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The New National Guidelines on Management of Dengue Fever & Dengue Haemorrhagic Fever – A Novel Approach

Dengue Fever (DF) is by far the most important mosquito-borne viral infection of public health significance in Sri Lanka at present, imposing a significant social, economic and political impact on the country, with large numbers acquiring the infection each year. During the past couple of years a state of hyperendemisity was observed in the country with more serious manifestations such as Dengue Haemorrhagic Fever (DHF) and Dengue Shock Syndrome (DSS) which lead to considerable morbidity and mortality with a significantly high case fatality rate (CFR).

However there are no simple answers to controlling Dengue. One approach is to reduce the number of infections through a well organized vector control programme; which is easily said than done due to obvious reasons related to the breeding habits and behaviour patterns of the vector mosquito. Also in the absence of an effective drug or a vaccine against the disease, it should be emphasized, that eradication of Dengue in any time in the near future in Sri Lanka will be next to impossible. Consequently, accurate early detection and treatment of DHF cases will be paramount in bringing down the number of deaths due to Dengue. Educating the public about the signs and symptoms of DF and doctors about proper diagnosis and management of DHF have proved to be effective in achieving this.

In this state of affairs, the Epidemiology unit of the Ministry of Health, Sri Lanka, in collaboration with the Ceylon College of Physicians and the Sri Lanka College of Paediatricians has come up with two sets of new National Guidelines on Management of DF and DHF in adults and in children and adolescents respectively. These guidelines were developed based on the best available evidence at the time of writing.

This document was aimed at providing guidance to all levels of health professionals as an authoritative source of reference, to carry out appropriate treatment for patients with Dengue Fever/Dengue Haemorrhagic Fever, expeditiously disseminating and establishing new knowledge among them and

thereby reduce complications and the case fatality rate in future .

These guidelines have been developed by a team of physicians who are experienced in the field, in consultation with the Ceylon College of Physicians and the Sri Lanka College of Paediatricians. This team of experts underwent an extensive clinical management training programme in 2010, in a centre of excellence in Thailand where similar guidelines are practiced, under world authorities on clinical management of Dengue

These guidelines, will be published in December 2010, supersede the previous single set of guidelines published by the Epidemiology Unit, Ministry of Health in 2005.

The principles of management given in the guidelines have already been practised in several hospitals in the country by the team of experts involved in the development of the guidelines over a period of several months in 2010 with significant improvements in the disease outcomes.

Identifying the beginning and predicting the end of the critical phase (leaking phase), meticulous monitoring, accurate fluid management in the critical phase, vigilance, early detection and treatment of concealed bleeding and other complications are the most crucial factors in reducing case fatality in patients with Dengue Haemorrhagic Fever

In addition to the information on the natural course of the illness, diagnosis at primary care level giving the clinical features, criteria for admission, management of patients not warranting admission etc. the guidelines emphasize some new concepts based on most updated knowledge on management of DHF and DSS; some of which are mentioned below.

- The importance of accurately identifying the onset of the critical phase of the disease through appropriate investigations and monitoring.

Contents

- Monitoring the patients during the critical phase giving the clinical and laboratory parameters to go by with their frequency of evaluation.
- The main feature of the guidelines is the new principles of fluid management during the critical phase –The amount of fluid given during the critical phase is proven to determine the outcome of the disease; administration of the correct fluid at the correct time in the correct volume at the correct rate will prevent the patient going in to shock, and will help to manage shock effectively, if the patient is already in shock at the time of admission. Thus the correct fluid management has been proven to minimise complications and reduce the mortality significantly in patients with DSS. The guidelines highlight the importance of avoiding overloading the patient with IV/oral fluids and reserving the capacity to rapidly infuse fluids if the patient starts leaking fluids rapidly into the extra vascular compartment and thereby preventing shock. The volume of fluid that was previously recommended for 24 hours is now recommended to be given over a period of 48 hours.
- How to calculate the fluid quota recommended for the critical phase
- Indications for administration of Colloids
- Management of Complicated patients
- Place for adjunctive treatment in patients with Dengue

The guidelines also speak about special groups of patients such as small children, pregnant women and patients with co-morbidities.
The clinical case classification of DF, DHF and DSS remains the same as in the previous guidelines with a few exceptions. The guidelines also provide monitoring charts: for management of Dengue patients in the febrile phase, DHF patients during the critical phase and to be used during the peak of leakage and during shock.

A few highlights from the guidelines

The Natural Course of the Illness

The course of dengue infection varies from individual to individual and even in the
same individual from time to time.

The majority of patients infected with dengue virus remain asymptomatic. Others, after an incubation period of 4-7 (range 3-14) days, develop a febrile illness which could turn out to be one of following.

- Undifferentiated febrile illness
- Dengue fever (DF)
- Dengue Haemorrhagic Fever (DHF)
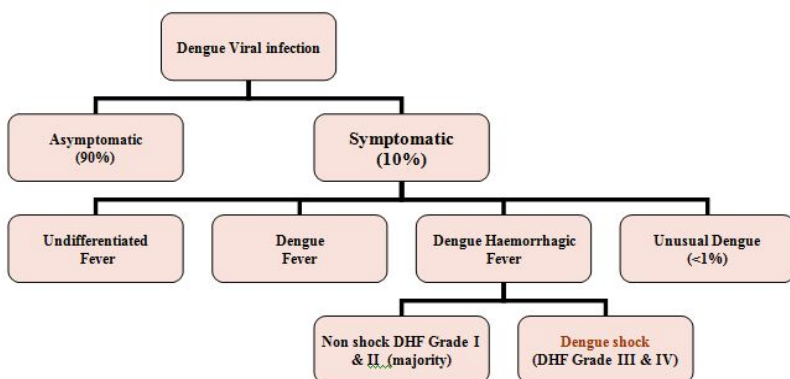
The hallmark of DHF is the plasma leakage

Diagnosis at OPD Level & by the Primary Care Physician

In the present hyper-endemic setting in Sri Lanka, dengue fever should be considered in the differential diagnosis of patients presenting with acute onset of fever with two or more of the following:

1. Headache, especially retro-orbital pain
2. Myalgia /Arthralgia
3. Rash (diffuse, erythematous, macular)
4. Haemorrhagic manifestation (petechiae, positive tourniquet test etc.)
5. Leukopenia (< 5000 /mm3)
6. Rising haematocrit of 5 - 10 %
7. Platelet count ≤ 150,000 /mm3

Criteria for Admission

The first contact physician may decide to admit a patient on clinical judgment.
However it is essential to admit patients:

- **With platelet count less than 100,000/mm3**
- **With the following warning signs :**
  - **Abdominal pain or tenderness**
  - **Persistent vomiting**
  - **Clinical signs of plasma leakage: pleural effusion, ascites**
  - **Mucosal bleeding**
  - **Lethargy, restlessness**
  - **Liver enlargement >2 cm**
  - **Increase in haematocrit (HCT) concurrent with rapid**
  - **decrease in platelet count in a Full Blood Count (FBC)**

The following categories of patients with probable dengue also should be admitted:
- Infants
- Obese patients
- Patients with major co-morbidities / medical problems (diabetes, nephrotic syndrome, CRF, haemolytic diseases, poorly controlled
- asthma)
- Adverse social circumstances- living alone, living far from health care facility without reliable means of transport, unreliable parents

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Table 1: Vaccine-preventable Diseases & AFP   23rd – 29th October 2010(43rd Week)

Disease	No. of Cases by Province									Number of cases during current week in 2010	Number of cases during same week in 2009	Total number of cases to date in 2010	Total number of cases to date in 2009	Difference between the number of cases to date in 2010 & 2009
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	01	00	00	00	01	00	00	01	01	04	00	72	57	+ 26.3 %
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	-
Measles	00	00	00	00	00	00	00	00	00	00	03	86	157	- 45.2 %
Tetanus	00	00	00	00	00	00	00	00	00	00	00	20	23	- 13.0 %
Whooping Cough	00	00	00	00	00	01	00	00	00	01	01	29	57	- 49.1 %
Tuberculosis	111	20	118	07	08	27	01	19	24	335	203	8467	8542	-0.1 %

Table 2: Newly Introduced Notifiable Disease   23rd – 29th October 2010(43rd Week)

Disease	No. of Cases by Province									Number of cases during current week in 2010	Number of cases during same week in 2009	Total number of cases to date in 2010	Total number of cases to date in 2009	Difference between the number of cases to date in 2010 & 2009
	W	C	S	N	E	NW	NC	U	Sab					
Chickenpox	08	00	02	01	02	04	03	00	05	25	55	8253	13641	- 39.5 %
Meningitis	04 CB=1 KL=2 GM=1	00	03 GL=3	00	01 BT=1	06 KR=6	01 AP=1	00	01 KG=1	16	76	1368	1190	+ 15.0 %
Mumps	03	04	03	01	00	02	01	01	02	17	12	995	1548	- 35.7 %
Leishmaniasis	00	00	00	00	00	01 KR=1	05 AP=3 PO=2	00	00	06	07	325	581	- 44.6%

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.
Data Sources:
Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps.
Special Surveillance: Acute Flaccid Paralysis.
Leishmaniasis is notifiable only after the General Circular No: 02/102/2008 issued on 23 September 2008.

Dengue Prevention and Control Health Messages

Look for plants such as bamboo, bohemia, rampe and banana in your surroundings and maintain them free of water collection.

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

23rd – 29th October 2010(43rd Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Returns received timely
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	25	5683	3	286	0	15	6	163	3	43	3	519	0	8	1	61	0	1	62
Gampaha	18	3789	2	153	0	26	2	55	0	21	10	461	0	15	2	104	0	4	67
Kalutara	6	1760	6	231	1	14	0	32	1	75	4	356	0	4	0	41	0	3	67
Kandy	6	1565	17	304	1	6	0	30	0	15	8	120	3	128	2	129	0	1	78
Matale	6	579	5	287	2	8	1	36	1	75	1	93	0	6	1	52	0	1	83
Nuwara	3	215	2	324	1	1	0	109	0	84	2	29	0	59	3	45	0	0	92
Galle	4	1083	0	240	0	8	1	10	41	59	3	141	0	19	0	18	0	4	53
Hambantot	3	779	1	68	0	7	0	4	0	14	2	86	0	89	1	19	0	0	45
Matara	2	585	0	163	0	8	0	11	2	52	9	332	1	127	1	19	0	0	88
Jaffna	7	2751	9	266	0	7	5	518	0	8	0	1	0	116	0	65	0	2	83
Kilinochc	0	40	0	14	0	0	0	10	0	1	0	3	0	0	0	1	0	0	50
Mannar	2	548	1	45	0	2	1	44	0	10	0	0	0	1	0	17	0	0	50
0Vavuniya	0	571	1	48	0	3	1	44	0	12	0	2	0	1	0	13	0	1	50
Mullaitivu	0	22	1	7	0	0	0	3	0	0	0	0	0	2	0	1	0	0	17
Batticaloa	0	1182	6	173	0	4	0	34	0	38	1	13	0	3	0	5	0	3	71
Ampara	0	146	2	105	0	1	0	8	0	65	0	30	0	1	1	13	0	0	57
Trincomale	2	951	3	147	0	14	0	7	0	11	0	28	0	19	0	14	0	1	73
Kurunegala	4	1365	4	288	0	19	2	43	4	24	18	304	0	54	2	116	0	4	76
Puttalam	1	966	0	143	0	7	0	49	0	125	0	72	0	1	0	21	0	1	56
Anuradhap	6	1019	6	101	0	11	0	14	0	46	3	81	0	26	2	49	0	4	63
Polonnaru	2	386	4	103	0	1	0	7	0	8	1	62	0	2	0	43	0	0	100
Badulla	4	1265	0	193	0	1	1	82	0	27	2	80	5	104	0	105	0	0	67
Monaragala	6	992	7	166	0	1	0	40	0	7	0	33	1	83	0	88	0	3	55
Ratnapura	3	2689	2	445	0	5	0	18	0	26	3	367	0	59	1	90	0	2	33
Kegalle	1	861	1	139	0	15	3	68	0	25	14	315	1	29	4	118	0	0	64
Kalmunai	4	516	3	278	0	3	0	10	0	9	0	3	0	0	1	12	0	1	54
SRI LANKA	115	32308	86	4717	5	187	23	1449	52	880	84	3531	11	956	22	1259	0	36	66

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 29th October , 2010 Total number of reporting units =320. Number of reporting units data provided for the current week: 212

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

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.**

ON STATE SERVICE

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