WEEKLY EPIDEMIOLOGICAL REPORT

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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

Contents ***Page***

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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