WEEKLY EPIDEMIOLOGICAL REPORT

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Ministry of Healthcare and Nutrition

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Meningococcal Meningitis

Meningococcal meningitis is a bacterial form of meningitis, a serious infection of the meninges that affect the brain membrane. It can cause severe brain damage and is fatal in 50% of cases if untreated.

Several different bacteria can cause meningitis. *Neisseria meningitidis* is the one with the potential to cause large epidemics. Twelve groups of *N. meningitidis* have been identified, five of which (A, B, C, W135, and X) can cause epidemics. Geographic distribution and epidemic potential differ according to the group.

Transmission

Bacteria are transmitted from person to person through droplets of respiratory or throat secretions. Close and prolonged contact – such as kissing, sneezing or coughing on someone, or living in close quarters (such as a dormitory, sharing eating or drinking utensils) with an infected person, facilitates spread of the disease. The average incubation period is four days, but can range between two and 10 days.

Neisseria meningitidis only infects humans, there is no animal reservoir. The bacteria can be carried in the throat and sometimes, for reasons not fully understood, can overwhelm the body's defenses allowing infection to spread through the bloodstream to the brain. It is believed that 10% to 20% of the population carries *Neisseria meningitidis* at any given time. However, the carriage rate may be higher in epidemic situations.

Symptoms

The most common symptoms are a stiff neck, high fever, sensitivity to light, confusion, headaches and vomiting. Even when the disease is diagnosed early and adequate treatment is commenced, 5% to 10% of patients die, typically within 24 to 48 hours after the onset of symptoms. Bacterial meningitis may result in brain damage, hearing loss or a learning disability in 10% to 20% of the survivors. A less common but even more severe (often fatal) form of meningococcal disease is meningococcal septicaemia, which is characterized by a hemorrhagic rash and rapid circulatory collapse.

Diagnosis

Initial diagnosis of meningococcal meningitis can be made by clinical examination followed by a lumbar puncture showing a purulent spinal fluid. The bacteria can sometimes be seen in microscopic examinations of the spinal fluid. The diagnosis is supported or confirmed by growing the bacteria from specimens of spinal fluid or blood, by agglutination tests or by polymerase chain reaction (PCR). The identification of the groups and susceptibility testing to antibiotics are important to define control measures.

Treatment

Meningococcal disease is potentially fatal and should always be viewed as a medical emergency. Admission to a hospital or health centre is necessary, although isolation of the patient is not necessary. Appropriate antibiotic treatment must be started as soon as possible, ideally after the lumbar puncture has been carried out if such a puncture can be performed immediately. **If treatment is started prior to the lumbar puncture it may be difficult to grow the bacteria from the spinal fluid and confirm the diagnosis**.

A range of antibiotics can treat the infection, including penicillin, ampicillin, chloramphenicol and ceftriaxone. Under epidemic conditions with limited health infrastructure and resources, chloramphenicol or ceftriaxone are the drugs of choice because a single dose has been shown to be effective on meningococcal meningitis.

Prevention

There are three types of vaccines available.
Polysaccharide vaccines have been available to prevent the disease for over 30 years. Meningococcal polysaccharide vaccines are available in either bivalent (groups A and C), trivalent (groups A, C and W), or tetravalent (groups A,

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C, Y and W135) forms to control the disease.

For group B, polysaccharide vaccines cannot be developed, due to antigenic mimicry with polysaccharide in human neurologic tissues. Consequently, vaccines against B developed in Norway, in Cuba and Netherlands are outer membrane proteins (OMP).

Since 1999, meningococcal conjugate vaccines against group C have been available and widely used. Tetravalent A, C, Y and W135 conjugate vaccines have been licensed since 2005 for use in children and adults.

From December 2010, a new meningococcal A conjugate vaccine is being introduced nationwide in Burkina Faso, Mali and Niger. The vaccine has several advantages over existing polysaccharide vaccines, it induces a higher and more sustainable immune response against group A meningococcus. It is expected to confer long-term protection not only for those who receive the vaccine, but on family members and others who would otherwise have been exposed to meningitis. It is available at a lower price than other meningococcal vaccines and it is expected to be particularly effective in protecting children under two years of age who do not respond to conventional polysaccharide vaccines.

It is hoped that all 25 countries in the African meningitis belt will have introduced this vaccine by 2015. High coverage of the target age group of 1 to 29 years is expected to eliminate meningococcal A from this region of Africa.

Outbreak trends

Meningococcal meningitis occurs in small clusters throughout the world with seasonal variation and accounts for a variable proportion of epidemic bacterial meningitis.

The largest burden of meningococcal disease occurs in an area of sub-Saharan Africa known as **the meningitis belt**, which stretches from Senegal in the west to Ethiopia in the east. During the dry season between December to June, dust winds, cold nights and upper respiratory tract infections combine to damage the nasopharyngeal mucosa, increasing the risk of meningococcal disease. At the same time, transmission of *N. meningitidis* may be facilitated by overcrowded housing and by large population displacements at the regional level due to pilgrimages and traditional markets. This combination of factors explains the large epidemics which occur during the dry season in the meningitis belt.

Global public health response

With the introduction of the new meningococcal A conjugate vaccine, WHO promotes a strategy comprising epidemic preparedness, prevention and response. Preparedness focuses on surveillance, from case detection to investigation and laboratory confirmation. Prevention consists of vaccinating all 1-29 year-olds in the African meningitis belt with this vaccine. WHO regularly provides technical support at the field level to countries facing epidemics.

Epidemic response consists of prompt and appropriate case management with chloramphenicol or ceftriaxone and reactive mass vaccination of populations not already protected through vaccination. Meningitis epidemics in the African meningitis belt constitute an enormous public health burden. WHO is committed to eliminating meningococcal disease as a public health problem.

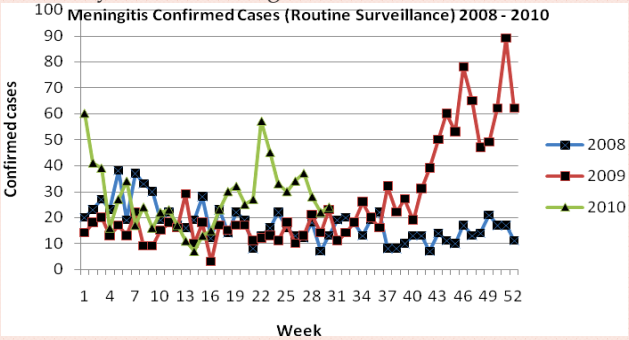
Meningitis is listed as a notifiable disease in Sri Lanka. It is also listed under the diseases requiring special investigation which should be carried out only by a Medical Officer of Health (MOH) or any other Medical Officer. For surveillance purposes, following case definitions have been established by the Epidemiology Unit of Ministry of Health.

"Fever of acute onset with one or more of the following signs and meningeal irritation/inflammation".

- Neck stiffness
- Poor sucking (in infants)
- Bulging fontanelles (in infants)
- Altered consciousness
- Irritability
- Seizures
- Other signs of meningeal irritation/inflammation

According to the special investigation carried out in the field by MOH/AMOH meningitis cases will be classified into the following groups

1. **Suspected**: A case compatible with the surveillance case definition
2. **Probable bacterial meningitis**: A suspected case with a turbid ("cloudy") CSF or a CSF with an elevated protein (>100mg/dl) decrease glucose (<40mg/dl) as compared to the blood glucose level or leucocytosis (>100WBC/mm^3) with 80% neutrophils
3. **Probable viral meningitis**: A suspected case with CSF findings including pleocytosis (usually mononuclear, occasionally polymorphonuclear in the early stages), increased protein, normal sugar and absence of other causative organisms
4. **Confirmed**: A suspected case which is laboratory confirmed by culture or antigen detection



Source: H399

The graph shows the confirmed and reported cases of meningitis through routine surveillance system to the Epidemiology Unit from 2008 to the 30th week of 2010. According to the graph year 2008 cases remained constant approximately at the level of 18 cases per week (Mean = 17.58, SD = 7.06). Year 2009, case load has increased beyond the outbreak level (i.e Mean + 2SD = 31.68) of 32 cases per week after 40th week and was steadily increasing towards the end of the year. The peak began to come down around the 51st week of the year 2009. Major contributors for this peak were Kurunegala, Kalutara, Rathnapura, Colombo, Anuradhapura and Gampaha. In year 2010 also an outbreak can be noticed between the 21st and 28th week which was contributed by the Kurunegala, Kalutara, Rathnapura and Colombo districts.

Source : ***Epidemiology Unit, Ministry of Health and World Health Organization***

Table 1: Vaccine-preventable Diseases & AFP

16th – 22nd October 2010(42st 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	00	01	00	00	00	00	00	00	00	01	00	68	57	+ 19.3 %
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	-
Measles	00	00	00	00	00	02	00	00	00	02	01	86	154	- 44.1 %
Tetanus	00	00	00	00	00	00	00	00	00	00	01	20	23	- 13.0 %
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	28	56	- 50.0 %
Tuberculosis	29	05	00	02	04	06	00	07	02	55	90	8132	8339	-02.5 %

Table 2: Newly Introduced Notifiable Disease

16th – 22nd October 2010(42st 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	10	04	08	00	06	04	02	05	11	50	59	2820	13547	- 79.8 %
Meningitis	03 KL=3	01 ML=1	00	00	03 TR=3	06 KR=6	00	01 BD=1	01 RP=1	15	57	1344	1102	+ 19.7 %
Mumps	02	01	00	01	00	01	03	03	06	17	15	972	1527	- 37.1 %
Leishmaniasis	00	00	03 HB=2 MT=1	00	01 TR=1	00	06 AP=4 PO=2	01 MO=1	00	11	13	318	574	- 44.2 %

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.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps.

Special Surveillance: Acute Flaccid Paralysis.

Dengue Prevention and Control Health Messages

Reduce, Reuse or Recycle the plastic and polythene collected in your home and help to minimize dengue mosquito breeding.

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

16th – 22nd October 2010(42st 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	49	5623	8	282	0	14	10	155	0	39	12	510	0	7	1	59	0	1	**85**
Gampaha	12	3711	7	147	0	25	1	50	0	20	25	438	1	15	3	101	0	4	**73**
9Kalutara	7	1753	5	225	0	13	3	32	0	74	2	351	0	4	1	39	0	2	**92**
Kandy	7	1557	3	287	0	5	0	30	0	15	8	112	0	125	2	127	0	1	**87**
Matale	3	572	3	282	0	6	1	35	2	74	1	92	0	6	1	51	0	1	**92**
Nuwara	1	212	3	322	0	0	1	109	0	84	1	27	2	59	1	42	0	0	**85**
Galle	4	1074	1	236	0	7	1	9	0	18	7	132	0	19	0	18	0	4	**74**
Hambantot	6	775	0	67	0	7	0	4	1	14	2	84	3	89	1	18	0	0	**91**
Matara	7	573	2	158	0	8	0	11	1	50	9	319	0	126	0	18	0	0	**76**
Jaffna	18	2744	6	257	0	7	5	513	0	8	0	1	2	116	1	65	0	2	**83**
Kilinochc	0	40	0	14	0	0	0	10	0	1	0	3	0	0	0	1	0	0	**100**
Mannar	9	546	0	44	0	2	1	43	0	10	0	0	0	1	0	17	0	0	**50**
0Vavuniya	0	571	2	47	0	3	0	43	0	12	0	2	0	1	0	13	0	1	**100**
Mullaitivu	0	22	0	6	0	0	0	3	0	0	0	0	0	2	0	1	0	0	**17**
Batticaloa	1	1182	3	167	0	4	0	34	0	38	0	12	0	3	0	5	0	3	**86**
Ampara	1	146	3	103	0	1	0	8	0	65	0	30	0	1	1	12	0	0	**100**
Trincomale	0	947	3	144	0	14	0	7	0	11	0	28	1	19	0	14	0	1	**64**
Kurunegala	4	1359	5	277	0	19	0	40	5	20	10	286	2	54	1	114	0	4	**71**
Puttalam	3	959	3	141	0	7	0	49	0	125	2	72	0	1	0	21	0	1	**56**
Anuradhap	6	1013	1	90	0	11	0	14	0	46	2	78	1	26	1	47	0	4	**58**
Polonnaru	0	384	2	99	0	1	0	7	0	8	2	61	0	2	0	43	0	0	**86**
Badulla	8	1259	3	191	0	1	0	81	0	27	3	78	2	97	2	105	0	0	**60**
Monaragala	6	983	0	159	0	1	3	40	0	7	0	33	4	82	3	88	0	3	**64**
Ratnapura	1	2683	2	441	0	5	0	18	0	26	4	362	0	58	0	89	0	2	**50**
Kegalle	3	860	10	138	0	15	1	65	3	25	12	297	1	28	1	110	0	0	**91**
Kalmunai	1	512	2	247	0	3	0	8	0	9	0	3	0	0	0	11	0	1	**69**
SRI LANKA	**157**	**32060**	**77**	**4598**	**00**	**179**	**27**	**1418**	**12**	**826**	**102**	**3411**	**19**	**941**	**20**	**1229**	**00**	**35**	**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 22nd October , 2010 Total number of reporting units =311. Number of reporting units data provided for the current week: 241
A = Cases reported during the current week. B = Cumulative cases for the year.

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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.

ON STATE SERVICE

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