conditions for viability. Warmer temperatures enhance vector breeding and reduce the pathogen's maturation period within the vector organism. However, very hot and dry conditions can reduce mosquito survival.

Malaria, today, is mostly confined to tropical and subtropical regions. The disease's sensitivity

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to climate is illustrated by desert and highland fringe areas where higher temperatures and/or rainfall associated with El Niño may increase transmission of malaria . In areas of unstable malaria in developing countries, populations lack protective immunity and are prone to epidemics when weather conditions facilitate transmission.

Dengue is the most important arboviral disease of humans, occurring in tropical and subtropical regions, particularly in urban settings. ENSO affects dengue occurrence by causing changes in household water storage practices and in surface water pooling. Between 1970 and 1995, the annual number of dengue epidemics in the South Pacific was positively correlated with La Niña conditions (i.e., warmer and wetter) .

Rodents, which proliferate in temperate regions following mild wet winters, act as reservoirs for various diseases. Certain rodent-borne diseases are associated with flooding, including leptospirosis, tularaemia and viral haemorrhagic diseases. Other diseases associated with rodents and ticks, and which show associations with climatic variability, include Lyme disease, tick borne encephalitis, and hantavirus pulmonary syndrome.

Many diarrhoeal diseases vary seasonally, suggesting sensitivity to climate. In the tropics diarrhoeal diseases typically peak during the rainy season. Both floods and droughts increase the risk of diarrhoeal diseases. Major causes of diarrhoea linked to heavy rainfall and contaminated water supplies are: cholera, cryptosporidium, E.coli infection, giardia, shigella, typhoid, and viruses such as hepatitis A.

Temperature extremes: heatwaves and cold spells

Extremes of temperature can kill. In many temperate countries, death rates during the winter season are 10-25% higher than those in the summer. In July 1995, a heatwave in Chicago, US, caused 514 heat related deaths (12 per 100,000 population) and 3300 excess emergency admissions.

Most of the excess deaths during times of thermal extreme are in persons with preexisting disease, especially cardiovascular and respiratory disease. The very old, the very young and the frail are most susceptible. In terms of the amount of life lost, the mortality impact of an acute event such as a heatwave is uncertain because an unknown proportion of deaths are in susceptible persons who would have died in the very near future.

Global climate change will be accompanied by an increased frequency and intensity of heat waves, as well as warmer summers and milder winters. Predictive modelling studies, using climate scenarios, have estimated future temperature-related mortality. For example, the annual excess summertime mortality attributable to climate change, by 2050, is estimated to increase several-fold.

The extent of winter-associated mortality directly attributable to stressful weather is less easy to determine. In temperate countries undergoing climate change, a reduction in winter deaths may outnumber the increase in summer deaths. Without better data, the net impact on annual mortality is difficult to estimate. Further, it will vary between populations.

Natural disasters : The effects of weather disasters (droughts, floods, storms and bushfires) on health are difficult to quantify, because secondary and delayed consequences are poorly reported. El Niño events influence the annual toll of persons affected by natural disasters . Globally, disasters triggered by droughts occur especially during the year after the onset of El Niño.

Globally, natural disaster impacts have been increasing. An analysis by the reinsurance company Munich Re found a tripling in the number of natural catastrophes over the last ten years, compared to the 1960s. This reflects global trends in population vulnerability more than an increased frequency of extreme climatic events. Developing countries are poorly equipped to deal with weather extremes, even as the population concentration increases in high-risk areas like coastal zones and cities. Hence, the number of people killed, injured or made homeless by natural disasters has been increasing rapidly.

Conclusion ; The increasing trend in natural disasters is partly due to better reporting, partly due to increasing population vulnerability, and may include a contribution from ongoing global climate change. Especially in poor countries, the impacts of major vector-borne diseases and disasters can limit or even reverse improvements in social development. Even under favorable conditions recovery from major disasters can take decades.

Short-range climatic forecasts may help reduce health impacts. But early warning systems must also incorporate monitoring and surveillance, linked to adequate response capacities. Focusing attention on current extreme events may also help countries to develop better means of dealing with the longer-term impacts of global climate change, although this capacity may itself decline because of cumulative climate change. For example, increased food imports might prevent hunger and disease during occasional drought, but poor, food-insecure, countries may be unable to afford such measures indefinitely in response to gradual year-by-year drying.

Source :

Climate change and human health - risks and responses. Summary. WHO, 2003, ISBN 9241590815
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This article was compiled by Dr Samitha Ginige - Consultant Epidemiologist.

Table 1: Vaccine-preventable Diseases & AFP

29th March - 4th April 2008 (14th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	01 CB=1	01 NE=1	00	00	00	00	00	00	01 RP=1	03	03	21	26	-19.2%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	01	01	01	00	00	00	00	01	04	02	35	19	+84.2%
Tetanus	00	00	00	00	00	00	00	00	00	00	01	11	10	+10.0%
Whooping Cough	01 CB=1	00	00	00	00	02 PU=2	00	00	00	03	00	11	13	-15.4%
Tuberculosis	146	44	08	05	06	22	04	14	12	271	173	2427	2550	-4.8`%

Table 2: Newly Introduced Notifiable Diseases

29th March - 4th April 2008 (14th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	42	18	18	23	03	14	11	10	18	157	56	1714	900	+90.4%
Meningitis	08 GM=4 CO=4	09 KD=2 ML=1 NE=6	04 GL=3 MT=1	01 VA=1	00	06 KR=4 PU=2	02 PO=2	02 BD=1 MO=1	04 KG=4	36	00	502	49	+924.5%
Mumps	03	14	05	00	04	13	04	01	06	50	23	665	288	+130.9%

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=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 3: Laboratory Surveillance of Dengue Fever

29th March - 4th April 2008 (14th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	06	01	01	00	00	00	00	00	01	00	00	00	00	00
Total number to date in 2008	59	24	05	06	00	00	02	02	01	00	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

29th March - 4th April 2008 (14th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal -itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	41	541	04	50	03	07	00	45	01	57	11	126	00	01	03	45	00	01	**85**
Gampaha	31	347	02	50	01	05	02	22	00	65	12	98	00	02	03	44	00	01	**93**
Kalutara	12	170	07	109	00	06	00	34	00	15	14	105	00	02	00	15	00	00	**75**
Kandy	07	75	04	72	00	02	01	16	08	30	11	66	04	35	07	60	00	00	**88**
Matale	03	35	11	84	00	00	02	16	00	02	07	166	00	01	01	13	00	00	**75**
Nuwara Eliya	00	06	04	64	00	00	02	83	00	107	01	12	00	27	04	54	00	01	**92**
Galle	03	39	04	39	00	08	00	10	00	42	21	112	01	08	00	04	00	02	**94**
Hambantota	02	41	02	29	00	03	00	05	00	06	02	34	03	34	01	04	00	00	**91**
Matara	03	78	00	59	01	03	00	19	00	02	20	111	07	68	01	04	00	01	**88**
Jaffna	02	34	02	43	00	01	06	144	00	02	00	00	03	108	00	17	00	00	**88**
Kilinochchi	00	00	00	02	00	00	00	00	00	00	00	01	00	00	00	01	00	00	**50**
Mannar	00	20	00	07	00	06	06	86	00	00	00	00	00	00	00	09	00	00	**50**
Vavuniya	00	10	01	13	00	01	00	01	00	06	00	02	00	00	00	02	00	00	**100**
Mullaitivu	00	00	00	01	00	00	00	05	00	00	00	00	00	00	00	04	00	00	**80**
Batticaloa	07	62	01	23	00	01	01	08	00	17	01	01	00	01	01	48	00	05	**82**
Ampara	00	07	07	74	00	00	00	02	00	00	01	07	00	00	00	01	00	00	**100**
Trincomalee	11	136	01	28	00	00	01	05	00	01	00	07	01	10	00	08	00	00	**70**
Kurunegala	07	166	06	114	00	07	01	18	08	10	02	22	00	14	04	18	00	03	**100**
Puttalam	07	177	02	34	00	02	01	41	12	15	01	03	00	15	00	17	00	02	**78**
Anuradhapur	03	87	00	25	00	04	00	08	00	04	07	31	00	09	00	07	00	00	**84**
Polonnaruwa	03	30	02	34	00	01	02	16	00	04	03	10	00	00	00	12	00	00	**86**
Badulla	01	21	07	123	00	03	04	42	00	01	00	10	01	46	00	50	00	01	**93**
Monaragala	01	25	05	69	00	01	05	20	05	15	06	29	03	48	01	09	00	00	**91**
Ratnapura	01	93	03	79	02	18	01	36	00	42	05	49	01	50	00	29	00	00	**75**
Kegalle	09	104	11	163	00	15	03	17	00	00	06	45	01	29	23	198	00	00	**100**
Kalmunai	01	13	06	59	01	02	00	03	03	06	00	00	00	01	01	11	00	00	**77**
SRI LANKA	**155**	**2317**	**92**	**1447**	**08**	**96**	**38**	**702**	**37**	**449**	**131**	**1047**	**25**	**509**	**50**	**684**	**00**	**17**	**86**

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 12 April , 2008 Total number of reporting units =290. Number of reporting units data provided for the current week: 224

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WEEKLY EPIDEMIOLOGICAL REPORT

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Vol. 35 No. 16 **12th - 18th April 2008**

Epidemiology of Chikungunya

Chikungunya is a viral disease. The illness was observed for the first time in 1952 in Tanzania. The name comes from the local dialect, Swahili which means "that which bend up" for stooped walk, reflecting the physic of a person suffering from the disease. It resembles Dengue and is reported mainly from Africa, South-East Asia including India and Pakistan. It occurs principally during the rainy season. Chikungunya outbreaks typically result in large numbers of cases but deaths are rarely encountered.

EPIDEMIOLOGY: Chikungunya is caused by an Arborvirus, belongs to the genus *Alphavirus* under the *Togaviridae* family. The virus is transmitted to human by infected *Aedes* mosquitoes, *Aedes albopictus* mainly in the rural area and *Aedes aegypti* in the urban area. The urban outbreaks are sporadic but explosive in nature. It then disappears and reappears at irregular intervals. Aedes albopictus is a treehole mosquito in natural rural areas, however in urban areas too, the mosquitoes breed around bush vegetation in gardens. Larval habitats are mostly in small collections of water. Its ecological flexibility allows it to colonise in many types of man-made sites too in urban regions. It may reproduce in flower pots, bird baths, soda cans and abandoned containers and natural water receptacles. The addition of decaying leaves from neighbouring trees produces chemical conditions similar to tree holes, which provide an excellent substrate for breeding. A. albopictus naturally establishes and survives throughout non-urbanised areas lacking any artificial containers, raising additional public health concerns due to the inability to effective elimination of these natural breeding sites especially in the rural areas.

In some parts of Africa, Chikungunya virus was isolated from zoophilic mosquitoes. It suggests that the virus circulates in rodents and cattle in the region. Virus was also obtained from a squirrel, chiroptera, and ticks (*Alectorobius sonrai*), as well as the presence of antibodies specific for Chikungunya virus in rodents and birds, support the assumption that secondary wild cycles exist in animals. The existence of such cycles could contribute to maintaining of the virus in an endemic region in Africa. In a study in Africa, the transmission cycle of Chikungunya virus is characterized by a periodicity of occurrence with silence intervals of 3–4 years. The disease is endemic in most of the sub-Saharan Africa, southern India and Pakistan, Southeast Asia, Indonesia and Philippines. Malaysia reported the first outbreak in 1999 which was detected in Myammar immigrants. However the antibody to Chikungunya was detected in 51 people of the urban area near Kuala Lumpur in 1960s. It occurs principally during the rainy season.

In early 2006, WHO reported Chikungunya outbreaks in islands of Indian Ocean i.e. Maldives, Mauritius, Madagascar, Mayotte, Seycelle and La Reunion Islands; as well as the coastal regions of India. In the last quarter of 2006 and the 1st quarter of 2007 there was an outbreak of Chikungunya in Sri Lanka involving mainly the districts of Colombo, Puttalam Kalmunai and Mannar.

CLINICAL MANIFESTATION : The incubation period of the disease is 2 to 4 days

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The symptoms is less severe and fewer in children than adults. Infected patients manifest an acute debilitating illness, most often characterized by fever, severe joint pain and rash. It is characterized by a rapid transition from a state of good health to the illness. Temperature rises abruptly as high as 40^{0}C (typically in children) and is often accompanied with shaking chills. After a few days fever may subside.

Patients also have maculopapular rash mostly in trunk. Rash characteristically appears on the 1st day of illness, but the onset may be delayed. It usually arises as a flush over the face and neck, which evolves to a maculopapular or macular form with pruritis. It later spreads to the trunk, limbs, palms and soles in that order of frequency. Petechial skin lesions can also be seen.

Migratory polyarthritis (commonly swelling and redness) occurs in 70 % of the cases and mainly affects the small joints. Pain is most intense on waking up in the morning. Chikungunya patients typically avoid movements as much as possible. Joints may swell without significant fluid accumulation. These symptoms may last from 1 week to several months and are accompanied by myalgia or muscle pain.

They may also manifest photophobia, anorexia, nausea, conjunctival injection, fatigue and abdominal pain. "Silent" Chikungunya infections (infections without illness) do occur; but how commonly this happens is not yet known.

The acute illness usually last for 5 to 7 days. Chikungunya has not been reported causing severe haemorrhagic manifestation or death. Older patients usually continue to suffer recurrent joint pain and effusion for several years. The persistent arthralgic forms were first described in 1980 in South Africa. A retrospective study done in 1983, on proven cases of Chikungunya infection identified this region in the last 3 years noted 87.9 % were completely cured, 3.7 % had stiffness or a moderate embarrassment in an episodical way, 2.8% had persistent articular stiffness without pain and 5.6 % had painful and stiff articulations in a persistent way. These patients with persistent arthritis had high level of antibody against the Chikungunya virus.

As with dengue, West Nile fever, o'nyong-nyong fever and other arboviral fevers, some patients with Chikungunya have prolonged fatigue lasting several weeks. Co-circulation of dengue fever in many areas may mean that chikungunya fever cases are sometimes clinically misdiagnosed as dengue or vice versa. Chikungunya_infection (whether clinical or silent) is thought to confer life-long immunity.

DIAGNOSIS : Chikungunya infection may be mistaken for dengue and / or West Nile disease. Provisional diagnosis is often made based on the clinical features.

Mild leucopenia and relative lymphocytosis, elevated ESR and positive C - reactive protein are seen. A reduction in platelet count and ECG changes may also be seen in complicated cases.

Acute or viraemic phase serum samples collected within 2 to 4 days of onset have yielded positive virus isolates and detection of viral nucleic acids. Paired sera drawn 1 to 3 weeks apart will demonstrate rising antibody titer. Rapid diagnosis can be used to detect Chikungunya antibody (IgM) after 5 days of onset i.e. ELISA, immunofluorescene etc. Reverse transcriptase polymerase chain reaction (RT-PCR) tests may yield diagnoses based on samples without detectable antibodies and may also provide genetic information of the virus.

TREATMENT: The disease is self-limiting. There is no specific treatment or vaccine for Chikungunya; patients are only given symptomatic or supportive treatment. To avoid further transmission, patients who are in the viraemic phase (first 4 days of onset) should be protected from mosquito bites especially from *Aedes* species. *Aedes* mosquito feeding time is during dawn (5.00 am to 8.00 am) and dusk (5.00 pm to 8.00 pm).

PREVENTION : To date, there is no vaccine available for the control and prevention of Chikungunya. The control measures are based on the general measures adopted in the control of mosquito-borne diseases. Hence prevention tips are similar to those for dengue fever:

- Avoid mosquito bites by using mosquito repellants, mosquito coils, protective clothing or mosquito nets .
- Vector control through search and elimination of the potential mosquito breeding sites. These usually are discarded tyres, plastic containers, leaf axils, coconut shells, blocked gutters, bird baths and flower pots.
- Elimination of naturally occurring mosquito breeding sites especially around the immediate household environment. Eg. Water retaining plants, unwanted bushes, tree holes and decaying leaves ect
- Additionally, a person with chikungunya fever should limit their exposure to mosquito bites in order to avoid further spreading of the infection. The person must stay indoors or under a mosquito net.

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This article was compiled Dr Nihal Abeysinghe- Chief Epidemiologist.

Table 1: Vaccine-preventable Diseases & AFP

5th - 11th April 2008 (15th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	00	00	00	00	01 P0=1	00	00	01	00	22	26	-15.3%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	00	00	03	00	00	00	00	00	03	02	40	21	+90.5%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	12	10	+20.0%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	11	13	-15.4%
Tuberculosis	112	57	00	22	10	00	24	06	11	252	435	2679	2985	-10.3`%

Table 2: Newly Introduced Notifiable Diseases

5th - 11th April 2008 (15th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	15	05	10	14	06	08	01	04	13	76	32	1794	955	+87.6%
Meningitis	03 KL=1 CO=2	02 KD=2	04 GL=2 MT=2	00	01 BT=1	03 KR=1 PU=2	00	02 BD=2	02 KG=2	17	00	521	49	+963.3%
Mumps	02	06	03	10	11	07	01	04	08	52	09	720	309	+133.0%

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=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 3: Laboratory Surveillance of Dengue Fever

5th - 11th April 2008 (15th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	06	05	00	03	00	00	00	01	00	02	00	00	00	00
Total number to date in 2008	65	29	05	09	00	00	02	03	01	02	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

5th - 11th April 2008 (15th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal -itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	14	559	01	51	00	07	01	46	00	57	08	137	00	01	03	48	00	01	**69**
Gampaha	12	359	01	51	00	05	00	22	00	65	08	106	00	02	00	44	00	01	**57**
Kalutara	14	184	04	115	00	06	01	35	01	16	20	125	00	02	01	16	00	00	**92**
Kandy	03	78	02	75	01	03	00	17	00	30	03	69	02	37	04	64	00	00	**56**
Matale	02	37	04	88	00	00	00	16	00	02	07	173	00	01	00	13	00	00	**58**
Nuwara Eliya	00	06	02	66	01	01	01	84	00	107	00	12	02	29	03	57	00	01	**77**
Galle	00	39	02	42	00	08	00	10	00	42	03	115	00	08	00	04	01	03	**47**
Hambantota	02	43	01	30	00	03	00	05	00	06	05	39	07	41	00	04	00	00	**91**
Matara	06	84	04	63	00	03	01	20	00	02	12	123	04	72	00	04	00	01	**82**
Jaffna	02	36	02	45	00	01	07	151	03	05	00	00	03	111	00	17	00	00	**63**
Kilinochchi	00	00	00	02	00	00	00	00	00	00	00	01	00	00	00	01	00	00	**25**
Mannar	00	20	00	07	00	06	00	86	00	00	00	00	00	00	00	09	00	00	**00**
Vavuniya	00	10	00	13	00	01	00	01	00	06	00	02	00	00	00	02	00	00	**25**
Mullaitivu	00	00	00	01	00	00	00	05	00	00	00	00	00	00	00	04	00	00	**00**
Batticaloa	01	63	00	24	01	02	00	08	00	17	00	01	00	01	05	55	00	05	**73**
Ampara	00	07	01	75	00	00	00	02	00	00	00	07	00	00	00	01	00	00	**29**
Trincomalee	05	141	01	30	00	00	01	06	02	03	00	07	00	10	00	08	00	00	**50**
Kurunegala	03	169	02	116	02	09	02	20	00	10	03	25	00	14	01	19	00	03	**44**
Puttalam	08	185	01	35	00	02	00	41	02	17	00	03	03	18	00	17	00	02	**67**
Anuradhapur	01	88	02	27	00	04	00	08	00	04	04	35	00	09	00	07	00	00	**32**
Polonnaruwa	00	30	02	36	00	01	00	16	01	05	11	21	00	00	01	13	00	00	**71**
Badulla	00	22	01	124	00	03	00	43	00	01	00	10	03	49	01	51	00	01	**73**
Monaragala	00	25	06	75	00	01	00	20	00	15	05	34	00	48	00	09	00	00	**91**
Ratnapura	00	94	00	79	00	18	00	36	00	42	00	51	00	50	03	32	00	00	**19**
Kegalle	08	112	05	159	00	15	02	19	00	00	06	51	02	31	09	207	00	00	**73**
Kalmunai	01	14	01	62	00	02	00	04	00	06	00	00	00	01	00	11	00	00	**46**
SRI LANKA	**82**	**2405**	**45**	**1491**	**05**	**101**	**16**	**721**	**09**	**458**	**95**	**1147**	**26**	**535**	**31**	**717**	**01**	**18**	**58**

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 19 April , 2008 Total number of reporting units =290. Number of reporting units data provided for the current week: 176

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ON STATE SERVICE

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WEEKLY EPIDEMIOLOGICAL REPORT

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Vol. 35 No. 17 **19th - 25th April 2008**

WER SRI LANKA 2008

Chikungunya outbreak – 2008

Since early January 2008 there have been several reports to the Epidemiology Unit, Ministry of Health Sri Lanka of an increase in viral fever cases in districts of Anuradhapura, Ratnapura, Kegalle and Kalutara from numerous sources. These sources included some General Practitioners, Regional Epidemiologists and Medical Officers of Health. This viral fever was characterized with high fever, severe joint and muscle pain and a maculopapular rash. Since these symptoms resembled those of Chikungunya fever which was reported in large numbers the previous year, arrangements were promptly made to send samples of blood from these suspected patients for virological studies on dengue and Chikungunya to the Medical Research Institute (MRI), Colombo. Initial samples were taken from Anuradhapura by a team from the MRI with Regional Epidemiologist which visited there to investigate a large number of military personnel who fell ill with this fever particularly in Janakapura and Sampathnuwara. Thereafter samples were sent in by the MOOH of the most affected areas in Ratnapura e.g. Kuruwita, Eheliyagoda Kiriella, Erathna, Godekawela and Kegalle district eg.Dehiowita, Warakapola, Dereniyagala. Most of these samples tested positive for Chikungunya virus and this outbreak of viral fever was attributed to the virus.

Surveillance of Cases : The following case definition which had been developed for surveillance of chikungunya cases last year was adopted for this outbreak as well.

Suspected case: A patient presenting with acute onset of fever usually with chills/rigors which lasts for 3 – 5 days with multiple joint pains/ swelling of extremities that may continue for weeks to months.

Probable case: A suspected patient with above features with any one of the following:

a) history of travel or resident in areas reporting outbreaks

b) ability to exclude Malaria, Dengue and any other known cause for fever with joint pains

Confirmed case: Any patient with any one or more of following findings irrespective of the clinical presentation.

a) virus isolation in cell culture or animal inoculations from acute phase sera

b) Presence of viral RNA in acute phase sera

c) Seroconversion to virus specific antibodies in samples collected at least 1 – 3 weeks apart

d) Presence of virus specific IgM antibodies in single serum collected after 5 days of onset of illness

All provincial and district health authorities namely Provincial Directors of Health Services, Regional directors of Health Services and Regional Epidemiologists were promptly informed on the situation and guidelines were issued to initiate surveillance. A special investigation form which had been developed last year to collect

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Following are the number of cases which have been laboratory tested during the outbreak.

Month	District	MOH Area	Number of Samples				
			Collected	Positive for CK	Positive for Dengue	Positive for both Dengue & CK	Negative for both
January	Anuradhapura	Galnewa,	95	8	9	0	78
	Kandy	Galagedara, Hataraliyedda	8	2	0	0	4
February	Ratnapura	Kuruwita, Godakawela	82	54	4	2	18
March	Anuradhapura	Padaviya	25	8	5	2	10
April	Colombo	Hanwella	25	19	0	3	3
	Anuradhapura	Sampathnuwara, Padaviya, Anuradhapura, Janakapura	63	60	4	3	21
	Kegalle	Dehiowita, Warakapola	24	14	0	0	11
	Ratnapura	Kiriella, Kuruwita, Devipahala, Eheliyagoda Embilipitiya, Ayagama	135	99	2	0	39
		Total	457	264	43	10	184

information from suspected cases, was sent to all the sentinel sites (major hospitals) and relevant officials along with the fact sheet which also had been developed earlier.

Fever surveillance activities on Chikungunya were initiated in most hospitals in the affected areas by respective Regional Epidemiologists with due guidance from Regional Directors. Clinicians were encouraged to differentiate and confirm the suspected cases from Dengue which closely resembles Chikungunya clinically. Necessary arrangements were made to transport specimens for laboratory diagnosis wherever necessary. Hospitals were persuaded to notify the confirmed as well as suspected cases by completing the special investigation forms to the Epidemiology Unit. Assistance and cooperation of the Infection Control Nurses were obtained in the institutions to carry out this task.

During the month of April Ratnapura and Kegalle districts have reported six deaths which has some link to the ongoing fever outbreak. Epidemiology Unit has investigated all deaths in detail and found Clinical pictures of all six deaths were clearly suggestive of the presence of chronic underlying medical conditions other than fever directly responsible for the deaths.

Prevention and Control

As in the previous year, Medical Officers of Health were mobilized to initiate preventive measures against the spread of Chikungunya fever. This included health education campaigns for the public to highlight the mode of spread and possible preventive measures. Priority was given to organize parallel campaigns promptly to eliminate mosquito breeding sites especially in public places such as schools and working places. Information was given to electronic and print media as requested since the outbreak was limited to only a few districts this year.

Affected Areas : Most affected districts were Anuradhapura, Ratnapura and Kegalle. Over 14000 suspected cases have been reported from Ratnapura district alone during the last week of April and first week of May out of which 50—60 % would have been chikungunya. The total number of cases are still being updated and a detailed epidemiological report would be prepared once the special surveillance forms are analyzed.

Laboratory Diagnosis : Blood samples from chikungunya patients from hospitals and mostly the field have been tested at the Medical Research Institute (MRI) and Molecular Medicine Unit of the Department of Microbiology at University of Kelaniya during the initial outbreak period. A total of 488 samples were tested at these laboratories and out of them 264 (57%) were positive for chikungunya.

Conclusion : According to the data received to date at the Epidemiology Unit the outbreak still appears to be limited to a few districts. Incidentally these districts were not largely affected during the previous outbreak and therefore it would be safe to conclude that this outbreak was limited to a mostly unimmunized population. Chikungunya fever outbreak is not directly associated with mortality but it is unable to exclude the possibility of precipitation of the underlying medical conditions . However surveillance in the hospitals and field in the affected areas is being continued with support from the regional health administrators. Initial data obtained through the Regional Epidemiologists to date may be overestimated since these surveillance activities were mainly based in the Out Patients' Departments on all fever cases. Therefore it includes large numbers who opted to seek hospital care for all viral fevers. However a clearer and a more accurate report would be available once the special surveillance forms are analyzed.

This article was compiled by Dr Nihal Abeysinghe—Chief Epidemiologist.

Table 1: Vaccine-preventable Diseases & AFP

12th - 18th April 2008 (16th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	02 GL=1 MT=1	01 JF=1	00	00	00	00	00	03	03	25	29	-13.8%
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	00	40	24	+59.3%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	12	11	+9.0%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	01	11	14	-21.4%
Tuberculosis	33	06	06	16	17	00	00	06	00	84	177	2763	3162	-12.6`%

Table 2: Newly Introduced Notifiable Diseases

12th - 18th April 2008 (16th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	05	03	13	00	02	07	03	05	14	52	77	1895	1119	+69.3%
Meningitis	02 KL=1 GM=1	00	01 HB=1	00	02 BT=2	04 KR=4	02 PO=2	02 BD=2	02 KG=2	15	00	541	49	+1004.1%
Mumps	04	04	03	00	01	02	06	00	04	30	46	763	380	+100.4%

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=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 3: Laboratory Surveillance of Dengue Fever

12th - 18th April 2008 (16th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	06	11	02	04	00	00	02	02	00	02	00	00	00	00
Total number to date in 2008	71	40	07	13	00	00	04	05	01	04	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

12th - 18th April 2008 (16th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal -itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	26	592	04	55	00	05	00	46	00	57	07	146	00	01	02	50	00	01	**77**
Gampaha	17	385	01	54	00	05	01	23	01	66	10	120	00	03	02	47	00	01	**79**
Kalutara	03	187	04	119	00	06	00	35	00	16	04	133	00	02	00	16	00	00	**92**
Kandy	02	81	00	76	00	03	01	18	00	30	07	76	00	37	01	67	00	00	**80**
Matale	04	45	05	94	00	00	01	17	00	02	07	192	00	01	02	16	00	00	**83**
Nuwara Eliya	00	07	00	66	00	01	00	85	00	107	01	13	01	30	00	57	00	01	**92**
Galle	01	40	02	44	00	08	00	10	00	42	09	132	00	08	00	04	00	03	**88**
Hambantota	01	44	02	32	00	03	00	05	00	06	03	44	00	45	00	04	00	00	**91**
Matara	05	89	01	66	00	03	00	20	00	02	06	131	07	81	00	04	00	01	**94**
Jaffna	00	36	00	45	00	01	01	153	00	05	00	00	03	114	00	17	00	00	**50**
Kilinochchi	00	00	00	02	00	00	00	00	00	00	00	01	00	00	00	01	00	00	**25**
Mannar	01	22	00	07	00	06	04	90	00	00	00	00	00	00	01	11	00	00	**25**
Vavuniya	00	10	00	13	00	01	00	01	00	06	00	02	00	00	00	02	00	00	**50**
Mullaitivu	00	00	00	01	00	00	00	05	00	00	00	00	00	00	00	04	00	00	**40**
Batticaloa	02	66	00	24	00	02	00	08	00	17	00	01	00	01	02	58	00	04	**82**
Ampara	00	07	00	76	00	00	00	02	00	00	00	07	00	00	00	01	00	00	**29**
Trincomalee	00	145	01	31	00	00	00	06	00	03	00	07	00	10	00	08	00	00	**60**
Kurunegala	07	177	02	121	00	09	00	22	00	10	04	31	00	14	00	20	00	03	**83**
Puttalam	08	194	00	35	00	02	00	53	00	17	00	03	03	21	00	18	00	02	**67**
Anuradhapur	02	90	01	30	00	04	00	08	00	04	16	53	00	09	00	07	00	00	**68**
Polonnaruwa	03	33	02	38	00	01	00	16	00	05	02	23	00	00	02	15	00	00	**100**
Badulla	04	29	08	134	00	03	00	45	00	01	00	10	00	51	00	51	00	01	**87**
Monaragala	00	25	01	76	00	01	01	21	03	18	04	38	02	50	02	11	00	00	**91**
Ratnapura	01	102	02	85	00	18	00	36	00	42	01	66	00	63	02	34	00	00	**75**
Kegalle	12	125	02	165	00	15	01	20	00	00	12	63	00	31	05	214	00	00	**100**
Kalmunai	04	18	01	66	00	02	00	05	04	10	00	00	00	01	00	11	00	00	**69**
SRI LANKA	**103**	**2549**	**39**	**1555**	**00**	**99**	**10**	**750**	**08**	**466**	**93**	**1292**	**16**	**573**	**21**	**748**	**00**	**17**	**78**

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 26 April , 2008 Total number of reporting units =238. Number of reporting units data provided for the current week:

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WEEKLY EPIDEMIOLOGICAL REPORT

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Vol. 35 No. 18 **26th April 2nd May 2008**

WER SRI LANKA 2008

PREVENTION AND CONTROL OF LEPTOSPIROSIS

We have been observing increasing numbers of leptospirosis cases during the last few months despite implementation of a set of strategies for its control and prevention. In 2007, 2195 cases were reported to the Epidemiology Unit. This year up to May 16, a total of 1700 cases and 51 deaths have been reported. Unusually high case fatality rate and high reporting from districts such as Anuradhapura, Ratnapura, Hambantota, and Moneragala (in addition to the already identified high risk districts: Colombo, Gampha, Kalutara, Matara, Galle and Kandy) are some of the notable features observed this year. This alarming trend emphasizes the need for the revision of current strategies.

There is a direct correlation between the amount of rainfall and the incidence of leptospirosis. The unsettled weather conditions prevailing in the country with heavy rains is a concern and the situation may worsen once the southwest monsoonal rains set in. In this regard, recently two workshops were conducted with the participation of Consultant Physicians, Microbiologists, Regional Epidemiologists and MOOH of high risk areas. The necessity of strengthening prevention activities at all levels i.e. primary, secondary and tertiary was stressed at these workshops.

Primary Prevention

The risk of acquiring leptospirosis can be greatly reduced by avoiding exposure to contaminated water and soil. However, it might not be possible for people whose livelihoods depending on occupations such as agriculture, gem mining, sewage work etc. They should be advised about the benefits of wearing footwear preferably knee-high boots and protective clothing while at work. Wounds/ abrasions in skin should be covered with waterproof dressing. Further, awareness about the disease should be raised among risk groups, health care providers and general population, so that the disease can be recognized early and treated as soon as possible.

Chemoprophylaxis:

It is not advocated as a routine and leading preventive strategy and is recommended only for well recognized high risk groups. Identification of high risk localities at the divisional level (e.g. clustering of cases in a particular area) will help to identify high risk groups. Further, there should be a felt need by farmers/ agricultural workers of such areas for prophylaxis i.e. a request for prophylaxis from farmers' organizations and/ or agrarian services.

If prophylaxis is given, it should be closely monitored by the MOH and the field public health staff. A register should be maintained at the MOH level containing all the names, addresses and occupations of recipients and arrangements should be made to regularly distribute drugs to them for the required period. The recommended dose is Doxycycline 200 mg weekly during the period of possible exposure. Doxycycline is a tetracycline antibiotic. It should not be given to children younger than 12 years old, pregnant and lactating mothers. Some may develop allergy and it should not be prescribed for them. Generally, it is not prescribed to patients with liver or kidney disease.

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This drug can be taken with or without food, preferably with a full glass of water.

Secondary Prevention

Admission: Leptospirosis causes a wide range of symptoms and is often wrongly/ lately diagnosed resulting in high rates of complications and fatality. It is recommended that fever patients with a history of exposure to contaminated environment (e.g. local agricultural practices, gem mining, sewage work and swimming/ wading in contaminated/ flood water etc.) and symptoms/ signs such as conjunctival suffusion and muscular pain/ tenderness (notable in calf and lumbar areas) should be admitted for inward management. Even without a proper history of exposure, if the patients present with symptoms/ signs strongly suggestive of leptospirosis, admission for inward management should be considered.

Management: Once admitted as suspected cases of leptospirosis, treatment with appropriate dose of IV penicillin should be initiated without delay. Fluid balance chart should be maintained and IV fluids can be given, if indicated. If the results of basic investigations such as FBC, Urine FR, and Blood Urea & Electrolytes (e.g. polymorpholeucocytosis & albuminuria) are not in favour of a diagnosis of leptospirosis, treatment with IV penicillin could be stopped.

Laboratory investigations: Whenever possible clinical suspicion of leptospirosis should be confirmed by necessary laboratory tests. Investigations such as microscopic agglutination test (MAT) for a high titre or a rising antibody titre, ELISA test, and antigen detection by PCR are some of the confirmatory tests. Confirmatory diagnosis could be done at the Medical Research Institute (MRI), Colombo. However, serological tests do not become positive with the onset of illness. Thus, the blood samples should be sent after 5 days of onset of illness and a 2nd sample should be sent 4 - 5 days later if the clinical suspicion is high but the MAT result for the 1st sample was equivocal or negative (i.e. to demonstrate rising titre).

Investigations such as serovar and sero-group specific MAT test, and culture are useful for epidemiological and public health reasons, as they would be helping in investigating the source of infection, potential reservoir, and planning and evaluating interventions.

The treating physicians should notify the details of suspected cases of leptospirosis to the respective MOOH without delay. Early notification and investigation are essential particularly to forecast outbreaks and take early interventions. Sentinel site based detailed surveillance is carried out only in selected hospitals in the high risk areas in addition to the routine notification. At present, 16 hospitals are functioning as sentinel sites. The Infection Control Nurses (ICN) attached to these institutions will carry out investigation while the patients are in the wards. If there are designated Medical Officers to coordinate public health activities at hospital level, head of the institution will have the responsibility to discuss with both MO— public health & ICN and to delegate the responsibilities in order to effectively carry out the special surveillance activities

Tertiary Prevention

If the duration of fever is more than 3 - 4 days be vigilant of signs and symptoms suggestive of possible complications such as renal failure, myocarditis, heart failure, meningitis, and widespread haemorrhage due to disseminated intravascular coagulation resulting from vasculitis. Case fatality rate is reported to range from less than 5% to 30% and is mainly due to above complications. Transferring patients to higher level institutions should be considered if there is a concern about urine output despite adequate hydration. Symptoms suggestive of cardiac involvement such as hypotension and tachycardia are some of the other indications for transferring patients.

Mortality review: To further strengthen the surveillance activities, it is recommended that the director of the sentinel hospitals are requested to conduct mortality reviews for leptospirosis deaths with the participation of the relevant ward doctors and MOOH. For the transferred cases, it would be beneficial to invite the medical officers of the relevant hospitals also for the reviews. The main objective of the leptospirosis mortality review is to identify the factors contributing to the deaths and to take remedial action at both field and institutional levels. This is to identify the shortcomings in the system and certainly not to find fault with any individuals. A final report to the Epidemiology Unit with copies of the reporting forms filled by the clinicians would be the outcome envisaged.

This article was compiled by Dr N. Janakan - Consultant Epidemiologist.

Table 1: Vaccine-preventable Diseases & AFP

19th - 25th April 2008 (17th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	02 CO=2	00	01 GL=1	00	01 AM=1	00	00	00	00	04	02	29	31	-6.5%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	01	00	00	00	00	00	00	00	01	03	41	24	+70.8%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	12	11	+9.1%
Whooping Cough	00	00	00	00	00	00	00	01 BD=1	00	01	00	13	14	-7.1%
Tuberculosis	10	02	03	23	17	00	00	00	34	89	103	2852	3265	-12.6`%

Table 2: Newly Introduced Notifiable Diseases

19th - 25th April 2008 (17th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	35	04	15	03	06	15	17	11	22	128	50	2038	1119	+82.1%
Meningitis	08 KL=3 GM=4 CO=1	01 ML=1	06 GL=3 MT=3	00	03 AM=3	06 KR=6	03 PO=3	00	08 KG=6 RP=2	35	00	580	49	+1083.7%
Mumps	07	06	07	00	07	09	03	07	08	54	15	821	380	+116.1%

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.
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 3: Laboratory Surveillance of Dengue Fever

19th - 25th April 2008 (17th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	06	04	02	01	00	00	02	01	00	00	00	00	00	00
Total number to date in 2008	71	44	07	14	00	00	04	06	01	04	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]
* Not all positives are subjected to serotyping.
NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

19th - 25th April 2008 (17th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal -itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	56	658	05	60	00	05	01	48	00	57	13	162	00	01	00	50	00	01	**85**
Gampaha	23	409	08	62	00	05	01	24	00	66	15	136	01	04	06	53	00	01	**86**
Kalutara	18	206	05	125	01	07	00	35	00	16	15	149	00	02	02	18	00	00	**83**
Kandy	07	88	08	84	00	03	02	20	00	30	22	98	01	38	03	70	00	00	**76**
Matale	04	50	03	97	01	01	03	22	00	02	42	254	00	01	00	16	00	00	**75**
Nuwara Eliya	01	08	15	84	00	01	08	93	00	107	02	15	00	30	03	60	00	01	**77**
Galle	05	45	03	47	00	08	00	10	00	42	16	149	00	08	00	04	00	03	**94**
Hambantota	02	46	02	34	00	03	00	05	00	06	02	46	03	48	00	04	00	00	**100**
Matara	08	97	02	68	01	04	00	20	00	02	12	144	02	83	01	05	00	01	**82**
Jaffna	01	40	06	52	00	01	01	161	00	05	00	00	05	121	00	17	00	00	**00**
Kilinochchi	00	00	01	03	00	00	00	00	00	00	01	02	00	00	00	01	00	00	**00**
Mannar	02	24	00	07	00	06	01	92	00	00	00	00	00	00	00	11	00	00	**25**
Vavuniya	00	10	02	15	00	01	00	01	03	09	01	03	00	00	00	02	00	00	**75**
Mullaitivu	00	00	00	01	00	00	00	05	00	12	00	00	00	00	00	04	00	00	**40**
Batticaloa	07	73	02	26	00	02	01	09	01	18	00	01	00	01	08	66	00	04	**64**
Ampara	00	07	03	80	00	00	00	02	00	00	00	07	00	00	03	04	00	00	**43**
Trincomalee	05	150	02	33	00	00	00	06	00	03	00	07	00	10	00	08	00	00	**60**
Kurunegala	06	183	04	125	00	09	00	22	00	10	20	57	00	14	00	20	01	04	**94**
Puttalam	05	200	00	35	00	02	08	71	01	18	02	05	02	23	01	19	00	02	**67**
Anuradhapur	05	99	07	37	00	04	00	08	00	04	22	79	00	09	02	09	00	00	**74**
Polonnaruwa	04	37	04	42	00	01	02	18	01	06	02	25	00	00	00	15	00	00	**100**
Badulla	08	37	21	155	00	03	06	51	00	01	04	14	04	55	03	54	00	01	**67**
Monaragala	02	27	08	85	00	01	01	22	01	19	08	46	02	52	00	11	00	00	**100**
Ratnapura	03	110	08	94	00	19	00	36	00	42	04	76	00	65	00	35	00	00	**44**
Kegalle	16	141	04	169	02	17	06	26	00	00	10	73	00	31	22	236	00	00	**73**
Kalmunai	01	19	09	82	00	02	01	07	00	10	00	00	00	01	02	14	00	00	**77**
SRI LANKA	**189**	**2764**	**132**	**1702**	**05**	**105**	**42**	**814**	**07**	**485**	**213**	**1548**	**20**	**597**	**56**	**806**	**01**	**18**	**73**

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 3 May, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 196

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WEEKLY EPIDEMIOLOGICAL REPORT

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WER SRI LANKA 2008

Burden of Asthma—Part I

World Asthma Day [WAD] is organized by the Global Initiative for Asthma (GINA) in collaboration with health care groups and asthma educators to raise awareness about asthma and improve asthma care throughout the world

World Asthma Day 2008 tooke place on Tuesday, May 6. This year's event continues the focus on the positive theme introduced for WAD 2007, "You Can Control Your Asthma." This theme is consistent with the emphasis on asthma control set out in the latest versions of the GINA guideline documents, and will help to spread the word that asthma control is the goal of treatment and can be achieved in the vast majority of asthma patients with proper management

Asthma is one of the most common chronic health conditions in the world. It is estimated that asthma affects between 155 million and 300 million people worldwide. The prevalence of asthma is growing with urbanisation and as communities adopt Western lifestyles. The proportion of the world's urban population is estimated to grow from 45% to 59% by 2025, suggesting significant increases in asthma globally. In 2001, asthma accounted for one in every 250 deaths worldwide. Many are preventable. Annually, approximately 15 million disability-adjusted life years – or approximately 1% of all disability-adjusted life years – lost worldwide are due to asthma. Both direct and indirect costs associated with asthma increase significantly when asthma is not under control.

Asthma is a worldwide problem with a profound impact on patients, families and healthcare systems. The prevalence and associated morbidity of asthma have increased over the past 35 years despite an overall reduction in asthma mortality. The latter probably reflects better awareness and understanding of the disease and, to some extent, an increased use of inhaled corticosteroids. In contrast, the reasons for the continued increases in asthma prevalence are not clear. Increased prevalence is occurring in a wide range of populations with different lifestyles. Recent international studies that have examined trends in worldwide asthma morbidity have made the following observations:

- asthma prevalence tends to be highest in economically developed countries (e.g. New Zealand, the UK, the US and Australia);
- the prevalence of asthma increases when developing countries adopt a more urban lifestyle; and
- changes in the prevalence of asthma appear to be related to a worldwide increase in allergic diseases.

Morbidity: Asthma is a chronic disorder that can significantly impact the quality of life of the affected patients and their families. Uncontrolled or poorly controlled asthma can:

- disturb sleep
- increase fatigue and decrease energy
- produce difficulty in concentrating
- restrict physical activity and exercise;
- cause absence from work and/or school
- reduce participation in normal daily activities resulting in missed recreational and social opportunities.

Uncontrolled asthma is a common reason for work and school absences and missed daily

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activities. Subtler effects include fatigue and associated concentration deficits due to decreased quality of sleep. Many people with asthma restrict their lifestyles in order to accommodate the disease without acknowledging that they do so. The patient therefore may not recognise the impact of asthma on his/her physical and social functioning or quality of life.

Cost: Asthma causes significant expense for society and healthcare systems: as prevalence increases, so do costs. The total cost of asthma in the US are estimated to have increased between the mid 1980s and the mid 1990s from approximately US$4.5 billion to over US$10 billion. Weiss and colleagues estimated the total asthma cost for Australia, the UK and the US (adjusted to 1991 US dollars for comparison purposes) at US$457 million, US$1.79 billion and US$6.40 billion, respectively. Updating these figures to 2003 dollars using the Consumer Price Index (CPI) yields approximately US$617 million, US$2.42 billion and US$8.64 billion, respectively. These data are probably underestimates, as the cost and prevalence of asthma were increasing during this period.

Indirect cost for asthma are difficult to determine but reflect time lost from work and decreased productivity for patients and caregivers. The direct cost associated with the disease are related largely to medications and use of healthcare services. Direct cost for asthma vary from country to country according to healthcare systems and policies; however, the majority of the asthma-related health expenses in any community are associated with urgent care. In the US, the projected direct cost for asthma in 1998 exceeded US$7.3 billion; and those for indirect cost exceeded US$5.3 billion. Adjusting to 2003 (using the CPI), the respective direct and indirect cost approximate to US$7.6 billion and US$5.8 billion. Cost for in-patient hospital services accounted for the largest direct expenditure and lost productivity related to work absences accounted for the largest indirect expenditure. An important goal of disease management in any society is to reduce the need for urgent care for asthma. Asthma affects the family, not just the patient, and medical bills can be a substantial burden – one that increases with disease severity. A community-based study of healthcare usage estimated an up to five-fold increase in costs associated with severe asthma compared with mild asthma. The distribution of direct cost was also influenced by disease severity.

Medication cost accounted for the majority of the total direct cost for patients with mild or moderate disease compared with patients with severe disease who had substantially more cost associated with hospitalisations. Other observations from international studies of costs associated with asthma indicate that:

- regular primary care is less expensive than acute urgent care;
- outpatient urgent care (e.g. clinic or emergency department) costs less than hospitalisation; and
- regular treatment with controller (antiinflammatory) medications is less expensive than treating acute exacerbations.

From the perspective of healthcare systems, therefore, the goal of management should be to reduce urgent care visits for acute episodes of asthma and, more specifically, to prevent hospitalisations by encouraging the use of controller medications (i.e. inhaled corticosteroids) in patients with persistent asthma.

Barriers to Reducing the Burden of Asthma

1.Generic barriers including poverty, poor education, and poor infrastructure.

2. Environmental barriers including indoor and outdoor air pollution, tobacco smoking, and occupational exposures.

3. Low public health priority due to the importance of other respiratory illnesses such as tuberculosis and pneumonia and the lack of data on morbidity and mortality from asthma.

4. The lack of symptom-based rather than disease-based approaches to the management of respiratory diseases including asthma.

5. Unsustainable generalisations across cultures and healthcare systems which may make management guidelines developed in high-income countries difficult to implement in low and middle-income countries.

6. Inherent barriers in the organization of healthcare services in terms of : geography, type of professional responding, education and training systems, public and private care, tendency of care to be "acute" rather than "routine."

7. The limited availability and use of medications including: omission of basic medications from WHO or national essential drug lists, poor supply and distribution of infrastructure, cost, cultural attitudes towards drug delivery systems, e.g. inhalers

8. Patient barriers including: cultural factors, lack of information, underuse of self-management, over-reliance on acute care, use of alternative unproven therapies.

9. The requirement of respiratory specialists and related organisations required to care for a wide variety of diseases, which has in some regions resulted in a failure to adequately promote awareness of asthma.

Sources:

Farrar JR. The global burden of asthma and current approaches to its management.. Eur Pharmacother 2005: 126, 128, 998-1000.

Masoli M, Fabian D, Holt S, Beasley R. Global burden of Asthma. Medical Research Institute of New Zealand, Wellington, New Zealand.

This article was compiled by Dr Samitha Ginige - Consultant Epidemiologist

Table 1: Vaccine-preventable Diseases & AFP

26th Apr - 2nd May 2008 (18th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	01 CO=1	00	00	00	00	00	00	00	01 RP=1	02	02	31	31	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	01	00	00	01	02	42	27	+55.5%
Tetanus	00	00	00	00	00	00	00	00	00	00	01	12	12	00.0%
Whooping Cough	00	01 GL=1	00	00	00	00	00	00	00	01	01	14	15	-6.6%
Tuberculosis	124	41	09	18	15	09	05	31	00	225	141	2988	3440	-13.1`%

Table 2: Newly Introduced Notifiable Diseases

26th Apr - 2nd May 2008 (18th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	47	15	18	02	01	17	04	03	14	119	58	2153	1228	+75.3%
Meningitis	01 CO=1	01 KD=1	05 GL=3 MT=2	01 JF=1	01 TR=1	06 KR= PU=1	00	01 BD =1	05 KG=3 RP=2	21	00	598	49	+1120.4%
Mumps	04	01	10	00	06	13	03	04	10	51	38	870	435	+100.0%

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=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 3: Laboratory Surveillance of Dengue Fever 26th Apr - 2nd May 2008 (18th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	07	03	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	78	43	07	13	00	00	04	05	01	04	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

26th Apr- 2nd May 2008 (18th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	35	693	03	63	01	06	00	48	00	57	02	164	00	01	03	53	00	01	**85**
Gampaha	20	429	01	63	00	05	03	27	00	66	10	146	00	04	07	60	00	01	**93**
Kalutara	08	214	01	126	00	07	02	37	00	16	02	151	00	02	00	18	00	00	**100**
Kandy	02	90	07	91	00	03	00	20	00	30	12	109	02	40	01	71	00	00	**76**
Matale	03	53	06	103	00	01	00	22	00	02	17	271	00	01	00	16	00	00	**75**
Nuwara Eliya	01	09	05	89	00	01	05	98	00	107	00	15	00	30	00	60	00	01	**92**
Galle	04	49	00	47	00	08	00	10	00	42	10	159	00	08	00	04	00	03	**82**
Hambantota	00	46	00	34	00	03	00	05	00	06	01	47	00	48	00	04	00	00	**100**
Matara	02	99	00	68	00	04	00	20	00	02	13	157	06	89	00	05	00	01	**88**
Jaffna	00	39	03	49	00	01	02	163	00	05	00	00	01	117	00	17	00	00	**50**
Kilinochchi	00	00	00	03	00	00	00	00	00	00	00	02	00	00	00	01	00	00	**50**
Mannar	00	24	00	07	00	06	01	93	00	00	00	00	00	00	00	11	00	00	**50**
Vavuniya	00	10	01	16	01	02	00	01	00	09	01	04	00	00	01	03	00	00	**50**
Mullaitivu	00	00	00	01	00	00	00	05	00	12	00	00	00	00	00	04	00	00	**40**
Batticaloa	00	72	04	30	00	02	00	09	00	18	00	01	00	01	00	64	00	04	**73**
Ampara	01	08	06	86	00	00	01	03	00	00	01	08	00	00	00	04	00	00	**43**
Trincomalee	02	152	01	34	00	00	01	07	00	03	04	11	00	10	01	09	00	00	**90**
Kurunegala	03	186	02	127	01	10	01	23	00	10	21	78	00	14	01	21	00	04	**100**
Puttalam	05	205	00	35	00	02	04	75	00	18	01	06	00	23	00	19	00	02	**89**
Anuradhapur	01	100	02	39	00	04	00	08	00	04	18	97	00	09	00	09	00	00	**74**
Polonnaruwa	00	37	00	42	00	01	00	18	00	06	05	30	00	00	00	15	00	00	**100**
Badulla	00	37	09	164	00	03	03	54	01	02	00	14	00	55	00	54	00	01	**87**
Monaragala	05	32	07	92	00	01	01	23	00	19	03	49	00	52	00	11	00	00	**100**
Ratnapura	04	112	03	95	00	18	00	36	00	42	08	81	01	66	00	35	00	00	**75**
Kegalle	14	155	04	173	00	17	01	27	00	00	09	82	01	32	10	246	00	00	**100**
Kalmunai	00	19	02	77	00	02	01	07	00	10	00	00	00	01	00	13	00	00	**69**
SRI LANKA	**110**	**2870**	**67**	**1754**	**03**	**107**	**26**	**839**	**01**	**486**	**138**	**1682**	**11**	**603**	**24**	**827**	**00**	**18**	**82**

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 10 May, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 251

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WEEKLY EPIDEMIOLOGICAL REPORT

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Vol. 35 No. 20 **10th– 16th May 2008**

WER SRI LANKA 2008

Asthma Burden—Part II

Part I of this article was published in the last issue of the Weekly Epidemiological Report.

Current guidelines identify four key components for the successful management of asthma. The goal of management is control of asthma, which means that the patient exhibits:

- minimal or no chronic symptoms, including nocturnal symptoms
- infrequent or no exacerbations
- no emergency visits for acute symptom exacerbations
- minimal or no use of prn (as-needed) short-acting β_2-agonist
- no limitations on activities, including exercise and other physical activity
- circadian variations in peak expriatory flow (PEF) <20%
- normal or near normal PEF and
- minimal or no adverse effects from medicine.

Managing the asthma patient involves four key components: diagnosis, pharmacotherapy, environmental control and patient education. Asthma is a lifelong inflammatory disease affecting the airways; the earlier the patient is diagnosed and appropriate treatment started the better the overall outcome for health and quality of life. Early diagnosis and appropriate treatment of persistent asthma with controller medications are therefore critical factors for clinical success. In addition to pharmacotherapy, application of environmental control measures can reduce symptoms in patients with persistent asthma and can even minimise symptoms in patients with mild, intermittent asthma. In combination with pharmacotherapy, strict adherence to environmental control measures can lower medication requirements. Environmental control measures are particularly important for:

- tobacco and/or wood smoke
- allergens to which the patient is sensitive and
- other airborne irritants.

As for any chronic disease, successful clinical outcomes require a partnership between the patient, family and healthcare provider and an educational plan that permits the patient (and family) to understand and successfully manage the disease. Patient education should dispel any misperceptions about asthma and its treatment, emphasizing that:

- asthma is a chronic disease, not just episodic or acute
- asthma is physical, not emotional
- medication for asthma is not addictive and does not become ineffective over time
- asthma is best treated with prescriptive medications, not over-the-counter (OTC) medications and
- regular healthcare visits are important, even during symptom-free times

Moving Towards Optimal Asthma Management – Early Diagnosis:

The key to optimal asthma management is an early and correct diagnosis that includes classifying the patient's degree of disease severity. This is achieved on the basis of medical history, physical examination and objective measurements of lung function. The earlier the diagnosis and start

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of treatment, the better the outcome for the patient. The components for establishing a diagnosis of asthma are described below.

Medical History: The medical history should focus on establishing patterns of episodic symptoms (breathlessness, wheezing, chest tightness, coughing) in relation to specific triggers.

Physical Examination: Physical examination should include the upper respiratory tract and skin, as well as the lower respiratory tract. The physical examination may be normal at a routine office visit. Findings
supporting a diagnosis of asthma include:

- hyper-expansion of the thorax (especially in children)
- sounds of wheezing during normal (or deep) breathing
- signs and symptoms of nasal disease (allergic rhinitis, rhinosi nusitis, nasal polyps) and
- atopic dermatitis/eczema.

Pulmonary Function Tests: Spirometry (forced expiratory volume in one second (FEV_1) or forced vital capacity (FVC)) is the gold standard measurement used to confirm the diagnosis of asthma. Reversibility in airflow limitation is demonstrated by increases greater than 15% at 10 to 20 minutes after inhalation of a short-acting bronchodilator and can be shown even for patients with relatively mild disease (i.e. FEV_1 in the normal range, ε 80% predicted normal). PEF, while not as sensitive as FEV_1, may be substituted when a patient cannot perform spirometry – e.g. in a primary care office that has no spirometer. PEF may also be useful for diagnosing the patient with relatively mild disease who has normal FEV_1. The severity of asthma is reflected in the variability of PEF over 24 hours. Ideally, measurements should be made upon waking in the morning and before using a bronchodilator (when values are at their lowest), and before going to bed at night when values are close to maximum. A diurnal variation in PEF greater than 20% is considered to be diagnostic of asthma .PEF measurements are more frequently used to monitor the patient's asthma control and adjust medication usage.

Once asthma is diagnosed, the patient's disease severity is classified according to:

- the frequency, duration and severity of symptoms;
- the degree of airflow obstruction; and
- the extent to which the disease interferes with daily activities.

Classifying asthma severity determines appropriate therapy. Asthma may be treated in a step-care manner according to the patient's degree of severity at any point in time. However, it is important to recognize that asthma severity is not static and does not move in steps. Rather, asthma severity is a continuum that can change over time for any patient. Any patient, regardless of severity, can experience a severe exacerbation of symptoms.

Moving Towards Optimal Asthma Management – Early and Aggressive Pharmacotherapy:

Asthma remains underdiagnosed and undertreated despite better understanding of the pathophysiology of asthma and the increased availability of a variety of medications targeting airway inflammation. Early recognition of the disease and aggressive therapy to treat the underlying inflammation are critical.

All patients with persistent asthma require two types of medications:

- controller medication – a long-term anti-inflammatory agent to reduce the underlying airway pathology; and
- reliever medication – a short-acting β_2-agonist to provide 'rescue' from acute-symptom episodes.

Inhaled corticosteroids (ICS) remain the gold standard for treating persistent asthma, but there is room for improving their pharmacological properties. Efficacy is hampered by inter-individual variability and the fact that both the desired clinical effects and the unwanted adverse effects are mediated by a single glucocorticoid receptor that is distributed throughout the tissues of the body. While all current guidelines agree on the clinical benefit provided by ICS, all also note a degree of caution in terms of potential for systemic adverse effects. Future developments in ICS therapy will focus on maintaining goldstandard efficacy, optimising safety and tolerability profiles and providing a greater degree of reassurance and convenience for the physician and the patient.

Important Asthma Triggers:

Environmental Tobacco Smoke : Environmental tobacco smoke is often called "secondhand smoke" because it is smoke that is breathed in not by a smoker but by a second person nearby.

Dust Mites : Dust mites are found in almost everybody's home, but they don't cause everybody to have asthma attacks. If someone has asthma, dust mites may be a trigger for an attack.

Outdoor Air Pollution : Pollution caused by industrial emissions and automobile exhaust can cause an asthma attack.

Cockroach Allergen : Cockroaches and their droppings may trigger an asthma attack.

Pets : Furry pets may trigger an asthma attack.

Other Triggers : Strenuous physical exercise; some medicines; bad weather such as thunderstorms, high humidity, or freezing temperatures; and some foods and food additives can trigger an asthma attack. Strong emotional states can also lead to hyperventilation and an asthma attack.

Learn what triggers your attacks so that you can avoid the triggers whenever possible and be alert for a possible

Sources:

Farrar JR. The global burden of asthma and current approaches to its management.. Eur Pharmacother 2005: 126, 128, 998-1000.

This article was compiled by Dr Samitha Ginige - Consultant Epidemiologist

Table 1: Vaccine-preventable Diseases & AFP

3rd - 9th May 2008 (19th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	01 GM=1	00	00	00	00	00	00	01 BD=1	00	02	01	33	32	+3.1%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	01 KD=1	02 GL=2	00	00	02 PU=2	01 PO=1	00	00	06	01	48	28	+59.3%
Tetanus	00	00	00	00	00	01 KR=1	00	01 MO=1	00	02	00	14	13	+9.0%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	02	14	17	-21.4%
Tuberculosis	46	15	03	02	13	18	39	00	06	142	188	3140	3668	-14.4%

Table 2: Newly Introduced Notifiable Diseases

3rd - 9th May 2008 (19th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	52	13	13	08	06	06	14	13	12	137	101	2299	1372	+69.3%
Meningitis	08 CO=3 GM=3 KL=2	02 KD=2	02 MT=2	00	00	02 KR=2	01 PO=1	02 BD =1 MO=1	03 KG=2 RP=1	20	00	622	49	+1004.1%
Mumps	07	07	08	27	00	11	11	06	07	84	36	962	476	+100.4%

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=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 3: Laboratory Surveillance of Dengue Fever 3rd - 9th May 2008 (19th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	11	06	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	89	49	07	13	00	00	04	05	01	04	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

3rd– 9th May 2008 (19th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	43	741	08	71	00	06	00	48	00	57	07	172	01	02	05	58	00	01	**100**
Gampaha	18	452	04	67	00	05	01	28	00	66	08	154	00	04	01	61	00	01	**86**
Kalutara	11	225	09	135	02	09	01	38	00	16	04	155	00	02	01	19	00	00	**100**
Kandy	03	94	10	101	01	04	01	21	00	30	13	126	00	40	01	73	00	00	**80**
Matale	01	54	04	107	00	01	00	22	00	02	25	310	00	01	00	16	00	00	**83**
Nuwara Eliya	03	12	02	92	00	01	16	114	00	107	00	15	00	30	02	62	00	01	**100**
Galle	01	53	01	48	00	08	00	10	00	42	06	165	00	08	00	04	00	03	**88**
Hambantota	00	46	01	35	00	03	00	05	00	06	01	48	02	50	00	04	00	00	**82**
Matara	05	104	09	77	00	04	00	20	00	02	07	164	04	93	00	05	00	01	**94**
Jaffna	00	40	02	57	00	01	05	168	00	05	00	00	05	127	02	19	00	00	**63**
Kilinochchi	00	00	00	03	00	00	00	00	00	00	00	02	00	00	00	01	00	00	**50**
Mannar	00	24	00	07	00	06	02	95	00	00	00	00	00	00	00	11	00	00	**50**
Vavuniya	00	10	01	18	00	02	00	01	00	09	00	04	00	00	00	03	00	00	**100**
Mullaitivu	00	00	00	01	00	00	01	06	00	12	00	00	00	00	00	04	00	00	**20**
Batticaloa	02	75	04	34	00	02	02	11	00	18	00	01	00	01	00	66	01	05	**64**
Ampara	00	09	00	87	00	00	00	04	00	00	03	11	00	00	00	04	00	00	**29**
Trincomalee	01	153	06	40	00	00	00	07	00	03	00	11	00	10	00	09	00	00	**60**
Kurunegala	03	189	04	131	00	10	00	23	00	10	13	91	00	14	00	21	00	04	**78**
Puttalam	09	214	05	41	00	02	01	76	00	18	00	06	02	26	00	19	00	02	**89**
Anuradhapur	06	106	00	39	00	04	00	08	00	04	13	110	00	09	01	10	00	00	**74**
Polonnaruwa	03	40	03	45	00	01	02	20	00	06	00	30	00	00	00	15	00	00	**86**
Badulla	02	40	17	181	00	03	03	57	07	13	01	16	06	61	03	58	00	01	**93**
Monaragala	03	35	07	99	00	01	02	25	00	19	11	60	01	53	02	13	00	00	**100**
Ratnapura	04	117	09	107	01	19	03	39	00	42	02	85	00	66	00	35	00	00	**75**
Kegalle	09	164	06	179	03	20	02	29	00	00	18	100	03	35	35	281	00	00	**91**
Kalmunai	01	20	05	84	00	02	01	08	00	10	00	00	01	02	00	13	00	00	**54**
SRI LANKA	**128**	**3017**	**117**	**1886**	**07**	**114**	**43**	**883**	**07**	**497**	**132**	**1836**	**25**	**634**	**53**	**884**	**01**	**20**	**80**

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 17May, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 246

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WER SRI LANKA 2008

Hypotonic Hyporesponsive Episode [HHE]

DPT-HBV-Hib (Pentavalent) vaccine was introduced to Sri Lankan Immunization Program commencing from 1st January 2008. Being a new vaccine, all providers were requested to closely monitor adverse effects following immunization [AEFI] due to this vaccine. Around 125,000 pentavalent immunizations may have been carried out during the first four months of 2008.

During the first four months of 2008, four hundred and seven (407) cases of AEFI following pentavalent immunization have been reported through the national AEFI surveillance system. Majority were expected AEFI following Pertussis containing vaccine such as high fever (171 cases) and allergic reactions (72 cases). 47 cases of persistent screaming, 17 cases of seizures and 17 cases of injection site abscess were also among the reported AEFI.

However, twenty two cases of acute onset of pallor, cyanosis, reduced responsiveness and convulsions (Hypotonic Hyporesponsive Episode (HHE) like syndrome) were also reported within few minutes to several hours of administration of pentavalent vaccine. Majority of these cases fully recovered without sequelae.

However, it should be noted that no HHE like events have been reported through the routine AEFI surveillance system in previous years against DPT or any other vaccine in Sri Lanka.

Other than that, During this period there were five reported infant deaths that were temporally to be associated with Pentavalent vaccine. Clinical presentations of these deaths were not directly compatible with the HHE. After the preliminary investigations, experts classified that 3 of the 5 reported deaths, one as possibly related, one as unlikely to be related and the other as unrelated to the vaccine . The classification of the remaining 2 cases were not conclusive and further review is pending.

With the collaboration of the WHO, detailed investigations into these reported events are still in progress. By considering all National committee on AEFI has decided to temporally withdraw thepentavelent vaccine from the national EPI schedule and revert back to the previous immunization schedule

Hence at this Juncture, it vital for us to be well aware of HHE as a possible AEFI following pentavalent or any other pertussis containing vaccines and keep the health personnel and parents informed on the situation. It is important to further strengthen the surveillance of HHE by detecting and reporting such cases through the routine AEFI reporting system.

Hypotonic-hyporesponsive episode (HHE) is a clinical event characterized by sudden onset of reduced muscle tone, hyporesponsiveness (i.e., less responsive than usual to verbal or other sensorial stimuli) and change of skin color (pallor or cyanosis) following immunization. Until recently there has been no generally accepted definition of HHE. To promote meaningful comparability of future data, the Brighton working group on HHE has attempted to establish a case definition for global acceptance and use in clinical trials and passive surveillance by groups with various levels of resources and in different geographic regions.

HHE has been referred to by terms like 'shock,' 'shock like syndrome', 'collapse' and 'collapse reaction'. For a proper interpretation of various studies on the occurrence, pathophysiology and consequences of HHE, more detailed information would be needed to explore, whether the same events are described by the various *ad hoc* definitions. The only published structured work put into the development of a case definition for HHE was done in a US public health service workshop on hypotonic-hyporesponsive episode (HHE) after pertussis immunization . In addition to a systematic literature search of Medline, EMBASE and the Cochrane library of vaccine studies involving human subjects between 1990 and 2000, this has served as the basis for consensus formation within the working group.

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It has been modified to serve as a single definition to be globally used in clinical trials and post-marketing surveillance by groups with various levels of resources and in different geographic regions.

HHE has been documented to occur after immunization with diphtheria, tetanus, *Haemophilus influenzae* type b, and hepatitis B vaccines. Most reported episodes have, however, followed administration of pertussis component of vaccines, and have been associated with whole-cell vaccines more often than acellular. HHE has also been observed most frequently during the primary immunization series, mainly after the first dose . Whether these features are related to characteristics of the vaccinee, an immunologic phenomenon, presence of toxic component(s) in the vaccine, combinations of the above, or some yet to be determined cause, remains unclear. Sex attribution does not seem to be a factor of relevance: a slight majority (53%) of HHE among females was demonstrated in reports to the Vaccine Adverse Event Reporting System (VAERS) in the United States while male predominance was observed in the enhanced surveillance program in The Netherlands

The reported rates following whole-cell and acellular pertussis component combination vaccines may vary from 21 to 71 episodes and 7 to 36 episodes *per 100,000 doses* , and 36 to 250 episodes and 4 to 140 episodes *per 100,000 children*, respectively. Rates vary greatly even for the same vaccine, as has been noted in the reported incidence of HHE after receipt of DTPw . These wide variations probably reflect the various case definitions and case ascertainments rather than inherent properties of different vaccines but might also be explained by variations in immunization schedules, age of the child at the time of immunization, or differences in the components contained in combination vaccines. According to the VAERS the median time to onset of signs after immunization is 3–4 h but ranges from immediately to 48 h postimmunization. Of 203 cases in children <24 months of age, 17 (8.5%) presented within 5 min following immunization, whereas 8 (67%) of 12 children older than 24 months had such an early onset . The median duration of these triad signs is 6–30 min but rarely parents may report their perception of time to entire resolution, particularly pallor, as being as long as 10 days. "Fever" in association with HHE is reported in up to one third of cases.

Apart from the clinical triad of signs, there are no further investigations (e.g., laboratory examinations) helpful in confirming the diagnosis of HHE. Data from a small case series indicate that blood pressure is normal at the time of presentation . Leukocytosis due to neutrophilia is observed in children with or without HHE following immunization . There is no evidence of significant changes in insulin or glucose levels . Studies reporting on the follow-up of HHE relying on parental reporting and neurodevelopmental testing demonstrated HHE to be a self-limiting event without long-term sequelae .

Thus the pathogenesis of HHE is unknown and has been poorly studied given the constraints of investigating a condition that is rare and results in transient signs. The pathoenesis of HHE is likely to be multifactorial and may result from factors either idiosyncratic to the child or inherent in the vaccine.

Rationale for decisions about case definition

As vasovagal-syncope is clinically defined by the same triad of diagnostic signs but usually occurs in an older age group . Also, brief atonic seizures may present with a similar clinical picture as HHE; however, as defined by the Brighton Collaboration , atonic seizures are characterized by unconsciousness (rather than hyporesponsiveness) and a sudden loss of tone in postural muscles but not by pallor or cyanosis. Further, intoxication with sedative substances may present like HHE and should be ruled out by appropriate investigations (e.g. urine screening). If an intoxication explains the child's clinical signs and symptoms, this event should not be reported as HHE.

While perception of some of the clinical signs and symptoms listed in the definition and guidelines may be subjective and culturally influenced, it should be recognized that this is an unavoidable part of standard medical practice. If felt necessary in prospectively designed clinical trials, evaluation of inter-rater reliability may be done.

For this revised version, the working group for HHE concluded that, although most *reported* vaccine-related hypotonic-hyporesponsive episodes occur within the first 24 h, and virtually all within 48 h postimmunization, the lack of understanding of the pathogenesis and mechanism of the event precludes restriction to a fixed surveillance time interval such as "48 h". Surveillance that does not restrict reporting by time from vaccination to HHE onset could facilitate better understanding of these episodes by permitting examination of the age and onset distributions after current and future vaccines. Reporting of all events, without time restrictions, will still allow analysis stratified by occurrence within 48 h of immunization, if this is intended.

Likewise, although most cases are reported in children younger than 2 years of age undergoing their primary immunization series there are no data that would suggest that HHE could not occur in older individuals.

Source

Michael Buettcher , Ulrich Heininger , Miles Braun et al. Hypotonic-hyporesponsive episode (HHE) as an adverse event following immunization in early childhood: Case definition and guidelines for data ollection, analysis, and presentation. Vaccine 25 (2007) 5875–5881.

The editor wishes to acknowledge Dr T.S.R. Peris—Assistant Epidemiologist for the assistance provided in the preparation of this article.

Table 1: Vaccine-preventable Diseases & AFP

10th- 16th May 2008 (20th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	01 GM=1	00	00	00	00	00	00	00	00	01	00	34	34	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	48	29	+65.5%
Tetanus	00	00	00	00	00	01 KR=1	00	00	00	01	00	14	13	+7.7%
Whooping Cough	01 CO=1	00	01 MT=1	00	00	00	00	00	00	02	00	16	17	-5.9%
Tuberculosis	150	84	23	00	26	17	00	07	13	320	199	3460	3867	-10.5`%

Table 2: Newly Introduced Notifiable Diseases

10th - 16th May 2008 (20th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	13	10	15	00	02	10	04	05	07	67	70	2380	1450	+64.1%
Meningitis	04 CO=1 GM=3	00	01 MT=1	00	01 AM=1	02 KR=2	04 PO=4	00	02 KG=2	14	00	641	49	+1208.1%
Mumps	03	03	01	00	02	07	04	01	04	25	50	989	530	+86.6%

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.

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 3: Laboratory Surveillance of Dengue Fever 10th - 16th May 2008 (20th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	06	10	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	77	50	07	13	00	00	04	05	01	04	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

10th– 16th May 2008 (20th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	29	770	00	71	00	06	02	50	00	57	09	181	00	02	02	60	00	01	**85**
Gampaha	08	463	00	68	00	05	00	28	00	66	06	162	00	04	03	65	00	01	**64**
Kalutara	09	234	07	142	00	09	01	39	00	16	09	164	00	02	00	19	00	00	**75**
Kandy	03	97	03	104	00	04	02	23	00	30	26	152	04	44	03	76	00	00	**68**
Matale	00	54	03	110	00	01	01	23	00	02	30	340	00	01	01	17	00	00	**58**
Nuwara Eliya	00	12	09	101	00	01	03	117	00	107	01	16	01	31	01	63	00	01	**85**
Galle	01	54	03	51	00	08	00	10	00	42	03	168	01	09	00	04	00	03	**76**
Hambantota	01	47	00	35	00	03	01	06	00	06	01	49	01	51	00	04	00	00	**55**
Matara	05	109	02	79	00	04	00	20	00	02	03	167	03	96	01	06	00	01	**65**
Jaffna	02	46	05	65	00	01	04	174	00	05	00	00	01	132	00	20	00	00	**63**
Kilinochchi	00	00	00	03	00	00	00	00	00	00	00	02	00	00	00	01	00	00	**00**
Mannar	00	24	00	07	00	06	00	95	00	00	00	00	00	00	00	11	00	00	**00**
Vavuniya	00	10	03	21	00	02	00	01	00	09	00	04	00	00	00	03	00	00	**50**
Mullaitivu	00	00	00	01	00	00	00	06	00	12	00	00	00	00	00	04	00	00	**00**
Batticaloa	01	76	03	37	00	02	02	13	01	19	00	01	00	01	01	67	00	05	**45**
Ampara	00	09	02	89	00	00	00	04	00	00	00	12	00	00	00	04	00	00	**29**
Trincomalee	01	156	00	40	00	00	00	07	00	03	00	11	00	11	00	09	00	00	**20**
Kurunegala	02	193	02	134	00	10	00	25	00	10	02	95	00	15	01	22	00	04	**72**
Puttalam	10	224	00	41	00	02	00	76	00	18	00	06	00	26	00	19	00	02	**44**
Anuradhapur	00	107	02	41	00	04	00	08	00	04	20	133	01	10	00	10	00	02	**47**
Polonnaruwa	01	41	09	54	00	01	00	20	00	06	00	30	00	00	00	15	00	00	**86**
Badulla	02	42	13	194	00	03	01	58	00	13	03	19	01	62	01	59	00	01	**73**
Monaragala	00	35	07	106	00	01	00	25	00	19	05	65	02	56	00	13	00	00	**55**
Ratnapura	01	121	02	109	00	20	02	41	00	42	03	89	00	66	01	36	00	00	**50**
Kegalle	01	167	00	180	00	20	01	30	00	00	03	104	00	35	00	282	00	00	**55**
Kalmunai	01	21	07	99	01	03	00	09	00	10	00	00	00	02	00	14	00	00	**69**
SRI LANKA	**78**	**3112**	**82**	**1982**	**01**	**116**	**20**	**908**	**01**	**498**	**124**	**1970**	**15**	**656**	**15**	**903**	**01**	**21**	**59**

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 24 May, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 183

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WEEKLY EPIDEMIOLOGICAL REPORT

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Vol. 35 No. 22 **24th - 30th May 2008**

WER SRI LANKA 2008

Tobacco epidemic and its control—Part I

30th MAY 2008 | GENEVA -- WHO today urged governments to protect the world's 1.8 billion young people by imposing a ban on all tobacco advertising, promotion and sponsorship.

The WHO's call to action comes on the eve of World No Tobacco Day, 31st May. This year's campaign focuses on the multi-billion dollar efforts of tobacco companies to attract young people to its addictive products through sophisticated marketing.

This article describes how the devastating tobacco epidemic is growing, the state of tobacco control worldwide, and explains how this preventable epidemic can be halted with a set of

Tobacco and tobacco smoke contain thousands of chemicals. Many of these chemicals are well known to be toxic, carcinogenic, atherogenic, teratogenic and addictive; many have no known safe level of exposure. The chemicals found in tobacco and tobacco smoke include nicotine, tar, carbon monoxide, acetaldehyde, hydrogen cyanides, arsenic, chromium, DDT, formaldehyde, benzene, N-nitrosamines, cadmium, nickel, beryllium and vinyl chloride.

Globally, one person dies from tobacco use every 6.5 seconds; tobacco kills around 5 million smokers each year, or the equivalent of 13 699 people per day. This is in addition to the suffering caused through tobacco-related diseases and the burden of disease on individuals, families and society as a whole.

Studies have shown that people who start smoking in their teens (as more than 70% do), and continue to do so for two decades or more will die 20–25 years earlier than those who have never smoked, thus losing some of the most productive years of their lives. Lung cancer and heart disease are two of the most common health problems encountered by smokers, but the general public is largely unaware that there are a wide range of other diseases and ill-effects associated with tobacco use which are not as widely publicized.

Women and smoking deserve special attention as a result of the negative and serious health impacts on smoking women and their offspring, in addition to particular health concerns related to the use of contraceptives and women's frequent involuntary exposure to environmental tobacco smoke.

Children, who represent the building blocks of the future, are a large and significant segment of the population who are involuntarily exposed to the harm that tobacco can cause. Society needs to acknowledge the harm that environmental tobacco smoke exposure causes to the health of children and exert efforts to protect them from it

Tobacco kills up to half of those who use it. Yet tobacco use is common throughout the world due to low prices, aggressive and widespread marketing, lack of awareness about its dangers, and inconsistent public policies against its use.

Most of tobacco's damage to health does not become evident until years or even decades after the onset of use. So, while tobacco use is rising globally, the epidemic of tobacco-related disease and death has yet to reach its peak.

Tobacco products are products made entirely or partly of leaf tobacco as raw material, which are

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intended to be smoked, sucked, chewed or snuffed. All contain the highly addictive psychoactive ingredient, nicotine.

Tobacco use is one of the main risk factors for a number of chronic diseases, including cancer, lung diseases, and cardiovascular diseases. Despite this, it is common throughout the world. A number of countries have legislation restricting tobacco advertising, and regulating as to who can buy and use tobacco products, and where people can smoke.

Youth and tobacco : Globally, most people start smoking before the age of 18, with almost a quarter of those beginning before the age of 10. The younger children are when they first try smoking, the more likely they are to become regular tobacco users and the less likely they are to quit.

The vast majority of smokers begin using tobacco products well before the age of 18 years. It was predicted that if the pattern seen nowadays continued, a lifetime of tobacco use would result in the deaths of 250 million children and young people alive today, most of them in developing countries. Today, surveillance of tobacco use among youth in several countries has revealed that the problem is of equal concern in developed and developing countries Statistics reveal that the use of any form of tobacco by 13–15 year old students is greater than 10%. In addition, almost one in four students (13-15 years old) who ever smoked cigarettes smoked their first cigarette before the age of 10. Further, recent studies have revealed that there is little difference between the genders in cigarette smoking or in use of other tobacco products .

A strong link between advertising and smoking in young people has been proven. The more aware and appreciative young people are of tobacco advertising, the more likely they are to smoke or say they intend to. As a result, the tobacco industry spends billions of dollars worldwide each year spreading its marketing net as widely as possible to attract young customers. Tobacco companies market their products wherever youth can be easily accessed - in the movies, on the Internet, in fashion magazines, and at music concerts and sports events.

There are various determinants of tobacco use among youth. These include cultural and religious norms, availability of different types of tobacco products, tobacco control policies and strategies, and, perhaps most importantly, tobacco industry behaviour to promote tobacco use and undercut tobacco control strategies. Advertising, promotion and marketing efforts of the tobacco industry influence adolescent smoking behaviour, often to a greater extent than it influences the behaviour of adults.

The Tobacco Free Initiative is gathering available evidence for development of policy recommendations for effective youth interventions, as part of a comprehensive tobacco control strategy.

Health effects of smoking among young people :

Among young people, the short-term health consequences of smoking include respiratory and non respiratory effects, addiction to nicotine, and the associated risk of other drug use. Long-term health consequences of youth smoking are reinforced by the fact that most young people who smoke regularly continue to smoke throughout adulthood. Cigarette smokers have a lower level of lung function than those persons who have never smoked. Smoking reduces the rate of lung growth.

- In adults, cigarette smoking causes heart disease and stroke. Studies have shown that early signs of these diseases can be found in adolescents who smoke.

- Smoking hurts young people's physical fitness in terms of both performance and endurance even among young people trained in competitive running. On average, someone who smokes a pack or more of cigarettes each day lives 7 years less than someone who never smoked.

- The resting heart rates of young adult smokers are two to three beats per minute faster than that of the nonsmokers.

- Smoking at an early age increases the risk of lung cancer. For most smoking-related cancers, the risk rises as the individual continues to smoke.

- Teenage smokers suffer from shortness of breath almost three times as often as teens who don't smoke, and produce phlegm more than twice as often as teens who don't smoke.

- Teenage smokers are more likely to have seen a doctor or other health professional for an emotional or psychological complaint.

- Teens who smoke are three times more likely than nonsmokers to use alcohol, eight times more likely to use marijuana, and 22 times more likely to use cocaine. Smoking is associated with a host of other risky behaviors, such as fighting and engaging in unprotected sex.

Source

1, The tobacco health toll. World Health Organization Regional Office for the Eastern Mediterranean Cairo, 2005.

2. Health effects of smoking among young people –WHO Fact sheet [www. Tobacco day\WHO Health effects of smoking among young people.htm]

Part II of this article will be continued in the next issue.

Table 1: Vaccine-preventable Diseases & AFP

17th- 23rd May 2008 (21th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	01 GL=1	01 JF=1	01 KM=1	00	00	00	02 RP=2	05	00	41	34	+20.6%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	02	00	00	00	00	00	00	01	03	02	53	32	+65.6%
Tetanus	00	00	00	00	01 TR=1	00	00	00	00	01	01	15	14	+7.1%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	01	16	18	-11.1%
Tuberculosis	01	00	06	40	17	00	00	07	00	71	313	3531	4180	-15.5`%

Table 2: Newly Introduced Notifiable Diseases

17th - 23th May 2008 (21th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	14	09	07	05	03	03	07	01	06	55	71	2468	1543	+59.9%
Meningitis	01 GM=1	00 ML=1	03 HB=1 GL=2	00	00	03 KR=3	01 PO=1	00	00	09	00	658	49	+1242.8%
Mumps	04	03	04	00	05	11	00	02	08	37	29	1037	564	+83.9%

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=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 3: Laboratory Surveillance of Dengue Fever 17th- 23rd May 2008 (21th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	05	08	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	82	58	07	13	00	00	04	05	01	04	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

17th– 23rd May 2008 (21st Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	11	781	02	74	00	06	01	51	00	57	03	185	00	02	01	61	00	00	**77**
Gampaha	06	482	02	72	00	05	00	28	00	66	06	172	00	04	01	68	00	01	**71**
Kalutara	11	248	08	151	00	08	00	39	00	16	14	181	00	02	00	20	00	00	**92**
Kandy	05	104	03	110	00	04	01	24	00	30	09	163	02	46	03	79	00	00	**64**
Matale	01	56	02	113	00	01	00	23	00	02	21	371	00	01	00	18	00	00	**83**
Nuwara Eliya	01	13	05	106	00	01	09	126	00	107	02	18	00	31	03	66	00	01	**85**
Galle	04	59	01	53	01	09	00	10	00	42	02	170	00	09	00	04	00	03	**88**
Hambantota	01	51	06	41	00	03	00	06	00	06	02	51	01	52	00	04	00	00	**73**
Matara	03	113	03	82	00	04	00	20	00	02	05	181	03	99	00	06	00	01	**94**
Jaffna	01	47	02	67	00	01	06	181	00	05	00	00	00	132	00	21	00	00	**50**
Kilinochchi	00	00	07	10	00	00	00	00	00	00	00	02	00	00	00	01	00	00	**25**
Mannar	00	24	01	09	00	06	01	99	00	00	00	00	00	00	00	11	00	00	**25**
Vavuniya	00	10	02	23	00	02	01	02	00	09	00	04	00	00	01	04	00	00	**50**
Mullaitivu	00	00	01	02	00	00	02	08	00	12	00	00	00	00	00	04	00	00	**60**
Batticaloa	01	78	01	40	00	02	00	14	00	19	01	02	00	01	02	70	00	05	**45**
Ampara	00	09	00	93	00	00	00	04	00	00	00	13	00	00	00	04	00	00	**29**
Trincomalee	00	161	03	44	00	00	00	07	00	03	00	12	00	11	00	09	00	00	**60**
Kurunegala	03	199	00	135	00	10	00	27	00	10	06	105	00	15	00	22	00	04	**61**
Puttalam	06	233	01	42	00	03	04	97	00	18	01	07	00	29	01	20	00	02	**78**
Anuradhapur	00	107	01	43	00	04	00	08	00	04	13	150	00	10	00	10	00	02	**58**
Polonnaruwa	02	46	02	56	00	01	01	21	00	06	05	36	00	00	00	15	00	00	**86**
Badulla	00	42	05	204	00	03	01	59	00	13	03	22	00	62	00	59	00	01	**67**
Monaragala	00	35	05	112	01	02	00	25	00	19	00	67	00	56	02	15	00	00	**82**
Ratnapura	04	125	07	125	00	20	00	41	00	42	03	94	00	67	00	36	00	00	**81**
Kegalle	09	188	02	183	00	20	04	34	00	00	07	119	00	37	14	327	00	00	**91**
Kalmunai	00	21	01	100	00	03	00	09	00	10	00	00	00	02	00	14	00	00	**31**
SRI LANKA	**69**	**3232**	**73**	**2090**	**02**	**118**	**31**	**963**	**00**	**498**	**103**	**2125**	**06**	**668**	**28**	**1943**	**00**	**20**	**69**

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 31 May, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 215

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WEEKLY EPIDEMIOLOGICAL REPORT

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Vol. 35 No. 23 **31st May - 6th June 2008**

WER SRI LANKA 2008

Tobacco epidemic and its control—Part II

Why is smoking an issue for non-smokers?

In recent years there has been growing knowledge and awareness of the dangers and serious adverse health effects of environmental tobacco smoke exposure . The health hazards of environmental tobacco smoke exposure affect almost every organ and system in the body with a wide spectrum of ailments and diseases, and it has been clearly implicated as the cause of death in many of those who were exposed to it . Environmental tobacco smoke exposure acquires special importance when it comes to considering the negative health impact on children.

There are some 4000 known chemicals in tobacco smoke; more than 50 of them are known to cause cancer in humans. Tobacco smoke in enclosed spaces is breathed in by everyone, exposing smokers and non-smokers alike to its harmful effects.

Environmental tobacco smoke has been scientifically implicated in causing a number of cancers, including lung , nasal and sinus cancers . The Council on Scientific Affairs, American Medical Association, agrees that environmental tobacco smoke should be classified as a human carcinogen (a substance that causes cancer in humans) , and the Environmental Protection Agency has classified it as a Class A (known human) carcinogen .

It has been clearly shown that exposure to environmental tobacco smoke causes a significant increase in the risk of developing coronary heart disease and an associated increase in deaths related to it. A full spectrum of lung diseases results from environmental tobacco smoke exposure, including lung cancer , asthma , a worsening of existing asthma , and a more rapid deterioration of lung function.

According to the International Labour Organization, 200 000 workers die every year due to exposure to second-hand tobacco smoke at work. WHO estimates that around 700 million children, or almost half of the world's children, breathe air polluted by tobacco smoke.

Neither ventilation nor filtration, even in combination, can reduce tobacco smoke exposure indoors to levels that are considered acceptable. Only 100% smoke-free environments provide effective protection. Contrary to common belief, smoke-free environments are widely supported by both smokers and non-smokers.

Article 8 of the WHO Framework Convention on Tobacco Control, recognizes that exposure to tobacco smoke causes death, disease and disability, and asks countries to adopt and implement legislation that provides protection from second-hand smoke.

Many countries around the world have already introduced laws to protect people from exposure to tobacco smoke in public places. Celebrations around the globe on World No Tobacco Day encourage more people and more countries to go smoke-free.

WHO wants total ban on tobacco advertising

Recent studies prove that the more young people are exposed to tobacco advertising, the more likely they are to start smoking. Despite this, only 5% of the world's population is covered by comprehensive bans on tobacco advertising, promotion and sponsorship. Tobacco companies,

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qualities such as glamour, energy and sex appeal.

"In order to survive, the tobacco industry needs to replace those who quit or die with new young consumers," said WHO Director-General Dr Margaret Chan. "It does this by creating a complex 'tobacco marketing net' that ensnares millions of young people worldwide, with potentially devastating health consequences."

"A ban on all tobacco advertising, promotion and sponsorship is a powerful tool we can use to protect the world's youth," the Director-General added.

Since most people start smoking before the age of 18, and almost a quarter of those before the age of 10, tobacco companies market their products wherever youth can be easily accessed – in the movies, on the Internet, in fashion magazines and at music and sports venues. In a WHO study of 13 to 15-year-olds in schools worldwide, more than 55% of students reported seeing advertisements for cigarettes on billboards in the previous month, while 20% owned an item with logo of a cigarette brand on it.

But it is the developing world, home to more than 80% of the world's youth, which is most aggressively targeted by tobacco companies. Young women and girls are particularly at risk, with tobacco companies seeking to weaken cultural opposition to their products in countries where women have traditionally not used tobacco.

"The tobacco industry employs predatory marketing strategies to get young people hooked to their addictive drug," said Dr Douglas Bettcher, Director of WHO's Tobacco Free Initiative. "But comprehensive advertising bans do work, reducing tobacco consumption by up to 16% in countries that have already taken this legislative step."

"Half measures are not enough," added Dr Bettcher. "When one form of advertising is banned, the tobacco industry simply shifts its vast resources to another channel. We urge governments to impose a complete ban to break the tobacco marketing net," he said.

World No Tobacco Day, 31 May 2008 , WHO call for action :

A TOTAL BAN ON ADVERTISING, PROMOTION AND SPONSORSHIP OF TOBACCO PRODUCTS REDUCES CONSUMPTION

Call to policy-makers:

- Require by law a comprehensive ban on all forms of advertising, promotion and sponsorship of tobacco products. Be aware that voluntary policies do not work and are not an acceptable response to protecting the public, especially youth, from tobacco industry marketing tactics;

- Implement policies and programmes that do not target youth in isolation. Interventions that target the population as a whole, such as banning all forms of tobacco advertising, raising tobacco taxes, and creating 100% smoke-free environments have the greatest success in reducing youth tobacco use.

Call to young people:

- Let the policy-makers of your country know what you think. Advocate for a total ban on advertising, promotion and sponsorship of tobacco products in your country.

- Get involved in a campaign to educate your peers on how the tobacco industry uses advertising, promotion and sponsorship to persuade you to smoke or use other forms of tobacco. Let the industry know you won't be duped by its slick, expensive promotional efforts.

Call to NGOs:

- Advocate to policy-makers for a complete ban on advertising, promotion and sponsorship of tobacco products in your country.

- Help organize youth groups so they can be part of the campaign and engage in the conception, development, implementation, monitoring and evaluation of tobacco control policies and programmes to ban advertising, promotion and sponsorship of tobacco products.

WHY DO WE NEED TO CAMPAIGN FOR A TOTAL BAN ON TOBACCO ADVERTISING, PROMOTION AND SPONSORSHIP?

- Because about half the children of the world live in coun tries that do not ban free distribution of tobacco products to them.
- Because only total and comprehensive bans can be effective in reducing tobacco consumption.
- Because national-level studies before and after advertising bans found a decline in tobacco consumption of up to 16%.
- Because partial bans have little or no impact on demand since advertising can be switched to alternative media

The Sri Lankan government became a party to the FCTC by ratifying the Tobacco Control Act in December 2006. It has already begun implementing a comprehensive advertising ban including promotion and sponsorship, smoking in enclosed public areas and sales to minors (21 years and below).

Source

1, The tobacco health toll. World Health Organization Regional Office for the Eastern Mediterranean Cairo, 2005.

2. Health effects of smoking among young people –WHO Fact sheet [www. Tobacco day\WHO Health effects of smoking among young people.htm]

Table 1: Vaccine-preventable Diseases & AFP

24th- 30th May 2008 (22nd Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	00	00	00	00	00	00	00	00	05	41	39	+5.1%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	01	00	00	00	00	00	00	00	01	00	54	32	+68.6%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	15	14	+7.1%
Whooping Cough	00	00	01 MT=1	00	00	00	00	00	00	01	00	18	18	00.0%
Tuberculosis	106	03	28	00	02	00	07	00	00	146	126	3677	4306	-14.6`%

Table 2: Newly Introduced Notifiable Diseases

24th - 30th May 2008 (21nd Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	32	11	11	01	05	11	02	05	13	91	50	2577	1604	+60.7%
Meningitis	05 CB=1 KL=4	01 NE=1	05 HB=1 GL=4	00	00	05 KR=3 PU=2	02 PO=2	08 BD=6 MO=2	00	26	00	684	49	+1295.9%
Mumps	06	07	02	00	03	05	04	01	05	33	23	1086	593	+83.1%

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.

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 3: Laboratory Surveillance of Dengue Fever 24th - 30th May 2008 (22nd Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	05	04	00	01	00	00	00	00	00	01	00	00	00	00
Total number to date in 2008	87	62	07	14	00	00	04	05	01	05	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

24th– 30th May 2008 (22nd Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	23	805	02	76	00	06	01	52	03	60	05	191	00	02	00	61	00	00	**85**
Gampaha	25	512	07	80	01	06	01	29	00	66	20	196	00	04	03	72	00	01	**86**
Kalutara	16	265	05	156	00	08	00	39	00	16	20	201	00	02	01	23	00	00	**75**
Kandy	05	112	06	117	01	05	03	27	00	30	28	196	03	49	02	81	00	00	**72**
Matale	04	60	06	119	00	01	01	24	00	02	57	429	00	01	01	19	00	00	**75**
Nuwara Eliya	01	14	06	112	00	01	17	143	00	107	07	25	02	33	04	70	00	01	**92**
Galle	00	59	02	55	00	09	00	10	00	42	04	176	00	09	00	04	00	03	**71**
Hambantota	00	51	01	42	00	03	00	06	00	06	03	54	00	52	00	04	00	00	**82**
Matara	02	115	07	89	00	04	00	20	00	02	04	185	03	102	00	06	00	01	**82**
Jaffna	01	48	03	70	00	01	09	190	01	06	00	00	03	135	01	22	00	00	**63**
Kilinochchi	00	00	00	10	00	00	00	00	00	00	00	02	00	00	00	01	00	00	**25**
Mannar	00	24	01	10	00	06	02	103	00	00	00	00	00	00	00	11	00	00	**50**
Vavuniya	00	10	05	29	00	02	00	02	02	11	00	04	00	00	00	04	00	00	**50**
Mullaitivu	00	00	00	02	00	00	00	08	00	12	00	00	00	01	00	05	00	00	**40**
Batticaloa	02	80	04	44	01	03	00	14	00	19	00	02	00	01	00	71	00	05	**45**
Ampara	00	17	03	102	00	00	00	04	00	00	00	14	00	00	00	05	00	00	**43**
Trincomalee	03	165	02	49	00	00	00	08	09	12	02	15	01	13	01	11	00	00	**70**
Kurunegala	12	211	01	136	00	10	01	28	00	10	13	119	00	15	01	23	00	04	**94**
Puttalam	04	241	00	42	00	03	01	98	01	19	00	07	00	29	01	21	00	02	**78**
Anuradhapur	00	107	00	43	01	05	00	08	00	05	23	175	00	10	00	10	00	02	**79**
Polonnaruwa	00	46	03	59	00	01	00	21	00	06	01	37	00	00	00	15	00	00	**86**
Badulla	02	44	09	214	02	05	00	61	00	13	00	22	01	65	00	59	00	01	**60**
Monaragala	00	37	15	132	00	02	01	26	20	39	03	73	02	61	00	15	00	00	**100**
Ratnapura	02	128	03	128	01	21	00	41	00	42	01	95	01	68	00	36	00	00	**81**
Kegalle	17	207	09	193	00	20	01	35	00	00	21	140	02	39	15	342	00	00	**100**
Kalmunai	00	21	06	113	00	03	00	09	00	10	00	00	00	02	00	14	00	00	**46**
SRI LANKA	**119**	**3379**	**106**	**2222**	**07**	**125**	**38**	**1006**	**36**	**535**	**212**	**2358**	**18**	**693**	**30**	**1005**	**00**	**20**	**75**

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 7 June, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 228

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WEEKLY EPIDEMIOLOGICAL REPORT

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Vol. 35 No. 24 **7th - 13th June 2008**

WER SRI LANKA 2008

Blood transfusion safety—Part I

Global celebration of the World Blood Donor Day (WBDD) will take place on 14 June 2008. This annual event highlights the role blood donors play in saving the lives and improving the health of millions and creates awareness about the availability, safety and appropriate use of blood and blood products. The resolution passed by the World Health Assembly in 2005 recognised that voluntary, non-remunerated blood donors who donate blood regularly are integral to safe, adequate and sustainable blood supply

This year's theme is "Giving Blood Regularly" - an effort to commit volunteer blood donors to donate regularly and over long-term. This sense of social engagement and belonging displayed can be the foundation of a stable voluntary donor pool. It is an opportunity for every country to felicitate these givers of 'life' and for national transfusion services to reaffirm their efforts in providing them quality care.

Millions of lives are saved each year through blood transfusions. In many countries, however, people still die due to an inadequate supply of blood and blood products. This has a particular impact on women (as a consequence of pregnancy-related complications), children (malnutrition, malaria and severe life-threatening anaemia), trauma victims and, especially, the poor and disadvantaged.

The emergence of HIV in the 1980s highlighted the importance of ensuring the safety, as well as the adequacy, of national blood supplies. More than 81 million units of blood are collected globally every year. Only 45% of these are donated in developing and transitional countries where more than 80% of the world's population lives.

Family or replacement donors and paid donors still remain a significant source of blood for transfusion in many countries. Adequate stocks of safe blood can only be assured by regular donation by voluntary unpaid blood donors, because the prevalence of bloodborne infections is lowest among these donors.

In many countries, even where blood is available, many recipients remain at risk of transfusion-transmissible infections (TTIs) as a result of poor blood donor recruitment and selection practices and the use of untested units of blood.

Every country has a common need to ensure:

- Availability of adequate supplies of blood and blood products and their accessibility to all patients requiring transfusion;
- Safety of blood and blood products;
- Safe and appropriate clinical use of blood and blood products.

The WHO Blood Transfusion Safety (BTS) team supports the establishment of sustainable national blood programmes that can ensure the provision of safe, high quality blood and blood products that are accessible to all patients requiring transfusion and their safe and appropriate use. In support of this mission, the WHO BTS team recommends the following integrated strategy to national health authorities:

1.Establishment of a well-organized, nationally coordinated blood transfusion service

The provision of safe and adequate blood is the responsibility of government. The formation of a nationally organized and managed blood programme should be an integral part of each country's national health care policy and health care infrastructure.

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The blood transfusion service (BTS) should be established in accordance with an agreed National blood Policy and plan within a legislative framework. It should be responsible for establishing and maintaining a national quality system, including the development of guidelines and standards, staff training , a data/ information management system and a system for monitoring and evaluation of all blood transfusion activities.

National Blood Policy

To ensure a cost-effective system that is sustainable within the national health care budget with minimum of wastage, evidence has shown that a well-organized, nationally coordinated blood transfusion service is a prerequisite for a safer and more cost-effective than a hospital-based system or other fragmented system. This will allow blood and blood products to be equitable, safe, accessible, adequate to meet to meet the transfusion requirements of patient population . The centralization of the BTS depending on the country requirement, could lead to improved safety of the blood supply, reduced cost through economies of scale, increased efficiency, enhanced quality and improved human resource management.

The BTS requires formal government commitment, support and recognition of the national health authority as a specific, identifiable programme with a budgeting and finance system that can ensure the BTS to fully achieve a stable and adequate blood supply. Safe, accessible supplies of blood and blood products cannot be achieved without cost. However, an unsafe or inadequate blood supply is ultimately even more costly - in both human and economic terms.

2. Collection of blood only from voluntary unpaid blood donors

Safe blood donors are the cornerstone of a safe and adequate supply of blood and blood products. The safest blood donors are voluntary, non-remunerated blood donors from low-risk populations. Despite this, family/replacement and paid donors, which are associated with a significantly higher prevalence of transfusion-transmissible infections (TTIs) including HIV, hepatitis B, hepatitis C, syphilis and Chagas disease, still provide more than 50% of the blood collected in some developing countries. WHO advocates and recommends to its Member States to develop national blood transfusion services based on voluntary non-remunerated regular blood donation in accordance with World Health Assembly resolution 28.72, which was adopted in 1975.

The key to recruiting and retaining safe blood donors is good epidemiological data on the prevalence (and incidence, where possible) of infectious markers in the general population to identify low-risk donor populations coupled with an effective donor education, motivation and recruitment strategy to recruit new voluntary non-remunerated blood donors from these populations. A pleasant experience during blood donation, good donor care and effective communication between blood centre staff and blood donors are all important factors for the retention of safe blood donors.

WHO has developed a set of simple guidelines designed to assist those responsible for blood donor recruitment in resource poor settings to develop and implement a programme to improve communication with blood donors. These guidelines provide approaches for setting up a communication programme – organizing, collecting information, and developing plans; as well as providing ideas that individual centres might consider for recruiting, educating and retaining safe donors.

3. Appropriate clinical use of blood

Blood transfusion is an essential part of modern health care. Used correctly, it can save life and improve health. However, as with any therapeutic intervention, it may result in acute or delayed complications and carry the risk of transmission of infectious agents, such as HIV, hepatitis viruses, syphilis and Chagas disease.

Inappropriate use of blood and blood products, coupled with transfusion of unscreened or improperly screened units, particularly in countries with poor blood programmes, increases the risk of TTIs to recipients. It also widen the gaps between supply and demands and contributes to shortages of blood and blood products for patient requiring transfusion. Thus, it is necessary to reduce unnecessary transfusions. This can be achieved through the appropriate clinical use of blood, avoiding the needs for transfusion and use of alternatives to transfusion. The transfusion is deemed appropriate when it is used to treat condition leading to significant morbidity and mortality that cannot be prevented or managed effectively by other means. The commitment of the health authorities, health care providers and clinicians are important in prevention, early diagnosis and treatment of diseases/ conditions that could lead to the need for blood transfusion.

Source

1. Blood transfusion safety - WHO Fact sheet [http:// www.who.int\WHO Blood Transfusion Safety.htm]

2. Voluntary Blood Donation - WHO Fact sheet [http:// www.who.int/bloodsafety/voluntary_donation/en/]

3. Safe and appropriate use of blood - Who fact sheet [http://www.who.int/bloodsafety/clinical_use/en/]

Part II of this article will be continued in the next issue

Table 1: Vaccine-preventable Diseases & AFP

31st May - 6th June 2008 (23rdWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	01 GL=1	00	00	00	00	00	01 RP=1	02	01	43	40	+7.5%
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	02	58	34	+70.6%
Tetanus	00	02 ML=1 NE=1	00	00	00	00	00	00	00	02	01	17	16	+6.3%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	18	18	00.0%
Tuberculosis	78	04	04	07	14	00	32	06	89	234	238	3911	4544	-13.9`%

Table 2: Newly Introduced Notifiable Diseases

31st May - 6th June 2008 (23rdWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	13	08	10	05	05	05	08	05	11	70	50	2661	1671	+59.2%
Meningitis	04 CB=1 KL=1 GM=2	02 KD=1 NE=1	03 HB=2 GL=1	01 VA=1	01 BT=1	03 KR=2 PU=1	03 PO=1 AP=2	04 BD=4	03 RP=1 KG=2	24	11	711	62	+1046.8%
Mumps	02	00	06	02	14	07	05	00	07	43	45	1140	640	+78.1%

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.

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 3: Laboratory Surveillance of Dengue Fever 31st May - 6th June 2008 (23rdWeek)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	04	14	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	91	76	07	14	00	00	04	05	01	05	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

31st May - 6th June 2008 (23rd Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	18	828	03	79	00	06	02	54	00	60	06	197	00	02	01	62	00	00	**85**
Gampaha	21	535	04	84	01	08	00	29	00	66	07	204	00	04	01	73	02	03	**93**
Kalutara	09	275	06	169	00	08	00	40	00	16	16	221	00	02	00	23	00	00	**92**
Kandy	03	117	05	122	00	05	02	29	00	30	21	217	00	50	00	82	00	00	**84**
Matale	01	61	03	123	01	02	00	24	00	02	26	468	00	01	00	19	00	00	**75**
Nuwara Eliya	00	14	04	116	00	01	00	143	00	107	02	27	00	33	05	75	00	01	**77**
Galle	00	59	02	92	01	10	00	10	00	42	04	187	00	09	00	04	00	03	**88**
Hambantota	01	52	02	44	00	03	00	06	00	06	04	58	00	52	00	04	00	00	**91**
Matara	07	123	05	95	00	04	00	21	00	02	00	185	03	105	00	06	00	01	**82**
Jaffna	01	52	02	77	00	01	05	197	00	06	00	00	01	138	01	23	00	00	**75**
Kilinochchi	00	00	02	12	00	00	00	00	00	00	00	02	00	00	00	01	00	00	**25**
Mannar	00	24	00	10	00	06	03	106	00	00	00	00	00	00	00	11	00	00	**50**
Vavuniya	00	10	00	30	00	02	00	02	00	11	00	04	00	00	00	04	00	00	**100**
Mullaitivu	00	00	00	02	00	00	00	08	00	12	00	00	00	01	00	06	00	00	**60**
Batticaloa	02	82	00	46	00	03	01	16	00	19	00	02	00	01	00	72	00	05	**64**
Ampara	02	19	01	106	00	00	00	04	00	00	00	16	00	00	00	05	00	00	**57**
Trincomalee	04	169	00	49	00	00	01	09	00	12	05	20	00	13	01	12	00	00	**70**
Kurunegala	05	216	03	139	00	10	01	29	01	11	16	135	00	15	03	26	00	04	**94**
Puttalam	05	246	02	44	02	05	03	102	00	19	03	10	02	31	00	21	00	02	**100**
Anuradhapur	00	107	01	44	00	05	00	08	00	05	14	191	00	10	00	10	00	02	**95**
Polonnaruwa	04	50	08	67	00	01	00	21	00	06	07	44	00	00	01	16	00	00	**100**
Badulla	00	44	14	228	00	05	04	65	00	13	05	27	03	68	02	61	00	01	**93**
Monaragala	02	39	08	140	00	02	00	26	00	39	02	75	03	64	00	15	00	00	**91**
Ratnapura	05	133	05	133	00	21	00	41	00	42	12	107	00	68	02	38	00	00	**69**
Kegalle	10	217	03	196	01	21	00	35	01	01	18	158	02	41	14	356	00	00	**91**
Kalmunai	00	21	13	134	00	03	00	09	00	10	00	00	00	02	02	17	00	00	**77**
SRI LANKA	**100**	**3493**	**96**	**2381**	**06**	**132**	**22**	**1034**	**02**	**537**	**168**	**2555**	**14**	**710**	**33**	**1038**	**02**	**24**	**83**

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 14 June, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 254

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Vol. 35 No. 25 **14th - 20th June 2008**

WER SRI LANKA 2008

Blood safety and donation—Part II

Part I of this article was published in the last issue of the Weekly Epidemiological Report

4. Testing of all donated blood

The first step in reducing the risk of transmission of infectious diseases through blood is to select voluntary non-remunerated donors from low-risk populations who give blood on a regular basis as these individuals are at a lower risk of transmitting transfusion-transmissible infections than are family/replacement donors, or paid donors. However, even with the most careful selection, some donors may be seropositive for HIV or other infectious agents. Therefore, rigorous screening of all donated blood is required to ensure the safety of the blood supply.

Unfortunately, not all donations in all countries are screened. GDBS data from 1998–1999 indicated that, globally, 13 million tests were not performed for HIV, hepatitis B (HBV), hepatitis C (HCV) and syphilis. Data for 2000–2001 indicate an improvement in the number of tests performed for these markers, largely because a number of countries had introduced testing for HCV since the previous collection of data. Nevertheless, more than 6 million tests were not performed on donated blood for either HIV, HBV, HCV and syphilis. The donated blood should also be tested for ABO and RhD to ensure safety and compatibility of the transfusion for the patient.

In order to ensure safety of the blood supply, several key activities must be implemented:

- the development and implementation of a national strategy for the screening of all donated blood for transfusion-transmissible infections, using the most appropriate and effective assays to test for HIV, hepatitis viruses, syphilis and other infectious agents, such as Chagas disease;
- Training of blood transfusion service laboratory technical staff in all aspects of blood screening and processing including blood grouping, compatibility testing, component preparation and storage and transportation of blood products;
- Maintenance of quality assurance systems and good laboratory practice, including the use of standard operating procedures, in all aspects of blood screening and processing;
- Compatibility testing of all whole blood and red cells with the patient to be transfused must always be performed even if, in life-threatening emergencies, this is done after the transfusion has been completed;
- The procurement, supply, central storage and distribution of reagents and materials to ensure continuity in testing at all sites;
- The maintenance of an effective blood cold chain for the storage and transportation of blood and blood products.

5.Production of blood components

Safe blood is a precious gift from blood donors. To ensure that the use of donated blood is maximized, blood is processed into blood components so that a number of patients can benefit from a single donation. Blood is a complex fluid consisting of different blood cells suspended in yellowish liquid called plasma.

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The blood cells comprise a mixture of red cells (erythrocytes), white cells (leukocytes) and platelets (thrombocytes). The plasma contains water, chemical substances (electrolytes), many different proteins such as clotting (coagulation) factors and immunoglobulins and numerous metabolic substances. Blood serves as a transport medium for carrying all its different components to and from the different organs of the body.

Blood collected in an anticoagulant can be stored and transfused to a patient in an unmodified state. This is known as 'whole blood' transfusion. Blood may be used more effectively if component therapy is practised. One unit of donated blood may be divided into components, including red cells concentrates, fresh frozen plasma, cryoprecipitates and platelet concentrates, to meet the needs of more than one patient.

Advantages of component therapy are:

- the recipient can be treated with only those blood components that are lacking, reducing the occurrence of adverse transfusion reactions;
- more than one patient can be treated with blood components derived from one donation;
- therapeutic support for patients with special transfusion requirements can be provided, for example, plasma that often is not directly needed for transfusion can be used for manufacturing of Factor VIII concentrate for Haemophilia A patients;

improved quality and functional capacity of each component when varied storage conditions and shelf lives were applied

For a safe and effective blood component processing, the following elements are required:

- Commitment and support by national health authorities for a sustainable, well-organized, nationally co-ordinated blood transfusion service, with adequate resources and quality system for all areas;
- Centralization of blood processing and testing within major centers to permit economies of scale by maximizing utilization of personnel and equipment and uniform standards;
- Reliable supply of materials and consumables;
- Well-maintained equipment and spares available to keep down-time to a minimum;
- Effective and timely testing of all donated blood to ensure maximum safety and availability of blood components;
- A system for appropriate storage and transportation to ensure quality and efficacy of blood and blood components;
- Optimization of the use of plasma for fractionation where facilities are available;
- Promotion of appropriate blood component therapy.

Types of blood donation

Sufficient supplies of safe blood can only be assured by regular donations from voluntary unpaid donors. The 2006 data reveal some improvements in such donations worldwide, but many developing and transitional countries still rely heavily on relatively unsafe family/replacement donors and paid donors.

- Fifty-one countries reported an increase in blood donation by voluntary unpaid donors. In 27 countries the level remained the same.
- In 2004, 51 countries had reached the WHO-recommended goal of collecting 100% of their blood supplies from voluntary unpaid donors. Thailand, Turkey and Uganda achieved this in 2006.
- Particularly striking is the increase from 25% in 2002 to 40% in 2006 in the proportion of donations collected from voluntary non-remunerated blood donors in developing and transitional countries.
- 92% of donations in developed countries are from voluntary unpaid donors as compared to 77% in developing and transitional countries.
- More countries are moving towards voluntary blood donation and showing a decrease in dependence on relatively unsafe family and paid blood donors. In 2002, 63 countries were collecting more than 75% of their blood supplies from family and paid blood donors. This number had fallen to 46 countries by 2004 and again to 38 countries in 2006.
- More than 1 million whole blood units were still collected from paid blood donors in 2006.

Data from 97 countries shows that 6.93 million prospective donors are deferred prior to blood collection. The causes for these deferrals include anaemia, existing medical conditions and risk behaviours for transmissible infections. This indicates the need for collecting information about blood donors, and for educating and counselling prospective donors. These measures will ensure safety and availability of blood, reduce unnecessary deferrals, and also ensure health and safety of donors.

Sources

1.Testing of all donated blood - WHO Fact sheet [http:// www.Blood\WHO Testing of donated blood.htm]

2,Processing of donated blood - WHO Fact sheet [http:// www. Blood\WHO Processing of donated blood.htm]

3.Blood safety and donation - WHO Fact sheet [http:// www. Blood\WHO Blood safety and donation.htm]

Table 1: Vaccine-preventable Diseases & AFP

7th - 13th June 2008 (24thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	01 CO=1	00	00	00	00	01 KR=1	00	00	00	02	02	45	42	+7.1%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	01 NE=1	00	00	00	00	00	00	00	01	01	59	36	+63.9%
Tetanus	00	01 ML=1	00	00	00	00	00	00	00	01	02	18	17	+5.9%
Whooping Cough	00	00	00	00	00	00	01 PO=1	00	00	01	01	19	19	00.0%
Tuberculosis	46	21	02	12	24	33	02	17	15	172	163	3849	4707	-18.2`%

Table 2: Newly Introduced Notifiable Diseases

7th - 13th June 2008 (24thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	11	20	10	03	10	04	06	09	12	86	59	2769	1739	+59.2%
Meningitis	01 KL=1	02 NE=1 KD=1	07 HB=2 GL=3 MT=2	01 MU=1	01 BT=1	01 KR=1	00	03 BD=3	05 RP=1 KG=4	21	18	735	81	+807.4%
Mumps	09	09	07	00	11	10	06	03	20	75	46	1223	689	+77.5%

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=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 3: Laboratory Surveillance of Dengue Fever 7th - 13th June 2008 (24thWeek)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	02	06	00	01	00	00	00	01	00	00	00	00	00	00
Total number to date in 2008	93	82	07	15	00	00	04	06	01	05	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]
* Not all positives are subjected to serotyping.
NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

7th - 13th June 2008 (24thWeek)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	38	866	02	81	00	06	00	54	01	61	04	201	00	02	00	62	00	00	**85**
Gampaha	05	546	01	86	03	11	00	30	00	66	02	210	00	04	01	74	00	03	**86**
Kalutara	11	288	09	178	00	08	01	42	00	16	18	240	00	02	01	25	00	00	**75**
Kandy	08	125	09	131	00	05	03	32	04	34	17	234	05	55	01	83	00	01	**72**
Matale	01	62	02	125	00	02	04	30	01	03	33	517	00	01	00	19	00	00	**75**
Nuwara Eliya	01	15	08	126	00	01	17	170	00	107	01	30	01	34	01	77	00	01	**92**
Galle	02	62	04	97	01	11	00	10	00	42	05	192	01	10	02	06	00	03	**71**
Hambantota	00	52	03	47	00	03	00	06	00	06	02	63	00	52	00	04	00	00	**82**
Matara	06	129	05	100	00	04	01	22	00	02	06	193	03	108	01	07	00	01	**82**
Jaffna	00	52	00	78	00	01	00	199	00	08	00	00	00	139	00	23	00	00	**63**
Kilinochchi	00	00	00	12	00	00	00	00	00	00	00	02	00	00	00	01	00	00	**25**
Mannar	00	24	00	10	00	06	02	108	00	00	00	00	01	01	00	11	00	00	**50**
Vavuniya	00	10	01	31	00	02	00	02	00	11	00	04	01	01	00	04	00	00	**50**
Mullaitivu	00	00	00	02	00	00	00	08	00	12	00	00	00	01	00	06	00	00	**40**
Batticaloa	01	83	06	52	00	03	01	17	00	19	00	02	00	01	04	76	00	05	**45**
Ampara	00	19	04	116	00	00	00	04	00	00	00	16	00	00	00	05	00	00	**43**
Trincomalee	02	171	05	55	00	00	00	09	00	12	04	24	02	15	00	12	00	00	**70**
Kurunegala	03	220	00	139	01	11	01	30	00	11	08	143	01	16	03	29	00	04	**94**
Puttalam	07	253	01	45	01	06	10	112	02	21	04	14	01	32	01	22	00	03	**78**
Anuradhapur	00	107	01	45	00	06	00	08	00	05	15	208	00	10	00	10	00	02	**79**
Polonnaruwa	00	50	04	71	00	01	00	21	00	06	04	48	00	00	00	16	00	00	**86**
Badulla	01	47	12	240	00	05	02	67	00	13	00	27	01	69	01	62	00	01	**60**
Monaragala	02	41	12	152	00	02	01	27	61	100	05	80	00	64	03	18	00	00	**100**
Ratnapura	01	135	06	142	00	21	00	41	00	42	01	109	00	69	01	39	00	00	**81**
Kegalle	12	230	01	199	00	21	02	37	00	01	06	165	02	43	13	369	00	00	**100**
Kalmunai	03	24	11	147	00	03	00	09	00	10	00	00	00	02	02	19	00	00	**46**
SRI LANKA	**104**	**3611**	**107**	**2507**	**06**	**139**	**45**	**1095**	**69**	**608**	**135**	**2722**	**19**	**731**	**35**	**1079**	**00**	**24**	**75**

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 21 June, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 262

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WEEKLY EPIDEMIOLOGICAL REPORT

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WER SRI LANKA 2008

Integrated vector management - Part I

Integrated vector management [IVM] is "a rational decision-making process for the optimal use of resources for vector control". Its goal is to make a significant contribution to the prevention and control of vector-borne diseases. Implementation of IVM requires institutional arrangements, regulatory frameworks, decision-making criteria and procedures that can be applied at the lowest administrative level. It also requires decision-making skills that support intersectoral action and are able to establish vector control and health-based targets.

The Global Strategic Framework for Integrated Vector Management (IVM) provides a basis for strengthening vector control in a manner that is compatible with national health systems. Through evidence-based decision-making, IVM rationalizes the use of human and financial resources and organizational structures for the control of vector borne disease, and emphasizes the engagement of communities to ensure sustainability. It encourages a multi disease control approach, integration with other disease control measures and the considered and systematic application of a range of interventions, often in combination and synergistically.

Vector-borne diseases are responsible for a significant fraction of the global disease burden and have profound effects not only on health but also on the socioeconomic development of affected nations. Thus, an econometric model for malaria which is responsible for more than 1 million deaths every year suggests that countries with intensive malaria have income levels only 33% of those without malaria.

Vector control strategies have a proven track record of successfully reducing or interrupting disease transmission when coverage is sufficiently high. Thus, vector control has an important part to play in reducing the burden of vector-borne disease, adding resilience to the public health gains achieved through disease management and giving high priority to prevention.

The distribution and incidence of vector-borne diseases are strongly determined by the ecological conditions that favor different species of disease vectors. Knowledge and understanding of these characteristics provide a unique opportunity to prevent and control such diseases, by reducing vector–human contact and vector population density and survival.

For many vector-borne diseases there are no vaccines, and drug resistance or the threat of resistance is an increasing problem. In such circumstances vector control often plays a vital role. In some cases, and dengue is one example, effective vector control is the primary or even sole measure for preventing disease outbreaks. Vector control programmes have relied heavily on the use of residual insecticides and the selective use of such compounds is likely to continue, as a part of IVM.

However, vector control also has proven weaknesses that are contextual in nature and relate especially to technical and managerial deficien-

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But today we know how to better monitor and manage vector resistance. Similarly, we have learnt that significant success in the short term may be a weakness because it can lead to premature diversion of resources. And we know that any particular intervention may not be suitable for every setting; additionally, over-reliance on a single intervention may undermine the flexibility needed by health services to use an adaptive management approach to the control of vector borne diseases. It is well known that the development of insecticide resistance played a role in the breakdown of the malaria eradication campaign of the 1960s.

Bringing together different types of vector control interventions is not simply a matter of adding them up. It requires careful consideration of synergies and antagonisms to achieve vector-control goals in specific settings. It also requires reconsideration of these combinations over time, as contexts change and needs evolusion.

Vector control is well suited for integrated approaches because some vectors are responsible for multiple diseases, and some interventions are effective against several vectors. The concept of IVM was developed as a result of lessons learnt from integrated pest management, which is used in the agricultural sector; IVM aims to optimize and rationalize the use of resources and tools for vector control. For example, insecticide treated nets are currently used in the control of malaria and other vector-borne diseases, with minimal impact on ecosystems and the environment. The Onchocerciasis Control Programme eliminated the disease from much of the programme areas using various insecticides in rotation, and the Southern Cone Initiative for the control of Chagas disease in South America has relied primarily on spraying inside houses with residual insecticides to achieve its objectives of elimination.

However, the environmental and health concerns over persistent organic pollutants identified in the Stockholm Convention, together with the increasing problem of insecticide resistance, emphasize the need for alternative strategies for sustainable vector control and management Such considerations led to World Health Assembly resolution WHA 50.13, which called on Member States to support the development and adoption of viable alternative methods of controlling vector-borne diseases and thereby reduce reliance on insecticides. IVM provides a management framework within which such changes can be effected.

Although many vector-borne disease control programmes continue to rely heavily on vector control, the benefits are far from being fully realized. Reasons for this include the following:

• The skills to both manage and implement vector control programmes remain scarce, particularly in the resource-poor countries that are in most need of effective vector-borne disease control. This has led to control measures that are unsuitable or poorly targeted, with insufficient coverage and consequent wastage of resources and sometimes avoidable insecticide contamination of the environment.

• The use of insecticides in agriculture and poor management of insecticides in public health programmes have contributed to resistance in disease vectors.

• Development programmes, including irrigated agriculture, hydroelectric dam construction, road building, forest clearance, housing development and industrial expansion, all influence vector-borne diseases but opportunities for cooperation between sectors and for adoption of strategies other than those based on insecticides are seldom grasped. In addition, health sector reform, with its emphasis on decentralization of operational control, poses new challenges but also affords significant new opportunities for delivering vector control.

This Global Strategic Framework for integrated vector management has been developed both to address deficiencies in vector control and to improve the efficacy, cost-effectiveness, ecological soundness and sustainability of that control. More effective disease vector control will make a significant contribution to the attainment of the Millennium development goals,

Sources:

1. WHO position statement on vector management. Weekly Epidemiological Record. WHO, No 20, 2008, 83,177—184 [http://www.who.int/wer].

2. Global Strategic Framework for Integral vector man agement. WHO Geneva 2004. WHO /CDS/CPE/ PVC/2004.10

This article was compiled by Dr Samitha Ginige - Consultant Epidemiologist.

Part II of this article will be continued in the next issue

Table 1: Vaccine-preventable Diseases & AFP

14th - 20th June 2008 (25thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	01 GM=1	00	00	00	00	00	00	01 MO=1	00	02	04	49	46	+4.3%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	00	00	00	00	01 KR=1	00	00	00	01	02	60	38	+57.8%
Tetanus	00	00	00	00	01 TR=1	00	00	00	00	01	00	19	17	+11.8%
Whooping Cough	01 C0=1	00	00	00	00	00	00	00	00	01	02	20	21	- 4.8%
Tuberculosis	119	30	12	05	03	51	06	05	00	231	120	4080	4820	-15.3`%

Table 2: Newly Introduced Notifiable Diseases

14th - 20th June 2008 (25thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	15	05	03	03	04	04	04	07	22	67	57	2839	1800	+57. 7%
Meningitis	04 KL=3 C0=1	01 NE=1	02 GL=2	00	00	02 KR=1 PU=1	02 PO=2	01 BD=1	04 RP=3 KG=1	16	37	751	123	+510.6%
Mumps	02	01	06	00	14	07	04	00	06	40	23	1265	717	+76.4%

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=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 3: Laboratory Surveillance of Dengue Fever 14th - 20th June 2008 (25thWeek)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	02	04	00	02	00	00	00	02	00	00	00	00	00	00
Total number to date in 2008	95	86	07	17	00	00	04	08	01	05	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

14th - 20th June 2008 (25thWeek)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	36	915	02	83	00	06	02	56	00	61	08	210	00	02	02	64	00	00	**92**
Gampaha	12	558	03	89	01	12	00	30	00	66	03	213	00	04	00	74	00	03	**57**
Kalutara	04	292	09	187	00	08	00	42	00	16	19	259	00	02	00	25	00	00	**100**
Kandy	01	126	04	135	00	05	01	33	05	39	08	242	01	56	02	85	00	01	**68**
Matale	00	62	01	126	00	02	01	31	00	03	14	531	00	01	00	19	00	00	**83**
Nuwara Eliya	00	15	02	128	01	02	01	171	00	107	00	30	00	34	02	79	00	01	**92**
Galle	02	64	00	97	00	11	01	11	00	42	02	194	00	10	00	06	00	03	**94**
Hambantota	02	54	04	51	00	03	00	06	01	07	01	64	02	54	00	04	00	00	**73**
Matara	07	137	04	106	00	04	00	22	00	02	03	198	05	113	01	08	00	01	**94**
Jaffna	00	52	00	78	00	01	03	202	00	08	00	00	01	140	01	24	00	00	**63**
Kilinochchi	00	00	00	12	00	00	00	00	00	00	00	02	00	00	00	01	00	00	**00**
Mannar	00	24	01	11	00	06	00	108	00	00	00	00	00	01	00	11	00	00	**50**
Vavuniya	00	10	01	32	00	02	01	03	02	13	00	04	00	01	00	04	00	00	**100**
Mullaitivu	00	00	00	02	00	00	00	08	00	12	00	00	00	01	00	06	00	00	**60**
Batticaloa	00	84	03	55	00	03	00	17	00	19	01	03	00	01	01	77	00	05	**73**
Ampara	00	19	00	116	00	00	00	04	00	00	00	16	00	00	00	05	00	00	**29**
Trincomalee	00	171	01	56	00	00	00	09	00	12	00	24	00	15	00	12	00	00	**80**
Kurunegala	02	223	01	140	00	11	02	33	00	11	04	148	00	16	02	31	01	04	**78**
Puttalam	00	253	02	47	00	06	06	118	00	21	06	20	00	32	01	23	00	03	**100**
Anuradhapur	00	107	02	47	00	06	00	08	00	05	03	211	00	10	00	10	00	02	**58**
Polonnaruwa	02	52	02	73	00	01	00	21	00	06	05	53	01	01	00	16	00	00	**100**
Badulla	01	48	07	247	00	04	04	72	00	13	01	28	00	69	01	63	00	01	**73**
Monaragala	00	41	05	157	00	02	00	27	10	110	02	82	00	64	01	19	00	00	**91**
Ratnapura	02	138	06	155	00	22	00	41	00	43	00	110	02	71	02	41	00	00	**88**
Kegalle	13	243	03	202	00	21	01	38	00	01	10	175	01	44	10	379	00	00	**91**
Kalmunai	05	29	12	159	00	03	00	09	00	10	00	00	00	02	00	19	00	00	**77**
SRI LANKA	**89**	**3718**	**75**	**2591**	**02**	**141**	**23**	**1120**	**18**	**627**	**90**	**2817**	**13**	**744**	**26**	**1105**	**01**	**24**	**78**

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 28 June, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 262

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WER SRI LANKA 2008

Integrated vector management - Part II

Part I of this article was published in the last issue of the Weekly Epidemiological Report in which we discussed integrated vector management [IVM]. In this article we will discuss about the important attributes of IVM.

The important attributes of Integrated vector management [IVM] are described below.

Cost-effectiveness

At the core of the IVM concept is the need to obtain maximum value for money. Like most health-sector programmes, vector control has to operate within budget constraints. This implies that the vector control measures selected to be used as part of the IVM approach need to be tested for their cost-effectiveness, both individually and, taking into account possible synergies, collectively. For this reason, national vector-control programmes must have the capacity to carry out cost-effectiveness analyses.

Intersectoral action

The environmental and social determinants of health change constantly as a result of decision-making that takes place outside the health sector. For instance, irrigation schemes change the environmental receptivity for vectors, new transport infrastructure allows parasites and vectors to travel greater distances, and population resettlement may introduce parasite carriers to receptive areas or to those who are not immune to pathogens transmitted by vectors. There are opportunities, within the context of IVM, to include measures undertaken by other sectors to help reduce transmission risks through project design, implementation and operation. Moreover, in other economically productive sectors, resources are often orders of magnitude larger than those available in the health sector.

Regulatory and operational measures

The intersectoral framework within which IVM must operate underscores the need for regulatory as well as operational measures. Traditionally, vector-control professionals have been predominantly operation-oriented. However, lessons from the environmental sector show that results may often be achieved much more effectively and efficiently by regulating the actions of others. Establishing standards and norms that are supported by sound legislation gives vector-control programmes a strong instrument to engage others within the scope of IVM.

Subsidiarity

Vertical vector-control programmes, often exclusively based on chemical interventions, have a top-down decision making structure and are often challenged by the need to obtain the cooperation of local communities. In IVM, the involvement of local communities is a critical element. Therefore, the concept of subsidiarity is a key component of IVM: it foresees decision-making at the lowest possible levels (that is, any decision-making higher up in the administrative structure than strictly necessary is subsidiary to local decision-making). This concept also reconfi rms the need to assign different responsibilities to different levels:

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centrally, there should be a core group with strong technical capacities; regionally, there should be quality-control entities; and at the local level, the operational units should exist.

Decision-making

Decision-making on vector-control action at the lowest possible level requires criteria that are relevant to the local eco-epidemiological setting and the inclusion of those control measures that can be locally applied. Clearly, not all necessary expertise will be available at all times at all places, and therefore a regional or national core group should be able to provide technical support to local vector-control operators. Similarly, independent quality control of vector-control operations will be required to ensure that the health-based targets set for IVM are met in an optimal way. Responsibility for such quality control may be efficiently placed at the administrative mid-level – for example, with the provincial authorities.

Inability

In a natural-resource context, sustainability as defined by the World Commission on Environment and Development (1987) refers to intergenerational equity: the current generation should use natural resources to fulfill their needs in a way that will permit future generations to use them to fulfill their needs. This has a bearing on vector control, for example, when it comes to possible environmental modification, to the impact of the use of insecticides and to the introduction of new species as predators of vectors in stable ecosystems. In addition, there is the need to ensure that vector control is economically sustainable. One of the weaknesses of global efforts to eradicate malaria through the use of indoor residual spraying was that it could be only a time-limited effort, since the level of investment required was impossible to sustain. This led to the premature reduction of activities and the re-channelling of vector-control resources to other health-sector priorities before the outcome of the effort was fully consolidated.

A growing need for IVM

The IVM approach to the control of vector-borne diseases is justified in the interests of global public health for the reasons given below.

a) The health status of a population is strongly influenced by social and environmental determinants that are perpetually changing. IVM provides an opportunity to address these changes effectively in an intersectoral context as part of a broader plan to manage public health.

b) IVM will help consolidate and sustain public-health achievements that result from the investment in and scaling-up of the global malaria initiative.

c) Concerns about the environmental impact of overreliance on chemical control methods continue to haunt policy-makers. The World Health Assembly and the Stockholm Convention on Persistent Organic Pollutants advocate reducing reliance on pesticides for vector control. IVM provides the wherewithal to reduce this reliance.

d) The arsenal of insecticides is limited, and there are few prospects for new candidate compounds coming to market. At the same time, there is a growing problem with insecticide resistance. The application of IVM principles to vector control will contribute to the judicious use of insecticides and extend their useful life.

Conclusion

Vector-borne diseases are responsible for 17% of the global burden of parasitic and infectious diseases. They result in avoidable ill-health and death, economic hardship for affected communities and are a serious impediment to economic development. IVM has an important part to play in controlling these diseases. WHO promotes these management principles as set out in the Global strategic framework for integrated vector management. This position statement is intended to support the advancement of IVM. Member States are invited to accelerate the development of national policies and strategies, which in some regions has already shown significant progress. International organizations, donor agencies and other stakeholders are encouraged to support the capacity strengthening necessary for implementation.

Sources:

1. WHO position statement on vector management. Weekly Epidemiological Record. WHO, No 20, 2008, 83,177—184 [http://www.who.int/wer].

2. Global Strategic Framework for Integral vector man agement. WHO Geneva 2004. WHO /CDS/CPE/ PVC/2004.10

This article was compiled by Dr Samitha Ginige - Consultant Epidemiologist.

Table 1: Vaccine-preventable Diseases & AFP

21st - 27th June 2008 (26thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	01 GM=1	01 NE=1	00	00	00	00	00	00	00	02	02	51	48	+6.3%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	00	00	01 VA=1	00	00	00	00	00	01	03	60	41	+46.3%
Tetanus	00	00	00	00	00	00	00	00	00	00	01	19	18	+5.5%
Whooping Cough	01 KL=1	00	00	00	00	00	00	00	00	01	00	21	22	-4.5%
Tuberculosis	24	16	155	01	17	00	28	22	00	262	151	4342	4978	-12.8`%

Table 2: Newly Introduced Notifiable Diseases

21st - 27th June 2008 (26thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	34	04	06	00	06	06	04	06	15	81	55	2934	1859	+57.8%
Meningitis	02 GM=2	01 KD=1	05 GL=2 HB=2 MT=1	00	01 BT=1	01 KR=1	00	01 MO=1	02 KG=2	13	18	770	145	+431.0%
Mumps	04	08	14	00	15	03	04	03	08	59	35	1330	756	+75.9%

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=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 3: Laboratory Surveillance of Dengue Fever

21st - 27th June 2008 (26thWeek)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	01	08	00	02	00	00	00	00	00	01	00	00	00	00
Total number to date in 2008	96	94	07	19	00	00	04	08	01	06	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

21st - 27th June 2008 (26thWeek)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	19	937	04	87	01	07	01	57	01	62	06	218	00	02	05	69	00	00	**92**
Gampaha	09	577	06	96	01	13	01	31	00	66	09	225	00	04	03	77	00	03	**79**
Kalutara	03	295	10	197	00	08	00	42	00	16	19	278	00	02	00	25	00	00	**100**
Kandy	05	131	05	140	00	05	01	34	00	39	10	252	01	57	01	86	00	01	**88**
Matale	03	65	05	132	00	02	01	32	00	04	16	547	00	01	01	20	00	00	**83**
Nuwara Eliya	00	15	07	137	00	02	07	178	03	110	02	32	00	34	03	82	00	01	**85**
Galle	01	65	04	101	00	11	00	11	01	43	13	207	00	10	00	06	00	03	**100**
Hambantota	00	54	01	52	00	03	00	06	00	07	02	66	01	55	01	05	00	00	**100**
Matara	04	141	07	113	01	05	00	22	00	02	10	208	02	115	00	08	00	01	**94**
Jaffna	00	52	00	78	00	01	00	203	00	08	00	00	00	140	00	24	00	00	**13**
Kilinochchi	00	00	00	14	00	00	00	00	00	00	00	02	00	00	00	01	00	00	**25**
Mannar	01	25	00	11	00	06	01	109	00	00	00	00	00	01	00	11	00	00	**50**
Vavuniya	00	10	03	35	00	02	00	03	00	13	01	05	00	01	00	04	00	00	**75**
Mullaitivu	00	00	00	02	00	00	00	08	00	12	00	00	00	01	00	06	00	00	**00**
Batticaloa	00	84	00	55	00	03	00	17	00	19	00	03	00	01	00	77	00	05	**82**
Ampara	00	20	13	149	00	00	01	05	00	00	00	16	00	00	00	05	00	00	**71**
Trincomalee	01	173	01	58	00	00	01	10	00	12	00	24	00	15	00	12	00	00	**60**
Kurunegala	02	226	03	143	00	11	02	35	02	13	03	153	00	16	01	33	00	04	**94**
Puttalam	02	255	00	47	02	08	05	123	00	21	00	20	00	32	02	25	00	03	**100**
Anuradhapur	01	109	02	50	00	06	00	08	00	05	01	214	00	10	00	10	00	02	**89**
Polonnaruwa	02	54	02	75	00	01	00	21	00	06	00	53	00	01	00	16	00	00	**71**
Badulla	02	50	05	252	00	04	02	74	00	13	02	30	00	69	01	64	00	01	**100**
Monaragala	00	41	70	228	00	02	01	28	00	110	00	82	02	66	02	21	00	00	**91**
Ratnapura	00	138	07	162	00	22	00	41	00	43	01	111	02	73	00	41	00	00	**63**
Kegalle	08	251	03	206	01	22	05	43	01	02	13	188	02	46	07	387	00	00	**100**
Kalmunai	00	29	13	172	00	02	00	09	00	10	00	00	00	02	00	19	00	00	**85**
SRI LANKA	**63**	**3797**	**171**	**2792**	**06**	**146**	**29**	**1150**	**08**	**636**	**108**	**2934**	**10**	**754**	**27**	**1134**	**00**	**24**	**83**

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 5 July, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 254

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WEER SRI LANKA 2008

WEEKLY EPIDEMIOLOGICAL REPORT

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Vol. 35 No. 28 **5th – 11th July 2008**

Epidemiology of Leishmaniasis Part I

According to the available limited literature cutanious leishmaniasis seems to be an emerging disease in Sri Lanka. Recently suspected cases of cutanious leishmaniasis have been reported from the dermatology clinics in Anuradhapura and Matara districts. Currently Epidemiology Unit is in the process of investigation into those reported cases.
In this article we hopes to discuss the epidemiology of leishmaniasis.

Leishmaniasis remains a severe public health problem, with an estimated global prevalence of 12 million cases and a yearly incidence of 1.5–2 million cases (1–1.5 million for cutaneous leishmaniasis and 500 000 for the visceral form).

For many years, the public health impact of the leishmaniases has been grossly underestimated, mainly due to lack of awareness of its serious impact on health. Over the last 10 years, endemic regions have been spreading further and there has been a sharp increase in the number of recorded cases of the disease. As declaration is compulsory in only 32 of the 88 countries affected by leishmaniasis, a substantial number of cases are never recorded.

As with many diseases of poverty that cause high morbidity but low mortality, the true burden of leishmaniasis remains largely invisible, partly because those most affected live in remote areas, partly because the social stigma associated with the deformities and disfiguring scars caused by this disease keeps patients hidden. Leishmaniasis-related disabilities impose a great social burden, especially for women, and impair economic productivity.

Today, the leishmaniases undoubtedly have a wider geographical distribution than before and are now being reported in areas that were previously non-endemic. Environment and human tropical disease are linked together by human behaviour, both personal activities and societal organization. Increasing risk factors related to natural and man-made environmental changes are making leishmaniasis a growing public health concern for many countries around the world. One of the major risk factors is the worldwide phenomenon of urbanization, closely related to the sharp increase in migration. Socio-economic, demographic, cultural, religious, political and environmental factors have forced people increasingly to abandon their villages and move to the poor suburbs of cities. Migration patterns change over time as countries develop and urbanize: migration flows evolve from being primarily rural–rural to rural–urban and finally to urban–urban. Patterns of human settlement in urban areas have led, in developing countries, to a rapid growth of "megacities", where facilities for housing and sanitation are inadequate, thus creating opportunities for the transmission of communicable diseases such as leishmaniasis.

HOW IS LEISHMANIASIS SPREAD?

The leishmaniases are caused by 20 species pathogenic for humans belonging to the genus *Leishmania*, a protozoa transmitted by the bite of

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a tiny 2 to 3 millimetre-long insect vector, *the phlebotomine sandfly.* Of 500 known phlebotomine species, only some 30 of them have been positively identified as vectors of the disease. The phlebotomine sandfly, is found throughout *the world's inter-tropical and temperate regions.* Only the female sandfly transmits the protozoa. Sand flies become infected by biting an infected animal (for example, a rodent, dog or person). During a period of 4 to 25 days, the parasite continues its development inside the sandfly where it undergoes a major transformation. When the now infectious female sandfly feeds on a fresh source of blood, its painful sting inoculates its new victim with the parasite, and the transmission cycle is completed.

Sand flies make no noise when they fly or jump, so people may not realize they are being bitten. Sand flies are very small and may be hard to see; they are only about one-fourth the size of typical mosquitoes. Sand flies are most active from dusk to dawn. They are less active during the hottest times of the day. The female sandfly lays its eggs in the burrows of certain rodents, in the bark of old trees, in ruined buildings, in cracks in house walls, in animal shelters and in household rubbish, as it is in such environments that the larvae will find the organic matter, heat and humidity which are necessary for their development

Rarely, leishmaniasis is spread from a pregnant woman to her unborn baby. Leishmaniasis can also be spread by blood transfusions or contaminated needles.

VARIOUS FORMS OF LEISHMANIASIS

Leishmaniasis is a parasitic disease spread by the bite of infected sand flies. There are several different forms of leishmaniasis. The most common form is cutaneous leishmaniasis, which causes skin sores. Visceral leishmaniasis, which affects some of the body's internal organs, (most commonly the spleen, liver and bone marrow) is the most serious of the infections. Mucocutaneous forms affect mucous membranes.

HOW SOON MIGHT LEISHMANIASIS SYMPTOMS APPEAR AFTER INFECTION?

People with cutaneous leishmaniasis usually develop skin sores within a few weeks (sometimes as long as months) of when they are bitten. People with visceral leishmaniasis usually become sick within several months (rarely as long as years) of when they are bitten. Because it is a parasitic disease, if left untreated, reactivation can occur long after initial signs and symptoms resolve.

WHAT ARE THE SIGNS AND SYMPTOMS OF LEISHMANIASIS?

People with cutaneous leishmaniasis have one or more chronic skin lesions where infected sand flies have fed .normally produce skin ulcers on the exposed parts of the body such as the face, arms and legs. These lesions are generally unresponsive to antibiotics or topical steroids. The lesions start as a papule that often enlarges and then ulcerates. Some are surrounded by concentric silvery scales; some are raised pink plaques. Scabs may develop. The sores can change in size and appearance over time and some will heal spontaneously. The disease can produce a large number of lesions - sometimes up to 200 - causing serious disability and invariably leaving the patient permanently scarred, a stigma which can cause serious social prejudice. The sores can be painless or painful. Some people have swollen lymph nodes near the sores.

Visceral leishmaniasis - also known as kala-azar. People who have visceral leishmaniasis typically have chronic fever, weight loss, and sometimes an enlarged spleen or liver; usually the spleen is larger than the liver. Some patients have swollen glands. Patients usually have elevated liver function tests or low blood counts, including low red blood cell count, low white blood cell count, and/or low platelet count.

In mucocutaneous forms of leishmaniasis, lesions can lead to partial or total destruction of the mucous membranes of the nose, mouth and throat cavities and surrounding tissues.

Sources

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2. Leishmaniasis fact sheet : The disease and its epidemiology. [http:// www.leishmaniasis\WHO The disease and its epidemiology.htm]

3. Urbanization: an increased risk factor for leishmani asis .*Weekly Epidemiological Record*, N° 77, 44, 1 November 2002 [http://www.who.int/wer]

4 Leishmaniasis fact sheet : Burden of the disease. [http:// www.leishmaniasis\WHO Burden the dis ease .htm]

This article was compiled by Dr Darshani Abeysekera - Epidemiology Unit Colombo

Part II of this article will be continued in the next issue.

Table 1: Vaccine-preventable Diseases & AFP

28th June - 4th July 2008 (27thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	00	00	00	00	00	02 BD=1 MO=1	00	02	01	53	49	+8.2%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	01 KD=1	00	00	00	00	00	00	00	01	00	61	41	+48.8%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	19	18	+5.5%
Whooping Cough	02 CO=1 KL=1	00	00	00	00	00	00	00	00	02	00	23	22	-4.5%
Tuberculosis	136	01	12	16	21	00	03	00	12	201	266	4543	5244	-13.6`%

Table 2: Newly Introduced Notifiable Diseases

28th June - 4th July 2008 (27thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	19	04	14	02	09	10	07	02	18	85	55	3025	1919	+57.6%
Meningitis	01 CO=2	01 KD=1	07 GL=2 HB=4 MT=1	00	00	03 KR=1 PU=2	01 PO=1	01 BD=1	00	14	18	786	167	+370.6%
Mumps	02	07	11	02	08	07	04	05	08	54	39	1388	799	+73.7%

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=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 3: Laboratory Surveillance of Dengue Fever

28th June - 4th July 2008 (27thWeek)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	02	06	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	98	100	07	19	00	00	04	08	01	06	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

28th June - 4th July 2008 (27thWeek)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	16	953	04	91	00	07	00	57	02	64	07	226	00	02	02	71	01	01	**77**
Gampaha	14	591	03	99	01	14	00	31	00	66	10	236	01	05	02	79	00	03	**93**
Kalutara	06	301	04	201	00	08	01	43	00	16	05	283	00	02	00	25	00	00	**92**
Kandy	08	139	07	147	00	05	02	36	01	40	12	266	03	60	01	87	00	01	**68**
Matale	00	65	04	136	00	02	01	33	00	04	11	559	00	01	01	21	00	00	**75**
Nuwara Eliya	00	15	07	144	00	02	10	188	00	110	02	34	00	34	01	83	00	01	**85**
Galle	01	66	05	106	00	11	00	11	00	43	05	212	00	10	00	06	00	03	**94**
Hambantota	03	57	01	53	01	04	00	06	00	07	02	68	01	56	00	05	00	00	**91**
Matara	03	145	01	114	00	05	01	23	00	02	05	213	06	121	00	08	00	01	**100**
Jaffna	00	52	00	79	00	01	01	208	00	08	00	00	00	142	01	25	00	00	**88**
Kilinochchi	00	00	00	14	00	00	00	00	00	00	00	02	00	00	00	01	00	00	**00**
Mannar	00	25	00	11	00	06	02	111	00	00	00	00	00	01	00	11	00	00	**50**
Vavuniya	00	10	00	35	00	02	01	04	00	13	00	05	00	01	00	04	00	00	**100**
Mullaitivu	00	00	00	02	00	00	00	08	00	12	00	00	00	01	00	06	00	00	**00**
Batticaloa	01	85	02	63	00	03	02	19	00	19	00	03	00	01	00	77	00	05	**82**
Ampara	02	22	19	168	00	00	00	05	00	00	00	16	00	00	00	05	00	00	**29**
Trincomalee	00	173	00	58	00	00	00	11	00	12	00	24	00	15	00	12	00	00	**70**
Kurunegala	05	231	04	147	00	11	00	35	00	13	06	161	00	16	03	36	00	04	**94**
Puttalam	03	258	01	48	00	08	04	127	00	21	05	25	00	32	00	25	00	03	**100**
Anuradhapur	00	109	00	50	02	08	00	08	00	05	03	217	00	10	00	10	00	02	**74**
Polonnaruwa	00	54	05	80	00	01	00	21	00	06	01	54	00	01	01	17	00	00	**86**
Badulla	02	52	09	263	00	04	03	78	00	13	01	31	02	72	08	73	00	01	**100**
Monaragala	00	41	16	244	00	02	00	28	00	110	01	83	00	66	02	23	00	00	**64**
Ratnapura	34	172	06	168	00	22	00	41	00	43	04	117	00	73	01	42	00	00	**94**
Kegalle	13	264	07	213	01	23	02	45	00	02	11	199	01	47	07	394	00	00	**100**
Kalmunai	00	29	03	176	00	02	00	09	02	12	00	00	00	02	00	19	00	00	**92**
SRI LANKA	**111**	**3909**	**108**	**2910**	**05**	**151**	**30**	**1186**	**05**	**641**	**91**	**3034**	**14**	**770**	**30**	**1165**	**01**	**25**	**82**

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 12 July, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 251

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WER SRI LANKA 2008

Epidemiology of Leishmaniasis Part II

Patr I of this article was published in the last issue of the Weekly Epidemiological Report in which we discussed history, risk factors, mode of transmission and the clinical picture of leishmaniasis. In this article we shall discuss the diagnosis, treatment, prevention and social impact of the disease.

HOW IS LEISHMANIASIS DIAGNOSED?

There is no effective laboratory screening tests for leishmaniasis. Therefore, diagnoses involves a combination of compatible symptoms, objective signs, and laboratory findings.

Giemsa-stained tissue samples remain the most commonly used technique in the world today for diagnosis. A local pathologist should review the results. Serum antibody detection (serology) can prove useful in diagnosing visceral leishmaniasis but is of no use in the cutaneous disease. Other diagnostic techniques exist that allow parasite detection and species identification by special culture and microscopy, biochemical (isoenzymes), immunologic (immunoassays), and molecular PCR approaches.

Cutaneous leishmaniasis is diagnosed by sampling the skin lesion, usually with a biopsy or scraping. In visceral leishmaniasis, diagnosis requires invasive samples (bone marrow, liver, lymph nodes) and parasitological diagnosis can be challenging.

TREATMENT:

Cutaneous leishmaniasis generally heals spontaneously in 5-12 months in non-immunocompromised patients. Treatment depends on whether the patient is immunocompromised and/or at risk for mucosal leishmaniasis (in which case, treatment is provided) and on site and severity of lesions, with metastatic lesions treated and unobtrusive lesions not always treated. First-line treatment is IM or IV sodium stibogluconate.

WHAT WILL HAPPEN IF LEISHMANIASIS IS LEFT UNTREATED?

The skin sores of cutaneous leishmaniasis may heal on their own, but this can take months or even years. The smallest lesions (under 10 mm) may not require treatment, just "watchful waiting." The sores can leave ugly scars. If not treated, infection that started in the skin can rarely spread to the nose or mouth and can cause sores there (mucocutaneous leishmaniasis), which can be quite disfiguring. This is seen in some of the types of Leishmaniasis found in Central and South America.

Visceral leishmaniasis can cause serious illness (enough to require hospitalization) but does not usually cause death in people with healthy immune systems and good nutrition. In some, visceral leishmaniasis can be a milder illness. On the other hand, individuals with degraded immune system functioning are at higher risk for serious or even fatal illness.

PREVENTION AND CONTROL

1. Case management : Detect cases systematically and treat rapidly. This applies to all forms Leishmaniasis and is one of the important measures to prevent spread of the disease.

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2. Prevention of sand fly bites ; The best way to prevent ac quiring of Leishmaniasis is to avoid sand fly bites.

- Stay away from shrub jungles, and avoid outdoor activities as much as possible, especially from dusk to dawn when the sand flies are mostly active.
- Use bed nets (specially treated with permetrin) when ever possible during the night and day sleeping.
- When outside wear long sleeve shirts, long pants, and whenever possible socks.
- Application of insect repellents in exposed areas also can be useful. Care must be taken in children.
- Treatment of bed nets with permetrin is known to be ef fective for several months to repel the sand fly.

3. Suppression of the vectors : Residual insecticides which are used to control mosquitoes can be used effectively against the sand fly too.

4. Eliminate rubbish heaps and other sand fly breeding plases

5. Suppression of the reservoir: Further research has to be carried out to establish local reservoir animals.

NOTIFICATION

If any cases of Leishmaniasis are suspected/confirmed , please notify to the Epidemiologist and to the Regional Epidemiologist.

LEISHMANIASIS AND HIV CO-INFECTION

In a particularly ominous trend, the spread of HIV infection is bringing the severe visceral form of leishmaniasis to new geographical areas and changing the epidemiology of this disease in dangerous ways. The two infections coexist in a deadly synergy. Where leishmaniasis occurs in urban areas, conditions often favour explosive epidemics - thus transforming leishmaniasis from a sporadic to an epidemic threat. In persons infected with HIV, leishmaniasis accelerates the onset of AIDS by cumulative immunosuppression and by stimulating replication of the virus. The epidemiological significance of asymptomatic carriers of the parasite has also been amplified by the advent of HIV, as co-infection rapidly activates disease in parasite carriers. Sharing of needles by intravenous drug users contributes to the spread of leishmaniasis as well as HIV.

REPORTED LEISHMANIASIS OUT BREAK IN ANURADHAPURA AND MATARA DISTRICTS

According to the report submitted by the Regional Epidemiologist Anuradhapura, from January to July 2008, total number of 61 patients has been treated at the Dermatology Unit of the Teaching Hospital Anuradhapura for leishmaniasis. Out of this 60 had cutanious leishmaniasis and one had mucocutanious leishmaniasis.
Majority [36%] of the patients were from Thalawa MOH area and 14% from MOH area NPE Anuradhapura

According to the report submitted by the Regional Epidemiologist Matara, from January to July 2008 a total number of 113 patients has been treated at the Dermatology Unit of the General Hospital Matara for cutanious leishmaniasis.
Majourity [58%] of the patients were from Dickwella MOH area and 18% from MOH area Devinuwara

CONTROL MEASURES TAKEN AT ANURADHAPURA AND MATARA DISTRICTS

- Strengthen the leishmaniasis surveillance within the district with the help of Dermatology clinics.
- Identify the high risk areas
- Strengthen the vector surveillance activities in the high risk areas
- Carry out focal spraying houses and cattle sheds in high risk locations
- Organize awareness programmes to medical staff
- Organize awareness programmes to public

Sources

1. LEISHMANIASIS Information for Clinicians. A Collaborative Effort of DHCC, AFIOH/RSR,DHSD, USACHPPM, & WRAMC.

2. Leishmaniasis fact sheet : The disease and its epidemiology. [http:// www.leishmaniasis\WHO The disease and its epidemiology.htm]

3. Urbanization: an increased risk factor for leishmani asis .*Weekly Epidemiological Record*, N° 77, 44, 1 November 2002 [http://www.who.int/wer]

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This article was compiled by Dr Darshani Abeysekera - Epidemiology Unit Colombo

The editor wishes to acknowledge Dr A. V. Munasinghe, Regional Epidemiologist Anuradhapura and Dr R. M. U. K. Rathnayake Regional Epidemiologist Matara for the assistance provided in the preparation of this article.

Table 1: Vaccine-preventable Diseases & AFP

5th - 11th July 2008 (28thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	02 KL=2	01 KD=1	00	00	00	01 KR=1	00	00	00	03	01	57	49	+16.2%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	01 CO=1	00	00	01 VA=1	00	00	00	00	00	02	00	62	41	+51. 2%
Tetanus	00	00	00	00	00	00	00	00	00	00	01	19	19	0.0%
Whooping Cough	00	00	00	00	00	01 AM=1	00	00	00	01	01	24	23	-4.3%
Tuberculosis	75	07	07	11	07	00	02	05	73	187	350	4730	5594	-15.4`%

Table 2: Newly Introduced Notifiable Diseases

5th - 11th July 2008 (28thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	20	09	13	00	09	04	01	07	14	77	41	3113	1967	+58.6%
Meningitis	02 KL=2	03 KD=1 ML=2	04 GL=2 HB=1 MT=1	00	01 KM=1	02 KR=2	01 PO=1	02 BD=1 MO=1	00	15	25	803	195	+311.6%
Mumps	04	08	13	00	08	05	02	06	05	51	24	1453	832	+74.7%

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=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 3: Laboratory Surveillance of Dengue Fever

5th– 11th July 2008 (28thWeek)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	05	09	01	00	00	00	01	00	00	00	00	00	00	00
Total number to date in 2008	103	109	08	19	00	00	05	08	01	06	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

5th - 11th July 2008 (28thWeek)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	41	1010	04	100	00	07	02	59	04	69	08	241	00	02	02	73	00	01	**92**
Gampaha	06	599	02	101	00	14	02	33	01	67	03	240	00	05	03	82	00	03	**79**
Kalutara	05	306	05	206	00	08	01	44	00	16	09	292	00	02	00	25	00	00	**92**
Kandy	04	143	15	165	00	05	01	37	06	51	08	274	02	62	01	88	00	01	**76**
Matale	02	67	02	138	00	02	01	34	00	04	09	571	00	01	00	21	00	00	**92**
Nuwara Eliya	01	16	07	151	00	02	01	189	00	110	00	34	00	34	03	86	00	01	**92**
Galle	03	69	02	108	01	12	01	12	00	43	02	214	00	10	00	06	00	03	**82**
Hambantota	01	58	03	56	00	04	00	06	00	07	00	68	03	59	00	05	00	00	**91**
Matara	12	157	03	117	01	06	00	23	00	02	04	217	03	124	00	08	00	01	**94**
Jaffna	00	52	04	83	00	01	02	210	01	09	00	00	00	142	03	28	00	00	**63**
Kilinochchi	00	00	00	14	00	00	00	01	00	00	00	02	00	00	00	01	00	00	**25**
Mannar	00	25	00	11	00	06	04	115	00	00	00	00	00	01	01	12	00	00	**25**
Vavuniya	00	10	03	38	00	02	01	05	00	13	00	05	00	01	00	04	00	00	**75**
Mullaitivu	00	00	00	04	00	00	00	08	00	12	00	00	00	01	00	06	00	00	**40**
Batticaloa	00	85	05	70	00	03	01	20	00	19	00	04	00	01	01	79	00	05	**73**
Ampara	02	24	25	193	00	00	00	05	00	00	00	16	00	00	00	05	00	00	**86**
Trincomalee	00	173	05	63	00	00	01	12	00	12	01	25	00	15	00	12	00	00	**70**
Kurunegala	02	233	09	156	00	11	01	36	00	13	02	163	00	16	06	42	00	04	**83**
Puttalam	04	262	00	48	00	08	00	127	00	21	00	25	00	32	00	25	00	03	**67**
Anuradhapur	00	109	00	50	01	09	00	08	01	06	00	219	00	10	00	10	00	02	**58**
Polonnaruwa	01	55	01	81	00	01	00	21	00	07	00	54	00	01	00	17	00	00	**86**
Badulla	04	56	22	285	00	04	08	86	00	13	00	31	08	79	03	76	00	01	**93**
Monaragala	02	44	09	256	00	02	00	28	00	110	00	84	04	71	02	25	00	00	**64**
Ratnapura	11	183	06	175	01	23	00	41	00	43	02	119	01	74	00	42	00	00	**75**
Kegalle	06	270	07	220	00	23	01	46	00	02	02	201	01	48	02	396	01	01	**91**
Kalmunai	00	29	08	184	00	02	00	09	00	12	00	00	00	02	00	19	00	00	**77**
SRI LANKA	**107**	**4035**	**147**	**3073**	**04**	**155**	**28**	**1215**	**13**	**661**	**50**	**3099**	**22**	**793**	**27**	**1193**	**01**	**26**	**78**

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 19 July, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 240

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Combating Emerging Infectious Diseases - Part

Emerging infectious diseases are diseases of infectious origin of which incidence in humans has increased in the recent past or threatens to increase in the near future. These also include those infections that appear in new geographic areas or increase abruptly. The new infectious diseases and those which are re-emerging after a period of quiescence are also grouped under emerg-

The spectrum of health, environment and development hazards has changed considerably over the millennia of human existence. People are living longer, literacy has increased, education has improved and incomes and opportunities have amplified. With the discovery of vaccines that helped to eradicate smallpox, launch of a global campaign to eradicate poliomyelitis, and support control of measles, diphtheria and other killer diseases, and the discovery of potent antimicrobial agents, the last 50 years of the 20th century heralded strong hope for conquering many infectious diseases in the near future. Yet, despite these advances, infectious diseases remain the leading cause of death in developing countries, and the South-East Asia Region (SEAR) is no exception. In addition, these countries, mainly those with low resources, are grappling with a variety of new, emerging and reemerging infectious diseases.

The recent emergence of a new strain of H5N1 of influenza A virus and the outbreak of SARS underlines the importance of Asia as an epicenter not only for influenza A viruses, but also for other microbial agents. It is likely that epidemics will continue to occur in the future as they have in the past. Changes in human behaviour and customs will continue to provide opportunities for microbes to produce unexpected epidemics. Science cannot stop the emergence of new microbes. These emerge from the evolutionary stream as a consequence of genetic events and selective pressure that favours them. It is nature's way. It is strongly believed that new infections shall continue to emerge and pandemics commence in all likelihood from the developing countries, mainly in Asia. What is needed is to enhance the capacity to detect them early and respond most effectively and efficiently with available resources, skills and knowledge.

Emerging infectious diseases threaten to disrupt the health care system. Conversely, a strong health system is a prerequisite for effectively combating emerging infectious diseases. Left unchecked, today's emerging diseases can assume pandemic proportions causing social and economic disruption and ultimately becoming endemic. This is what happened with HIV/AIDS, which spread from a remote part of Africa to all other continents and is now entrenched all over the world. In less than 25 years from its first isolation it has become the fourth leading cause of death worldwide.

The successful detection and treatment of

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of microbes, vectors and intermediate hosts, and create awareness on the possibility that new epidemics can, and will emerge in unexpected places. A sustained forward-thinking applied research programme is crucial to effectively respond to new and emerging infectious diseases.

The health and economic impact of recent outbreaks occurring in many countries of the Region underscore the need to further strengthen national disease surveillance and response systems, including early warning systems and epidemic preparedness as well as laboratory and entomological investigation facilities. They have also driven home the critical role of collaboration within and between the countries. Inter-regional cooperation can facilitate an effective and prompt response through activation of various technical networks available all over the world.

This is a wake up call for all those who are concerned with the health of the people. This includes mainly policy makers, health administrators, public health professionals, national finance managers, international agencies and NGOs. The importance of emerging infections must be recognized and suitable remedial measures instituted to combat them.

More than 30 years ago, the then US Surgeon General stated that “the time has come to close the book on infectious diseases”. Hindsight is a great teacher and the last three decades have taught us that there will be no closing of books on infectious diseases, now or ever. In fact, emerging infectious diseases seem to be closing, or have the potential to close windows of opportunity for infectious disease eradication or elimination.

Distribution and Trends

Infectious diseases continue to be a major challenge in the South-East Asia Region (SEAR). They are estimated to be responsible for about 40% of the 14 million deaths annually in the Region and account for 28% of the global burden of infectious diseases. Of 350 million DALYs that are lost due to communicable diseases globally, South-East Asia Region accounts for 89 million. The brunt is mainly borne by children, women and marginalized sections of society. Children show greater vulnerability. Infectious diseases represent 7 out of 10 top causes of child deaths in developing countries, and account for nearly 60% of all such deaths. Acute respiratory infections cause 18% of all deaths and diarrhoeal diseases kill 15% children in developing countries. More than 80% of the population in SEAR continues to live in malaria-prone areas of which 178.8 million are at high risk. On an average, 2 to 2.5 million cases of malaria are reported annually with an estimated 27,000 deaths and an annual economic loss of US$ 2 billion.

Tuberculosis continues to be the biggest killer of young adults. Notwithstanding the success of DOTS, the TB situation is likely to be complicated with the rapid spread of HIV and the emergence of drug resistant strains in the Region. Multidrug resistant-TB is at least 100 times more expensive to cure. There is a new threat to TB control in the form of a parallel HIV/AIDS epidemic with around 2.5 million people estimated to be co-infected with HIV and TB in countries of the Region. HIV/AIDS is one of the most rapidly growing epidemics globally. HIV has already spread to more than 6 million people in SEAR.

The Region has witnessed several outbreaks of new and emerging infections as new micro-organisms continue to appear and some of the existing ones alter their characteristics to promote their survival at the expense of human health. Japanese encephalitis, Chandipora virus, Nipah virus and leptospirosis are examples of emerging infectious diseases that appeared a few years back and have now established endemicity. These infections are gradually and steadily progressing to conquer newer areas and populations.

Microbes are never idle. They possess remarkable genetic versatility that enables them, under favourable circumstances, to develop new pathogenic vigour, to escape population immunity by acquiring new antigens and to develop antimicrobial resistance. New pathogens, particularly viruses, remain unpredictable and continue to emerge and spread across countries, without respecting national boundaries. During the past 30 years, more than 30 new pathogens have been detected worldwide many of which have caused serious outbreaks. They continue to challenge our ability to respond to the epidemic quickly. Deliberate use of the micro-organisms adds another grim dimension to the burgeoning problem of microbial diseases.

The recent epidemics of SARS and avian influenza have caused grave concern and made an enormous health and economic impact throughout the world. There is no way, as yet, to say whether SARS has finally been brought under control and whether avian influenza will make a comeback. Since the SARS epidemic was contained in July 2003, there have been four further out-

Table 1: Vaccine-preventable Diseases & 19th - 25th July 2008 (30thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	00	00	00	01 KU=1	00	00	00	01	03	59	56	+5.6%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	00	01 HA=1	00	00	00	00	01 BD=1	00	02	03	64	44	+45. 5%
Tetanus	00	01 MT=1	00	00	00	00	00	00	00	01	00	21	21	0.0%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	01	24	25	-4.0%
Tuberculosis	135	12	18	25	26	00	00	11	64	291	194	5130	5921	-13.5`%

Table 2: Newly Introduced Notifiable Diseases 19th - 25th July 2008 (30thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	21	10	07	01	03	04	04	05	12	67	39	3273	2078	+57.5%
Meningitis	10 KL=3 CB=4 GM=3	03 KD=2 NE=1	09 HB=2 GL=7	01 JF=1	01 BT=1	03 KR=2 PU=1	02 PO=2	01 BD=1	03 KG=2 RP=1	33	20	849	247	+243.7%
Mumps	08	15	13	04	01	05	10	02	04	62	47	1574	938	+67.8%

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=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 3: Laboratory Surveillance of Dengue Fever 19th– 25th July 2008 (30thWeek)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	03	06	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	107	119	08	19	00	00	05	08	01	06	00	00	02	00

Table 4: Selected notifiable diseases reported by Medical Officers of Health

19th - 25th July 2008 (30thWeek)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	46	1082	06	111	00	07	04	64	00	69	09	265	00	02	05	78	00	00	**100**
Gampaha	08	630	03	110	00	14	01	34	00	67	02	249	00	05	03	89	00	03	**71**
Kalutara	07	323	07	220	01	09	00	44	02	18	13	316	00	02	00	27	01	01	**100**
Kandy	08	156	16	189	00	05	02	40	00	52	07	289	03	67	02	92	00	01	**76**
Matale	03	76	03	149	00	02	00	35	00	04	08	592	00	01	00	22	00	00	**92**
Nuwara Eliya	01	17	08	166	00	02	04	193	00	110	01	35	01	35	00	86	00	01	**100**
Galle	02	71	01	113	00	12	00	12	00	43	07	225	01	11	00	06	00	03	**94**
Hambantota	03	64	00	64	00	05	00	06	04	11	00	68	03	63	02	08	00	00	**91**
Matara	10	176	06	125	01	10	00	23	00	04	05	223	04	132	00	09	00	01	**94**
Jaffna	00	52	03	91	00	02	02	217	01	10	00	00	00	148	01	30	00	00	**88**
Kilinochchi	00	00	00	14	00	00	00	01	00	00	00	02	00	00	00	01	00	00	**25**
Mannar	00	25	02	14	00	06	03	118	00	00	00	00	00	01	00	12	00	00	**50**
Vavuniya	00	10	02	40	00	02	00	05	00	13	00	05	00	01	00	04	00	00	**75**
Mullaitivu	00	00	00	06	00	00	00	12	00	12	00	00	00	01	00	08	00	00	**40**
Batticaloa	00	85	02	73	00	03	00	20	00	19	00	04	00	01	01	81	00	05	**91**
Ampara	00	25	08	210	00	00	00	05	00	00	00	17	00	00	01	07	00	00	**29**
Trincomalee	01	174	01	68	00	00	00	12	00	12	00	28	00	15	00	12	00	00	**80**
Kurunegala	08	241	02	159	02	13	02	39	00	13	09	175	01	18	05	48	00	04	**83**
Puttalam	02	267	01	51	00	08	03	131	05	26	01	26	00	32	01	27	00	03	**100**
Anuradhapur	00	109	03	54	00	09	00	08	00	06	00	219	00	10	00	11	00	02	**79**
Polonnaruwa	00	58	00	82	00	01	00	21	00	07	00	54	00	01	00	18	00	00	**71**
Badulla	03	61	08	304	00	04	06	93	00	13	00	32	06	91	05	87	00	01	**80**
Monaragala	04	49	07	271	00	02	00	29	00	114	00	85	00	71	01	27	00	00	**64**
Ratnapura	06	200	09	212	00	24	00	41	00	43	02	121	00	74	00	43	00	00	**63**
Kegalle	07	284	01	223	01	24	00	47	00	02	03	208	01	48	03	405	00	01	**82**
Kalmunai	00	29	03	192	00	02	00	09	02	14	00	00	00	02	01	21	00	00	**77**
SRI LANKA	**119**	**4264**	**102**	**3311**	**05**	**166**	**27**	**1259**	**14**	**682**	**67**	**3238**	**20**	**832**	**31**	**1259**	**00**	**27**	**81**

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 2 August, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 247

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WEEKLY EPIDEMIOLOGICAL REPORT

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Vol. 35 No. 33 **9th – 15th August**

WER SRI LANKA 2008

Combating Emerging Infectious Diseases - Part III

Part I& II of this article was published in the last two issues of the Weekly Epidemiological Report.

International travel

International travel and trade also facilitate movement of infections. SARS has been documented to be one of the fastest moving micro-organisms in the history of mankind. The Spanish influenza travelled around the world in less than 12 months; Hong Kong (1968-69) influenza took only six months and a future pandemic is likely to spread more rapidly because of the speed and frequency of human travel. SARS was carried through international air travel by infected people to 31 countries that reported probable cases of SARS.

Socioeconomic factors

Poverty breeds ill health and ill health, in turn, breeds poverty. Poverty remains the prime killer. Today, poverty amidst plenty is the world's greatest challenge. More than 522 million people in the South-East Asia Region live in abject poverty with an income of less than a dollar a day. Poor children are particularly affected with a greater burden borne by the female child. Not only are children more heavily and frequently exposed to threats to their health but are more vulnerable to diseases.

Inadequate public health infrastructure

Having a well functioning public health infrastructure can prevent many infections, particularly those that are food-borne or water-borne. Defects in the health system can result in massive epidemics. An efficient public health system not only quickly detects and responds to the epidemic during its initial phase but is also sensitive and sophisticated enough to spot a new or hitherto unidentified infection. Achieving an effectively functioning public health infrastructure is thwarted by inadequate funding and low priority accorded by the national governments.

Existing Response Capacity

The success achieved in eradication of smallpox and guineaworm disease, and appreciable progress made towards eradication of poliomyelitis and elimination of leprosy has resulted in a perceptible national desire and political will to address problems of infectious diseases. This is evident from the support that initiatives for elimination of kala azar and lymphatic filariasis have received from various governments of the Region. Excellent progress is being made in expanding DOTS and implementing greater access to antiretroviral therapy in the Region. Malaria incidence is now static and has started showing signs of decreasing.

The commitment of national authorities has received a further boost through some international initiatives like the Millennium Development Goals (MDGs) which are the expression of global solidarity in improving quality of life. In many ways MDGs aim to directly or

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countries which usually act as trigger sites for emerging diseases.

If Asia is considered a cradle for the emergence of some new infections, it also has Centres of Excellence for training and research on emerging infectious diseases and some of the finest WHO Collaborating Centres. It has a vibrant pharmaceutical sector with significant capacity to manufacture drugs and vaccines. The countries are working towards a strategy for integrated disease surveillance and response. In addition, there are public health institutions with a capacity to investigate and control infectious disease outbreaks and provide appropriate human resource development (Field Epidemiology Training Programmes) to upgrade the skills of public health professionals.

All countries in the region have public health institutions that respond to outbreak investigations and the institution of control measures. There is a need to improve the efficacy and efficiency of the response mechanism. For that the basic infrastructure has been already created. Rapid response teams have been constituted in some countries to quickly initiate action in times of outbreaks. Surveillance activities are integral to several national health programmes mainly malaria, tuberculosis and HIV/AIDS. The need to expand these programmes to include early warning functions for emerging infections is gaining ground across the Region.

Global alert and response systems have also been created which countries from this Region are benefiting from. In 2000, WHO launched the Global Outbreak Alert and Response Network (GOARN) which links more than 100 networks, institutes and experts to provide support to countries on behalf of the international community in responding to disease outbreaks. Health Canada has instituted a Global Public Health Intelligence Network (GPHIN) which is a customized search engine that continuously scans the internet for rumors and reports. The data from GPHIN are available to WHO as well as to all countries for early detection of outbreaks and initiation of rapid response. Advanced information technology was successfully used by WHO during the SARS epidemic to create virtual networks of experts and institutions to gather and consolidate global experiences and knowledge in fighting SARS. Upgradation of skills of public health professionals has been an ongoing process. Field Epidemiology Training Programmes are being regularly conducted in India and Thailand for all the countries. Almost 40
WHO Collaborating Centers are currently operational in Region in the area of communicable diseases.

Though the modern sophisticated laboratory and entomological support system is available to a limited extent in the public health area in most countries of the Region, their importance is widely recognized. There is also a growing realization that emerging diseases can be better fought collectively. The existing regional organizations such as SAARC
and ASEAN, initiated with the central objective of economic cooperation between countries, are now being utilized to extend collaboration in public health as well.

Global efforts against SARS demonstrated that emerging infectious diseases require a similar joint response for rapid containment. Global networks of laboratories, epidemiologists and clinicians were quickly identified by WHO and concerted efforts yielded commendable results. WHO is strongly advocating strengthening of surveillance, especially institutionalization of the integrated disease surveillance programme. Integrated surveillance will consolidate surveillance activities, improve outbreak/ epidemic detection, intercept early warning signals, strengthen early detection and confirmation of outbreaks as well as anticipate or predict outbreak and ensure preparedness for an early and effective response for disease prevention and control. GOARN is another example of global cooperation to combat outbreaks where national capacities fall short to contain same.

The existing public health and laboratory capacities need to be further strengthened through the networks established among centers of excellence as well as through the WHO Collaborating Centers. Links need to be developed between public health, veterinary and clinical laboratories. This is important to ensure the timeliness and quality of surveillance, research and response.

Effective risk communication and management have critical roles in ensuring that emerging infectious diseases are recognized early, promptly reported and appropriately managed. The mass media, both electronic and print, have important roles which necessitate sustained partnerships between health authorities and the media. The rapidly expanding information technology in this Region can be effectively utilized in risk communication and management activities.

Source

Combating Emerging Infectious Diseases in the

Table 1: Vaccine-preventable Diseases & 2nd -8th August 2008(32nd Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	01 MT=1	00	00	00	00	00	00	01	02	60	58	+3.4%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	00	00	01 JF=1	04 TR=4	00	00	00	00	05	01	81	49	+65. 3%
Tetanus	00	00	00	00	01 TR=1	00	00	00	00	01	02	24	23	+3.5%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	01	24	28	-14.3%
Tuberculosis	159	47	09	16	10	51	00	18	39	349	133	5528	6257	-11.6`%

Table 2: Newly Introduced Notifiable Diseases 2nd -8th August 2008(32nd Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	19	08	08	01	05	08	04	15	11	79	34	3464	2174	+59.3%
Meningitis	01 GM=1	0=2 ML=2	02 GL=1 MT=1	00	01 TR=1	06 KR=4 PU=2	02 PO=1 AP=1	00	00	14	23	886	290	+205.5%
Mumps	05	20	06	05	03	09	19	00	08	75	45	1713	1049	+63.3%

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=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 3: Laboratory Surveillance of Dengue Fever 2nd -8th August 2008

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	03	00	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	116	124	09	21	00	00	06	08	01	07	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]
* Not all positives are subjected to serotyping.
NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

2nd –8th August 2008 (32nd Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	25	1150	07	126	00	08	01	67	05	74	03	274	00	02	02	84	00	00	**85**
Gampaha	23	689	07	131	00	14	00	34	00	67	11	271	00	05	03	94	00	03	**79**
Kalutara	03	338	03	227	00	09	00	44	00	18	04	325	00	02	03	32	00	01	**83**
Kandy	07	172	09	212	00	05	00	42	00	53	10	311	03	72	00	94	00	01	**76**
Matale	02	80	00	150	00	02	00	35	00	04	06	606	00	01	00	22	00	00	**92**
Nuwara Eliya	02	21	05	179	00	02	03	196	00	110	01	36	00	35	00	87	00	01	**100**
Galle	06	81	05	129	00	12	00	13	00	43	04	236	00	12	00	06	00	03	**94**
Hambantota	02	67	00	66	00	05	00	07	00	11	00	69	00	65	00	09	00	00	**91**
Matara	11	195	05	132	00	10	00	26	00	06	05	231	06	143	00	11	00	01	**88**
Jaffna	00	52	02	97	00	02	00	218	00	10	00	00	00	148	00	30	00	00	**00**
Kilinochchi	00	00	00	14	00	00	00	01	00	00	00	02	00	00	00	01	00	00	**00**
Mannar	00	25	01	15	00	06	18	139	00	00	00	00	00	01	00	13	00	00	**50**
Vavuniya	00	11	03	43	00	02	00	05	01	14	00	05	00	01	00	04	00	00	**100**
Mullaitivu	00	00	00	06	00	00	00	12	00	12	00	00	00	01	00	08	00	00	**00**
Batticaloa	00	85	07	89	00	03	00	20	01	20	00	04	00	01	01	82	00	05	**73**
Ampara	00	26	02	218	00	00	00	07	00	01	00	17	00	00	00	07	00	00	**71**
Trincomalee	01	175	01	70	00	00	00	12	00	12	00	28	00	15	00	12	00	00	**80**
Kurunegala	07	256	05	166	00	13	01	42	00	14	19	209	00	20	03	53	00	04	**83**
Puttalam	01	270	00	59	00	08	02	134	00	26	02	30	01	33	00	27	00	03	**78**
Anuradhapur	00	109	03	59	00	09	00	09	00	06	03	222	00	10	00	12	00	02	**74**
Polonnaruwa	01	59	05	89	00	01	00	21	00	07	01	55	00	01	00	18	00	00	**100**
Badulla	02	64	13	332	01	05	07	101	00	13	01	33	01	97	03	95	00	01	**87**
Monaragala	00	49	02	278	01	03	00	29	02	116	00	86	00	76	04	33	00	00	**91**
Ratnapura	05	209	10	232	00	26	00	42	00	44	03	126	00	74	01	45	00	00	**63**
Kegalle	06	310	03	229	02	26	00	49	01	04	10	224	00	50	13	427	00	01	**91**
Kalmunai	01	32	03	200	00	02	00	09	01	15	00	00	00	02	00	21	00	00	**77**
SRI LANKA	**106**	**4525**	**101**	**3548**	**04**	**173**	**32**	**1314**	**11**	**700**	**83**	**3400**	**11**	**867**	**33**	**1327**	**00**	**27**	**78**

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 16 August, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 251

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Vol. 35 No. 34 **16th - 22nd August 2008**

WER SRI LANKA 2008

CURRENT OUTBREAK OF LEPTOSPIROSIS

This year up to September 5, a total of 4295 leptospirosis cases have been notified from all over the country. An alarmingly increasing number of cases have been observed in several districts including Kurunegala, Gampaha and Colombo. The sentinel hospitals alone reported 119 deaths. Unusually high case fatality rate is one of the notable features observed this year. All these emphasize the need for further strengthening prevention and control activities at all levels. The activities to be taken by the health workers and the issues/ constrains encountered during this outbreak are briefed in this article.

This acute generalized illness can mimic other tropical diseases and the common symptoms include fever, chills, muscle pain, nausea, diarrhoea and conjunctival suffusion. Manifestations of severe disease can include jaundice, renal failure, widespread haemorrhage, myocarditis and meningitis. It should be noted that though the above symptoms are common, none is specific for leptospirosis. This often leads to mistaken or late diagnosis resulting in high rates of complications and fatality. It is recommended (especially during outbreaks) that fever patients with a history of exposure to contaminated environment should be admitted for inward management. Even without a proper history of exposure, if the patients present with symptoms/ signs strongly suggestive of leptospirosis, inward management should be considered.

If the duration of fever is more than 3 - 4 days be vigilant of signs and symptoms suggestive of possible complications such as renal failure, myocarditis and heart failure, meningitis, and widespread haemorrhage due to disseminated intravascular coagulation. Case fatality rate is reported to range from less than 5% to 30% and is mainly due to the above complications. Transferring patients to higher level institutions should be considered if there is a concern about urine output despite adequate hydration. Symptoms suggestive of cardiac involvement such as hypotension and tachycardia are some of the other indications for transferring patients.

Clinical suspicion of leptospirosis should be confirmed whenever possible by necessary laboratory tests. Confirmatory diagnosis (especially microscopic agglutination test–MAT) could be done at the Medical Research Institute, Colombo. However, serological tests do not become positive with the

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mortem blood samples obtained within one hour of death to confirm the diagnosis in clinically suspected cases.

The treating physicians should also notify details of suspected cases of leptospirosis to the Epidemiology Unit without delay. Early notification and subsequent investigation by field health staff are essential particularly to forecast/ track the outbreaks and take early interventions. In addition, sentinel surveillance is carried out in selected hospitals in high risk areas. These hospitals are expected to send special investigation forms for all confirmed cases. Getting further information on laboratory investigations conducted and the possible source of exposure is the main objective of this activity.

Since the case fatality is unusually high this year, there is a need to investigate the deaths also. All hospital deaths due to suspected/ confirmed leptospirosis should be notified to the Epidemiology Unit and the relevant Regional Epidemiologist over the phone by the hospital staff. In addition, for all reported deaths, duly filled death investigation forms should be sent from the hospitals (by the physician who treated) and from the field (by the relevant MOH of the area from where the patient hailed) to the Epidemiology Unit. The objective of the death investigation is to identify the factors contributed to the deaths and to take remedial action at both field and hospital levels. This is to identify the shortcomings in the system with a view to rectifying these in future and certainly not to find fault with any individuals.

All information collected by the above means should be rationally used to plan and evaluate prevention and control activities. It is the responsibility of the MOOH to carry out prevention and control activities at the divisional level. A variety of occupational and recreational activities have been associated with leptospirosis, including farming, gem mining, cleaning drains and canals, veterinary and abattoir work, and swimming and playing in contaminated water. The risk of acquiring leptospirosis can be greatly reduced by avoiding exposure to contaminated water and soil. However, it might not be possible for people whose livelihoods depend on occupations mentioned above. They should be advised on the benefits of wearing footwear preferably knee-high boots and protective clothing. Wounds/ abrasions on skin should be covered with waterproof dressing. Further, awareness about the disease should be raised among risk groups, health care providers and general population, so that the disease can be recognized early and treated with the least possible delay.

Chemoprophylaxis is not advocated as a routine and leading preventive strategy and is recommended only for well recognized high risk groups. Identification of high risk localities at the divisional level (e.g. clustering of cases in a particular area) will help to identify high risk groups. Further, there should be a felt need by the high risk occupational groups of such areas for prophylaxis e.g. request for prophylaxis made by farmers' organizations. If prophylaxis is given, it should be closely monitored by the MOH and the field health staff. The recommended dose is doxycycline 200 mg weekly during the period of possible exposure. Doxycycline is a tetracycline antibiotic and should not be given to children younger than 12 years old, pregnant and lactating mothers.

Though this ongoing outbreak has been presumed due to leptospirosis, more than one pathogenic agent may be responsible . For example, hanta virus infections may be part of the current problem in Sri Lanka. Like leptospirosis, hanta virus infection is also a mainly rodent-borne zoonotic infection. It often presents in epidemic forms after abundant rainfall, and differential diagnosis with leptospirosis on clinical grounds alone is impossible to be made. Even if the rodent reservoir in Sri Lanka is same for both leptospira and hanta virus - which is far from proven - the treatment and prognosis of both human infections is totally different. Further, effective measures of prevention and control will not be possible as long as the exact mammal reservoir is not known. These facts underscore the importance of clinical observations being supported by adequate laboratory testing.

Source

Table 1: Vaccine-preventable Diseases & AFP 9th - 15th August 2008 (33rd Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	01 GM=1	00	00	00	01 BT=1	00	00	00	02 RP=1 KG=1	04	01	64	59	+8.53%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	00	00	00	00	00	00	01 MO=1	02 KG=2	03	01	84	50	+68.3%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	25	23	+8.7%
Whooping Cough	00	00	00	01 JF=1	00	00	02 KR=1 PU=1	00	00	03	02	29	30	-3.3%
Tuberculosis	33	43	07	04	02	00	05	00	00	205	261	5733	6518	-12.0`%

Table 2: Newly Introduced Notifiable Diseases 9th - 15th August 2008 (33rd Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	25	06	10	00	04	02	02	07	12	67	37	3536	2226	+58.8%
Meningitis	02 GM=2	01 KD=1	03 GL=1 MT=1 HB=1	01 JF=1	00	02 KR=1 PU=1	00	03 BD =3	03 KG=2 RP=1	15	16	903	316	+185.7%
Mumps	06	19	17	20	03	19	13	04	12	113	83	1833	1145	+60.1%

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.
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,

Table 3: Laboratory Surveillance of Dengue Fever 9th - 15th August 2008 (33rd Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	04	04	00	01	00	00	00	00	00	01	00	00	00	00
Total number to date in 2008	120	128	09	22	00	00	06	08	01	08	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]
* Not all positives are subjected to serotyping.
NA= Not Available.
Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health
9th - 15th August 2008 (33rd Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	32	1186	07	137	01	09	04	71	01	75	14	289	00	02	02	86	00	00	**92**
Gampaha	18	715	07	138	00	15	02	36	27	95	22	293	00	05	04	99	01	04	**64**
Kalutara	07	347	01	230	01	10	00	44	00	18	08	335	00	02	00	32	00	01	**100**
Kandy	08	180	06	218	00	05	01	43	00	53	05	317	04	76	01	95	00	01	**76**
Matale	02	82	03	153	00	02	00	35	00	04	04	611	00	01	01	23	00	00	**100**
Nuwara Eliya	00	21	02	181	00	02	01	197	48	158	03	39	00	35	00	87	00	01	**92**
Galle	02	83	03	132	00	12	00	13	00	43	05	241	00	12	00	06	00	03	**88**
Hambantota	02	70	02	68	00	05	00	07	00	11	03	72	01	66	03	12	00	00	**100**
Matara	07	202	03	136	00	10	02	28	00	06	08	239	04	147	00	11	00	01	**100**
Jaffna	00	52	02	99	00	02	03	221	00	11	00	00	02	150	02	32	00	00	**75**
Kilinochchi	00	00	00	23	00	00	00	01	00	00	00	02	00	00	00	01	00	00	**00**
Mannar	00	25	00	15	00	06	06	145	00	00	00	00	00	01	00	13	00	00	**75**
Vavuniya	00	11	02	45	00	02	01	06	00	14	00	05	00	01	01	05	00	00	**100**
Mullaitivu	00	00	00	06	00	00	00	12	00	12	00	00	00	01	00	08	00	00	**00**
Batticaloa	00	85	01	90	01	04	00	20	00	20	01	05	00	01	00	82	00	05	**73**
Ampara	00	26	01	219	00	00	00	07	00	01	00	17	00	00	00	07	00	00	**14**
Trincomalee	01	176	00	70	00	00	01	13	00	12	00	28	01	16	00	12	00	00	**70**
Kurunegala	03	259	04	170	01	14	02	44	00	14	40	249	00	20	00	53	00	04	**89**
Puttalam	01	271	02	61	00	08	03	137	00	26	02	32	00	33	00	27	00	03	**89**
Anuradhapur	00	109	00	60	00	09	01	10	00	06	01	223	00	10	00	12	00	02	**58**
Polonnaruwa	00	59	00	89	00	01	00	21	00	07	00	55	00	01	00	18	00	00	**86**
Badulla	02	66	05	338	00	05	00	101	00	13	00	33	01	98	05	102	00	01	**93**
Monaragala	00	49	02	280	00	03	00	29	00	116	01	87	00	76	05	38	00	00	**91**
Ratnapura	04	213	03	235	00	26	00	42	00	51	01	127	00	74	00	45	00	00	**88**
Kegalle	08	318	02	231	00	24	02	51	00	04	16	240	03	53	05	433	00	01	**91**
Kalmunai	01	33	01	201	00	02	00	09	00	15	00	00	00	02	00	21	00	00	**62**
SRI LANKA	**98**	**4638**	**59**	**3625**	**04**	**176**	**29**	**1343**	**76**	**785**	**134**	**3539**	**16**	**883**	**29**	**1360**	**01**	**27**	**80**

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 23 August, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week:

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WEEKLY EPIDEMIOLOGICAL REPORT

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Vol. 35 No. 35 **23rd - 29th August 2008**

WER SRI LANKA 2008

Meningococcal meningitis - Part I

During the last few years few isolated clinically suspected meningococcal meningitis cases were reported mainly from some Paediatrics Units in Sri Lanka.

In this series of articles we hope to discuss the epidemiology, clinical picture, diagnosis, treatment and prevention of meningococcal meningitis.

Meningitis is an infection of the meninges, the thin lining that surrounds the brain and the spinal cord. Several different bacteria can cause meningitis out of that Neisseria meningitidis being one of the most important because of its potential to cause epidemics. Meningococcal disease was first described in 1805 when an outbreak swept through Geneva, Switzerland. The causative agent, Neisseria meningitidis (the meningococcus), was identified in 1887.

Twelve subtypes or serogroups of N. meningitidis have been identified and four (N. meningitidis. A, B, C and W135) are recognized to cause epidemics. The pathogenicity, immunogenicity, and epidemic capabilities differ according to the serogroup. Thus the identification of the serogroup responsible for a sporadic case is crucial for epidemic containment.

Meningococcal disease is caused by the gram-negative bacterium *Neisseria meningitidis*, also known as meningococcus. Infection occurs both endemically and epidemically, in developed and developing countries. The impact of the disease persists due to the lack of effective control measures necessary to significantly decrease the number of asymptomatic carriers. For every case of meningococcal disease there are hundreds of persons in normal conditions with upper respiratory tract colonization. Humans are the only reservoir in nature.

Why a particular individual colonized by the microorganism develops infection while others who are equally colonized develop immunity to infection is not known. There are two main forms of clinical manifestation of the disease meningococcal meningitis, which has a good prognosis if it is adequately treated and meningococcemia or *Meningococcal septicemia*, which is less frequent and highly lethal even when treated. It is characterized by positive blood cultures and an exaggerated systemic inflammatory response, associated with endotoxemia. Cases of simultaneous meningitis and bacteremia are generally considered as cases of meningitis. *Meningococcal septicemia* is considered a medical emergency and can result in death rapidly.

Epidemiology of Meningococcal Disease

Meningococcal meningitis occurs sporadically in small clusters throughout the world with seasonal variations and accounts for a variable proportion of endemic bacterial meningitis. In temperate regions the number of cases increases in winter and spring. Serogroups B and C together account for a large majority of cases in Europe and the Americas. Several local outbreaks due to N. meningitidis serogroup C have been re-

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Major African epidemics are associated with N. meningitidis serogroups A and C and serogroup A is usually the cause of meningococcal disease in Asia. Outside Africa, only Mongolia reported a large epidemic in the recent years (1994-95). There is increasing evidence of serogroup W135 being associated with outbreaks of considerable size. In 2000 and 2001 several hundred pilgrims attending the Hajj in Saudia Arabia were infected with N. meningitidis W135. Then in 2002, W135 emerged in Burkina Faso, striking 13,000 people and killing 1,500.

In Delhi the outbreaks have occurred at regular intervals in 1935, 1966-67 and in1985-86. In 1966, 616 cases were recorded with peaks - May and December. In 1985, 1731 cases with 569 deaths and in 1986, 6133 cases of meningitis with 799 deaths were documented. Overall case fatality rate was 13%. In Delhi during the past three years (2002-2004) the number of cases, have been 971 with 118 deaths. It is obvious that the majority of the cases are adolescents and young adults. Most of the cases were from crowded inner city areas.

Transmission mechanisms

Transmission results from person-to-person contact or from inhalation of respiratory droplets containing meningo-cocci. It does not survive in the environment or in animals, is vulnerable to temperature changes and desiccation. Coughing and sneezing contribute to the transmission mechanism . The colonization rate is greater than 50% during periods associated with an increase in viral infections and upper respiratory tract infections.

The carrier rate is low during childhood and high in adolescents and young adults. Transmission is relatively slow in open populations and is greater in isolated populations and is aggravated by smoking or respiratory tract infections.

Health workers may contract the disease only when directly exposed to the patient's secretions. It has been determined that the risk of the sibling of a child for being infected is 2 to 3% and the attack rate for persons living in the same household is 2 to 4 per 1000 subjects. In outbreaks, colonization may be subsequent or simultaneous by the same or different serogroups.

When cases occur in schools, a student's risk of becoming infected ranges between 0.04% and 2.5%, with a higher risk in middle schools than in elementary schools. The variation in the attack rate is representative of the variation in the established control measures, but it also depends on factors related to the bacterium, the environment, and the host . The distance between student's seats has proved a risk factor for colonization. Similar situations are found in prisons. Outbreaks due to type C serogroup have been identified in these institutions and associated with 40% overpopulation.

Microbiological characteristics and pathogenesis

N. meningitidis is a gram negative, aerobic, immobile, non-sporulated bacterium; it is usually encapsulated and has pilli. It is classified in serogroups according to the immune reactivity of its capsular poly-saccharide, which is the basis of the polysaccharide vaccines currently available. Serogroup B contains a polysaccharide of low immunogenicity, probably due to its polysialic acid content. This acid is also present in human fetal neurons. Meningococcus can change from serogroup B to C or vice versa. The pathogenic process of *N. meningitidis* begins when the bacterium adheres to the surface of the microvilli of the cylindrical non-ciliated epithelium of the nasopharynx, where it reproduces.

Most subjects colonized by *N. meningitidis* remain asymptomatic. However, a lower percentage of meningococci enters the mucosa and the circulatory system, causing systemic disease. An increase in the incidence of meningococcal disease in a given population reflects the introduction, transmission, and acquisition of a virulent strain of a clonal group previously inexistent in a susceptible population. These bacterial strains produce a protective capsule that aids in evading the host's immune response, particularly the activation of complement-mediated and antibody-dependent lysis. Individuals with a deficiency of complement mediated antibody-dependent bactericidal system are susceptible to meningococcal infection. Predisposed individuals include people who have been splenectomized, or with functional asplenia, properdine deficiency, or deficiency of the terminal component of the complement's cascade. However, although these predisposed individuals have an increased risk of meningococcal disease, they represent only a small proportion of total cases . It is thought that AIDS patients may also have an increased risk for infection, although not as high as compared with other encapsulated organisms. Other genetic characteristics have been associated with an increased risk of the disease, including polymorphisms in the genes for lectin, associated to mannose, and in the genes for tumor necrosis factor alpha.

Active or passive exposure to cigarette smoke, viral infections of upper respiratory tract, damage of the respi-

Table 1: Vaccine-preventable Diseases & AFP

16th - 22nd August 2008 (34th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	01 GM=1	01 NE=1	00	00	00	00	00	00	01 RP=1	03	00	67	59	+13.6%
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	00	85	50	+70.0%
Tetanus	00	00	00	00	00	00	00	00	01 RP=1	01	01	26	24	+8.3%
Whooping Cough	00	00	00	00	00	01 PU=1	00	00	00	01	01	30	31	-3.2%
Tuberculosis	124	49	14	11	11	00	38	10	11	265	106	5998	6624	-9.5`%

Table 2: Newly Introduced Notifiable Diseases

16th - 22nd August 2008 (34th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	18	11	18	00	19	10	02	06	11	95	33	3640	2263	+60.8%
Meningitis	04 GM=1 KL=2 CB=1	03 ML=3	01 HB=1	00	00	02 KR=2	01 AP=1	01 BD =1	01 KG=1	13	23	919	345	+166.3%
Mumps	13	04	12	18	07	05	05	03	05	72	41	1914	1492	+28.4%

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=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 3: Laboratory Surveillance of Dengue Fever

16th - 22nd August 2008 (34th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	04	02	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	124	130	09	22	00	00	06	08	01	08	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]
* Not all positives are subjected to serotyping.
NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

16th - 22nd August 2008 (34th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	24	1210	16	153	02	11	03	74	01	76	15	304	00	02	03	89	00	00	**92**
Gampaha	15	737	02	141	01	16	01	39	00	95	39	335	01	06	01	101	00	04	**79**
Kalutara	06	353	08	238	00	10	01	45	00	18	08	343	00	02	01	33	00	01	**92**
Kandy	07	188	03	221	00	05	01	44	00	53	05	323	02	79	01	96	00	01	**72**
Matale	04	86	03	156	00	02	01	36	00	04	02	613	00	01	00	23	00	00	**67**
Nuwara Eliya	01	22	03	184	00	02	01	198	06	164	00	39	00	35	02	89	00	01	**77**
Galle	01	84	04	136	00	12	00	13	00	43	05	246	00	12	00	06	00	03	**88**
Hambantota	03	73	00	68	00	05	00	07	00	11	02	74	05	71	01	13	00	00	**91**
Matara	08	210	01	138	01	11	01	29	00	06	16	257	07	154	01	12	00	01	**88**
Jaffna	00	52	01	102	00	02	01	223	00	11	00	00	00	150	00	32	00	00	**50**
Kilinochchi	00	00	00	26	00	00	00	01	00	04	00	02	00	00	00	01	00	00	**00**
Mannar	00	25	00	15	00	06	00	145	00	00	00	00	00	01	00	13	00	00	**75**
Vavuniya	00	11	01	46	00	02	02	08	00	14	00	05	00	01	00	05	00	00	**75**
Mullaitivu	00	00	00	09	00	00	00	13	00	13	00	00	00	01	00	09	00	00	**00**
Batticaloa	00	85	02	92	00	04	00	20	00	20	00	05	00	01	01	83	00	05	**82**
Ampara	00	28	03	224	00	00	00	07	00	01	02	20	00	00	00	08	00	00	**29**
Trincomalee	00	176	02	72	00	00	00	13	00	12	01	29	00	16	00	12	00	00	**90**
Kurunegala	07	266	01	171	00	14	03	47	00	14	69	331	01	22	01	54	00	04	**89**
Puttalam	00	271	02	63	00	08	00	137	00	26	03	35	00	33	01	28	00	03	**78**
Anuradhapur	02	111	00	64	00	09	00	10	00	06	00	223	00	10	00	12	00	02	**53**
Polonnaruwa	00	59	05	94	00	01	00	21	05	12	00	55	00	01	00	18	00	00	**100**
Badulla	03	69	11	349	00	05	04	105	80	93	06	39	02	100	06	108	00	01	**100**
Monaragala	00	49	01	281	00	03	03	32	00	116	00	87	02	78	00	38	00	00	**73**
Ratnapura	05	218	08	244	01	27	00	42	00	51	00	128	00	75	01	46	00	00	**69**
Kegalle	03	321	03	234	00	24	01	52	00	04	15	256	02	55	02	435	00	01	**82**
Kalmunai	00	33	08	209	00	02	00	09	01	16	00	00	00	02	00	21	00	00	**77**
SRI LANKA	**89**	**4732**	**88**	**3730**	**05**	**181**	**23**	**1370**	**93**	**883**	**188**	**3749**	**22**	**908**	**22**	**1385**	**00**	**27**	**76**

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 30 August, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 233

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WER SRI LANKA 2008

Meningococcal meningitis - Part II

Part I of this article was published in the last issue of the Weekly Epidemiological Report.

Clinical manifestations

A great obstacle in diagnosing meningococcal disease is that clinical manifestations are hard to tell apart from other, less serious upper respiratory tract infections. Acute purulent meningitis is the usual manifestation of meningococcal disease. It is believed that meningeal infection is the result of hematogenous dissemination of the bacterium. This is observed in 50% of patients and is similar in its initial manifestations to other types of bacterial meningitis. The symptoms start with sudden , fever, stiff neck, nausea, vomiting, photophobia, and neurological alterations that may include stupor, delirium, coma, and convulsions. In infants, meningitis may be more difficult to identify, with atypical symptoms of a stiff neck, but a swollen fontanel may be present. Also, the child may be irritable, cry inconsolably, vomit, have seizures, refuse to eat, and be hypotonic.

Blood cultures are positive in 75% of *Meningococcal meningitis* patients. Meningococcemia is difficult to identify in isolated cases, as opposed to outbreaks. However, it is characterized by sudden fever, purpuric or petechial exanthema, which may progress to purpura or fulminant septicemia, associated with hypotension, acute adrenal hemorrhage (Waterhouse-Friderichsen syndrome) and multiple organic failure. Sometimes the exanthema associated with meningococcal disease may be maculopapular, similar to a viral exanthema, non-pruritic and transient, lasting approximately two days. Serogroups A and C are most commonly associated with meningitis out-breaks. However, they can also be present as meningococcemia.

N. meningitidis may affect the respiratory tract causing pneumonia, epiglotitis, and otitis media. Pneumonia occurs in 5 to 15% of invasive meningococcal disease cases, particularly when serogroups Y and W-135 are involved. Diagnosis of meningococcal pneumonia is difficult because isolation of the bacterium from sputum cannot differentiate asymptomatic carriers from diseased individuals. Some focal infections also occur in the form of septic arthritis, urethritis, pericarditis and conjunctivitis.

The latter type of infection may become complicated in 18% of cases, progressing from a localized infection of the conjunctiva to meningococcemia or bacterial meningitis. Chronic meningococcemia is rather uncommon and is characterized by intermittent fever, exanthema, arthralgia, and cephalea .

Standard case definition of meningococcal meningitis and meningococcemia

- *Suspected case of acute meningitis:* Sudden Onset of fever (>38.5ºC rectal or 38ºC axillary) with stiff neck. In patients under one year of age, a suspected case of meningitis occurs when fever is accompanied by a bulging fontanelle.
- *Probable case of bacterial meningitis:* Sus-

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epidemic, or petechial or purpural rash.

- *Confirmed case:* Suspected or probable case as defined above, with either positive CSF antigen detection for *N. meningitides*, or positive culture of CSF or blood with identification of N. meningitides

This case definition allows the detection of cases of meningococcal septicaemia

Diagnosis

Diagnosis of meningococcal meningitis is based upon analysis of cerebrospinal fluid. The adequate medium is Mueller-Hinton or GC enriched with supplement, which have replaced agar chocolate medium. Gram stain of the cerebrospinal fluid is an important test for prompt and accurate identification of *N. meningitidis*. Commercial kits are available to detect the polysaccharide antigen in cerebrospinal fluid and are also very useful for preliminary diagnosis of meningococcal disease, including sero-group identification. False negative results may occur, particularly when serogroup B is involved. Currently, testing is performed with the polymerase chain reaction (PCR) in cerebrospinal samples, to identify the sero-group, with the advantage of not requiring live organisms to perform the test with a sensitivity and specificity greater than 90%.

In addition to cerebrospinal fluid abnormalities, one may find high white cell counts with an increased number of polymorphonuclear cells. When severe purpura occurs, it is usually associated with systemic intravascular coagulation. Blood cultures are frequently positive. When purpuric lesions occur, direct microscopic observation and culture of tissue specimens or pus may provide the diagnosis.

Differential diagnosis of meningococcal disease mainly has to exclude other bacterial meningitis caused by *Streptococcus pneumoniae* and *Haemophilus influenzae*. Meningococcemia is hard to tell apart from other acute febrile illnesses, particularly in the absence of purpuric exanthema. However, the presence of fever, purpura, and shock strongly suggests a diagnosis of meningococcal disease.

Treatment

At the beginning of the 20th century, mortality from meningococcal disease was 70%. The introduction of IV fluid therapy and sulfas caused a reduction in the case-fatality rates of this disease. However, even with the use of adequate supportive care and antibiotics, case fatality rates of between 9 and 12% have remained stable in the past 20 years. The case fatality rate of meningococcemia is high. The patient must be admitted to a hospital or clinic for diagnosis and treatment. Infectivity of patients is moderate and fades away soon after antimicrobial therapy; thus, isolation of the patient is not considered necessary after the initial 24-48 h. Antibiotics, include penicillin G, beta lactamic derivatives, ampicillin sulbactam combinations, amoxicillin, clavulanic acid, and cephalosporines like cefotaxime, ceftriaxone, cefuroxime and cefepime .

Third generation cephalosporines like ceftriaxone and cefotaxime are excellent but costly alternatives. Nevertheless, ceftriaxone frequently becomes the ideal alternative, since it can be administered once a day for periods as short as two days. The high morbidity and mortality rates associated with meningococcal disease, even in patients who are given appropriate antimicrobial therapy, suggest that some anti-inflammatory therapies may help to improve clinical prognosis. It has been estimated that 11 to 19% of meningococcal disease survivors are left with sequel like deafness, neurological abnormalities, and loss of a limb in cases of meningococcemia. Some studies have suggested that routine utilization of corticosteroids like dexamethasone may be useful prior to antimicrobial therapy to diminish meningeal inflammation caused by bacterial death; however, its use has not been established as standard therapy. Traditionally, two clinical situations are acknowledged to require the use of steroids to prevent sequel and probably to improve survival of patients; one is neurological damage resulting from meningeal inflammation identified at the moment of diagnosis, the other is the presence of a Gram stain positive for *N. meningitidis* .

Macroscopic characteristics: murky or purulent.	
WBC count:	>1000 cells/mm3 with over 80% polymorphonuclears.
Proteins:	>80 g/L
Glucose:	<0.4 g/L
Gram stain:	Gram negative intracellular diplococci in 80% of untreated cases.

Treatment is recommended for seven days in most countries. Intensive care by properly trained personnel is recommended for patients with severe disease, septic shock, fulminant purpura, meningitis, and coma.

CSF Characteristics in Meningococcal meningitis

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3. Control of Communicable Diseases Manual by David

Table 1: Vaccine-preventable Diseases & AFP

23rd - 29th August 2008 (35th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	01 CO=1	01 NE=1	00	00	00	00	01 AP=1	00	00	03	00	70	59	+18.6%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	01 NE=1	02 HB=2	00	00	01 KR=1	00	00	00	04	00	89	50	+78.0%
Tetanus	01 GM=1	01 KD=1	00	00	00	00	00	00	00	02	02	27	26	+3.8%
Whooping Cough	01 GM=1	01 NE=1	00	00	00	00	00	00	00	02	00	32	31	+3.2%
Tuberculosis	29	125	04	13	03	00	23	00	08	206	80	6204	6704	-7.5`%

Table 2: Newly Introduced Notifiable Diseases

23rd - 29th August 2008 (35th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	12	02	03	00	01	09	02	08	06	43	46	3693	2315	+59.5%
Meningitis	04 GM=1 KL=1 CB=2	02 KD=3	00	01 JF=1	00	04 KR=4	03 AP=2 PO=1	01 BD =1	0 KG=1 RP=1	17	23	941	375	+150.9%
Mumps	04	10	08	00	02	15	01	09	13	62	36	1991	1238	+60.8%

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=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 3: Laboratory Surveillance of Dengue Fever

23rd - 29th August 2008 (35th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	02	02	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	126	132	09	22	00	00	06	08	01	08	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]
* Not all positives are subjected to serotyping.
NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health
23rd - 29th August 2008 (35th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	21	1232	11	164	00	11	10	84	02	78	43	349	00	02	01	90	00	00	**92**
Gampaha	19	755	00	144	00	16	00	39	00	96	59	397	00	06	05	107	00	04	**86**
Kalutara	07	362	04	242	00	11	00	45	01	19	14	359	00	02	00	33	01	02	**100**
Kandy	08	196	03	224	01	06	01	46	00	54	01	325	02	81	02	98	00	01	**72**
Matale	01	87	00	156	00	02	00	36	00	04	00	614	00	01	00	24	00	00	**83**
Nuwara Eliya	00	22	07	193	00	02	00	198	00	166	00	39	00	35	01	90	00	01	**77**
Galle	01	85	01	137	00	12	01	14	00	43	06	252	00	12	00	06	00	03	**53**
Hambantota	01	74	02	71	00	05	00	07	00	11	02	76	00	71	01	14	01	01	**91**
Matara	03	224	02	141	00	11	00	29	00	06	17	275	09	164	02	14	00	01	**88**
Jaffna	00	52	01	103	02	04	00	223	02	13	00	00	00	151	01	33	00	00	**63**
Kilinochchi	00	00	00	26	00	00	00	01	00	04	00	02	00	00	00	01	00	00	**00**
Mannar	00	25	02	17	00	06	01	146	00	00	00	00	00	01	00	13	00	00	**50**
Vavuniya	00	11	03	49	00	02	02	10	01	15	00	05	00	01	00	05	00	00	**75**
Mullaitivu	00	00	00	09	00	00	00	13	00	13	00	00	00	01	00	09	00	00	**00**
Batticaloa	00	85	00	93	00	04	00	20	00	20	00	05	00	01	00	83	00	05	**73**
Ampara	00	28	01	227	00	00	00	07	00	01	00	20	00	00	00	08	00	00	**57**
Trincomalee	00	176	01	73	00	00	00	13	00	12	01	30	00	16	00	12	00	00	**80**
Kurunegala	01	267	04	175	00	14	02	49	02	16	43	389	01	24	01	55	00	04	**89**
Puttalam	01	272	02	65	00	08	00	137	00	26	01	36	00	33	00	28	00	03	**78**
Anuradhapur	00	111	02	66	00	09	00	10	00	06	00	223	00	10	00	13	00	02	**58**
Polonnaruwa	00	59	03	97	00	01	00	21	00	12	00	55	00	01	00	18	00	00	**71**
Badulla	02	71	08	357	00	05	05	110	00	93	04	43	00	100	05	113	00	01	**87**
Monaragala	02	51	02	283	00	03	00	33	00	116	00	87	03	81	01	39	00	00	**82**
Ratnapura	06	225	03	248	00	27	00	42	00	62	01	130	00	75	00	46	00	00	**69**
Kegalle	05	326	01	235	00	24	00	52	02	06	10	266	00	56	01	438	00	01	**91**
Kalmunai	00	33	05	215	00	02	00	09	00	16	01	01	00	02	00	21	00	00	**46**
SRI LANKA	**78**	**4829**	**68**	**3810**	**03**	**185**	**22**	**1394**	**10**	**908**	**203**	**3978**	**15**	**927**	**21**	**1411**	**02**	**29**	**74**

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 6 September, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 227

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WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiological Unit,

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Vol. 35 No. 37 **6th – 12th September 2008**

WER SRI LANKA 2008

Meningococcal Meningitis - Part III

Part I & II of this article was published in the last two issues of the Weekly Epidemiological Report.

Control and prevention measures

Meningococcal disease is potentially preventable by vaccination and chemoprophylaxis under specific circumstances. In some countries with high endemic rates of meningococcal disease vaccines against it are included within universal vaccination programs.

Vaccination

Several vaccines are available to prevent the disease. Polysaccharide vaccines, which have been available for over 30 years, exist against serogroups A, C, Y, W135 in various combinations. A monovalent conjugate vaccine against serogroup C, has recently been licensed in developed countries for use in children and adolescents. This vaccine is immunogenic, particularly for children under 2 years of age whereas other polysaccharide vaccines are not. No vaccine effective against group B meningococci is currently licensed. All these available vaccines have been proven to be safe and effective with infrequent and mild side effects. The vaccines may not provide adequate protection for 10 to 14 days following injection.

Capsular poly-saccharide vaccines against serogroups A, C, Y and W-135 have shown 75 to 90% efficacy in adults and school age children, and lower efficacy in children aged under two years. Development of vaccines against meningo-coccal infection, stimulation of herd immunity by reducing the proportion of carriers, and the acquisition of virulent meningococcal strains among adolescents and adults have been considered basic strategies to control this devastating disease.

Several studies show that protective antibody levels may not persist in the majority of children immunized with vaccine C beyond two years, while the concentration of anti-C antibodies in adults persists for longer. Repeated immunization with vaccine C before 18 months of age in children who were vaccinated at three months of age showed greater efficacy.

The main culprits of meningococcal disease in the world are serogroups B, A, C, Y and W135. Several vaccine trials have been conducted against the serogroup B. Polysaccharide B also has a weak immunogenicity in natural infections; frequently, it is not possible to show the presence of anti-B antibodies during or after meningococcal disease or in nasopharyngeal carriers of meningococcus B.

The use of conjugate vaccines that induce cellular immunologic memory is probably the best option for immunoprophylaxis, since it provides adequate levels of protection The

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Chemoprophylaxis Against Meningococcal Disease

Preventive vaccination can be used to protect individuals at risk (e.g. travellers, military, pilgrims).

When a sporadic case occurs, the close contacts need to be protected by a vaccine and chemoprophylaxis with antibiotics to cover the delay between vaccination and protection. Meningococcal polysaccharide vaccines are effective for outbreak control and for prevention among high risk groups, such as travellers to countries where disease is epidemic, Hajj pilgrims and individuals with underlying immune dysfunctions.

Vaccination need during outbreak/epidemic

In India routine immunization with meningococcal vaccine is not recommended. It is routinely recommended for high risk children *e.g.*, anatomic or functional asplenia, immunodeficiency states, sickle cell disease *etc*. However, in an outbreak/epidemic situation if the primary attack rate of *Meningococcal meningitis*/ meningococcemia exceeds 10 cases per 100,000 population, then mass vaccination to the age specific population group is targeted. In such a situation, meningococcal A vaccine can be given as early as 3 months of age. If the polysaccharide vaccine is administered before the age of 2 years than 2 doses at 3 months interval is recommended during an outbreak.

Chemoprophylaxis

The purpose of chemoprophylaxis is to prevent the occurrence of secondary cases by eliminating carriers with *Neisseria menin-gitidis*. Chemoprophylaxis is an important control measure; however, it has limited effectiveness and its use should be restricted to special circumstances. These circumstances include close contacts of cases, such as institutionalized subjects, those who share quarters (households, schools, military stations, jails, and nurseries), as well as subjects who have been in contact with oral fluids of patient, either by kissing or by sharing food or beverages. A patients with meningococcal infection treated in a hospital or clinic, who has received an antibiotic, which does not eliminate the carrier state (penicillins or chloramphenicol), should receive chemo-prophylaxis with an effective antibiotic (ciprofloxacin, rifampicin, or ceftriaxone) upon hospital discharge. Massive chemo-prophylaxis is not recommended by any health authority during outbreaks.

Since the risk of secondary cases among close contacts of the index case is very high during the first day of infection, chemoprophylaxis should be started early, preferably within 24 hours from initial contact. Secondary cases usually occur within 10 days after exposure. Close observation of this group of subjects is recommended for at least 10 days to ensure administration of appropriate and timely therapy of secondary cases, which may occur even in the presence of adequate chemo-prophylaxis. Chemoprophylaxis is effective only when administered together with systemic antibiotic therapy. Among potentially useful antibiotics, the most frequently used is rifampicin. Nevertheless, utilization of oral ciprofloxacin as a single dose is a useful alternative, since in addition to easier adherence it is as effective as rifampicin. Rifampicin use has some disadvantages; it is the main drug for tuberculosis control and its excessive utilization may result in un-acceptably high rates of microbial resistance. Utilization of ciprofloxacin in childhood, particularly when given as a single dose, has not been associated with toxicity. This makes it suitable for chemoprophylaxis in children. Also, ceftriaxone given intramuscularly is a third alternative that has great effectiveness, but at a high cost .

WHO's strategy

WHO promotes a two-pronged strategy which involves epidemic preparedness and epidemic response. Preparedness focuses on surveillance, from case detection and investigation and laboratory confirmation. This implies strengthening of surveillance and laboratory capacity for early detection of epidemics, the establishment of national and sub-regional stocks of vaccine, and the development or updating of national plans for epidemic management.

Drug	Age Group	Dose
Ciprofloxacin		20mg/kg, single dose
	Adult	500 mg single dose
Rifampicin	< 1 month	5 mg/kg, twice a day for 2 days
	> 1 month	10 mg/kg, twice a day for 2 days
	Adults	600 mg single dose
Ceftriaxone	< 15 years	125 mg, single dose, intramuscularly
	> 15 years	250 mg, single dose, intramuscularly

Chemoprophylaxis Against Meningococcal Disease

Sources

1. Meningococcal meningitis : **WHO Fact sheet N°141**

2. A. Sachdeva, S. Kukreja, V. Jain and A.K. Dutta .

Table 1: Vaccine-preventable Diseases & AFP

30th August - 5th Sep 2008 (36th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	00	00	00	00	00	00	00	00	02	70	61	+14.8%
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	00	90	50	+80.0%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	27	26	+3.8%
Whooping Cough	00	01 NE=1	00	00	01 AP=1	01 KR=1	00	00	00	03	01	36	32	+12.5%
Tuberculosis	127	18	10	03	08	00	00	00	08	174	296	6378	7000	-8.9`%

Table 2: Newly Introduced Notifiable Diseases

30th August - 5th Sep 2008 (36th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	14	04	20	01	12	05	03	04	15	78	59	3788	2378	+59.3%
Meningitis	04 GM=2 KL=1 CB=1	06 ML=3	04 GL=3 MT=1	00	00	06 KR=5 PU=1	01 PO=1	01 MO =1	02 RP=2	24	22	966	408	+136.8%
Mumps	04	09	03	01	01	19	06	03	09	55	105	2051	1346	+52.4%

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=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 3: Laboratory Surveillance of Dengue Fever

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	00	00	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	124	132	09	22	00	00	06	08	01	08	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]
* Not all positives are subjected to serotyping.
NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

30th August - 5th Sep 2008 (36th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal -itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceived
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	29	1261	06	170	02	13	02	86	07	85	45	394	00	02	02	92	00	00	**85**
Gampaha	15	775	10	156	01	17	00	41	02	98	57	460	00	06	14	123	00	04	**86**
Kalutara	12	374	03	245	00	11	00	45	01	20	26	385	00	02	03	36	00	02	**100**
Kandy	04	200	04	229	01	07	02	48	00	54	06	334	00	81	01	99	00	01	**80**
Matale	02	89	07	164	01	03	02	38	00	04	08	622	00	01	00	24	00	00	**100**
Nuwara	00	22	03	196	00	02	02	200	00	166	00	39	01	36	01	91	00	01	**85**
Galle	01	86	01	138	00	12	00	14	00	43	18	270	00	12	01	07	00	03	**76**
Hambantota	05	79	05	76	00	05	00	07	00	11	03	79	01	72	00	14	00	01	**100**
Matara	09	238	07	148	01	12	00	29	00	06	21	298	07	172	00	14	00	01	**88**
Jaffna	00	52	01	107	00	04	02	225	01	14	00	00	00	151	01	34	00	00	**50**
Kilinochchi	00	00	00	33	00	00	00	01	00	04	00	02	00	00	00	01	00	00	**00**
Mannar	00	25	00	17	00	06	00	152	00	00	00	00	00	01	00	13	00	00	**25**
Vavuniya	00	11	02	51	00	02	01	11	00	15	00	05	00	01	00	05	00	00	**100**
Mullaitivu	00	00	00	11	00	00	00	13	00	13	00	00	00	01	00	09	00	00	**00**
Batticaloa	00	85	04	101	00	04	00	20	00	20	00	05	00	01	00	83	00	05	**82**
Ampara	00	28	01	230	00	00	00	07	00	283	00	20	00	00	00	08	00	00	**57**
Trincomalee	00	176	04	77	00	00	00	13	00	12	00	30	00	16	00	12	00	00	**80**
Kurunegala	07	274	03	178	00	14	00	49	00	16	83	483	01	26	02	57	02	06	**94**
Puttalam	00	272	02	67	00	08	04	141	00	26	06	42	02	35	00	28	01	04	**100**
Anuradhapu	00	111	08	75	00	09	01	11	00	06	05	228	00	10	00	13	00	02	**74**
Polonnaruw	02	61	05	103	00	01	00	21	00	12	04	59	00	01	00	18	00	00	**86**
Badulla	02	73	14	371	00	05	04	114	00	93	02	45	02	102	09	122	00	01	**100**
Monaragala	00	51	00	283	00	03	00	33	00	116	00	87	01	82	01	40	00	00	**91**
Ratnapura	05	230	12	261	01	28	00	42	01	63	01	131	01	76	00	46	00	00	**81**
Kegalle	08	334	10	245	01	25	02	56	00	06	10	278	00	56	05	445	00	01	**91**
Kalmunai	01	34	04	219	00	02	00	09	00	16	00	01	00	02	01	23	00	00	**77**
SRI LANKA	**102**	**4941**	**116**	**3951**	**08**	**193**	**22**	**1426**	**12**	**1202**	**295**	**4297**	**16**	**945**	**41**	**1457**	**03**	**32**	**82**

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 13 September, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 227

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WER SRI LANKA 2008

AEFI SURVEILLANCE REPORT— 2007 [Part I]

Immunization is one of the public health interventions that have had the greatest impact on the world's health since its discovery. Thanks to pioneers like Sir Edward Jenner, the first vaccine against small pox was introduced in 1798 and these vaccines, since then, have helped save many lives and dramatically reduced the burden of many diseases in all four corners of the world. Immunization is one of the most cost effective interventions and has given great credibility to the global preventive health movement.

Sri Lanka too adopted immunization as a part of its primary health care services many decades ago and a big step forward was taken with the launching of the Expanded Programme on Immunization in 1978. Since then the EPI programme in the country has been a great success story often commended by the World Health Organization as being a programme of excellence that has achieved many high standards in immunization.

Although the first vaccines invented were, in some aspects, crude, the vaccines became more safe as well as more effective with time. But, these vaccines are not entirely without risk. Effective vaccines may produce some undesirable side effects which are mostly mild and clear up quickly. These adverse effects can jeopardize the entire immunization programme and the credibility achieved among the public over many years can be lost. Recognizing the importance of this critical issue, the Epidemiological Unit introduced the surveillance of Adverse Events Following Immunization in 1996 as an integral part of the programme. Furthermore, technological advances and continuously increased knowledge about vaccines have led to investigations focused on the safety of existing vaccines which have sometimes created a climate for concern.

An Adverse Events Following Immunization is a medical incident that takes place after immunization and is believed to be caused by immunization. The majority of events, though thought to be related to the administration of the vaccine, are actually not due to the vaccine itself. Many are simply coincidental events and others are due to human or programme errors that could have been prevented by observing the standard precautions in healthcare. Some reactions are solely due to the anxiety and have no association with the vaccine. The determination of AEFI is based on case investigations.

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Especially at a time when vaccine preventable diseases are hardly seen, convincing mothers to vaccinate their children against such diseases with a vaccine that could have adverse events, is a challenge. Therefore taking all necessary steps to prevent the occurrence of these AEFI and taking corrective measures can have a major impact on the continuation of the immunization programme.

Systematic collection, analysis and dissemination of data or surveillance of AEFI can greatly help in facing the challenge of maintaining public confidence in immunization. It is not possible to predict every individual who might have mild or serious reactions to a vaccine. Hence it is mandatory to keep track of every child vaccinated and report any adverse event thought to have occurred due to the vaccine.

Field health staff plays a key role in this regard and every month the Medical Officers of Health are expected to investigate every individual event and provide a return on the AEFI observed in their respective areas to the Epidemiological Unit at the central level. The Epidemiological Unit analyzes these data and makes policy decisions at the centre as and when necessary.

Since the introduction of the surveillance on AEFI in 1996, the reporting has shown impressive improvements. A marked improvement is observed in the completeness of reports received at the central level and in 2006 91% of the reports expected were received whereas in 2007 the figure has risen to 97%. The number of AEFI reported too has shown an increase by about 2000 events together with the rate of AEFI indicating stronger surveillance at the grass root level.

*Per 100,000 immunizations

Completeness of monthly reporting and receipt of NIL returns by RDHS division - 2006 & 2007

	Completeness %		NIL returns	
	2006	2007	2006	2007
	%	%	%	%
Colombo	96.4	98.8	17.9	12.7
Gampaha	95.6	99.4	27.3	11.2
Kalutara	85.6	96.2	27.4	34.7
Kandy	94.7	97.4	58.2	24.5
Matale	90.8	99.3	58.8	51.1
Nuwara Eliya	86.9	98.8	46.6	43.4
Galle	94.2	96.1	81.8	69.9
Hambantota	90.8	93.2	46.8	27.6
Matara	90.6	98.9	55.2	50.5
Jaffna	97.6	95.2	91.5	96.3
Kilinochchi	77.1	86.1	91.9	80.7
Mannar	100.0	83.3	93.8	87.5
Vavuniya	93.8	95.8	77.1	82.6
Mulletivu	33.3	88.3	95.0	94.3
Batticaloa	77.3	98.5	92.2	76.2
Ampara	88.1	96.4	67.6	66.7
Trincomalee	96.3	98.2	91.4	68.9
Kurunegala	95.1	99.1	53.1	36.9
Puttlam	94.4	96.3	38.2	8.7
Anuradhapura	95.6	98.3	65.1	54.9
Polonnaruwa	96.4	100.0	48.2	30.9
Badulla	95.0	99.4	70.8	40.8
Monaragala	95.8	99.2	60.0	37.8
Ratnapura	90.9	91.2	50.0	49.1
Kegalle	81.6	100	43.4	28.8
Kalmunai	93.1	99.4	88.1	80.0
Sri Lanka	**91.3**	**97.2**	**58.5**	**46.2**

Completeness of AEFI reports received and number and overall rate of AEFI reported in 2006 & 2007

	2006	2007
Number of monthly reports received	3156	3417
Percentage of reports received	91%	97%
Number of AEFI reported	4184	6217
Overall rate of AEFI reported*	61.5	94.5

Even though the completeness was at a satisfactory level the timeliness was below expectations and overall only 37.1% of the returns were received on time. Time is a vital ingredient in epidemiology. Timeliness, or the lack of it, is one of biggest obstacles in achieving high standards in AEFI reporting. Hence more emphasis must be laid on adhering to time to further improve the quality of AEFI surveillance by MOOH and more supervision is needed in this regard by the regional health authorities.

When the overall completeness of the reporting of AEFI is improving many districts other than Jaffna and Mannar showed a progress at the individual level from 2006 to 2007. The prevailing civil conflict in the Northern part of the country could be the reason for the lack of improvement in those two districts. In 2007 two RDHS divisions namely Kegalle and Polonnaruwa, achieved 100% completeness, while 21 RDHS divisions out of the 26 scored more than 95%. Mannar recorded the lowest coverage as a percentage with only 83.3%.

Table 1: Vaccine-preventable Diseases & AFP

6th - 12th Sep 2008 (37th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	00	00	01 TR=1	00	00	00	00	01	02	71	61	+14.8%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	00	01 HA=1	00	00	00	01 PO=1	00	00	02	00	92	50	+80.0%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	27	26	+3.8%
Whooping Cough	00	01 KD=1	00	00	00	01 PU=1	00	00	00	02	01	38	32	+12.5%
Tuberculosis	67	09	25	02	45	47	07	21	35	258	296	6636	7000	-8.9`%

Table 2: Newly Introduced Notifiable Diseases

6th - 12th Sep 2008 (37th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	13	15	28	02	06	06	02	10	32	114	59	3906	2378	+59.3%
Meningitis	01 KL=1	00	01 HA=1	00	01 BT=1	04 KR=4	02 PO=2	00	04 RP=1 KG=3	13	22	981	408	+136.8%
Mumps	04	15	11	02	23	08	17	01	15	96	105	2150	1346	+52.4%

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=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 3: Laboratory Surveillance of Dengue Fever 6th - 12th Sep 2008 (37th

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	00	00	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	124	132	09	22	00	00	06	08	01	08	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]
* Not all positives are subjected to serotyping.
NA= Not Available.

Data Sources:
Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Whooping Cough, Human Rabies, Dengue Haemorrhagic Fever, Japanese Encephali - tis, Chickenpox, Meningitis, Mumps.
Special Surveillance: Acute Flaccid Paralysis.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

6th - 12th Sep 2008 (37th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal -itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	11	1276	10	182	01	14	07	93	01	86	122	537	00	02	00	92	00	00	**77**
Gampaha	07	784	02	158	00	17	00	41	00	98	27	491	00	06	09	132	00	04	**64**
Kalutara	10	384	02	247	00	11	01	46	00	20	17	402	00	02	00	36	00	02	**75**
Kandy	07	210	05	235	00	07	01	49	27	81	07	341	00	81	03	102	01	02	**72**
Matale	06	95	05	169	01	04	02	40	00	04	05	627	00	01	00	24	00	00	**92**
Nuwara	00	22	03	201	01	03	02	202	00	166	01	40	00	36	01	93	00	01	**77**
Galle	01	87	01	139	00	12	00	15	00	43	12	282	00	12	01	08	00	03	**59**
Hambantota	00	79	06	82	00	05	00	07	00	11	02	81	03	75	00	14	00	01	**45**
Matara	05	243	04	152	00	12	02	31	00	06	19	317	09	181	00	14	00	01	**59**
Jaffna	00	52	06	114	00	04	02	229	01	15	00	00	00	151	00	34	00	00	**88**
Kilinochchi	00	00	00	35	00	00	00	01	00	04	00	02	00	00	00	01	00	00	**00**
Mannar	00	25	00	17	00	06	01	153	00	00	00	00	00	01	00	13	00	00	**50**
Vavuniya	00	11	01	52	00	02	00	11	01	16	00	05	00	01	00	05	00	00	**50**
Mullaitivu	00	00	00	11	00	00	00	13	00	13	00	00	00	01	00	09	00	00	**00**
Batticaloa	00	85	02	105	01	05	00	20	01	25	00	05	00	01	02	85	01	06	**45**
Ampara	00	28	02	232	00	00	00	07	00	283	00	20	00	00	00	08	00	00	**43**
Trincomalee	00	177	01	78	01	01	00	13	00	12	00	30	00	16	01	13	00	00	**60**
Kurunegala	08	282	04	182	00	14	01	50	00	16	20	503	00	26	01	58	00	06	**72**
Puttalam	02	274	01	68	00	08	04	145	00	26	04	46	00	35	00	28	00	04	**56**
Anuradhapu	04	115	04	79	00	09	00	11	02	08	03	231	00	10	00	13	01	03	**53**
Polonnaruw	01	62	03	106	00	01	00	21	05	17	00	59	00	01	00	18	00	00	**57**
Badulla	02	75	12	383	00	05	00	114	01	94	03	48	01	103	03	125	00	01	**53**
Monaragala	00	51	03	286	00	03	02	35	00	116	00	87	04	86	00	40	00	00	**82**
Ratnapura	01	231	26	287	00	28	01	43	00	63	04	135	01	77	00	46	00	00	**44**
Kegalle	13	347	04	249	00	25	00	56	01	07	17	295	02	58	07	452	00	01	**55**
Kalmunai	00	34	06	225	00	02	00	09	00	16	00	01	00	02	00	23	00	00	**54**
SRI LANKA	**78**	**5029**	**113**	**4074**	**05**	**198**	**26**	**1455**	**40**	**1246**	**263**	**4585**	**20**	**965**	**28**	**1486**	**03**	**35**	**61**

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 20 September, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 227

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WEEKLY EPIDEMIOLOGICAL REPORT

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WER SRI LANKA 2008

AEFI SURVEILLANCE REPORT— 2007 [Part II]

Part I of this article was published in the last issue of the Weekly Epidemiological Report.

Nil returns on AEFI are a cause for concern. It may reflect poor detection and reporting on the part of the field health officers and other relevant health care personnel. Reporting any Adverse Events Following Immunization is mandatory and it is the responsibility that lies with all health care providers who come across such an incident. Therefore if this is strictly observed it is unlikely that there would be such large proportion of "nil returns"

As a percentage nil returns have reduced from 58.5% in 2006 to 46.2% in 2007 which is a favourable trend. All RDHS divisions other than Jaffna, Vavuniya and Kalutara had made a stronger effort in strengthening their surveillance on AEFI. Puttlam district recorded the most impressive figure (8.7%) followed by Gampaha (11.2%) and Colombo districts (12.7%) respectively. All three of these RDHS divisions show a marked improvement over the previous year. Well over 90% of the returns received from Jaffna and Mullaitivu did not report any AEFI which is undoubtedly reflecting some form of under-reporting due to the prevailing conflict situation.

In 2007 the leading AEFI were high fever (1437), allergic reactions (992) injection site abscesses (873) and the ill defined category named "others

Distribution of reported AEFI by type of adverse events

	2006		2007	
	Num.	Rate *	Num.	Rate
Injection sit abscess	677	13.3	873	18.1
BCG Lymphadenitis	11	3.1	22	5.9
Severe local reaction	767	15	642	13.3
High fever	729	10.7	1437	21.9
Allergic reaction	969	14.3	992	15.1
Nodule	122	2.4	**	**
Seizures	212	3.1	239	3.6
Arthralgia	24	0.4	19	0.3
Shock	6	0.1	0	0
Excessive screaming	59	0.9	112	1.7
Encephalopathy	2	0.03	0	0
Meningitis	3	0.04	4	0.06
GBS	2	0.03	1	0.02
Deaths	4	0.06	5	0.08
Others	597	8.8	1871	28.5
Total	4184	61.6	6217	94.6

* Per 100,000 immunization

**"Nodules are included in the "Others" category from 2007

In 2006 allergic reactions were the highest reported AEFI but in 2007 there were more reported cases of high fever. In 2006 14.3 allergic reactions were reported per 100,000

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two fold indicating more vigilance on the part of the field health personnel.

The AEFI categorized as "others" had increased dramatically by more than three fold and the re-categorization of nodules under 'others' category could have contributed to this increase.

There has been an increase in the reported number and rate of AEFI after immunization with almost all the antigens in 2007. This increase was marked following Measles, Rubella and MR vaccinations but number of AEFI following JE had reduced remarkably [but rate remain more or less same].

AEFI By Type of Antigen 2006 & 2007

Vaccine	2006		2007	
	No.	Rate*	No.	Rate*
BCG	37	10.5	61	16.6
DPT	2803	205.7	5092	364.3
DT	129	39.2	184	51.1
OPV	19	1.1	28	1.6
Measles	106	30.0	228	62.6
TT	54	15.9	79	22.8
JE	817	92.5	41	90.5
Rubella	46	20.8	152	49.9
aTd	51	19.1	66	25.5
MR	69	20.7	169	49.6
Hep B	44	4.4	61	5.9
Other	6		54	
Total	4184	61.5	6215	94.5

(* Rate per 100,000 antigens)

This reduction could be due to limited number of immunizations carried out with JE during the previous year. As expected adverse events following DPT vaccination heads the table. Over 5000 cases were reported in 2007 whereas only 2803 cases had been identified the year before.

There is an increasing trend in the identification of AEFI following immunization with vaccines other than those in the EPI as well.

Distribution of selected adverse events by type of vaccine - 2007

	Seizures	Allergic reaction	Abscesses	Local reaction	High fever	Persistent screaming
BCG	1	2	16	4	4	0
DPT	214	542	808	544	1290	103
OPV	5	3	0	0	13	3
Measles	5	84	4	11	66	1
DT	4	45	13	35	22	2
TT	0	27	5	12	3	0
Rubella	0	124	0	3	6	0
JE	2	21	0	5	7	0
aTd	0	13	1	1	5	0
MR	6	115	1	15	13	2
Hep B	2	12	13	2	5	1
Other	0	4	12	10	3	0
Total	**239**	**992**	**873**	**642**	**1437**	**112**

As in the previous years all the main AEFI are high following vaccination with DPT vaccine. A large proportion of the abscesses are also found after DPT vaccination. This is once again a cause for concern. In addition allergic reactions are high after immunization with Rubella and MR vaccines.

Five death temporally associated with immunization were reported compared to four such deaths during the previous year. All five deaths were investigated. Some of the details of those deaths are given below.

One child aged three years developed fever and vomiting on the same day of immunization with MR vaccine. The following day his condition deteriorated rapidly and he developed neck stiffness and kernig's sign in the morning with profuse haemetemesis. By evening the child developed DIC and death occurred around five pm that day. The investigation that followed revealed that the death was probably due to a severe reaction to the MR vaccine.

Another death occurred after vaccination with DPT, Hep B and OPV first dose at the age of two months. The child died on the third day after vaccination and the child was dead on admission to the hospital. The cause of death was concluded as aspiration pneumonia during the post mortem.

A girl of six years from Kopai, Jaffna died after two days following vaccination with DT and OPV early in the year and the child had features of encephalitis. Unfortunately the death could not be investigated due to difficulty in accessibility to the area due to the civil conflict.

A four months old girl died 12 hours following 2nd dose of DPT, Hep B and OPV. The cause of death was concluded as congenital heart disease.

Another death occurred 5 days after vaccination with DT. The investigation revealed that the death was due to asphyxia following convulsions with complicated chickenpox.

It is obvious from these figures that reporting of Adverse Events Following Immunization has improved immensely. This is the result of better vigilance and commitment at the grass root level and enhanced supervision and technical guidance at the district and National

Table 1: Vaccine-preventable Diseases & AFP

13th - 19th Sep 2008 (38th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	01 ML=`1	01 MT=1	00	00	00	00	00	00	02	01	73	63	+15.8%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	01 NE=1	00	00	00	00	00	00	00	01	03	93	52	+78.0%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	27	26	+3.8%
Whooping Cough	00	00	00	00	00	01 KR=1	00	00	00	01	00	39	32	+21.8%
Tuberculosis	68	01	54	25	03	00	00	00	59	210	154	6378	7504	-15.0`%

Table 2: Newly Introduced Notifiable Diseases

13th - 19th Sep 2008 (38th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	14	18	13	01	07	07	03	03	22	88	57	4016	2514	+59.7%
Meningitis	00	00	04 HA=2 GL=2	00	01 TR=1	02 KR=2	03 PO=2 AP=1	00	02 KG=3	13	23	995	452	+120.1%
Mumps	03	06	08	00	11	11	02	09	05	55	43	2214	1499	+47.7%

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=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 3: Laboratory Surveillance of Dengue Fever 13th -19th Sep 2008 [38

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	00	02	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	124	134	09	22	00	00	06	08	01	08	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]
* Not all positives are subjected to serotyping.
NA= Not Available.

Data Sources:
Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Whooping Cough, Human Rabies, Dengue Haemorrhagic Fever, Japanese Encephali - tis, Chickenpox, Meningitis, Mumps.
Special Surveillance: Acute Flaccid Paralysis.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

13th - 19th Sep 2008 (38th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal -itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	24	1300	09	193	00	14	06	99	00	87	82	627	00	02	01	93	00	00	**92**
Gampaha	09	800	03	165	00	17	00	41	00	98	32	536	00	06	00	132	00	04	**71**
Kalutara	07	391	06	253	00	11	02	48	00	20	38	440	01	03	01	37	00	02	**100**
Kandy	04	215	07	242	00	07	02	51	07	88	06	349	03	84	06	108	00	02	**76**
Matale	14	109	03	172	00	04	00	40	05	10	08	635	01	02	00	24	00	00	**83**
Nuwara	02	24	06	207	00	03	17	219	00	166	01	41	00	36	04	97	00	01	**85**
Galle	01	88	07	146	02	14	00	15	00	43	13	295	00	12	00	08	00	03	**88**
Hambantota	06	85	01	83	00	05	00	07	01	12	02	83	01	76	00	14	00	01	**100**
Matara	06	249	10	162	01	13	02	33	00	06	38	355	08	189	00	14	00	01	**100**
Jaffna	00	52	00	114	00	04	02	229	00	15	00	00	00	151	00	34	00	00	**13**
Kilinochchi	00	00	00	35	00	00	00	01	00	04	00	02	00	00	00	01	00	00	**00**
Mannar	00	25	01	18	00	06	02	155	00	00	00	00	00	01	01	14	00	00	**25**
Vavuniya	00	11	03	55	00	02	00	11	00	16	00	05	00	01	00	05	00	00	**100**
Mullaitivu	00	00	00	11	00	00	00	13	00	13	00	00	00	01	00	09	00	00	**00**
Batticaloa	00	85	02	107	00	05	00	20	01	26	00	06	00	01	01	86	00	06	**55**
Ampara	00	30	06	239	00	00	00	07	00	283	01	21	00	00	00	08	00	00	**43**
Trincomalee	00	177	03	81	00	01	00	13	02	14	00	30	00	16	00	13	00	00	**70**
Kurunegala	06	289	05	187	00	14	01	51	07	23	29	536	00	26	01	59	00	06	**94**
Puttalam	00	274	06	74	00	08	00	145	00	26	02	48	00	35	01	29	00	04	**89**
Anuradhapu	00	115	03	82	00	09	00	11	01	09	02	234	00	10	00	13	00	03	**68**
Polonnaruw	00	62	04	110	00	01	00	21	04	21	00	59	00	01	01	19	00	00	**100**
Badulla	02	77	08	392	00	05	02	116	01	95	05	53	00	103	02	127	01	02	**87**
Monaragala	01	52	06	292	00	03	00	35	00	116	02	89	01	87	00	40	00	00	**73**
Ratnapura	03	239	07	311	01	31	01	45	01	68	06	143	01	78	01	48	00	00	**72**
Kegalle	11	358	09	258	00	25	04	60	02	09	39	338	01	59	04	456	00	01	**100**
Kalmunai	01	35	05	232	00	02	00	09	00	16	01	02	01	03	00	23	00	00	**62**
SRI LANKA	**97**	**5142**	**120**	**4221**	**04**	**204**	**39**	**1495**	**32**	**1284**	**307**	**4927**	**18**	**983**	**24**	**1511**	**01**	**36**	**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 September, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 227

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WER SRI LANKA 2008

Melamine contamination - Part I

Description of the event

More than 54 000 infants and young children have sought treatment for urinary problems, possible renal tube blockages and possible kidney stones related to the melamine contamination of infant formula and related dairy products. Three deaths among infants have been confirmed, more than 14 000 infants have been hospitalized and a little less than 11 000 remain so. Kidney stones in infants are very rare. While the exact onset date of illness resulting from contamination and the beginning of the contamination itself remain unknown, a manufacturer (Sanlu) received a complaint of illness in March 2008.

Chinese media reported at the beginning of September that Sanlu brand infant formula produced by Hebei-based Sanlu Group was contaminated with melamine. Sanlu's powdered infant formula is widely consumed by infants across China because the product is relatively affordable compared to others. Following inspections conducted by China's national inspection agency, at least 22 dairy manufacturers across the country were found to have melamine in some of their products. Two companies, Guangdong Yashili and Qingdao Suokang, exported their products to Bangladesh, Burundi, Myanmar, Gabon and Yemen. While contamination in those exported products remains unconfirmed, a recall has been ordered from China.

Other countries, however, have also reported finding melamine in dairy products manufactured in China.

So far, contamination has also been found in liquid milk, frozen yogurt dessert, biscuits, candies and in coffee drink. All these products were most probably manufactured using ingredients made from melamine contaminated milk.

In 2007, melamine was found in pet feed manufactured in China and exported to the United States of America, causing death of a large number of dogs and cats due to kidney failure.

Why was melamine added into milk?

In China, where adulteration has occurred, water has been added to raw milk to increase its volume. As a result of this dilution the milk has a lower protein concentration. Companies using the milk for further production (e.g. of powdered infant formula) normally check the protein level through a test measuring the nitrogen content. The addition of melamine increases the nitrogen content of the milk and therefore its apparent protein content.

Melamine contamination

Melamine is a chemical compound that has a number of industrial uses, including the production of laminates, glues, dinnerware, adhesives, moulding compounds, coatings and flame retardants. Melamine is a name used both for the chemical and for the plastic made from it. In this event, all references are to the chemical. There are no approved direct food uses for melamine, nor are there any recommendations in the Codex Alimen-

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Source of contamination

In this event, contamination appears to have happened as fraudulent contamination in primary production. Chinese government officials have pinpointed milk collecting stations as the sites where the melamine was added. According to Sanlu, contaminated milk was used in the manufacture of powdered infant formula processed before 6th August 2008 and the tainted milk powder has also been used in the manufacture of a number of other products.

Contamination levels

There are a total of 175 infant formula manufacturers across China, of which 66 have halted production and the remaining 109 manufacturers have undergone inspection due to the current events of melamine contamination. The results of the inspection presented by the Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) show evidence of the presence of melamine. Out of 491 batches tested, 69 of them, produced by 22 companies, tested positive for Melamine.
According to the State Council of China, the levels found in the batches ranged between 0.09 mg/kg and 619 mg/kg. Batches from the company Shijiangzhuang Sanlu Co. contained the highest levels, up to 2563 mg/kg.

Action taken by INFOSAN [International Food Safety Authorities Network]

INFOSAN is working directly with Ministry of Health (MoH), China in collaboration with the WHO Country Office in China. Through the INFOSAN Emergency surveillance system, WHO has learned of the contamination of infant formula with melamine and requested further information about the event on the 11th September 2008. MoH confirmed on 12th September 2008 that incriminated products from the Sanlu Company had not been exported and provided WHO with a description of the development of the event. Through further interaction between INFOSAN and MoH the issue of potential other use of the contaminated milk powder as well as parallel (illegal) distribution of contaminated milk powder was raised. An INFOSAN alert was subsequently distributed to the entire network on the 16th September 2008 alerting members of the event and of the possibility of contaminated products finding their way to other markets.

INFOSAN has several times during the past week, kept the entire network informed of developments in relation to this event as well as additional information on other products being found contaminated, information about the toxicity of the melamine and other information to help Member States better understand and assess the potential risks associated with melamine contaminated products.

Toxicology of melamine

Based on the previous incidents of melamine contaminated pet food and the development of kidney stones and subsequent acute kidney failure in cats and dogs, it appears that melamine and its structural analogues, such as cyanuric acid, may act together to form crystals. This crystal formation occurs at very high-dose levels and is a threshold and concentration dependent phenomenon, which would not be relevant at low levels of exposure (US FDA/CFSAN Interim Melamine and Analogues safety/risk .

Exposure

Consumer exposure to melamine is considered to be low, but may occur through the extraction of melamine from compression moulds by acidic foods, such as lemon or orange juice or curdled milk, at high temperature. Taking into account these sources the estimated oral uptake of melamine is around 0.007 mg melamine/kg/day (OECD 1998).

Toxicity of melamine

Melamine is not metabolized and is rapidly eliminated in the urine. No human data could be found on the oral toxicity of melamine but there are data from animal studies. These show the compound to have a low acute toxicity, with an oral LD in the rat of 3161 mg/kg body weight. In animal feeding studies, high doses of melamine have an effect on the urinary bladder, in particular causing inflammation, the formation of bladder stones and crystals in the urine. Analysis of the bladder stones has shown that these are a mixture of melamine, protein, uric acid and phosphate. Animal studies have generally not shown any renal toxicity or the formation of kidney stones.

Tetanus Toxiod Multidose Vials

In the coming months Epidemiology Unit is expecting to introduce a new 20 dose multidose vials of T. Toxois instead of 10 dose multidose vials currently being used.

Storage conditions, dosage [0.5 ml] and application of open vial policy for the new 20 dose vials is same as for earlier vials.

All MOOH are expected to educate their sup-

Table 1: Vaccine-preventable Diseases & AFP 20th - 26th August 2008 (39th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	01 GM=1	01 KD=1	00	00	00	01 KR=1	00	00	00	03	00	76	63	+20.6%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	01 NE=1	00	00	00	00	00	00	00	01	02	95	56	+69.6%
Tetanus	00	00	00	00	00	00	00	00	00	00	01	28	27	+3.7%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	39	32	+21.8%
Tuberculosis	63	03	14	01	09	08	`19	00	13	130	101	6508	7605	-14.4%

Table 2: Newly Introduced Notifiable Diseases 20th - 26th August 2008 (39th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	2 6	12	15	00	03	09	06	04	21	96	49	4119	2570	+60.3%
Meningitis	02 CB=1 GM=1	00	05 HA=2 MT=2 GL=1	00	00	05 KR=3 PU=2	01 AP=1	01 MO=1	02 RP=1 KG=1	16	16	1012	472	+114.4%
Mumps	07	13	08	00	04	06	01	01	08	48	71	2275	1579	+44.1%

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.
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 3: Laboratory Surveillance of Dengue Fever 20th - 26th 2008 (39th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	00	02	00	01	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	124	136	09	23	00	00	06	08	01	08	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]
* Not all positives are subjected to serotyping.
NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

20th - 26th August 2008 (39th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal -itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	19	1319	11	205	00	14	06	105	01	88	102	732	00	02	00	93	00	00	**92**
Gampaha	05	808	04	169	00	17	02	43	00	98	29	591	00	07	03	137	00	05	**71**
Kalutara	03	394	03	256	00	11	09	57	00	20	21	461	00	03	01	38	00	02	**75**
Kandy	05	220	04	246	00	07	00	51	00	88	15	367	03	87	00	108	00	02	**76**
Matale	03	112	02	174	00	04	01	41	00	10	09	644	00	02	01	25	00	00	**75**
Nuwara	00	24	08	216	00	03	05	224	00	166	06	47	00	36	01	98	00	01	**85**
Galle	02	90	03	149	01	15	01	16	00	43	09	304	01	13	00	08	00	03	**82**
Hambantota	00	85	04	87	00	05	00	07	00	12	02	85	01	77	00	14	00	01	**82**
Matara	01	250	06	168	00	13	02	35	00	06	17	372	02	191	00	14	00	01	**88**
Jaffna	00	53	04	123	00	04	01	234	00	15	00	00	00	151	00	35	00	00	**63**
Kilinochchi	00	00	00	35	00	00	00	01	00	04	00	02	00	00	00	01	00	00	**00**
Mannar	00	25	02	20	00	06	00	155	00	00	00	00	00	01	00	14	00	00	**25**
Vavuniya	00	11	01	56	00	02	01	12	03	19	00	05	00	01	00	05	00	00	**100**
Mullaitivu	00	00	00	11	00	00	00	13	00	13	00	00	00	01	00	09	00	00	**00**
Batticaloa	00	85	06	115	00	05	01	21	00	26	00	08	00	01	00	86	00	06	**55**
Ampara	00	30	01	242	00	00	00	07	00	283	01	22	00	00	01	09	00	00	**14**
Trincomalee	00	177	02	91	00	01	00	13	00	14	00	30	00	16	00	13	00	00	**90**
Kurunegala	03	292	01	188	00	14	00	51	00	23	17	553	00	26	05	64	01	07	**68**
Puttalam	01	275	09	83	00	08	02	147	00	26	05	53	01	36	00	29	00	04	**67**
Anuradhapu	00	116	03	89	00	09	01	12	00	09	01	235	01	11	00	13	00	03	**68**
Polonnaruw	00	62	05	115	00	01	00	21	00	21	00	59	00	01	00	19	00	00	**86**
Badulla	03	80	05	397	00	05	00	116	00	95	02	55	00	103	00	127	00	02	**53**
Monaragala	00	52	07	299	00	03	01	36	00	116	01	90	03	93	03	44	00	00	**91**
Ratnapura	01	241	05	317	00	32	01	46	00	68	03	151	00	78	00	48	00	00	**61**
Kegalle	05	363	06	264	00	25	02	62	02	11	47	385	01	60	09	465	00	01	**82**
Kalmunai	00	35	04	236	00	02	00	09	00	16	00	02	00	03	00	23	00	00	**46**
SRI LANKA	**51**	**5199**	**106**	**4351**	**01**	**206**	**36**	**1535**	**06**	**1290**	**287**	**5253**	**13**	**1000**	**24**	**1539**	**01**	**38**	**70**

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 4 October, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 227

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ON STATE SERVICE

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Melamine contamination - Part II

Part I of this article was published in the last issue of the Weekly Epidemiological Report.

Carcinogenicity

The International Agency for Research on Cancer (IARC) has concluded that there is sufficient evidence in experimental animals for the carcinogenicity of melamine under conditions in which it produces bladder stones. There is inadequate evidence for carcinogenicity in humans.

Role of melamine in the formation of kidney stones

Animal data have not shown that melamine alone causes renal failure or the formation of kidney stones. Evidence from an earlier outbreak of acute renal failure in cats and dogs associated with contaminated pet food suggests that a combination of melamine and cyanuric acid does cause renal toxicity. Both these compounds were found in the pet food together with other triazine compounds. Subsequent experimental studies in animals have shown that when they are fed a mixture of melamine and cyanuric acid this causes the formation of crystals in the tubules of the kidneys, eventually blocking them and causing renal damage and renal failure. The source of cyanuric acid in pet food was unknown but it may have been present as a contaminant of the melamine that had been illegally added to wheat gluten used in formulating pet food. In the current event in China, the presence of cyanuric acid has not yet been confirmed.

Health-based Guidance Values

Following the pet food incident in 2007 described above, several authorities have preformed preliminary risk assessments.

The US FDA has published an interim safety/risk assessment on melamine and structural analogues and has established for melamine a tolerable daily intake TDI of 0.63 mg per kg of body weight per day.

The European Food Safety Authority has published a provisional statement and recommended to apply a TDI of 0.5 mg per kg of body weight per day as tolerable intake value for melamine.

Epidemiology and treatment

Suggested surveillance case definition

Identification of possible cases related to the consumption of melamine-contaminated products from China

Member States should be aware of the possible distribution of the contaminated products either through formal or informal channels, because of the large quantities involved and the seriousness of public health consequences of this event. The period of production of contaminated product is uncertain and the incriminated raw material and products may have been exported as infant formula or other milk containing products to other Member States. Therefore WHO is suggesting this surveillance case definition to Member States to increase their awareness of signs that their population may be affected.

Clinical description

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- Unexplained crying in infants, especially when urinating, possible vomiting
- Macroscopic or microscopic haematuria
- Acute obstructive renal failure: oliguria or anuria
- Stones discharged while passing urine.

For example, a baby boy with urethral obstruction with stones normally has dysuria High blood pressure, edema, painful when knocked on kidney area

Key diagnostic criteria

1. Been fed with melamine-contaminated infant milk formula
2. Having one or more of the above clinical manifestations
3. Laboratory test results: routine urine tests with macroscopic or microscopic haematuria; blood biochemistry; liver and kidney function tests; urine calcium/creatinine ratio (usually normal); urinary red blood cell morphology shows normal morphology of red blood cells (not glomerular haematuria); parathyroid hormone test (usually normal).
4. Imaging examination: preferably ultrasound B exam of urinary system. If necessary, abdominal CT scan and intravenous urography (not to be used in case of anuria or renal failure). Kidney radionuclide scans can be used where available to evaluate renal function.
5. Ultrasound examination features:

General features: bilateral renal enlargement; increased echo on solid tissue; normal parenchyma thickness; slight pyelectasia and calicectasis; blunt renal calyx. If the obstruction locates in the ureter, then the ureter above the obstruction point dilates. Some cases have oedema with perinephric fat and soft tissue around the ureter. As the disease develops, the renal pelvis and ureter wall may have secondary oedema. A few cases have ascites.

Stone features: most stones affect the collecting system and ureters on both sides. Ureteral stones are mostly at pelviureteral junction, the part where the ureter passes across iliac artery, and ureter-bladder junction. Stones stay collectively, covering massive areas. Lighter echo in the background. Most stones are different from the calcium oxalate stones. Urinary tract is mostly completely obstructed by stones.

Differential diagnosis

1. Haematuria differentiation: need to rule out glomerular haematuria.

.2. Stone differentiation: stones are normally radiolucent and have a negative image on urinary tract x-ray. This feature differentiates the stones from those of radiopaque stones of calcium oxalate and calcium phosphate.

3. Differentiation of acute renal failure: need to rule out pre-renal and renal failure.

Clinical treatment

1. Immediately stop using melamine-contaminated infant formula milk powder.
2. Medical treatment: use infusion and urine alkalinization to dispel the stones. Correct the water, electrolyte and acid-base imbalance. Closely monitor routine urine tests, blood biochemistry, renal functions, ultrasound findings (with particular attention to the renal pelvis, ureter expansion, and the change of the stones in shape and location). If the stones are loose and sand-like, they are very likely to be passed out with urine.
3. Treatment of complicated acute renal failure: priority should be given to the treatment of life-threatening complications such as hyperkalemia. Measures include the administration of sodium bicarbonate and insulin. If possible, blood dialysis and peritoneal dialysis can be used early. Surgical measures can be taken to remove the obstruction if necessary.

Surgical treatment: if medical treatment is not effective, and hydrocele and kidney damage present, or blood dialysis and peritoneal dialysis are not available in case of renal failure, surgical methods can be considered to remove the obstruction. Stones can be removed by different methods including cystoscope retrograde intubation into the ureter, percutaneous kidney drainage, surgical removal and percutaneous kidney stone removal. Extracorporeal shock wave lithotripter (ESWL) is greatly limited in its application, because the stones are loose and mainly composed of ureter, and the patients are infants

Follow-up

Once the urinary obstruction is relieved, and the general condition and renal function and urination are back to normal, the children can be discharged.

Key issues to follow-up

Urine routine tests; ultrasound of urinary system; renal function tests; IVP (intravenous pyelogram) if necessary.

Sources

1. WHO Fact Sheet on Food safety –Melamine contamination event China [www.who.int/foodsafety/fs_management/infosan_events/en/ index.html]

Table 1: Vaccine-preventable Diseases & AFP 27th Sep - 3rd Oct 2008 (40th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	01 KD=1	01 GL=1	00	00	00	00	01 BD=1	00	03	01	79	64	+23.4%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	00	00	01 JF=1	00	00	00	00	00	01	01	96	64	+50.0%
Tetanus	01 GM=1	00	02 HB=2	00	00	00	00	00	00	03	01	31	28	+10.7%
Whooping Cough	01 CO=1	01 KD=1	00	00	00	00	00	00	00	02	02	41	34	+20.6%
Tuberculosis	99	01	20	15	16	00	`00	06	09	166	268	6674	7873	-15.4%

Table 2: Newly Introduced Notifiable Diseases 27th Sep - 3rd Oct 2008 (40th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	19	18	12	00	03	03	03	08	20	86	85	4244	2659	+59.6%
Meningitis	03 KL=1 GM=2	00	05 HA=1 MT=1 GL=3	00	01 BT=1	03 KR=3	00	00	02 RP=1 KG=1	15	30	1033	504	+104.9%
Mumps	00	05	03	01	00	04	02	09	02	26	81	2312	1660	+39.3%

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=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 3: Laboratory Surveillance of Dengue Fever 27th Sep - 3rd Oct 2008 (40th

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	00	02	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	124	138	09	23	00	00	06	08	01	08	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]
* Not all positives are subjected to serotyping.
NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

27th Sep- 3rd Oct 2008 (40th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal -itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceived
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	23	1346	05	211	00	14	05	113	02	90	31	776	01	03	01	94	00	00	**77**
Gampaha	07	821	02	171	01	19	02	47	02	100	22	634	00	07	10	148	01	06	**79**
Kalutara	06	405	02	258	00	11	00	57	00	20	15	488	00	03	00	39	00	02	**100**
Kandy	05	225	05	251	00	07	03	54	02	90	15	385	00	87	03	111	00	02	**76**
Matale	05	126	01	176	00	04	01	43	03	13	04	653	00	02	00	25	00	00	**92**
Nuwara	00	24	05	221	00	03	02	227	00	166	01	48	00	36	01	100	00	01	**85**
Galle	01	91	06	157	02	17	00	16	00	43	25	330	00	13	00	08	00	03	**88**
Hambantota	00	85	01	88	00	05	00	07	00	12	04	89	02	79	00	14	00	01	**91**
Matara	07	265	06	175	00	13	00	35	00	06	19	401	04	196	00	14	00	01	**82**
Jaffna	01	54	08	135	00	04	04	238	01	16	00	00	00	151	00	35	00	00	**63**
Kilinochchi	00	00	00	35	00	00	00	01	00	04	00	02	00	00	00	01	00	00	**00**
Mannar	00	25	01	21	00	06	00	155	00	00	00	00	00	01	00	14	00	00	**25**
Vavuniya	01	12	01	57	00	02	01	13	00	19	00	05	00	01	00	05	00	00	**100**
Mullaitivu	00	00	00	11	00	00	00	13	00	13	00	00	00	01	00	09	00	00	**00**
Batticaloa	00	85	00	121	01	07	00	21	00	26	00	08	00	01	01	88	01	07	**64**
Ampara	00	30	00	247	00	00	00	07	00	283	00	22	00	00	01	11	00	00	**14**
Trincomalee	00	177	00	92	00	01	00	13	00	14	00	30	00	16	00	13	00	00	**30**
Kurunegala	03	296	04	193	00	14	00	51	00	23	19	579	00	27	00	64	00	07	**74**
Puttalam	00	276	00	84	00	08	00	147	00	26	00	57	00	37	00	29	00	04	**67**
Anuradhapu	01	117	02	94	01	10	00	12	00	09	01	236	00	11	00	13	00	03	**79**
Polonnaruw	00	62	01	116	00	01	00	21	00	21	00	59	00	01	00	19	00	00	**86**
Badulla	00	81	07	406	00	05	02	118	00	95	00	56	02	105	02	131	00	01	**73**
Monaragala	00	52	19	318	00	03	00	36	01	117	00	90	02	95	00	44	00	00	**82**
Ratnapura	03	245	06	328	00	32	00	47	00	68	06	168	00	78	00	48	00	00	**83**
Kegalle	12	377	03	267	01	26	05	67	00	11	33	420	01	61	08	473	00	01	**100**
Kalmunai	00	35	02	240	00	02	00	09	00	16	01	03	00	03	01	24	00	00	**77**
SRI LANKA	**75**	**5312**	**87**	**4473**	**06**	**214**	**25**	**1568**	**11**	**1301**	**196**	**5536**	**12**	**1015**	**28**	**1574**	**02**	**39**	**75**

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 11October, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 227

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WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiological Unit,

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Vol. 35 No. 42 **11th – 17th October**

WER SRI LANKA 2008

Child survival: Where we stand - Part I

In 2006, for the first time in recent history, the total number of annual deaths among children under the age of five fell below 10 million, to 9.7 million. This represents a 60 per cent drop in the rate of child mortality since 1960. However, there is no room for complacency. The loss of 9.7 million young lives each year is unacceptable, especially when many of these deaths are preventable. And despite progress, the world is not yet on track to achieve the Millennium Development Goal target of a two-thirds reduction in the

The current situation

What is a life worth? Most of us would sacrifice a great deal to save a single child. Yet somehow on a global scale, our priorities have become blurred. Every day, on average more than 26,000 children under the age of five die around the world, mostly from preventable causes. Nearly all of them live in the developing world or, more precisely, in 60 developing countries. More than one third of these children die during the first month of life, usually at home and without access to essential health services and basic commodities that might save their lives.

Some children succumb to respiratory or diarrhoeal infections that are no longer threats in industrialized countries or to early childhood diseases that are easily prevented through vaccines, such as measles. In up to half of under-five deaths an underlying cause is undernutrition, which deprives a young child's body and mind of the nutrients needed for growth and development.

Unsafe water, poor sanitation and inadequate hygiene also contribute to child mortality and morbidity. In 2006, the most recent year for which firm estimates are available, close to 9.7 million children died before their fifth birthday. Although the numbers have changed, the problem is no less poignant today than it was 25 years ago when the 'child survival revolution' was launched by the United Nations Children's Fund (UNICEF).

The current focus of the development community in relation to child survival is Millennium Development Goal 4 (MDG 4), which aims to reduce the global rate of under-five mortality by two thirds between 1990 and 2015. Since child deaths in 1990 numbered around 13 million in absolute terms, meeting MDG 4 implies that during the next seven years the number of child deaths must be cut in half – to fewer than 13,000 child deaths per day, or fewer than 5 million per year. The enormity of the challenge should

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Moreover, the bulk of the efforts must be focused on the most difficult situations and circumstances: in the poorest countries, among the most impoverished, isolated , uneducated and marginalized districts and communities within nations ravaged by AIDS, conflict, weak governance and chronic underinvestment in public health systems and physical infrastructure. If the current trends continue, 4.3 million child deaths will occur in 2015 that could have been averted had MDG 4 been met

The under-five mortality rate : The indispensable gauge of child health

The under-five mortality rate, often known by its acronym U5MR or simply as the child mortality rate, indicates the probability of dying between birth and exactly five years of age, expressed per 1,000 live births, if subject to current mortality rates. It has several advantages as a barometer of child well-being in general and child health in particular. Firstly, it measures an 'outcome' of the development process rather than an 'input', such as per capita calorie availability or the number of doctors per 1,000 population – all of which are means to an end. Secondly, the U5MR is known to be the result of a wide variety of inputs: the nutritional status and the health oral rehydration therapy; the availability of maternal and child health services (including prenatal care); income and food availability in the family; the availability of safe drinking water and basic sanitation; and the overall safety of the child's environment, among other factors. Thirdy, the U5MR is less susceptible to the fallacy of the average than, for example, per capita gross national income (GNI per capita). This is because the natural scale does not allow the children of the rich to be 1,000 times as likely to survive, even if the human made scale does permit them to have 1,000 times as much income. In other words, it is much more difficult for a wealthy minority to affect a nation's U5MR, and it therefore presents a more accurate, if far from perfect, picture of the health status of the majority of children.

Underlying and structural causes of maternal and child motality: Maternal, newborn and under-five deaths and undernutrition have a number of common structural and underlying causes, including:

• Poorly resourced, unresponsive and culturally inappropriate health and nutritional services.

• Food insecurity.

• Inadequate feeding practices.

• Lack of hygiene and access to safe water or adequate sanitation.

• Female illiteracy.

• Early pregnancy.

• Discrimination and exclusion of mothers and children from access to essential health and nutritional services and commodities due to poverty and geographic or political marginalization.

These factors result in millions of unnecessary deaths each year. Their wide-ranging nature and interrelatedness require them to be addressed at different levels – community, household, service provider, government and international – in an integrated manner to maximize effectiveness and reach. The solutions to these impediments are well known, particularly those relating to the direct causes of maternal, neonatal and child deaths. The necessary interventions involve the provision of packages of essential primary health-care services for children across a continuum of care that spans pregnancy, childbirth and after delivery, leading to care for children in the crucial early years of life.

Of the 62 countries making no progress or insufficient progress towards the Millennium Development Goal on child survival, nearly 75 per cent are in Africa. In some countries in southern Africa, the prevalence of HIV and AIDS has reversed previously recorded declines in child mortality. Achieving the goal in these countries will require a concerted effort. Widespread adoption of basic health interventions, including early and exclusive breastfeeding, immunization, vitamin A supplementation and the use of insecticide-treated mosquito nets to prevent malaria, are essential to scaling up progress, in sub-Saharan Africa and elsewhere. More needs to be done to increase access to treatment and means of pre-

Table 1: Vaccine-preventable Diseases & AFP

4th - 10th Oct 2008 (41st Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	00	00	00	00	00	00	00	00	01	79	65	+21.5%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	01 NE=1	00	00	00	00	00	00	00	01	00	97	64	+51.6%
Tetanus	00	01 KD=1	00	00	00	00	00	00	00	01	02	31	30	+3.3%
Whooping Cough	02 GM=1 KL=1	00	00	00	00	00	00	00	00	02	01	43	35	+22.9%
Tuberculosis	63	03	14	01	09	08	`19	00	13	130	160	6508	8033	-14.4%

Table 2: Newly Introduced Notifiable Diseases

4th - 10th Oct 2008 (41st Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	19	05	21	00	04	02	03	05	14	73	42	4346	2715	+60.1%
Meningitis	01 CO=1	00	03 HA=1 GL=2	00	02 BT=1 KM=1	01 PU=1	02 PO=1 AP=1	00	02 KG=2	11	30	1048	541	+93.7%
Mumps	08	12	04	00	06	11	01	01	06	49	36	2391	1709	+39.9%

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=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 3: Laboratory Surveillance of Dengue Fever 4th - 10th Oct 2008 (41tst

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	00	02	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	124	138	09	23	00	00	06	08	01	08	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]
* Not all positives are subjected to serotyping.
NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

4th - 10th Oct 2008 (41st Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal -itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceived
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	23	1372	01	216	00	14	10	124	00	91	30	813	00	03	02	96	00	00	**69**
Gampaha	11	832	05	176	01	20	02	49	02	103	29	667	00	07	03	154	00	06	**86**
Kalutara	04	409	10	268	00	11	02	59	06	26	27	515	00	03	02	41	00	02	**92**
Kandy	06	233	05	256	00	07	01	55	02	97	23	409	01	89	00	111	00	02	**76**
Matale	07	133	01	177	00	04	05	48	00	13	08	661	00	02	00	25	00	00	**100**
Nuwara	01	25	09	230	00	03	08	235	00	166	03	51	00	36	04	104	00	01	**92**
Galle	01	92	06	163	01	18	01	17	00	43	09	339	01	14	00	08	00	03	**71**
Hambantota	00	85	00	88	00	05	00	07	00	12	01	90	05	84	00	14	00	01	**91**
Matara	05	271	06	181	00	13	00	35	00	06	13	415	03	199	00	14	00	01	**94**
Jaffna	00	54	00	135	00	04	00	238	00	16	00	00	00	151	00	35	00	00	**00**
Kilinochchi	00	00	00	35	00	00	00	01	00	04	00	02	00	00	00	01	00	00	**00**
Mannar	00	25	00	21	00	06	00	155	00	00	00	00	00	01	00	14	00	00	**00**
Vavuniya	00	12	01	58	00	02	00	13	00	19	00	05	00	01	00	05	00	00	**75**
Mullaitivu	00	00	00	15	00	00	00	15	00	13	00	00	00	01	00	09	00	01	**00**
Batticaloa	00	85	00	129	00	07	03	25	00	29	00	08	00	00	00	89	00	07	**55**
Ampara	00	30	00	249	00	00	01	08	00	283	00	22	00	00	01	12	00	00	**29**
Trincomalee	00	177	03	97	00	01	00	13	00	14	00	30	00	16	00	13	00	00	**70**
Kurunegala	05	302	04	198	00	14	00	52	00	23	10	589	01	29	02	67	01	06	**89**
Puttalam	00	276	05	90	00	08	00	148	01	27	02	56	00	37	00	29	00	04	**67**
Anuradhapu	00	117	02	97	00	10	00	12	00	09	00	236	00	11	01	14	00	03	**79**
Polonnaruw	00	62	03	119	00	01	02	24	00	21	05	64	00	01	00	19	00	00	**71**
Badulla	00	81	07	413	00	05	01	119	01	96	03	60	01	106	01	132	00	01	**73**
Monaragala	01	53	01	319	00	03	03	39	02	119	00	90	02	97	00	44	00	00	**45**
Ratnapura	03	248	08	336	00	32	02	49	00	68	09	178	00	78	02	50	00	00	**72**
Kegalle	06	383	03	270	00	26	03	70	00	11	19	439	02	63	01	474	00	01	**73**
Kalmunai	00	36	01	241	00	02	00	09	00	16	00	03	00	03	00	24	00	00	**31**
SRI LANKA	**72**	**5393**	**81**	**4577**	**02**	**216**	**44**	**1619**	**14**	**1325**	**191**	**5742**	**16**	**1032**	**19**	**1598**	**01**	**39**	**70**

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 18October, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 215

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Vol. 35 No. 43 **18th – 24th October 2008**

WER SRI LANKA 2008

Child survival: Where we stand - Part II

Part I of this article was published in the last issue of the Weekly Epidemiological Report.

Why child survival matters

Investing in the health of young children makes sense for a number of reasons beyond the pain and suffering caused by even one child's death. Depriving infants and young children of basic health care and denying them the nutrients needed for growth and development sets them up to fail in life. But when children are well nourished and cared for and provided with a safe and stimulating environment, they are more likely to survive, to have less disease and fewer illnesses, and to fully develop thinking, language, emotional and social skills. When they enter school, they are more likely to succeed.And later in life, they have a greater chance of becoming creative and productive members of society.

Investing in children is also wise from an economic perspective. According to the World Bank, immunization and vitamin A supplementation are two of the most cost-effective public health interventions available today. Improving vitamin A status can strengthen a child's resistance to disease and decrease the likelihood of childhood mortality. For only a small sum, a child can be protected from vitamin A deficiency and a number of deadly diseases, including diphtheria, pertussis, tetanus, polio,measles, childhood tuberculosis, hepatitis B and Hib (*Haemophilus influenzae* type b), which is a major cause of pneumonia and meningitis. Providing cotrimoxazole, a low-cost antibiotic, to HIV-positive children dramatically reduces mortality from opportunistic infections. Improvements in child health and survival can also foster more balanced population dynamics. When parents are convinced that their children will survive, they are more likely to have fewer children and provide better care to those they do have – and countries can invest more in each child.

Newborn survival

Until the mid to late 1990s, estimates of the number of child deaths occurring during the neonatal period (the first month of life) were drawn from rough historical data rather than from specific surveys. More rigorous estimates for newborn deaths emerged in 1995 and 2000, as data from reliable household surveys became available. Analysis of these data made it evident that previous estimates had seriously understated the scale of the problem. Although the global neonatal mortality rate has decreased slightly since 1980,neonatal deaths have become proportionally much more significant because the reduction of neonatal mortality has been slower than that of under-five mortality: Between 1980 and 2000, deaths in the first month of life declined by a quarter, while deaths between one month and five years declined by a third.

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The latest evidence is that 4 million babies die each year in their first month of life, and up to half of these die in their first 24 hours – a child is about 500 times more likely to die in the first day of life than at one month of age. Neonatal mortality accounts for almost 40 per cent of all under-five deaths and for nearly 60 per cent of infant deaths.

The largest absolute number of newborn deaths occurs in South Asia – India contributes a quarter of the world total – but the highest national rates of neonatal mortality occur in sub-Saharan Africa. A common factor in these deaths is the health of the mother – each year more than 500,000 women die in childbirth or from complications during pregnancy, and babies whose mothers have died during childbirth have a much greater chance of dying in their first year than those whose mothers remain alive. Even these figures understate the vast scale of the problems that affect child health during the neonatal period. For example, more than a million children who survive birth asphyxia each year go on to suffer such problems as cerebral palsy, learning difficulties and other disabilities. For every newborn baby who dies, another 20 suffer birth injury, complications arising from preterm birth or other neonatal conditions. Significant improvements in the early neonatal period will depend on essential interventions for mothers and babies before, during and immediately after birth. According to the latest estimates for 2000–2006, at present in the developing world, one quarter of pregnant women do not receive even a single visit from skilled health personnel (doctor, nurse, midwife); only 59 per cent of births take place with the assistance of a skilled attendant; and just over half take place in a health facility. Averting neonatal deaths is pivotal to reducing child mortality.

The Lancet Neonatal Survival Series, published in 2005, estimated that 3 million of the 4 million deaths could be prevented each year if high coverage (90 per cent) is achieved for a package of proven, cost-effective interventions that are delivered through outreach, families and communities, and facility-based clinical care across a continuum of neonatal care (antenatal, intrapartum and postpartum). While increasing skilled care is essential, the Neonatal Survival Series underlines the importance of interim solutions that can save almost 40 per cent of newborn lives in community settings Expanding programmes that prevent mother-to-child transmission of HIV is also crucial.

Actions required to save newborns include setting evidence-based, results-oriented plans at the national level with specific strategies to reach the poorest, greater funding, agreed targets for neonatal mortality reduction, and promotion of greater harmonization and accountability on the part of stakeholders at the international level.

The main proximate causes of child death

The countries and regions in which children under five are dying in large numbers are well known, and the main proximate causes of premature deaths and ill health are also well established. Almost 40 per cent of all under-five deaths occur during the neonatal period, the first month of life, from a variety of complications. Of these neonatal deaths, around 26 per cent – accounting for 10 per cent of all under-five deaths – are caused by severe infections. A significant proportion of these infections is caused by pneumonia and sepsis (a serious blood-borne bacterial infection that is also treated with antibiotics). Around 2 million children under five die from pneumonia each year – around 1 in 5 deaths globally.

In addition, up to 1 million more infants die from severe infections including pneumonia, during the neonatal period. Despite progress since the 1980s, diarrhoeal diseases account for 17 per cent of under-five deaths. Malaria, measles and AIDS, taken together, are responsible for 15 per cent of child deaths. Many conditions and diseases interact to increase child mortality beyond their individual impacts, with undernutrition contributing up to 50 per cent of child deaths.

Unsafe water, poor hygiene practices and inadequate sanitation are not only the causes of the continued high incidence of diarrhoeal diseases, they are a significant contributing factor in under-five mortality caused by pneumonia, neonatal disorders and undernutrition.

Source

The state of the world's children 2008 . United Nations Children's Fund (UNICEF) December 2007 [www.unicef.org]

Table 1: Vaccine-preventable Diseases & AFP

11th - 17th Oct 2008 (42nd Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	02 MT=1 KD=1	00	00	01 TR=1	00	00	00	00	03	03	82	68	+20.5%
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	100	65	+53.8%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	31	30	+3.3%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	01	43	36	+19.4%
Tuberculosis	88	109	06	18	25	00	`10	18	10	280	96	6788	7833	-13.3%

Table 2: Newly Introduced Notifiable Diseases

11th - 17th Oct 2008 (42nd Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	06	13	12	00	07	09	05	10	16	78	26	4448	2804	+58.6%
Meningitis	06 GM=1 CB=4 KL=1	02 NE=2	01 HA=1	00	03 BT=3	02 PU=2	01 PO=1	00	01 KG=1	16	15	1102	556	+98.2%
Mumps	01	03	03	03	07	02	08	01	06	34	23	2454	1811	+35.5%

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=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 3: Laboratory Surveillance of Dengue Fever 11th - 17th Oct 2008 (42nd Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	00	02	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	124	138	09	23	00	00	06	08	01	08	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]
* Not all positives are subjected to serotyping.
NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

11th - 17th Oct 2008 (42nd Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal -itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceived
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	14	1393	03	222	00	14	07	132	20	112	21	849	02	06	02	98	00	00	**54**
Gampaha	09	842	05	183	00	20	00	49	00	103	25	699	00	07	02	158	00	06	**64**
Kalutara	05	417	05	274	00	11	00	61	00	26	18	535	00	03	00	41	00	02	**75**
Kandy	09	243	09	266	00	07	02	57	00	98	14	424	01	90	03	114	00	02	**80**
Matale	02	135	02	179	00	04	00	48	00	13	04	665	00	02	02	27	00	00	**67**
Nuwara	02	27	05	237	00	03	00	235	00	166	05	56	00	36	02	106	00	01	**69**
Galle	00	92	03	171	00	20	00	17	00	43	10	361	00	14	00	08	00	05	**71**
Hambantota	02	87	02	93	00	05	00	07	00	12	02	93	06	90	02	16	00	01	**82**
Matara	11	282	07	188	00	13	00	35	09	15	07	422	10	209	00	14	00	01	**65**
Jaffna	03	57	01	140	00	04	06	246	00	16	00	01	01	152	01	36	00	00	**50**
Kilinochchi	00	00	00	35	00	00	00	01	00	04	00	02	00	00	00	01	00	00	**00**
Mannar	00	25	00	21	00	06	00	155	00	00	00	00	00	01	00	14	00	00	**50**
Vavuniya	00	12	00	58	01	03	00	13	01	20	00	05	00	01	00	05	00	00	**100**
Mullaitivu	00	00	00	17	00	00	00	16	00	13	00	00	00	01	00	09	00	01	**00**
Batticaloa	01	86	10	145	00	07	01	26	00	29	00	09	00	00	02	91	00	09	**55**
Ampara	00	31	01	254	00	00	00	09	00	283	00	23	00	00	01	13	00	00	**14**
Trincomalee	00	177	05	103	00	01	00	13	00	14	00	30	00	16	00	13	00	00	**60**
Kurunegala	02	304	02	201	00	14	00	52	00	23	06	595	00	29	02	69	00	06	**58**
Puttalam	00	277	10	100	00	08	03	151	00	27	03	59	00	37	00	29	01	05	**44**
Anuradhapu	01	118	07	104	00	10	00	12	01	10	01	237	00	11	00	14	00	03	**47**
Polonnaruw	00	62	02	121	00	01	00	25	00	23	00	65	00	01	00	19	00	00	**71**
Badulla	03	84	19	433	01	06	02	121	00	96	01	61	01	108	05	138	00	01	**60**
Monaragala	00	53	12	331	00	03	01	40	00	119	00	90	01	98	01	46	00	00	**73**
Ratnapura	00	250	03	339	00	32	00	49	00	68	04	189	00	78	00	50	00	00	**72**
Kegalle	03	386	04	274	00	26	01	71	01	12	13	470	00	63	02	477	00	01	**82**
Kalmunai	00	36	01	242	00	02	01	11	00	16	00	03	00	03	00	25	00	00	**77**
SRI LANKA	**67**	**5476**	**118**	**4731**	**02**	**220**	**24**	**1652**	**32**	**1361**	**134**	**5943**	**22**	**1056**	**27**	**1631**	**01**	**44**	**63**

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 25 October, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 215

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Vol. 35 No. 44 **25th – 31st October 2008**

WER SRI LANKA 2008

Facts about Rats

Plant Protection Centre is the focal point in the Department of Agriculture for promoting pest control methods including rat control in agricultural crops. The interest and attention of rat control in paddy fields and other agricultural settings has been increased with the current leptospirosis outbreak in Sri Lanka. The knowledge on rodent behaviours and their control would be useful for healthcare staff too.

This article describes some facts about rodents. Rodent control methods will follow in the next issue.

Rodents are a group of gnawing mammals including rats, mice, voles and hamsters. More than 42 percent of the world's known mammalian species i.e. about 1700 are rodents. The majority play an important role in maintaining ecosystems. They bear an important position in the food chain too.

Rodents are extensively used in scientific research. Guinea pigs are one of the classic examples. Their use in scientific experiments dates back at least to the 17th century. Guinea pigs played a major role in the establishment of 'germ theory' in the 19th century. They were most extensively implemented in research and diagnosis of infectious diseases, to standardize vaccines and antiviral agents, production of antibodies, and research in pharmacology and irradiation. They also were used several times in space research .

Some rodent species are also popular as pets. In some countries rodents are used as a source of food. They are rich in protein and breed rapidly, making an advantage over other livestock productions.

However, despite these benefits, some rodent species play a significant role in disease transmission and as agricultural or urban environmental pest. About 150 species have been identified as pests out of which around 20 are most important.

Rodents and their parasites are implicated in the transmission of a number of diseases. Plague, one of the oldest diseases in human history is spread to humans by rat fleas. Leptospirosis, currently one of the public health problem in Sri Lanka is also mainly transmitted by rodents. Hantavirus pulmonary syndrome, tick-borne relapsing fever, salmonellosis, and rickettsialpox are several other diseases that can be transmitted by rodent species. Bacterial food poisoning can occur when foods are contaminated with infected rodent droppings. Tapeworms and roundworms of rodents also can be infectious to pets and humans.

Apart from causing illnesses, rodents are responsible for enormous economic losses due to their destruction of properties, and crops - both stored and in-field. It is calculated that in Asia alone, in each year rodents consume grain in rice fields that would provide enough to feed 200 million people for a year. During feeding, rodents destroy and waste as many fold as crops what they have actually consumed. In fact, the greatest loss is due to this waste and contamination they cause than what they eat. Their food contamination is about ten times greater than what is eaten. Nevertheless, it is very difficult to place a monetary value on human suffering and the damage caused by rodents.

Rodents derive their name from their gnawing

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behaviour (rodere in Latin means gnaw). Their incisor teeth grow continuously and if not used, will grow back into the cheek disabling proper feeding. They can cause an enormous structural damage either by gnawing or by burrowing. They gnaw wooden structures and even thin metal. They also undermine buildings by burrowing, which eventually causes structural failure and collapse. Electrical wiring gnawed could be the reason for many fire outbreaks in houses and buildings, yet listed as "cause unknown".

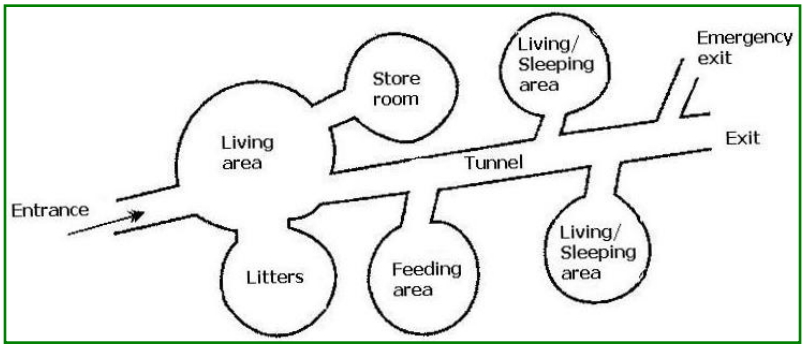

Figure 1: Cross sectional sketch diagram of a common rat burrow

The main culprits in rice field damage in Asian countries are Rice field rat (*Rattus argentiventer*), Field rat (*Rattus mindanensis*), Pacific rat (*Rattus exulans*) and the Black rat (*Rattus rattus*). In Sri Lanka species of Lesser Bandicoot rat (*Bandicota bengalensis*) and Greater Bandicoot rat (*Bandicota indica*) are seen in rice fields.

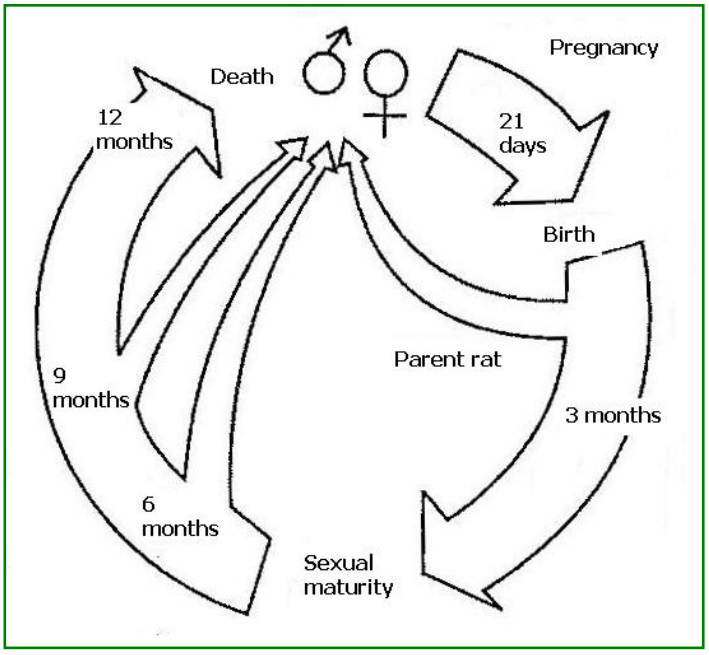

Figure 2: The breeding cycle

Rats commonly construct complex underground tunnels with numerous entrances. Figure 1 illustrates a cross section of a rat burrow. They make these burrows to breed in, storing food in large amounts and for protection against their predators and to avoid extreme climatic conditions. In the case of bandicoot rats these burrow systems may be 100 cm deep and very extensive. Lesser Bandicoot Rat is very aggressive in behaviour, even against individuals of the same species. Therefore, the large burrow systems made by these rats are normally occupied by only one adult each.

During land preparation and paddy cultivation seasons, rats usually live in burrows in surrounding lands especially along channel banks and in village gardens. The density of Rat population can fluctuate considerably throughout the year. This depend on the stage of growth of the rice plants they feed on. As the rice begin to grow, rats move in to fields and chop it down. As their food source increases with rice plants begin to flower and fill, the reproductive rate of rats also increases (a breeding season). Immigration and birth are major factors affecting the increase in rat population. If crops are planted more than two weeks apart then the rats will move to the late planted field (immigration) and continue breeding. Many rodent pests by their behaviour are very mobile and able to disperse rapidly. This allows them to move quickly and take advantage of new areas with favourable conditions. It is known that bandicoot rats, and others, will move from surrounding fields into villages at harvest time, that is when fields no longer provide enough food.

Lifespan of rats is usually short, ranging from four to 20 months. Although they live for only a short period, they multiply rapidly if conditions are favourable. A female rat may have up to five litters in her lifetime. The size of a single litter is usually five to six. The gestation period is 21 to 23 days. Young rats are weaned in about 21 days, and females can mate at about 35 to 49 days. A female bandicoot rat may share a burrow with a weaned litter, have a litter suckling and be pregnant at the same time.

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Figures adapted from: Control of Damage Caused by Rats. Office of Deputy Director - Agriculture, Matara.

This article was prepared by Dr Sudath Samaraweera, Consultant Community Physician

Table 1: Vaccine-preventable Diseases & AFP

18th - 24th Oct 2008 (43rdWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	01 KD=1	00	00	00	00	00	00	00	01	01	83	69	+20.3%
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	100	66	+51.5%
Tetanus	00	00	00	00	00	01 KG=1	00	00	00	01	00	33	31	+06.5%
Whooping Cough	00	00	00	00	00	00	01 PO=1	00	00	01	01	44	38	+15.8%
Tuberculosis	132	04	08	04	05	14	00	01	16	184	308	6972	8141	-14.4%

Table 2: Newly Introduced Notifiable Disease

18th - 24th Oct 2008 (43rdWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	18	10	08	00	05	10	06	11	22	90	25	4576	2829	+61.8%
Meningitis	04 GM=2 CB=2	01 ML=1	01 HA=1	00	02 BT=2	03 KR=2 PU=1	01 PO=1	00	02 RP=1 KG=1	14	15	1102	571	+93.0%
Mumps	03	04	08	02	01	04	05	01	03	31	17	1116	1830	+39.0%

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=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 3: Laboratory Surveillance of Dengue Fever

18th - 24th Oct 2008 (43rdWeek)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	00	00	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	124	138	09	23	00	00	06	08	01	08	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

18th - 24th Oct 2008 (43rd Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encepha-litis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Returns Re-ceived Timely*
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	14	1408	05	227	01	15	02	135	00	112	24	875	00	06	01	99	00	00	**77**
Gampaha	11	855	06	190	00	20	00	49	00	103	11	710	00	07	01	159	00	06	**71**
Kalutara	00	417	05	279	02	13	00	61	00	26	15	551	00	03	00	41	00	02	**75**
Kandy	10	253	12	278	00	07	00	57	00	98	06	430	01	91	05	119	00	02	**64**
Matale	05	141	03	182	00	04	00	48	00	13	06	671	00	02	00	27	00	00	**75**
Nuwara	00	27	03	240	00	03	01	236	00	166	02	58	01	37	00	106	00	01	**77**
Galle	01	93	02	173	00	20	00	17	00	43	12	373	00	14	00	08	00	05	**82**
Hambantota	00	87	02	95	01	06	00	07	00	12	02	95	00	90	00	16	00	01	**64**
Matara	07	291	00	189	00	13	00	35	00	15	03	427	04	216	00	14	00	01	**82**
Jaffna	00	57	00	140	00	04	00	249	00	17	00	01	01	154	00	37	00	00	**25**
Kilinochchi	00	00	00	35	00	00	00	01	00	04	00	02	00	00	00	01	00	00	**00**
Mannar	00	25	00	21	00	06	01	156	00	00	00	00	00	01	01	15	00	00	**50**
Vavuniya	00	12	00	58	00	03	00	13	02	22	00	05	00	01	00	05	00	00	**75**
Mullaitivu	00	00	00	22	00	00	00	16	00	13	00	00	00	01	00	09	00	01	**00**
Batticaloa	00	86	03	156	00	07	00	26	00	29	00	09	00	00	00	91	02	11	**55**
Ampara	00	31	00	254	00	00	00	09	00	283	00	23	00	00	00	13	00	00	**29**
Trincomalee	00	177	01	104	00	01	00	13	00	14	00	30	01	17	00	13	00	00	**80**
Kurunegala	04	308	04	205	00	14	00	52	00	23	02	597	00	29	03	72	00	06	**53**
Puttalam	00	277	02	102	00	08	02	153	12	39	02	61	00	37	01	30	00	05	**56**
Anuradhapu	00	118	04	108	00	10	00	12	00	10	00	237	00	11	00	14	00	03	**58**
Polonnaruw	00	62	07	128	00	01	01	26	00	23	03	68	00	01	01	20	00	00	**100**
Badulla	01	85	09	442	00	06	00	121	00	96	02	63	00	108	04	142	00	01	**87**
Monaragala	02	55	01	335	00	03	00	40	00	121	01	91	00	98	01	48	00	00	**82**
Ratnapura	01	252	07	356	00	32	01	51	09	77	02	195	00	78	01	52	00	00	**72**
Kegalle	03	389	05	279	00	26	02	73	02	14	22	492	01	64	04	481	00	01	**82**
Kalmunai	01	37	06	248	00	02	01	12	00	16	00	03	00	03	00	25	00	00	**62**
SRI LANKA	**60**	**5543**	**87**	**4846**	**04**	**224**	**11**	**1668**	**25**	**1389**	**115**	**6067**	**09**	**1069**	**23**	**1657**	**02**	**46**	**67**

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 01 November, 2008 Total number of reporting units =309. Number of reporting units data provided for the current week: 207

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WEER SRI LANKA 2008

WEEKLY EPIDEMIOLOGICAL REPORT

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Vol. 35 No. 45 **01st – 07th November 2008**

Rat Control in the Field

In the last issue, some facts about rodent behavior and their biology were discussed. Methods that can be applied in control of rat population in agricultural lands especially in paddy fields are discussed in this issue.

There are two main reasons why rat population should be controlled. One reason is the economic loss caused by destruction of crop and other properties. The second is due to their role in disease transmission to humans and other animals.

There are traditional methods of pest control that farmers had practiced for ages. However, with the introduction of 'new' and quick methods of pest control, mainly chemical control has resulted in most of these traditional practices to become almost extinct. Meanwhile, we do not know exactly how many more such practices have vanished without leaving any trace of knowledge behind. As well, introduction of pesticides and chemical fertilizers during the so called 'Green Revolution' would have had adversely affected the natural enemies of rodents while making the situation further worse. Although there are effective chemical control methods of rats, it is more advisable to encourage or 're-reintroduce' traditional methods since they are more environmental friendly, cheaper and are less harmful to other animals if at all.

Traditional control

Most of the traditional rat control practices in paddy fields are aimed at making the environment less conduce rat to inhabit or allow them to be prey of their predators. Proper maintenance of paddy fields and the surroundings are important aspects of these control methods.

Following are some of those field practices helped in controlling rat population in and around paddy fields:

- Clean dykes and irrigation canals, including surrounding areas, and make them free of weeds.
- Reduce the size of bunds and dykes in paddy fields to a minimum level as rats prefer to live on higher grounds of the rice fields. This limits the breeding and burrowing sites.
- When rat burrows are noticed, destroy them; cover burrow holes.
- To drive out rats in their burrows and breeding sites, flood paddy fields just below the dyke level. This practice does not kill them, but forces them to leave paddy fields.
- Follow synchronised planting. i.e., planting at the same time with other farmers in the same area. This prevents migrating rats from one field to the next and ensuring a continuous supply of food which will result in increased breeding capacity.
- Proper management of straw after harvesting. Although removing of straw completely out of the field after harvesting is helpful, this will lose a rich source of fertilizer and nutrient to the soil. Therefore, dispersing straw across the land rather than heaping them up is advisable.
- Do not kill predators of rats namely, mongoose, snakes, owls and other birds. In fact, whenever possible, they should be encouraged to roam the area. One of the traditional

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practices was placing supportive structures at different places of the paddy field for birds to rest. Most commonly used method was placing stumps of coconut branches. Preserving at least a few trees around the paddy fields will also ensure a place birds to rest.

Traditionally practiced rat control methods

Most of the traditionally practiced rat control methods are simple and generally harmless to other animals. Farmers had placed cut pieces of stalks of flowering papaw trees mixed with water as a rat control method. Dispersing gliricidia flowers in the field is another traditionally practiced rat control method in paddy fields. Farmers also believed that by dispersing or hanging coconut leaves or drawings of reptiles in paddy fields can repel rats from paddy fields.

Rat traps and baits

A bamboo stalk connected to a polythene bag is a kind of mouse trap traditionally used which can be easily prepared.

Shallow pans or bowls baited with dried fish mixed with cement is also effective in rat elimination. A mixture of corn meal, brown sugar and plaster of Paris has been used in some countries. Break-back/snap traps baited with some food items (popularly called 'mouse trap') and cage traps can be used to trap rats. They will be more effective if placed at dusk to lie overnight. By inspection in the morning any trapped rats should be removed carefully.

Community trap barrier system (CTBS) is one of the successful methods used in some South Asian countries. Building one CTBS collectively by a group of 20-30 farmers will be cost effective. This type of trap can lure the rats from neighbouring fields extending as far as 200 meters in every direction. It comprises a plot of rice crop about 20-30 sq. meter in size planted 2–3 weeks earlier than the surrounding crop. The plot is surrounded by a properly built rat proof fence covered with plastic. At every 5-10 meters, a hole is made that leads into the one-way trap. The rats that enter cannot escape and were subsequently caught and removed.

Appropriate use of rodenticides will achieve a desired reduction in rat population. Rodenticides are divided into two major groups as anticoagulants and other compounds. Warfarin is the commonly used anticoagulant in rodent control. Since most of anticoagulants need multiple doses to cause its lethal effect it may require a continuous supply of bait for about 10-15 days or until all feeding ceases. This also will ensure that the entire mouse population at the bait location has had ample opportunity to eat a lethal dose of the bait.

Zinc phosphide is the commonly used non-anticoagulant toxicant. This is a single dose bait with acute poisoning effect. They are not designed to be left available to rats for more than a few days, as continuous exposure may result in "bait shyness". The risk of secondary poisoning to other animals is also higher than that of anticoagulants. Whenever a quick population reduction is desired or anticoagulants cannot be safely set out for the required length of time, single dose baits are useful. Disposal of all poisoned rats particularly those killed by single-dose baits, should be done safely.

Stray dogs and cats, crows and other animals may be at risk through feeding on dying or dead rats. This is called secondary poisoning. Normally these animals, because of their size, would need to feed on several rats before they would be affected and more to receive a lethal dose. The chance is very low with most anticoagulants and even with acute poisonings because most of the poison is broken down in the stomach. Nevertheless, the potential danger of secondary poisoning all the time should be borne in mind.

Bait selection and bait shyness

Food preferences may vary among species and individual rodents. Some rodent species are very suspicious and tend to avoid any object that is new to it. It may take several days before an individual will enter a trap or take bait. Even then, if the new object appears to be food, initially they consume only a small amount. If the food containing poison causes symptoms after feeding, rats may not touch the bait again. This is commonly called bait shyness. Therefore it is advisable to place baits with their preferred food sans poison for a couple of days until they get attracted to it. Baits that are similar to foods mice are accustomed to eating, are often more effective.

Reference:

Control of Damage Caused by Rats. Office of Deputy Director - Agriculture, Matara

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This article was prepared by Dr. Sudath Samaraweera, Consultant Community Physician.

Table 1: Vaccine-preventable Diseases & AFP

25th - 31st October 2008 (44thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	01 KL=1	00	01 GL=1	01 JF=1	00	00	00	00	00	03	00	86	69	+24.6%
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	02	100	69	+44.9%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	33	31	+06.5%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	44	39	+12.8%
Tuberculosis	28	23	07	00	01	00	21	00	00	80	261	7052	8402	-16.1%

Table 2: Newly Introduced Notifiable Disease

25th - 31st October 2008 (44thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	09	04	13	00	06	10	06	01	14	63	49	4689	2885	+62.5%
Meningitis	09 CB=3 GM=2 KL=4	00	02 GL=1 HA=1	00	02 BT=1 TR=1	03 PU=3	01 AP=1	00	03 RP=1 KG=2	20	17	1141	589	+93.7%
Mumps	01	12	05	00	00	05	01	08	04	36	31	2535	1863	+36.0%

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**: 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 3: Laboratory Surveillance of Dengue Fever

25th - 31st October 2008 (44thWeek)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	00	00	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	124	138	09	23	00	00	06	08	01	08	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

25th - 31st October 2008 (44th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encepha-litis		Enteric Fever		Food Poison-ing		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Returns Re-ceived Timely*
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	22	1433	8	238	0	15	8	148	22	134	20	904	0	6	2	102	0	0	**77**
Gampaha	10	870	3	195	0	20	2	52	0	103	16	731	0	7	5	168	0	6	**86**
Kalutara	3	422	4	283	0	13	2	64	0	26	8	560	0	3	0	42	0	2	**75**
Kandy	8	264	4	283	1	8	1	58	1	99	6	440	0	92	3	122	0	2	**80**
Matale	0	142	9	196	0	4	2	50	1	14	2	695	0	2	0	27	0	0	**92**
Nuwara	0	27	16	257	0	3	2	238	0	166	3	61	0	37	0	106	0	1	**85**
Galle	5	98	4	177	0	20	0	17	0	43	14	387	0	14	0	8	0	5	**76**
Hambantota	0	87	3	100	0	6	1	8	0	12	1	96	0	90	0	16	0	1	**91**
Matara	7	303	3	193	0	14	0	35	0	15	10	439	2	218	0	14	0	2	**82**
Jaffna	0	58	1	142	0	4	0	251	0	17	0	1	0	154	0	37	0	0	**25**
Kilinochchi	0	0	0	118	0	0	0	1	0	4	0	2	0	0	0	1	0	0	**0**
Mannar	0	25	0	21	0	6	0	156	0	0	0	0	0	1	1	16	0	0	**50**
Vavuniya	0	12	0	58	0	3	0	13	0	22	0	5	0	1	0	5	0	0	**100**
Mullaitivu	0	0	0	52	0	0	0	16	0	13	0	0	0	1	0	9	0	1	**0**
Batticaloa	0	86	9	168	0	7	1	27	0	29	0	9	0	0	0	92	1	16	**73**
Ampara	2	33	1	257	0	0	0	9	0	283	0	23	0	0	0	13	0	0	**71**
Trincomalee	1	178	1	106	0	1	0	13	0	14	0	30	0	17	0	13	0	0	**70**
Kurunegala	5	319	4	213	0	15	0	52	1	24	11	610	1	30	0	74	0	6	**89**
Puttalam	1	278	5	115	0	8	1	154	0	39	1	62	1	38	0	30	0	5	**89**
Anuradhapu	0	118	5	118	0	10	0	12	0	10	0	237	0	11	1	15	0	3	**79**
Polonnaruw	2	64	0	128	0	1	0	26	0	23	0	68	0	1	1	21	0	0	**100**
Badulla	1	86	11	453	0	6	0	121	0	96	2	65	1	109	6	148	0	1	**87**
Monaragala	0	57	5	341	0	3	6	46	0	121	2	93	1	100	3	51	0	0	**91**
Ratnapura	4	261	5	361	0	32	0	51	0	80	6	205	0	78	2	54	0	0	**83**
Kegalle	7	396	9	291	0	26	0	74	1	16	18	514	0	64	8	489	0	1	**82**
Kalmunai	0	37	5	255	0	2	1	13	0	16	0	3	0	3	0	25	0	0	**69**
SRI LANKA	**78**	**5654**	**115**	**5119**	**1**	**227**	**27**	**1705**	**26**	**1419**	**120**	**6240**	**6**	**1077**	**32**	**1698**	**1**	**52**	**78**

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 08 November, 2008 Total number of reporting units =309. Number of reporting units data provided for the current week: 241

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WEEKLY EPIDEMIOLOGICAL REPORT

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WER SRI LANKA 2008

Solid Waste - Its impact on health & environment

This is a brief description of the impact of solid waste on human health and environment. In the next issue, the ways solid waste can be managed will be described.

Solid wastes are the solid material which do not have any economic value and discarded from human or animal activities. They can create significant health problems and a very unpleasant living environment if not disposed properly. If not correctly disposed of, waste provide breeding site for insect vectors, snakes, pests and rodents. It may pollute water sources and the environment. In proper solid waste management process those only do not have any economic value should be disposed of. However, in most countries there is no proper solid waste management. Therefore, valuable resources in large quantities are disposed as unwanted or useless material. Sri Lanka is not an exception.

There are many factors that contribute to solid waste to become a problem to any society. Rapid population growth, rapid and unplanned urbanization and material development of the society, all have contributed to aggravate the problem. Over the time the consumption pattern and the life style of people has changed in a way that the generation of waste has exceeded the assimilation capacity of the environment for natural decomposition. In a proper solid wastes management, there should be a systematic collection from the places of its origin, and then they should be brought into disposal sites by means of an appropriate transport mechanism. There should be an intermediate treatment of solid wastes to minimize its hazardous effects to the environment and the living organisms including human. Then waste should be disposed of by using environmental friendly methods. Unfortunately, in Sri Lanka, from the very beginning of this process, there are inherent deficiencies. The haphazard waste disposal practices in the country have caused a number of environmental problems endangering human health and the sustainability of ecosystems. The social and economic problems associated with improper waste management are enormous. Therefore, proper management of solid wastes should receive priority attention.

Main problems related to solid waste

Air pollution: Decomposition of solid wastes can occur either by aerobic or anaerobic microorganisms. In the process, aerobic microorganisms produce odourless gases while gases produced by anaerobic organisms often have unpleasant odours, making it a nuisance to the people living around. In addition, methane gas produced during anaerobic digestion is a green house gas contributing to global warming. Methane is a highly flammable gas which can give rise to fire hazards associated with waste dumping grounds. Burning of solid waste is very harmful to humans and other living organisms. Dioxins and furans are the most hazardous chemical compounds produced by burning of solid waste at low temperature. Although these chemicals are not water soluble they are soluble in fat and can exist in the environment for longer periods. Therefore they can enter human body and get accumulated.

Water pollution: Solid waste can cause blockage

Contents ***Page***

Different categories of solid waste	
Organic waste	Waste from preparation of food, market places etc.
Combustibles	Paper, wood, dried leaves, packaging (high organic and low moisture content)
Non-combustibles	Metal, tin cans, bottles, stones etc.
Ashes/ dust	Residue from fires used for cooking
Bulky waste	Tree branches, tyres etc.
Dead animals	Carcasses of domestic animals and live-stock
Hazardous waste	Oil, battery acid, medical waste
Construction waste	Roofing, rubble, broken concrete, etc.

of drainage lines making flooding and also creating mosquito breeding places. Pollution of surface water and ground water sources can happen frequently with solid wastes. Although there are a number of solid waste disposal sites operated by local government bodies, there are only a very few such sites that have a mechanism to control ground water pollution.

Soil pollution: Solid waste can alter chemical and physical properties of soil and the change of pH or the chemical structure can affect on plant growth or on soil microorganisms. The long-term degradable materials such as polythene reduce water infiltration which can lower the ground water level.

Health problems: Decomposing organic waste in uncontrolled waste dumping attract animals, vermin and flies. Flies may play a major role in faeco-oral transmission of organisms. Rodents may increase the transmission of diseases like leptospirosis, and salmonellosis. They also attract snakes to dumping grounds.

Solid waste also provides breeding sites for mosquitoes. In addition to their disease transmission, a high density of mosquitoes is a public nuisance.

Destroying biodiversity: Improperly managed solid waste dumping sites can disrupt ecosystems of surrounding areas affecting its biodiversity. Consumption of solid waste can result in death of herbivorous animals.

Destroying the scenic beauty: Dumping of waste around living environment is unpleasant and destroys the scenic beauty.

Social and economic problems: Disposal of solid waste is very expensive. As a result, on average, most local authorities in Sri Lanka spend more than half of their annual income for this purpose. Haphazard solid waste disposal also destroys the scenic beauty of the area and makes the environment unpleasant to live. This also will negatively affect on tourist industry.

Reference:

Harvey P, Baghri S and Reed B (2002). Emergency Sanitation. Assessment and Programme Design. WEDC, Loughborough University, UK.

Malwana C (2008). Solid Waste Management in Sri Lanka. Economic Review; 34 (3&4): 34-37.

This article was prepared by Dr Sudath Samaraweera, Consultant Community Physician.

Pilisaru - An initiative for sustainable waste management in Sri Lanka

In Sri Lanka, the responsibility in waste management is borne by Local Government Authorities. Land filling and open dumping are the methods largely used by all local government authorities in Sri Lanka. Currently, most of these local authorities, especially in urban areas are facing a the problem of finding suitable locations for waste disposal. The problem is particularly high in densely-populated areas. In addition to the difficulty in finding suitable locations they also have to manage relatively a large volume of waste. Some local authorities are forced to dispose of their solid wastes at unsuitable sites such as lowlands, or riverbanks. With these practices, pollution of water resources and surrounding environment is unavoidable.

Recently, in order to provide a lasting solution to this problem, the Ministry of Environmental & Natural Resources has launched a national level programme called 'Pilisaru' with co-chairmanship with Provincial Council and Local Government Ministry. Other governmental and private institutions, non-governmental organisations and various technological specialists are participants of this programme. The Central Environment Authority serves as the implementation body of the project.

The project aims at solving the solid waste problem in the country within the next 5 years. The national policy for solid waste management which has been introduced in 2007, provides the directions to improve the solid waste management in the country. Provision of environmentally sound waste treatment and residual waste disposal facilities are among the main areas that have been addressed by this policy.

Under this project, waste management is expected to be carried out by reduction of waste generation, reusing and recycling of waste and resource recovery to the maximum possible extent and finally the disposal of residual waste in an environmentally friendly manner.

Table 1: Vaccine-preventable Diseases & AFP

01st - 07th November 2008 (45thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	01 GL=1	00	00	00	00	00	00	01	01	87	70	+24.3
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	01	00	-
Measles	01 CB=1	01 ML=1	00	00	00	00	00	00	00	02	01	102	71	+43.7%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	33	31	+06.5%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	02	44	42	+4.8%
Tuberculosis	33	40	03	13	17	36	38	19	00	199	74	7251	8538	-11.9%

Table 2: Newly Introduced Notifiable Disease

01st - 07th November 2008 (45thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	17	13	11	0	3	9	6	3	8	70	50	4785	2957	+61.8%
Meningitis	01 CB=1	02 KD=2	02 MT=2	00	01 TR=1	02 KR=2	01 AP=1	00	03 KG=3	12	22	1157	620	+86.6%
Mumps	02	33	07	09	04	03	02	03	06	69	27	2609	1906	+36.9%

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**: 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 3: Laboratory Surveillance of Dengue Fever

01st - 07th November 2008 (45thWeek)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	00	00	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	124	138	09	23	00	00	06	08	01	08	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

01st - 07th November 2008 (45th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encepha-litis		Enteric Fever		Food Poison-ing		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Returns Re-ceived Timely*
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	11	1446	3	241	0	15	7	156	0	134	37	945	0	6	0	102	0	0	**85**
Gampaha	11	883	4	201	0	20	1	54	0	103	18	752	0	7	3	172	0	6	**71**
Kalutara	4	427	8	291	0	13	2	67	14	40	17	581	0	4	1	43	0	2	**92**
Kandy	11	275	8	291	0	8	2	60	0	99	19	460	0	92	1	123	0	2	**80**
Matale	3	145	4	200	0	4	1	51	2	16	13	708	0	2	1	28	0	0	**83**
Nuwara	1	28	0	258	0	3	0	238	0	166	3	64	4	41	0	106	0	1	**85**
Galle	2	100	3	182	0	20	0	17	0	43	8	395	0	14	0	8	0	5	**88**
Hambantota	0	87	13	113	0	6	0	8	0	12	7	103	1	91	0	16	0	1	**100**
Matara	5	309	3	198	0	14	1	36	0	15	2	442	1	219	0	14	0	1	**76**
Jaffna	0	58	1	145	0	4	1	254	0	17	0	1	1	156	0	37	0	0	**25**
Kilinochchi	0	0	0	118	0	0	0	1	0	4	0	2	0	0	0	1	0	0	**0**
Mannar	0	25	0	21	0	6	0	156	0	0	0	0	0	1	0	16	0	0	**25**
Vavuniya	0	12	4	62	0	3	0	13	0	22	0	5	0	1	0	5	0	0	**100**
Mullaitivu	0	0	0	54	0	0	0	16	0	13	0	0	0	1	0	9	0	1	**0**
Batticaloa	0	86	5	173	0	7	0	27	0	29	0	9	0	0	0	92	0	16	**55**
Ampara	0	33	2	259	0	0	0	9	0	283	0	23	0	0	0	13	0	0	**57**
Trincomalee	0	178	1	108	0	1	0	13	0	14	0	30	0	17	1	14	0	0	**50**
Kurunegala	8	327	9	222	0	15	0	52	2	26	13	623	0	30	5	79	2	8	**95**
Puttalam	1	279	2	117	0	8	0	154	0	39	2	64	0	38	0	30	0	5	**78**
Anuradhapu	0	118	11	129	0	10	0	12	3	13	0	237	0	11	0	15	0	3	**79**
Polonnaruw	0	64	1	129	0	1	1	27	0	23	3	71	0	1	0	21	0	0	**100**
Badulla	3	89	16	472	0	6	0	121	0	96	3	68	3	112	2	150	0	1	**93**
Monaragala	0	57	2	343	0	3	0	46	0	121	0	93	0	101	0	51	1	2	**73**
Ratnapura	10	272	10	373	0	32	0	51	0	80	6	211	1	79	0	54	0	0	**72**
Kegalle	6	402	5	297	0	26	4	78	0	16	11	526	3	67	4	493	0	1	**82**
Kalmunai	0	37	4	259	0	2	0	13	0	16	0	3	0	3	0	25	0	0	**62**
SRI LANKA	**76**	**5737**	**119**	**5256**	**0**	**227**	**20**	**1730**	**21**	**1440**	**162**	**6416**	**14**	**1094**	**18**	**1717**	**3**	**55**	**75**

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 15 November, 2008 Total number of reporting units =309. Number of reporting units data provided for the current week: 233

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WEER SRI LANKA 2008

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Vol. 35 No. 47 **15th – 21st November 2008**

Solid Waste Management

When the enormous burden of solid waste is considered, it is obvious that any country should have a proper solid waste management system. It will either prevent or minimize adverse effects on the human life, society, environment and the economy. In a 'waste management hierarchy' there are various strategies to avoid or to minimise waste generation and to extract the maximum benefit out of waste. These options include, avoiding, reducing, reusing, and recycling of waste and recovering value from waste and then final disposal.

In a proper waste management programme due consideration should be paid to waste generation, collection and transportation, intermediate treatment and final disposal of waste.

Waste generation

Waste avoidance: Avoidance of waste generation is the best possible preventive action. Then there is no waste to deal with. However, it is not possible at all times and we should pay attention to avoid wastes as much as possible.

Waste reduction: When waste generation is unavoidable, best alternative would be to minimise waste generation. Consumption pattern, human behaviours and their attitudes greatly influence on waste generation. Interventions at different levels such as at household or at market level etc., would be necessary. For example, household generation of waste can be minimised by correct decisions on what materials in what quantities should be bought. This is especially relevant with regard to perishable items such as food. Paying attention to the quality and the quantity of goods bought could help in waste reduction at household level.

At the market level, waste generation can be reduced to a great extent by using proper transport and storage techniques. This is very relevant to vegetable market where a great proportion of agricultural products are wasted by rotting or damaging the products during transportation. For example, in the Pettah Manning Market, the daily collection of waste is 30 tonnes on average. If rotten materials are removed and vegetables are stored properly at the field level and transported in proper storage containers, such waste could be avoided to a greater extent.

Waste reuse: The next step to reduce waste generation is reusing them. Use of disposable materials has overwhelmingly increased waste generation. Their use may be beneficial for health reasons, but in many instances it does not bear benefit that outweighs the disadvantages. Plastic waste ranks first in the list of such wastes. Some of the materials discarded as waste can be reused for the same purpose or some other purpose. Reuse of plastic bags is one example.

Waste collection and transportation

Other than a small proportion of reuse at the same place of its origin, most of the reuse, recycling and recovering value occur elsewhere. For these activities and for final disposal of waste, they have to be transported from the places of their origin. An efficient waste disposal occurs only when all stakeholders, mainly local authorities who are responsible for waste management and those who generate waste bear equal responsibility. It is everybody's responsibility to sort wastes at source according to its category and hand over them separately.

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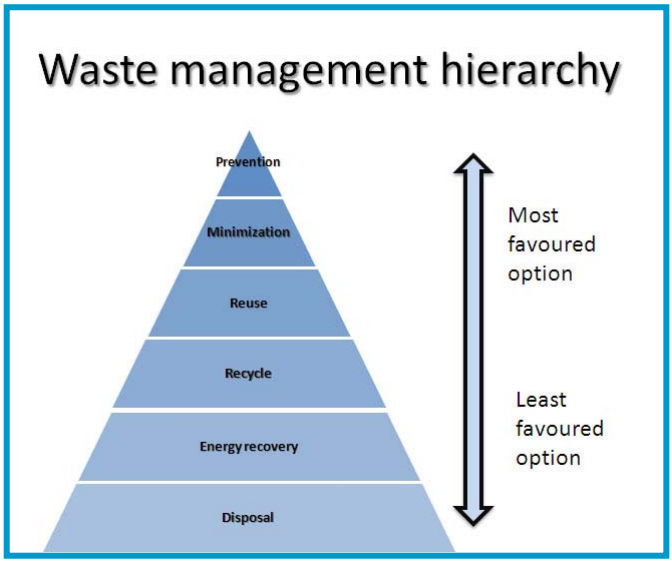
At present, what most local authorities practice is heap collection of wastes where people dump their waste by the road side and vehicles of local government or other responsible companies collect and transport them to the dumping sites. Often there is no regular waste collection mainly due to lack of manpower and material. This results in accumulation of heaps of garbage by the road side.



In a waste transportation system, due consideration should be paid on selection of suitable vehicles, safe transportation, workers' safety and selection of suitable route and a time to transport. Selection of a vehicle depends on the type of waste. Vehicle with compression devices, i.e. compactors are a suitable and convenient method for day to day household waste transport. However, the high maintenance cost prevents acquiring them by most of the local governments. To avoid disturbance to the public and to avoid traffic congestion disturbances, it is better to pre-determine the suitable time and route to transport. Workers engaged in garbage handling are at a greater risk of injuries and also of infectious diseases. Therefore, they should be provided with proper personal protective equipment (PPE). Proper supervision should be exercised to ensure that they are using provided PPEs as there are many instances where workers prefer not to wear them despite their availability. Routine health checks of workers also will ensure their good health.

Intermediate treatment of waste

Prior to the final disposal there are procedures that can be employed to minimise the volume and hazardous materials. This is called intermediate treatment and includes recycling and resource recovering (energy and materials).

Recycling: Waste recycling is one of the major strategies of waste management. Ironically, it is a topic widely talked of with less action taken. This is the process used to recover the original raw materials from discarded goods. This helps in protecting the natural resources and the environment.

Paper, plastics, glass and metal are some of the recyclable wastes. Collecting them separately at the source of origin is the most effective method. If they are entered into the routine waste stream, then it has to be sorted out before recycling and if contaminated may need cleaning. This may not be economically productive for some industries.

Recovering value: This refers to converting waste materials into different products. Production of compost manure and biogas out of organic waste are examples. This is a very effective management method of largely organic wastes. On the other hand it can be used as a good source of nutrients in agricultural practices. The other advantage is that it can be practiced on small scale at household level or on large scales. There are several methods of composting of which a suitable method can be selected according to the requirement.

Incineration: This is an intermediate treatment method in waste management. Incineration can produce residual ash amounting to about 10-15% and have to be disposed of as landfills. Incineration also produces other pollutants by means of gas, and airborne ash which is expensive to control.

Final disposal

Disposal of waste is the final option if other methods described above fail, inadequate or inappropriate. Sanitary land filling is one option. Sometimes, incineration is also used as a final disposal method.

Sanitary land filling is an essential element of waste management. This is because, all management options produce some residue that needs disposal. The purpose of sanitary land filling is to dispose of wastes hygienically through proper dumping and decomposing using natural metabolic processes. To become land filling practical and viable, it is important to evaluate the local conditions and then decide a proper disposal method and location. When making this decision, it is important to consider type, form, composition of wastes, location of landfill site, hydrological and climate conditions of the location.

Both construction and maintenance costs of standard sanitary landfills are very high. Therefore, low cost sanitary land filling is the best alternative for countries like Sri Lanka.

Reference:

Harvey P, Baghri S and Reed B (2002). Emergency Sanitation. Assessment and Programme Design. WEDC, Loughborough University, UK.

Malwana C (2008). Solid Waste Management in Sri Lanka. Economic Review; 34 (3&4): 34-37.

This article was prepared by Dr Sudath Samaraweera, Consultant Community Physician

Table 1: Vaccine-preventable Diseases & AFP

08th - 14th November 2008 (46thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	01 NE=1	00	00	00	00	00	00	01	05	88	75	+17.3
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	01	00	-
Measles	00	00	01 HB=1	00	02 TR=2	00	00	00	00	03	01	105	71	+47.9%
Tetanus	01 GM=1	00	00	00	01 AM=1	00	00	00	00	02	00	35	31	+12.9%
Whooping Cough	00	00	00	00	00	01 KR=1	00	00	00	01	01	46	43	+07.0%
Tuberculosis	158	00	04	05	04	04	05	08	05	193	161	7444	8699	-14.4%

Table 2: Newly Introduced Notifiable Disease

08th - 14th November 2008 (46thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	16	09	13	00	10	05	10	05	04	72	72	4874	3033	+60.7%
Meningitis	02 KL=2	00	01 GL=1	00	00	01 PU=1	00	01 BD=1	02 RP=1 KG=1	07	26	1171	647	+81.0%
Mumps	05	02	05	00	06	04	02	05	00	29	39	2646	1955	+35.3%

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**: 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 3: Laboratory Surveillance of Dengue Fever

08th - 14th November 2008 (46th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	00	00	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	124	138	09	23	00	00	06	08	01	08	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

08th - 14th November 2008 (46th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encepha-litis		Enteric Fever		Food Poison-ing		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Returns Re-ceived Timely*
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	20	1470	9	253	0	15	6	166	5	139	25	981	0	6	3	107	0	0	**92**
Gampaha	9	895	6	210	0	20	0	56	1	104	20	776	0	7	3	176	0	7	**86**
Kalutara	9	437	13	304	0	13	1	68	0	40	15	598	0	4	0	43	0	2	**92**
Kandy	6	285	3	294	0	8	1	61	0	99	16	480	1	93	1	124	0	2	**84**
Matale	1	146	3	204	0	4	0	51	0	16	14	723	0	2	1	29	0	0	**100**
Nuwara	0	28	0	259	0	3	0	242	1	167	0	64	1	42	1	107	0	1	**77**
Galle	0	100	3	185	0	20	0	17	2	45	10	405	0	14	0	8	0	5	**94**
Hambantota	7	94	3	116	2	8	0	8	0	12	6	109	1	92	0	16	0	1	**100**
Matara	6	316	4	202	0	14	0	36	0	15	12	456	2	221	0	14	0	1	**94**
Jaffna	0	58	1	146	0	4	1	255	0	17	0	1	0	156	0	38	0	0	**50**
Kilinochchi	0	0	0	129	0	0	0	1	0	4	0	2	0	0	0	2	0	0	**0**
Mannar	0	25	0	22	0	6	1	157	0	0	0	0	0	1	0	16	0	0	**25**
Vavuniya	0	12	0	62	0	3	0	13	0	22	0	5	0	1	0	5	0	0	**50**
Mullaitivu	0	0	0	54	0	0	0	16	0	13	0	0	0	1	0	9	0	1	**0**
Batticaloa	0	86	10	195	0	7	2	30	0	29	0	9	0	0	3	95	0	16	**82**
Ampara	0	33	1	260	0	0	0	9	0	283	0	23	0	0	0	13	0	0	**71**
Trincomalee	1	179	8	116	0	1	0	13	0	14	0	30	0	17	1	15	0	0	**90**
Kurunegala	4	331	10	232	1	16	0	52	0	27	22	646	0	30	1	80	0	8	**89**
Puttalam	1	281	5	129	2	10	3	157	1	40	1	65	0	38	2	32	0	5	**78**
Anuradhapu	1	119	11	141	0	10	0	12	3	16	3	240	0	11	0	15	0	3	**58**
Polonnaruw	0	64	1	130	0	1	1	28	0	23	0	71	0	1	0	21	0	0	**86**
Badulla	2	92	11	484	1	7	0	121	0	96	0	68	1	113	0	152	0	1	**93**
Monaragala	2	60	2	348	1	4	4	50	0	121	0	93	0	102	1	54	0	2	**91**
Ratnapura	2	276	9	383	0	32	0	51	0	80	1	223	0	79	0	55	0	0	**78**
Kegalle	5	407	1	299	0	25	2	81	0	16	8	535	1	68	1	494	0	1	**82**
Kalmunai	0	37	6	269	0	2	0	14	0	16	0	3	0	3	0	25	0	0	**92**
SRI LANKA	**76**	**5831**	**120**	**5426**	**7**	**233**	**22**	**1765**	**13**	**1454**	**153**	**6606**	**7**	**1102**	**18**	**1745**	**0**	**56**	**81**

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 22 November, 2008 Total number of reporting units =309. Number of reporting units data provided for the current week: 251

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WEER SRI LANKA 2008

WEEKLY EPIDEMIOLOGICAL REPORT

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EPI schedule - New directions

With the achievements of EPI in Sri Lanka, tetanus toxoid vaccination schedule during pregnancy will have some changes in the near future. This article discusses these new changes and the rationale behind it.

Tetanus is a fatal infectious disease caused by toxigenic strains of *Clostredium tetani*. The disease is an important public health problem especially in tropical underdeveloped countries. In these countries tetanus morbidity and mortality are dominated by maternal and neonatal tetanus.

Tetanus is readily preventable through immunization. Tetanus toxoid (TT) containing vaccines (DPT, DT, aTd and TT) are included in the EPI schedule for infants and children, adolescents and for pregnant mothers. In addition, TT is routinely used in wound management.

Protection against tetanus is incomplete after a single dose and in a majority of recipients the protective concentration of antitoxin is achieved only after completion of 2 doses. A third dose induces immunity in almost 100% of those immunized.

Immunity to tetanus is antibody-mediated and depends upon the ability of antitoxins to neutralize tetanoplasmin, the most important toxin of *C. tetani*. Recovery from clinical tetanus does not result in protection against the disease in the future. Immunity can be obtained only by active or passive immunization. Maternal antitoxin passes via the placenta to the foetus. Hence, if the mother receives the booster or a second dose of a primary series of immunization at least two weeks before the delivery, then both the mother and the newborn are protected against birth associated tetanus infection. If the last dose is given within two weeks of the delivery then there may not be an adequate time period to obtain the optimum booster response by the time of the childbirth. If a mother presents during the last two weeks of her pregnancy, however, ignoring the delay, vaccine should be administered to obtain whatever the booster response that can be achieved and also considering this as a measure of protection against tetanus in future deliveries.

Duration of protection: The antibody concentration and avidity and also the duration of protection depend on a number of factors. These include the age of the vaccinee and the number and intervals between vaccine doses. It is considered that three DPT vaccine doses in infancy will give 3-5 years' protection, a further dose or booster (e.g. in early childhood) will provide protection into adolescence. One or two more boosters will induce immunity well through adulthood – probably for a duration of 20-30 years.

Goals of tetanus control should primarily be i) elimination of maternal and neonatal tetanus and ii) achievement and sustenance of high coverage of DPT 3 and appropriate boosters in order to prevent tetanus in all age groups. Strategies will depend on the disease burden of the community and gaps in the vaccine programme for example, in countries where maternal and neonatal tetanus is high a 'high-risk approach' to cover all women in child bearing age would be appropriate. Although there may be good vaccine coverage during infancy the subsequent boosters during childhood and adolescence may have deficiencies. In such instances school based immunization programmes coupled with strategies to capture non-school going children would be necessary to prevent tetanus among younger and adult age groups.

Prevention of tetanus in case of injury: Decision to immunize against tetanus after an injury depends on the severity of the injury and reliability of the history of previous tetanus vaccinations. If the last dose was administered more than 10 years ago (or 5 years in the case of severe injuries) it should be given. In addition, passive immunization using tetanus antitoxin, preferably of human

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origin, may be needed for prophylaxis (e.g. in cases of dirty wound in incompletely immunized individuals).

However, in most instances after an injury, previous immunization history is not explored and treating physicians prefer to give a single dose or more of tetanus toxoid. Non-availability of a written immunization record is the main reason.

Tetanus vaccination schedules: The choice of primary schedule as well as the number and timing of boosters could vary and depends on many factors including national epidemiological, programmatic and economic considerations.

WHO recommend that ideally an individual should receive a total of 5 doses of tetanus toxoid containing vaccines in childhood, followed by a 6th dose in early adulthood which will provide added assurance of protection throughout the childbearing years, and possibly for life. Even after many years an interrupted primary or booster dose schedule need not be restarted, and can be simply continued with the next dose that is due. It would be very useful if all doses received over an individual's lifetime are documented. A lifelong immunization card will be invaluable.

The exact timing of the booster doses could be flexible to suit the most appropriate health service contacts. WHO recommendation is that in addition to primary immunization of three doses during infancy a booster dose at age 4-7 years followed by another booster in adolescence (at age 12-15 years) should be given. This totals to 5 tetanus toxoid containing vaccine doses. In addition to the childhood vaccination programme, an extra dose to adults will further assure long-lasting, possibly life-long protection. Therefore, WHO recommends a 6th dose for adults, for example at the time of the 1st pregnancy or during military service.

For previously non-immunized adolescents and adults, WHO recommend 2 doses of tetanus toxoid to administer at least 4 weeks apart and a 3rd dose at least 6 months after the second and, subsequent boosters at least 1 year apart. Those who receive their first tetanus vaccine doses as adolescent or adult will require only administration of appropriately spaced 5 doses of tetanus toxoid to obtain long-term protection.

Current practice in Sri Lanka: Sri Lanka has a very good coverage for immunization during infancy and childhood. It is almost 100% for vaccines during infancy. Under the EPI, infants get tetanus toxoid containing DPT vaccine at 2, 4 and 6 months of age and then at 18 months the 4th dose. Before school entry at 5 years they receive the tetanus toxoid containing DT vaccine as the booster. Again at 12-15 years of age, preferably at Grade 7 children receive aTd vaccine. This totals up to 6 tetanus toxoid containing vaccines.

In addition, during the first pregnancy, mothers receive two doses of tetanus toxoid with 6-8 weeks apart and a single dose of tetanus toxoid during each subsequent pregnancy up to a total of five doses.

Future directions: According to the WHO recommendations a total of six doses of tetanus toxoid containing vaccines would provide almost lifelong immunity against tetanus. In Sri Lanka the current immunization during pregnancy has been designed primarily because people in child bearing age group were not covered by current EPI schedule during their childhood and adolescent ages. The second reason was that, even if they would have received tetanus vaccine, there were no records to prove that. Administration of tetanus toxoid during pregnancy has been commenced in Sri Lanka in 1969 and will be shortly celebrating the completion of four decades. The launch of EPI in Sri Lanka was in 1978 and those who had a desirable coverage with immunization against tetanus during infancy and childhood are now reaching their child bearing age. This means that these pregnant mothers are having an adequate- probably a life long immunity against tetanus. For the same reasons, these mothers need no administration of tetanus toxoid during pregnancy. The main barrier to implement this would be the availability of proof of immunization.

An algorithm for tetanus toxoid vaccination during pregnancy

Documented immunization history									Pregnancy				
DPT @ 2 mo.	DPT @ 4 mo.	DPT @ 6 mo.	DPT @ 18 mo.	DT @ 5 yrs	aTd @ 12 yrs	One or more TT following trauma @ any age	Last dose within past 10 yrs?	Additional TT-b during past 10 yrs	1st	2nd	3rd	4th	5th
← 06 or more doses →							Yes	No	☒	☒	☒	☒	☒
← 06 or more doses →							No	Yes	☒	☒	☒	☒	☒
← 06 or more doses →							No	No	TT-b	☒	☒	☒	☒
← Don't know/ Incomplete [less than 06 doses] →							—	—	TT1 TT2	TT3	TT4	TT5	☒

TT- b = TT booster; ☒ = vaccine not indicated

Based on these new developments EPI schedule for pregnant mothers in Sri Lanka will change in near future. If any pregnant mother is having an immunization record to prove that she has received a total of six doses of tetanus toxoid containing vaccines according to the EPI schedule and/or following trauma, and the time since last tetanus vaccination is 10 years or more, then they will receive one booster dose of tetanus toxoid during the first pregnancy. Further tetanus vaccinations during subsequent pregnancies are not necessary. Even this booster dose is not necessary if she has had a total of 6 doses of tetanus toxoid containing vaccines and also fulfils one of the following criteria: i) time since last vaccine is less than 10 years; ii) had one more booster dose during pregnancy or after trauma within the last 10 years. All the other pregnant mothers, i.e. those who have not had six doses of tetanus toxoid containing vaccines according to the national EPI schedule/ after trauma need administration of tetanus toxoid according to the existing schedule. In the light of these new changes it is essential to strengthen school based immunization and also to keep a life long record of all vaccines administered. Primary healthcare staff should educate parents and all others that the current child health record should be considered as a life long record. It should be updated whenever a new vaccine dose is administered and also should be readily available whenever healthcare including ante-natal care is sought.

Reference:

WHO (2006). Tetanus Vaccine. WHO Position Paper. *Weekly epidemiological record*; 81: 198-208.

The Editor wishes to thank Dr. T. S. R. Peiris, Assistant Epidemiologist of the Epidemiology Unit for the assistance provided in preparation of this article.

Table 1: Vaccine-preventable Diseases & AFP

15th - 21st November 2008 (47thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	01 GM=1	00	00	00	00	00	00	00	00	01	02	89	77	+15.6%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	01	00	-
Measles	00	00	01 HB=1	00	00	00	00	00	02 RP=2	03	04	108	76	+42.1%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	35	32	+09.4%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	46	44	+04.5%
Tuberculosis	32	16	49	03	14	00	17	00	00	131	173	7575	8872	-14.6%

Table 2: Newly Introduced Notifiable Disease

15th - 21st November 2008 (47thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	12	17	09	01	06	12	01	12	11	81	50	4968	3085	+61.0%
Meningitis	03 CB=1 KL=2	01 ML=1	04 HB=2 MT=2	00	00	08 KR=6 PU=2	02 PO=2	02 BD=2	08 RP=1 KG=7	28	20	1199	668	+79.5%
Mumps	01	05	05	01	08	05	00	03	08	36	29	2682	1979	+35.5%

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**: 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 3: Laboratory Surveillance of Dengue Fever

15th - 21st November 2008 (47th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	00	03	00	01	00	00	00	01	00	00	00	00	00	00
Total number to date in 2008	124	160	09	25	00	00	06	10	01	09	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

15th - 21st November 2008 (47th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encepha-litis		Enteric Fever		Food Poison-ing		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Returns Re-ceived Timely*
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	16	1486	10	264	0	15	8	174	0	139	16	997	1	7	3	110	0	0	**85**
Gampaha	5	900	4	214	0	20	1	57	0	104	3	780	0	7	3	179	0	7	**64**
Kalutara	3	440	9	313	0	13	1	69	0	40	22	620	0	4	0	43	0	2	**83**
Kandy	8	293	7	302	1	9	2	63	0	99	12	492	2	95	2	126	0	2	**84**
Matale	7	153	8	212	0	4	0	51	0	16	16	739	0	2	1	30	0	0	**83**
Nuwara	0	28	3	262	0	4	6	249	1	168	3	67	1	43	0	107	0	1	**85**
Galle	0	100	5	190	1	21	1	18	0	45	12	417	1	15	0	8	0	5	**82**
Hambantota	2	96	7	123	0	8	0	8	4	16	3	112	4	96	0	16	0	1	**91**
Matara	6	324	8	210	0	14	0	36	0	15	6	464	5	226	0	14	0	1	**82**
Jaffna	0	58	0	146	0	4	0	255	0	17	0	1	0	156	0	38	0	0	**0**
Kilinochchi	0	0	0	151	0	0	0	1	0	4	0	2	0	0	0	2	0	0	**0**
Mannar	0	25	2	24	0	6	0	157	0	0	0	0	0	1	0	16	0	0	**25**
Vavuniya	0	12	5	69	0	3	1	15	0	22	1	6	0	1	0	5	0	0	**100**
Mullaitivu	0	0	0	55	0	0	0	16	0	13	0	0	0	1	0	9	0	1	**0**
Batticaloa	0	86	8	203	0	7	1	31	0	29	1	10	0	0	0	95	0	16	**82**
Ampara	0	33	0	260	0	0	0	9	2	285	1	24	0	0	0	13	0	0	**57**
Trincomalee	2	181	3	119	0	1	0	13	0	14	1	31	0	17	0	15	0	0	**80**
Kurunegala	8	341	8	240	0	16	0	52	0	27	25	671	0	30	0	80	1	9	**84**
Puttalam	2	283	6	142	0	10	0	157	1	41	0	66	0	38	1	33	0	5	**78**
Anuradhapu	0	119	5	146	0	10	0	12	0	16	0	240	0	11	0	15	0	3	**68**
Polonnaruw	0	64	5	135	0	1	0	28	0	23	0	71	0	1	0	21	0	0	**86**
Badulla	3	96	5	489	2	9	4	125	1	112	1	69	5	118	4	157	0	1	**80**
Monaragala	0	60	1	349	0	4	1	51	0	121	0	93	3	105	0	54	0	2	**91**
Ratnapura	2	278	13	396	0	33	0	52	0	80	4	228	0	80	3	58	0	0	**72**
Kegalle	8	416	4	303	0	25	3	84	1	17	12	552	0	68	13	507	0	1	**91**
Kalmunai	1	38	14	283	0	2	0	14	0	16	0	3	0	3	2	27	0	0	**54**
SRI LANKA	**73**	**5910**	**140**	**5600**	**4**	**239**	**29**	**1797**	**10**	**1479**	**139**	**6755**	**22**	**1125**	**32**	**1778**	**1**	**57**	**74**

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 29 November, 2008 Total number of reporting units =309. Number of reporting units data provided for the current week: 230

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WEEKLY EPIDEMIOLOGICAL REPORT

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Vol. 35 No. 49 **29th November – 05th December 2008**

WER SRI LANKA 2008

Indoor air pollution - An overlooked misery (Part I)

There is consistent evidence that indoor air pollution is responsible for a number of health consequences including premature death. Women and children in developing countries and in poor urban communities are the most affected. However, in most countries the extent of this problem has not been explored adequately. This is Part I of an article on overview of health effects of indoor air pollution.

The deleterious and disastrous effects of fire, experienced as bush fires would have been interwoven with life and death of man and animal in the prehistoric era, probably from the very beginning of its existence. However, since the discovery of uses and how to control fire, it has been inseparable from the day to day life of those who lived in early civilizations. Since then fire has become an essential element or commodity of human society.

Fire is useful in processing and preserving food and improves food safety. It also enables men to consume a wider range of foodstuff which would not be possible otherwise. Light and heat protected men from hostile environment. It also aided them to make the environment safe and convenient to live in. Heat from fire allowed people to get warmth in cold climates. Thus, since very early stages of human civilization fire has become an integral part of human life.

But fire is most likely responsible for the first ever anthropogenic pollution of the environment, i.e. air pollution. This is very obvious by the soot observed in caves where there are evidence of very early human settlements. The amount of soot suggests that there was a very high degree of pollution probably due to the inadequate air circulation within caves making smoke to stagnate inside.

Although there are much less-polluting alternatives to cook and get light and warmth, mainly by means of using electricity, solar power or fuel gas, these facilities have not been penetrated into all social strata in all countries. Most disadvantaged are in underdeveloped countries where people still use fire generated by combustion of organic materials like firewood to cook their food, to get light and warmth and also to make the environment safe from enemies. While the main determinant is poor socio-economic conditions they live in, lack of knowledge and cultural practices also play a significant role to continue some of these practices. The end result would be long term health effects which may even lead to premature death.

In urban settings ambient air pollution by automobile exhausts and industrial emissions are the prime important, but in rural settings indoor air pollution caused by combustion of biomass fuels far outweighs ambient air pollution. Even in urban areas especially in poor households indoor air pollution could be contributing significantly.

It is estimated that in developing countries indoor air pollution is responsible for about 1.8 million deaths and over 50 million disability adjusted life years lost (DALYs). These figures account for 4.7% of total deaths and 4% of DALYs lost. This health burden is comparable

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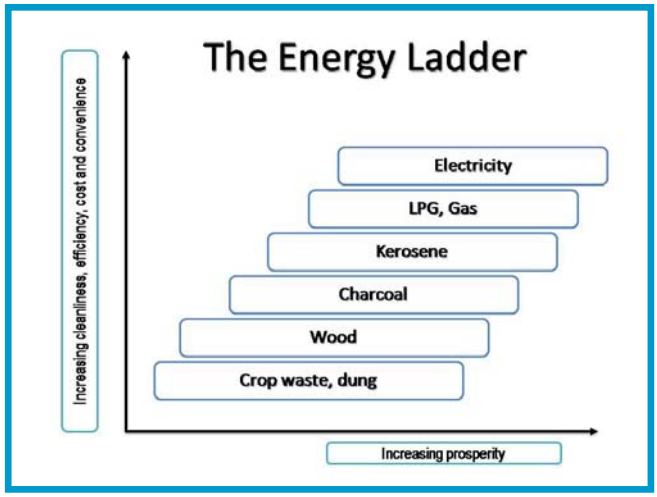
with those of tobacco use and they are only exceeded by those of malnutrition (16%), unsafe water and sanitation (9%), and unsafe sex(4%).

A pollutant released indoors is 1000 times more likely to reach people's lungs than a pollutant released outdoors. In developed countries there are several substances including radon, asbestos, volatile organic compounds, pesticides, heavy metals, animal dander, mites, moulds, and tobacco smoke which raise concerns as air pollutants and are having significant health effects. However, in developing countries, the single most important group of indoor air pollutant is the combustion products of unprocessed solid biomass fuels utilized for cooking and heating. Smoke from biomass fuels contain many products that can affect human health. These include particulates, carbon monoxide, nitrous oxide, formaldehyde and benzo(*a*)pyrene, benzene, and many others.



Any material derived from plants or animals which is deliberately burnt by man is called biomass fuels. The most commonly used material is wood, but animal dung and crop residues are also used widely in some communities. Theses are the most basic and cheapest fuels. However, they are the least efficient and also produce pollutants most. Coal is more efficient than these but less efficient than kerosene oil or gas fuels including liquefied petroleum gas (LPG). Electricity is the most efficient and cleanest energy source. Liquid fuels like kerosene oil, if not used with proper combustion technologies, will not be as efficient as it should be. For example, kerosene oil in a pressurized burner is very efficient and hardly produces any pollutants; if used in a wick burner it will be sooty and smoky. With the development of societies there will be a transition up the so-called 'energy ladder' to fuels which are progressively more efficient, cleaner and convenient but expensive. However, most of these relatively efficient fuel sources are unaffordable to poor communities and they have to largely depend on biomass fuels.

Over the past few centuries about half of the world population could make transition from traditional biomass fuel such as wood, animal dung, crop residues etc., to fossil fuels and electricity. The remaining half, around 3000 million people, almost all from developing countries still continue to use biomass fuel often in open fire or inefficient stoves. It is important to emphasize that most households may be using a combination of fuels. For example electricity for lighting and gas for cooking. In most instances, this interchanges particularly use of fuels down the ladder may be a reflection of poor socio economic status. For example, a household where kerosene oil is used for lighting may be using fire wood for cooking.

Compared to developed countries, per capita use of energy in underdeveloped countries is much lower. However, due to the large size of population these countries use a substantial proportion of global energy. Unlike in industrialized countries where a larger proportion of energy usage is for industries, in underdeveloped countries a larger share of energy usage is for household consumption for lighting, cooking and warming in colder climates.

The proportion of global energy derived from biomass fuels has fallen from 50% in 1900 to 13% in 2000. However, there is evidence that their use is now increasing among the poor. In Sri Lanka, the household sector energy consumption accounts for 52% of the total energy consumption while industrial and transport sector consume 25% and 23% of energy respectively. Fuel wood is the source for 53% of the total energy consumption in the country. Out of the total energy supply, the household sector consumes 76% and the rest by the industrial sector. According to available calculations, nearly 80% of the population still relies on the unprocessed fuel wood for cooking and 20-30% utilizes fossil fuels such as kerosene or non-fossil fuels including plant based fuels for illuminating houses.

Over 25% of all households in Sri Lanka are deprived of electricity. There is a marked geographical variation as the availability of electricity in households in Colombo district is 95.5%, in Gampaha 90.9% and in Kalutara 90.0% while in Vavuniya, Moneragala, Batticaloa, and Polonnaruwa it is only 43.8%, 44.6%, 56.9% and 57.9% respectively.

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This article was prepared by Dr Sudath Samaraweera, Consultant Community Physician.

Table 1: Vaccine-preventable Diseases & AFP

22nd - 28th November 2008 (48thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	02 GL=1 MT=1	00	00	00	00	00	00	02	05	91	82	+11.0%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	01	00	-
Measles	00	00	00	00	00	00	00	00	00	00	01	108	77	+40.3%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	36	32	+12.5%
Whooping Cough	00	00	00	00	00	00	00	01 MO=1	00	01	01	48	45	+06.7%
Tuberculosis	130	20	06	00	04	00	00	00	00	160	158	7735	9030	-14.3%

Table 2: Newly Introduced Notifiable Disease

22nd - 28th November 2008 (48thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	15	17	18	01	02	09	05	08	12	87	52	5075	3154	+60.9%
Meningitis	04 KL=4	03 ML=3	01 HB=1	00	00	03 KR=2 PU=1	01 PO=1	03 BD=3	02 RP=1 KG=1	17	13	1219	688	+77.2%
Mumps	07	11	11	00	02	02	01	04	01	39	27	2729	2018	+35.2%

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**: 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 3: Laboratory Surveillance of Dengue Fever

22nd - 28th November 2008 (48th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	00	00	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	124	160	09	25	00	00	06	10	01	09	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

22nd - 28th November 2008 (48th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encepha-litis		Enteric Fever		Food Poison-ing		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Returns Re-ceived Timely*
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	18	1509	7	272	0	15	5	180	0	139	19	1020	0	7	2	112	0	0	**92**
Gampaha	4	910	1	217	0	20	0	57	0	104	9	798	0	7	10	189	0	7	**93**
Kalutara	5	446	14	333	1	14	5	74	4	44	8	634	0	4	1	44	0	2	**92**
Kandy	13	310	1	303	1	10	0	63	0	99	6	500	1	96	0	126	0	2	**76**
Matale	8	161	5	217	0	4	1	52	0	16	19	760	0	2	0	30	0	0	**75**
Nuwara	0	28	20	283	1	5	4	253	0	168	3	70	0	43	0	107	0	1	**100**
Galle	1	101	8	198	1	22	0	18	5	50	6	426	0	15	0	8	0	5	**88**
Hambantota	3	99	3	126	0	8	0	8	4	20	10	122	2	98	1	17	0	1	**91**
Matara	8	333	8	218	0	14	0	36	0	15	10	476	0	227	0	14	0	1	**88**
Jaffna	0	60	0	150	0	4	0	255	0	20	0	1	0	157	0	38	0	0	**0**
Kilinochchi	0	0	0	151	0	0	0	1	0	4	0	2	0	0	0	2	0	0	**0**
Mannar	0	25	1	27	0	6	0	158	0	0	0	0	0	1	0	16	0	1	**25**
Vavuniya	0	12	1	70	0	3	0	15	1	23	0	6	0	1	0	5	0	0	**100**
Mullaitivu	0	0	0	59	0	0	0	16	0	13	0	0	0	1	0	10	0	1	**0**
Batticaloa	0	86	9	222	0	7	0	31	0	30	1	11	0	0	0	95	0	10	**64**
Ampara	0	33	0	263	0	0	0	9	0	285	0	25	0	0	0	13	0	0	**57**
Trincomalee	4	185	1	120	0	1	0	13	0	14	1	32	0	17	0	15	0	0	**80**
Kurunegala	4	345	10	250	0	16	2	54	2	29	9	680	0	30	1	81	0	9	**95**
Puttalam	1	284	14	161	0	10	1	159	0	41	0	66	0	38	1	34	0	5	**100**
Anuradhapu	0	119	3	151	0	10	0	12	0	16	7	249	0	11	0	15	0	3	**63**
Polonnaruw	0	64	0	135	0	1	0	28	0	23	9	80	0	1	0	21	0	0	**86**
Badulla	6	102	7	499	0	9	1	126	0	112	1	72	2	121	13	170	0	1	**93**
Monaragala	0	60	5	354	0	4	2	54	2	123	1	94	0	105	1	55	0	2	**91**
Ratnapura	4	286	5	406	0	33	1	53	4	84	5	236	1	81	1	59	0	0	**83**
Kegalle	6	422	3	307	0	25	2	86	0	17	7	566	1	69	9	517	0	1	**100**
Kalmunai	0	38	17	303	0	2	2	16	0	16	0	3	0	3	0	27	0	0	**54**
SRI LANKA	**85**	**6018**	**143**	**5795**	**4**	**243**	**26**	**1827**	**22**	**1505**	**131**	**6929**	**7**	**1135**	**40**	**1820**	**0**	**52**	**79**

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 06 December, 2008 Total number of reporting units =309. Number of reporting units data provided for the current week: 243

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WEEKLY EPIDEMIOLOGICAL REPORT

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Vol. 35 No. 50 **6th – 12th December 2008**

WER SRI LANKA 2008

Indoor air pollution - An overlooked misery (Part II)

This is Part II of an article on the nature and extent of health effects of indoor air pollution which has a large impact on human health especially those living in developing countries.

The health effect of air pollution is determined not only by the level of pollution but also by the time people spend breathing polluted air, i.e. the exposure level. Unprocessed solid biomass fuels release at least 50 times more noxious pollutants than gaseous fuels. The time they spent daily for cooking may vary from less than one hour to several hours. In developing countries, traditionally women are responsible for food preparation and cooking. Therefore, disproportionately, they are exposed more than men. As children especially infants and young children often accompany their mothers at home, they get heavily exposed. The next vulnerable group would be elderly and sick, who usually stay at home throughout the day.

Since the immune system of the infants is not fully developed, their respiratory tract is more susceptible to the effects of inflammation. Young children breathe faster than adults elevating relative intake of pollutants. Malnutrition which is strongly associated with poverty may impair an optimum development of the immune system making them more vulnerable to pollutants. Elderly are also at a greater risk of health effects of indoor air pollution since they are more likely to suffering from chronic illnesses and are having a compromised immune system.

It has been estimated that 2.7 – 2.8 million women and children die each year from indoor air pollution in developing nations. Out of all, 28% deaths due to indoor air pollution occurs in India. Since only a few studies are carried out in Sri Lanka there are no exact evidence to recognise where we stand.

There is consistent evidence that exposure to biomass smoke increases the risk of a range of illnesses both in children and adults. The main conditions among them are acute respiratory tract infections, particularly pneumonia, chronic bronchitis and chronic obstructive pulmonary disease. There is also evidence that exposure to coal smoke at in the home markedly increases the risk of lung cancer, particularly among women.

There is new evidence which suggest that indoor air pollution in developing countries may also increase the risk of other important health problems such as low birth weight, perinatal mortality, bronchial asthma, middle ear infections in children, tuberculosis, nasopharyngeal and laryngeal cancer, and cataract in adults. These health outcomes are either direct or indirect effects on the human body. For example, toxic substances in biomass smoke can be carcinogenic. There is evidence that some toxicants can cause cataracts. In addition, some pollutants may cause the victim more vulnerable to secondary infections such as tuberculosis or other bacterial infections indirectly influencing on the health of exposed victims.

Extended exposure to high levels of biomass smoke can impair the clearing ability of the lung making them more susceptible to infec-

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tions. Most of the pollutants generated as a result of biomass fuel combustion are capable of irritating the airways and lungs, reducing the resistance to infection and increasing the risk of cancer. There is clear research evidence that exposure to smoke from wood stoves increases the risk of acute respiratory tract infection among infants and young children. The risk of dying from respiratory tract infection is also increased if a child has been sleeping in a room with an open cook stove.

Among adult women there is evidence that exposure to open cook stove is strongly linked with chronic lung diseases. It is also found that active tuberculosis infection is more prevalent among people living in houses where bio fuels are used for cooking than in houses where cleaner fuels are used. Pulmonary tuberculosis can be aggravated by exposure to smoke.

Benzo(*a*)pyrene is a know carcinogen and is found in large quantities in cooking smoke.

Interventions should be able to reduce exposure to indoor air pollution while meeting domestic energy requirements and cultural needs, at the same time improving safety, fuel efficiency and environmental protection. They should be affordable and sustainable.

Exposure can be reduced by means of improved stoves, better housing , cleaner fuels, and behavioural changes. A long term solution to the problem would be use of cleaner fuels especially liquefied petroleum gas. But, purely because of economic reasons, poor communities may not be able to make this transition for many more years to come.

Within the existing conditions to prevent health hazards associated with household air pollution, public awareness tends to play an important role. Harmful effects of household smoke, how to reduce exposure and prevent harmful effects and best practices of cooking including how a household stove can be converted into a more efficient stove etc., should be addressed in such a public awareness programme.

Inadequate ventilation within houses thereby reducing air exchange between indoor and outdoor can aggravate health effects of household air pollution. Any mechanism that will disperse the pollutants rather than leaving them stagnating, will minimizes the risk associated with air pollution. When building new houses this issue should be addressed. Modification of housing designs by enlarging existing windows or installing new windows would be necessary to improve ventilation in existing houses. Construction of chimneys, flues or installing hoods also would be appropriate solutions to reduce indoor air pollution.

Simple modification of domestic behaviours will also be important in reducing or minimizing the generation of pollutants and getting exposed to them. For example, if mothers carry their infants or toddlers while cooking, it will increase children getting exposed to polluted environment. Keeping them away from cooking area is the simplest behavioural modification mothers can adhere to. Outdoor cooking also will minimize exposure. Another measure that can be taken is as in our traditional housing system, to have a separate kitchen, away from the home. However, this will not be a practical measure for some people especially those living in an urban slum area where they are pressed for land and space.

Many people are used to cook each meal of the day separately. This will prolong the time exposed to smoky environment. As well some of our cooking methods are lengthy. Introduction of quick food preparation methods and cooking several meals together will significantly cut off the time of exposure. The reduction of cost of food preparation would be an added advantage. Drying firewood before use and cutting wood into small pieces will improve the efficiency of cooking process. Extinguishing the fire immediately after the use will reduce emissions.

The other issue that has to be addressed is the improvement of efficiency of stoves. The most popular type of stove that uses firewood for cooking in Sri Lanka is the customary three-stone stove. Since its nature of open fire, the efficiency of this type of stove is as low as 10-15%. Therefore, the energy wastage and subsequently the level of exposure are high.

Designing stoves to have a more complete combustion will decrease indoor air pollution. Using efficient stoves have other benefits also. For example, it will reduce cooking time allowing women to have spare time for other activities. It also will reduce other hazards like burns and injuries. Reduced fuel wood consumption will have economic and social benefits, at family level and also will have macro level benefits such as reducing deforestation.

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This article was prepared by Dr Sudath Samaraweera, Consultant Community Physician.

Table 1: Vaccine-preventable Diseases & AFP

29th November - 5th December 2008 (49thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	00	00	00	01 KR=1	00	00	00	01	01	92	83	+10.8%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	01	00	-
Measles	00	00	00	00	00	00	00	00	00	00	00	107	77	+39.0%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	36	32	+12.5%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	48	45	+06.7%
Tuberculosis	59	25	07	19	20	00	00	00	87	217	310	7952	9340	-14.9%

Table 2: Newly Introduced Notifiable Disease

29th November - 5th December 2008 (49thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	30	12	12	00	02	04	03	11	12	86	55	5189	3213	+61.5%
Meningitis	04 CB=2 GM=1 KL=1	01 KD=1	04 GL=1 HB=2 MT=1	00	00	00	01 AP=1	00	04 RP=1 KG=3	14	25	1234	714	+72.8%
Mumps	01	09	01	00	00	01	00	00	07	19	47	2761	2072	+33.3%

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**: 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 3: Laboratory Surveillance of Dengue Fever

29th November - 5th December 2008 (49thWeek)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	00	00	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	124	160	09	25	00	00	06	10	01	09	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

29th November - 5th December 2008 (49thWeek)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encepha-litis		Enteric Fever		Food Poison-ing		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Returns Re-ceived Timely*
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	20	1529	6	278	0	15	5	185	0	139	8	1028	1	8	1	113	0	0	**69**
Gampaha	13	923	0	220	0	20	0	60	0	104	10	812	0	7	1	190	0	7	**64**
Kalutara	8	455	10	343	0	14	3	77	0	44	9	645	0	4	1	45	0	2	**50**
Kandy	6	323	6	312	0	10	0	64	1	100	4	507	2	98	0	126	0	2	**68**
Matale	5	167	2	223	0	4	0	53	0	16	6	771	0	2	0	30	0	0	**58**
Nuwara	1	29	14	297	1	6	2	255	0	168	2	72	0	43	1	108	0	1	**85**
Galle	3	104	10	208	1	23	0	18	0	50	6	432	1	16	0	8	0	5	**76**
Hambantota	13	112	9	135	0	8	0	8	0	20	0	122	0	98	0	17	0	1	**73**
Matara	7	340	6	224	0	14	0	36	0	15	8	484	1	228	0	14	0	1	**59**
Jaffna	0	60	0	150	0	4	0	257	0	20	0	1	0	159	0	41	0	0	**0**
Kilinochchi	0	1	0	160	0	0	0	1	0	4	0	2	0	0	0	2	0	0	**0**
Mannar	0	25	0	27	0	6	0	158	0	0	0	0	0	1	0	16	0	1	**0**
Vavuniya	0	12	1	71	0	3	0	15	2	25	0	6	0	1	0	5	0	0	**50**
Mullaitivu	0	0	0	61	0	0	0	16	0	13	0	0	0	1	0	10	0	1	**0**
Batticaloa	1	87	1	226	1	8	1	32	0	30	1	12	0	0	0	95	0	10	**45**
Ampara	0	33	1	265	0	0	0	9	0	285	0	25	0	0	0	14	0	0	**29**
Trincomalee	0	185	0	120	0	1	0	13	0	14	1	33	0	17	0	15	0	0	**30**
Kurunegala	4	349	7	257	0	16	1	55	0	29	2	683	2	32	2	83	0	9	**68**
Puttalam	0	284	6	167	0	10	0	159	0	41	0	66	0	38	0	34	0	5	**44**
Anuradhapu	0	120	8	159	0	10	0	12	40	56	2	251	0	11	1	16	0	3	**42**
Polonnaruw	0	64	3	138	0	1	0	28	2	25	15	95	0	1	0	21	0	0	**57**
Badulla	0	102	3	502	0	9	0	126	0	112	0	72	4	125	7	178	0	1	**87**
Monaragala	0	60	0	354	0	4	1	55	0	123	0	94	0	105	4	59	0	2	**45**
Ratnapura	1	288	4	415	0	33	0	53	0	84	3	245	0	82	1	61	0	0	**56**
Kegalle	14	436	3	310	0	25	0	86	0	17	4	570	3	72	1	518	0	1	**64**
Kalmunai	0	38	6	318	0	2	1	17	0	16	0	3	0	3	0	27	0	0	**38**
SRI LANKA	**96**	**6126**	**106**	**5940**	**3**	**246**	**14**	**1848**	**45**	**1550**	**81**	**7031**	**14**	**1152**	**20**	**1846**	**0**	**52**	**55**

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 13 December, 2008 Total number of reporting units =309. Number of reporting units data provided for the current week: 171

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ON STATE SERVICE

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WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiological Unit,

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Vol. 35 No. 51 **13th – 19th December 2008**

WER SRI LANKA 2008

Zoonoses and water-related infections

Both Zoonoses and water related diseases are causing a significant impact on human health. This article briefly describes zoonoses and water related diseases and also their relationship.

In the past two to three decades, a number of new diseases have been recognized. The term "emerging infectious diseases" is used to describe infectious disease whose incidence in humans has increased recently or threaten to increase in the near future. In addition, a number of infectious diseases that have been under control are showing a trend of "re-emerging."

There are a number of newly recognized infectious agents that have been associated with outbreaks of water related diseases or appear to have the potential for waterborne transmission. One of the important groups of diseases that has a water related disease transmission is zoonoses. In total, it is estimated that up to 75% of pathogens responsible for emerging outbreaks may be of zoonotic origin. As well as throughout the world, both in developed and developing nations, zoonotic diseases are a major public health problem.

It is very important to identify the source of the agent of an emerging infection and the likely and possible routes of transmission so that effective prevention and control measures can be established as soon as possible. This is a brief introduction to zoonoses and to water related diseases and water related zoonotic diseases.

Zoonoses. Diseases and infections that are naturally transmitted between vertebrate animals and man are called zoonoses. Zoonotic infections have been recognized among all the major groups of infectious agents; prions, viruses, bacteria, protozoa, and helminths. Some of these agents may infect only one type of animals and humans. Others may infect several types of animals and humans.

Based on the method of transmission, zoonoses can be divided into two types as direct and indirect zoonoses. In direct zoonoses, the infection is transmitted from animals to humans by direct contact with the animal by way of a bite, ingestion of animal tissues, or skin contact with an animal. Rabies is an example of direct zoonosis. In indirect zoonoses, the transmission of the infectious agent from animals to human occurs via a vector or a vehicle. Examples are Japanese encephalitis, leptospirosis and plague. Some infections, for example, tularaemia can be transmitted by both ways; i.e., directly via animal contact and indirectly via water ingestion or inhalation of infectious aerosols. For some zoonoses like avian influenza, Ebola virus, human immune deficiency viruses HIV-1 and HIV-2, it is not yet very clear how these infectious agents are transferred from animals to humans.

Zoonoses also can be categorized on the basis whether humans are a "dead-end-host" or whether subsequent human-to-human transmission can occur. In some zooneses like rabies, the pathogen is normally transmitted between animals. Once the infection is accidentally spread to human they become dead-end-hosts. Infections like HIV-1 and HIV-2, after the vi-

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rus is transmitted from animal to human, it can be maintained in the human body and is subsequently transmitted from human to human.

Water-related infections: There are four main categories of water related infections. They are: "water-borne infections," "water-washed infections," "water-based infections" and "infections with water-related insect vectors." Some infections may fit into more than one of these categories, and also water may not be the only transmission route or even the major transmission route for some of these infections. An understanding of these dynamics is very important in planning effective prevention and control measures.

Water-borne infections: These are classically recognized as water borne diseases, and examples are typhoid and cholera. The causative enteric microorganisms enter the water source through faecal contamination and transmission occurs by ingestion of contaminated water. Transmission depends on the following factors:

- The amount of faecal contamination in the water
- The concentration of pathogens in the faecal contamination
- The survival of the pathogenic organism in the water
- The infectivity of the organism
- The individual ingestion of (exposure to) the contaminated water

Water-washed infections: These diseases occur due to poor personal and/or domestic hygiene. They are not due to the presence of infectious agents in water but due to the lack of readily accessible water or even when available, not maintaining an adequate level of hygiene. This limits washing of contaminated hands and utensils thereby permitting transmission of infectious agents, for example, *Shigella* species. Factors associated with transmission of water borne diseases are also important in transmission of water-washed infections. Lack of water for bathing also facilitates the spread of diseases that affect the eyes and skin such as conjunctivitis and scabies. Control of these diseases is possible through provision of easy access to adequate quantities of water, and behavioural changes to improve personal and domestic hygiene.

Water-based infections: They are infections in which the pathogen must spend a part of its life cycle in an aquatic environment. This category is further subdivided into diseases acquired by ingestion of water and diseases acquired by contact with water. The main reason for diseases acquired by ingestion is poor quality of drinking water while reasons for water contact diseases varies. In industrialized countries these diseases are mainly associated with recreational exposure to contaminated marine water, freshwater lakes, ponds, creeks, or rivers, and less frequently water in swimming pools. In developing countries, the risk of water contact diseases may be from bathing or washing in contaminated surface waters. Occupational exposure to water is also often associated with water contact diseases.

Infections with water-related insect vectors: These are the infections that are transmitted by insects who breed in water, such as mosquito vectors of malaria, or insects that bite near water, like the tsetse flies that transmit sleeping sickness.

Other water-related transmission routes: There are two additional water-related modes of transmission of infectious agents. They are the transmission by inhalation of water aerosols and transmission by consumption of raw or undercooked shellfish or contaminated fish. The major pathogens associated with aerosol transmission are *Legionella* species. Outbreaks of legionellosis have been associated with aerosols from cooling towers and evaporative condensers of large buildings or with hot and cold water systems in hospitals, hotels and other institutions. *Legionella* can proliferate in hot water tanks maintained at 30-54^{0}C and exposure to aerosols from showerheads can occur.

Bivalve molluscan shellfish can serve as vehicles of enteric disease transmission because of their ability to concentrate enteric organisms from faecally contaminated water in their tissues.

What are the zoonotic water-related infections?: Certain criteria have been developed to determine whether an infectious disease is zoonotic and water-related at the same time. They are:

1. The pathogen must spend a part of its life cycle within one or more animal species. It should be able to replicate or undergo development within an animal host and within a human host. However, the organism may not always cause symptomatic disease in either the animal or human host.

2. Within the life cycle of the pathogen, it is probable that some life stage will enter water - via faeces, urine, or tissue of an infected animal or human. The organism must be able to survive in water for at a least few hours or days in order to be transmitted by exposure to water. Replication in water is not necessary.

3. Transmission of the pathogen (or toxin produced by the organism) from animal source to human must be through a water-related route - ingestion; contact; inhalation of water/wastewater aerosols; consumption of shellfish or other seafood harvested from waters infected by animals or animal waste; and consumption of seafood infected with a pathogenic organism.

Reference:
Cotruvo J A, Dufour A, Rees G, Bartram J, Carr R, Cliver D O, Craun G F, Fayer R and Gannon V P J. [Eds.] (2004) Waterborne Zooneses. Identifica-

Table 1: Vaccine-preventable Diseases & AFP

6th - 12th December 2008 (50thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	01 CB=1	00	00	00	00	00	01 AP=1	00	01 KG=1	03	01	95	84	+13.1%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	01	00	-
Measles	05 KL=5	00	00	00	00	00	00	00	00	05	02	105	79	+32.9%
Tetanus	00	00	00	00	00	00	00	00	00	00	02	36	34	+5.9%
Whooping Cough	00	01 NE=1	00	00	00	00	00	00	03 KG=3	04	00	53	47	+12.8%
Tuberculosis	41	05	03	02	02	00	21	00	06	80	179	8032	9519	-15.6%

Table 2: Newly Introduced Notifiable Disease

6th - 12th December 2008 (50thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	17	06	11	00	04	16	09	02	11	76	94	5324	3321	+60.3%
Meningitis	01 KL=1	02 ML=2	00	00	00	02 KR=2	03 AP=1 PO=2	00	05 RP=3 KG=2	13	22	1259	744	+69.2%
Mumps	06	01	07	21	02	01	04	00	08	50	63	2833	2170	+30.6%

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.

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 3: Laboratory Surveillance of Dengue Fever

6th - 12th December 2008 (50thWeek)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	00	00	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	124	160	09	25	00	00	06	10	01	09	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

6th - 12th December 2008 (50thWeek)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encepha-litis		Enteric Fever		Food Poison-ing		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Returns Re-ceived Timely*
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	17	1553	8	288	0	15	5	193	1	141	9	1042	0	8	1	115	0	0	**77**
Gampaha	7	934	6	226	0	20	2	62	7	111	2	817	1	8	4	194	0	7	**86**
Kalutara	7	463	5	359	0	14	4	85	0	44	6	663	0	4	0	46	0	2	**92**
Kandy	7	335	0	312	0	10	2	66	0	100	3	512	2	100	0	126	0	2	**64**
Matale	4	173	2	230	0	4	1	55	1	17	24	802	0	2	1	31	0	0	**83**
Nuwara	0	29	4	301	0	6	2	257	0	168	1	73	0	43	0	108	0	1	**92**
Galle	1	105	2	213	0	23	0	18	0	50	1	436	0	16	0	8	0	5	**82**
Hambantota	9	122	1	138	0	8	0	8	0	20	12	134	0	98	0	17	0	1	**82**
Matara	7	347	4	230	0	14	0	36	0	15	1	487	3	233	0	14	0	1	**76**
Jaffna	0	60	0	155	0	4	0	258	0	20	0	1	0	164	0	42	0	0	**0**
Kilinochchi	0	1	0	160	0	0	0	1	0	4	0	2	0	0	0	2	0	0	**0**
Mannar	1	26	0	28	0	6	0	160	0	0	0	0	0	1	0	16	0	1	**50**
Vavuniya	0	12	2	77	0	3	0	15	0	25	0	6	0	1	0	5	0	0	**75**
Mullaitivu	0	0	0	61	0	0	0	16	0	13	0	0	0	1	0	10	0	1	**0**
Batticaloa	0	87	8	242	0	8	0	32	0	30	0	12	0	0	0	95	0	10	**73**
Ampara	0	33	3	271	0	0	0	9	3	289	0	25	0	0	0	14	0	0	**71**
Trincomalee	0	185	1	121	0	2	0	13	0	14	0	33	0	17	0	15	0	0	**60**
Kurunegala	2	352	6	263	0	16	1	56	1	30	4	687	2	34	0	84	0	9	**84**
Puttalam	1	285	8	178	0	10	0	162	0	41	0	67	0	38	0	34	0	5	**89**
Anuradhapu	0	120	1	162	0	10	0	12	0	56	1	252	3	14	0	16	0	3	**63**
Polonnaruw	1	66	5	146	0	1	0	29	0	25	1	101	0	1	0	22	0	0	**86**
Badulla	1	103	4	506	0	9	0	126	0	112	0	72	2	128	2	180	0	1	**73**
Monaragala	0	60	2	358	0	4	0	55	1	124	2	96	1	107	0	59	0	2	**64**
Ratnapura	13	304	6	428	1	34	0	54	0	84	3	250	0	82	1	63	0	0	**61**
Kegalle	7	444	4	316	0	25	0	86	3	25	6	581	2	74	1	521	0	1	**91**
Kalmunai	0	38	4	326	0	2	0	17	0	16	0	4	0	3	1	28	0	0	**54**
SRI LANKA	**85**	**6237**	**86**	**6095**	**1**	**248**	**17**	**1881**	**17**	**1574**	**76**	**7155**	**16**	**1177**	**11**	**1865**	**0**	**52**	**71**

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 20 December, 2008 Total number of reporting units =309. Number of reporting units data provided for the current week: 219

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WEEKLY EPIDEMIOLOGICAL REPORT

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Vol. 35 No. 52 **20th – 26th December 2008**

WER SRI LANKA 2008

Epidemiology of leptospirosis outbreak in 2008

In 2008, Sri Lanka has experienced the largest ever recorded outbreak of leptospirosis. Epidemiological and laboratory data strongly suggest that the organism transmitted from rodents in paddy fields is responsible for the current outbreak.

History: Human leptospirosis (Weil's disease) was first described in Sri Lanka in 1953. In the early days, majority of cases was reported from Ratnapura (Sabaragamuwa Province), then Ragama, Colombo and Kalutara (Western Province), Matara (Southern Province), and to a lesser degree from Kandy and Matale (Central Province) and Anuradhapura (North Central Province). It is recorded that reporting varied from time to time and place to place depending on the clinician working in that place. In 1959, for the first time *L. icterohaemorrhagiae* was isolated in Ceylon from the blood of a patient in Colombo and soon after from the kidney of a sewer rat trapped in the vicinity of that patient's home.

Current situation: Over the past decade or more leptospirosis remains endemic in Sri Lanka with an outbreak situation once in every four to five years (Figure 1). Beginning from the latter part of the year 2007, Sri Lanka is experiencing the largest ever recorded outbreak of leptospirosis. When compared with the year 2006, the increase in the number of cases reported in 2008 has surpassed 400% already. Based on the notification of suspected cases, the incidence of leptospirosis in Sri Lanka in 2008 is 35.7 per 100,000 population.

The peak of the current outbreak with notification of 368 cases was in the week 39 (Week ending 26th September 2008). At present, the outbreak is in the declining phase and the total number notified up to 17th December 2008 was 7099 patients. There were 204 deaths with a

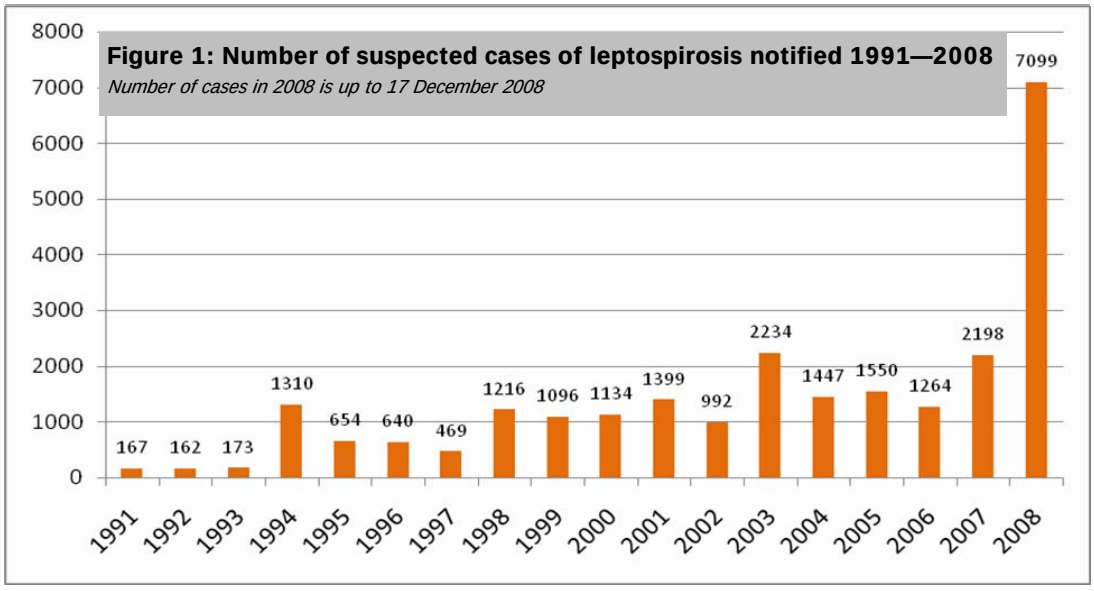

Figure 1: Number of suspected cases of leptospirosis notified 1991—2008

Number of cases in 2008 is up to 17 December 2008

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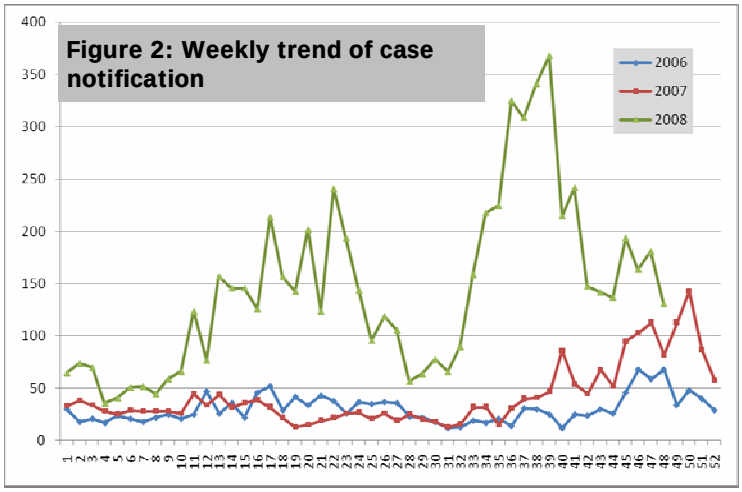
case fatality rate of 2.9%. In 2007, the case fatality rate was 1.5%.

Worst affected districts are Colombo, Gampaha and Kalutara in the Western Province, Matale and Kandy in the Central Province, Kurunegala in the North Western Province, Kegalle in the Sabaragamuwa Province, and Matara and Galle in the Southern Province. The highest incidence is in the Matale District with 150.5 per 100,000 population. The next highest incidence of 66.5 per 100,000 population has been reported from the Kegalle district.



Special investigations: By 11th December 2008, a total of 1957 completed Special Investigation Forms have been received by the Epidemiology Unit. This includes 261 (13%) patients treated at Base Hospital Horana, 230 (13%) at District General Hospital Matale, 227 at Teaching Hospital Colombo South, 192 at General Hospital Kegalle, 138 (7%) at Base Hospital Homagama, 160 (8%) at Teaching Hospital Kurunegala and 115 (6%) at Teaching Hospital Kalutara.

The mean age of patients is 40 years (SD 14.7) and 81% were males. The commonest symptoms were acute fever (98.6%), myalgia (91.0%), headache (90.4%), conjunctival suffusion (71.8%) and prostration (37.0%). Anuria/oliguria were reported in 33.4% while jaundice and proteinuria were in 24% and 10% of patients respectively. Cardiac symptoms (5%), haemorrhagic manifestations (5%), meningeal irritation (3%) and skin rash (3%) were less commonly reported.

The majority (61%) has been exposed to paddy fields. Another 24% provided a history of exposure to marshy or muddy lands while exposure to animal husbandry or veterinary environment is rare (0.4%). Based on the available data, 931 (47.6%) were not on prophylaxis while only 26 (1.3%) were on prophylactic treatment at the time of getting the infection. Prophylaxis history of 1000 (51.1%) patients was not available.

Out of the total of 1957, results of Microscopic Agglutination Test conducted at Medical Research Institute, were available for 144 patients. 71 (49.3%) patients were positive (titre level ≥ 800) and 30 (20.8%) were equivocal (titre level <800) while 43 (29.9%) showed negative results.

Table 1: Leptospirosis antibody titre levels detected at MRI

Titre level	No	%
100	159	11.2
200	96	6.8
400	81	5.7
800	84	5.9
1600	125	8.8
3200	321	22.7
3600	1	0.1
0	547	38.7
Total	**1414**	**100.0**

Laboratory diagnosis of leptospirosis: Up to the end of November, Medical Research Institute has performed more than 4000 Microscopic Agglutination Tests (MAT) with samples received from all over the country. A preliminary analysis of 1414 tests revealed that 37% were positive while 24% and 39% were equivocal and negative respectively (Table 1). Among positives, 78% were males. 13% were females while the gender of 9% was not available. The mean age of positive patients was 40.2 years (SD 14.4).

Identification of serovars: Using Microscopic Agglutination Test, identification of serovars in 9 samples was carried out at the Veterinary Research Institute, Peradeniya. Results are displayed in Table 2. Most of the serovars identified are rodent specific.

Conclusion: Majority of the affected are males in the productive age group and provided an occupational exposure in paddy fields. Detected serovars of *Leptospira* are mainly rodent specific. This strongly suggests that rodents in paddy fields are responsible for the current leptospirosis outbreak. Reasons for an unprecedented increase are yet to be determined, but may be due to the heavy rainfall experienced throughout the year and increased agricultural activities when compared with the previous years.

Table 2: Leptospirosis serovars detected from patients in Sri Lanka - 2008

Pt. No	Serovar	Titre Level
01	*pyrogenes*	400
	australis	400
02	*australis*	1600
03	*australis*	100
04	*weerasinghe*	400
	pyrogenes	100
	australis	200
	gem	200
05	*canicola*	800
	pyrogenes	200
	gem	800
06	Not detected	
07	*pyrogenes*	100
08	*pyrogenes*	100
09	Not detected	

Reference:

Administrative Report of the Director of Health Services for the Year 1953. Ceylon Government Press.

Nityananda K. 1970. Leptospirosis in Ceylon – Epidemiological & Laboratory Investigation. Report No FE-381-4 (Annual Report) US Army Research and Development Group Far East, San Francisco, US.

This article was prepared by Dr Sudath Samaraweera, Consultant Community Physician

Table 1: Vaccine-preventable Diseases & AFP

13th - 19th December 2008 (51st Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	02 CB=1 GM=1	01 ML=1	00	00	00	00	00	00	01 RP=1	04	01	99	85	+16.5%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	01	00	-
Measles	01 GM=1	00	00	00	00	00	00	00	00	01	01	107	80	+33.8%
Tetanus	00	00	00	00	00	00	00	00	00	00	04	36	38	-05.3%
Whooping Cough	00	00	00	00	00	00	00	00	02 KG=2	02	00	55	47	+17.0%
Tuberculosis	67	64	05	02	07	00	03	01	00	149	145	8181	9664	-15.3%

Table 2: Newly Introduced Notifiable Disease

13th - 19th December 2008 (51st Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	17	04	23	11	01	10	01	06	11	84	50	5424	3380	+60.5%
Meningitis	07 CB=2 GM=3 KL=2	01 ML=1	01 GL=1	00	03 BT=3	02 KR=2	00	00	04 RP=1 KG=3	18	11	1280	762	+68.0%
Mumps	02	03	06	02	02	02	01	01	02	21	39	2860	2218	+28.9%

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**: 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 3: Laboratory Surveillance of Dengue Fever

13th - 19th December 2008 (51st Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	00	03	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	124	163	09	25	00	00	06	10	01	09	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data 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.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

13th - 19th December 2008 (51stWeek)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encepha-litis		Enteric Fever		Food Poison-ing		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Returns Re-ceived Timely*
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	19	1574	6	296	0	15	9	202	2	143	15	1057	0	8	1	116	0	0	**77**
Gampaha	19	953	9	235	0	20	0	62	8	119	5	825	1	9	2	196	0	7	**64**
Kalutara	9	475	3	363	0	14	1	87	0	44	16	679	0	4	0	47	0	2	**83**
Kandy	16	352	3	315	2	12	1	67	0	100	19	531	5	106	5	131	0	2	**76**
Matale	20	203	4	234	1	5	0	57	0	17	25	831	0	2	0	31	0	0	**75**
Nuwara	1	30	8	314	0	6	0	257	1	169	3	76	1	44	0	108	0	1	**85**
Galle	2	107	3	216	0	23	0	18	0	50	5	441	0	16	0	8	0	5	**88**
Hambantota	5	127	1	139	0	8	0	8	2	22	3	137	1	99	0	17	0	1	**73**
Matara	20	369	7	238	0	14	0	36	0	15	6	494	4	237	1	15	0	1	**88**
Jaffna	0	60	0	155	0	4	0	261	0	20	0	1	0	167	0	43	0	0	**0**
Kilinochchi	0	1	0	161	0	0	0	1	0	4	0	2	0	0	0	2	0	0	**0**
Mannar	4	30	0	29	0	6	0	165	0	0	0	0	0	1	1	17	0	1	**50**
Vavuniya	0	12	0	77	0	3	0	15	0	25	0	6	0	1	0	5	0	0	**100**
Mullaitivu	0	0	0	62	0	0	0	16	0	13	0	0	0	1	0	10	0	1	**0**
Batticaloa	1	88	22	270	0	8	0	32	0	30	0	12	0	0	0	95	0	10	**73**
Ampara	0	33	1	272	0	0	0	9	0	348	0	25	0	0	0	14	0	0	**43**
Trincomalee	0	185	1	122	0	2	0	13	0	14	0	33	0	17	0	15	0	0	**60**
Kurunegala	6	360	8	271	1	17	0	57	0	30	3	692	3	37	4	88	1	10	**95**
Puttalam	1	286	5	183	2	12	1	163	1	42	0	67	0	38	0	34	0	5	**67**
Anuradhapu	0	120	5	173	0	10	0	12	0	56	2	255	0	14	0	16	0	3	**53**
Polonnaruw	0	66	2	149	0	1	0	29	0	25	10	111	0	1	0	22	0	0	**57**
Badulla	1	107	6	512	0	9	1	128	1	113	1	73	1	129	10	192	0	1	**80**
Monaragala	3	63	3	361	0	4	1	56	0	124	1	98	0	108	3	62	0	2	**45**
Ratnapura	6	312	4	439	0	34	0	54	1	85	2	256	0	82	0	63	0	0	**67**
Kegalle	13	457	2	318	0	25	0	86	0	25	7	589	0	74	2	523	0	1	**82**
Kalmunai	0	38	4	330	0	2	0	17	0	16	0	4	0	3	0	28	0	0	**54**
SRI LANKA	**146**	**6408**	**107**	**6234**	**6**	**254**	**14**	**1908**	**16**	**1649**	**123**	**7295**	**16**	**1198**	**29**	**1898**	**1**	**53**	**69**

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 December, 2008 Total number of reporting units =309. Number of reporting units data provided for the current week: 212

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