WEEKLY EPIDEMIOLOGICAL REPORT

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Immunizing against Mumps

Background

Mumps is most often a mild disease of childhood. Before 1960s, when mumps vaccines became commercially available, mumps was a common infectious disease in all parts of the world. In hot climates the disease may occur at any time of the year, whereas in temperate climates the incidence peaks in winter and spring. By December 2010, 124 of the 197 (63%) WHO Member States had included mumps vaccine in their national immunization programmes, the vast majority using the combined MMR vaccine as a two dose schedule vaccine. Disease incidence has dropped dramatically in countries where large-scale immunization against mumps has been implemented.

The pathogen

Mumps virus belongs to the genus Rubulavirus of the family Paramyxoviridae. Humans are the only known natural host for mumps virus. Only 1 distinct serotype of mumps virus exists, but sequence analysis of the variable gene encoding a small hydrophobic protein (the SH gene) permits differentiation into genotypes.

The disease

Mumps infection is spread via direct contact or by airborne droplets from the upper respiratory tract of infected individuals. The averages incubation period is 16–18 days with a range of 2–4 weeks. Although mumps is most frequently reported in children aged 5–9 years, both adolescents and adults may be affected. After about 1 week, mumps typically begins with non-specific symptoms, such as myalgia, headache, malaise and low-grade fever; within a day these are followed by the characteristic unilateral or bilateral swelling of the parotid glands. Other salivary glands are visibly affected in approximately 10% of cases. Unless complications occur, the illness resolves completely.

In approximately 30% of cases, only non-specific symptoms occur or the infection is asymptomatic. Most infections in children aged <2 years are subclinical. People with mumps are contagious from about 2 days before the onset of swelling of the parotid glands up to 9 days after the onset of swelling. No specific therapy for mumps exists. With a case–fatality rate of only 1/10 000 cases, mumps is generally a mild self-limiting disease, although complications may occur.

In general, natural infection confers lifelong protection against the disease, but recurrent mumps attacks have been reported. Protection against mumps correlates with the presence of specific serum antibodies. It is not known whether a prerequisite for lifelong immunity is boosting of the immune system from circulating wild virus in the community.

Complications

Asymptomatic pleocytosis of cerebrospinal fluid (>5 leucocytes/mm^3) is found in 50–60% of mumps patients; symptomatic meningitis is reported in as many as 15%. Mumps encephalitis is reported in 0.02–0.3% of cases. Although the case–fatality rate of mumps encephalitis is low, permanent sequelae including paralysis, sei-

Proposed MMR Vaccine Schedule commencing from 1st October 2011

1st Dose - at 1 year

2nd Dose – at 3 years

Dose : 0.5 ml of reconstituted vaccine

Route : Subcutaneous

Site : Outer mid thigh / Mid deltoid region of the upper arm

Storage :
Unopened vials should be stored in the upper shelf of the main compartment of the refrigerator at the MOH office.
In the clinic, both unopened and reconstituted vaccine vials should be stored at 2 to 8 degrees centigrade and reconstituted vials should be discarded 6 hours after reconstitution or at the end of the vaccination session. These vials should be protected from light.

Contents	*Page*

zures, cranial nerve palsies, aqueductal stenosis and hydrocephalus may occur. Acquired sensorineural deafness caused by mumps is one of the leading causes of deafness in childhood, affecting approximately 5/100 000 mumps patients. Orchitis occurs in 20% of post-pubertal males who develop mumps. In 20% of orchitis cases, both testes are affected, but mumps orchitis is rarely associated with permanently impaired fertility. Symptomatic oophoritis and mastitis are relatively uncommon and apparently without long-lasting consequences for patients. Acquisition of mumps during the first 12 weeks of pregnancy is associated with a 25% incidence of spontaneous abortions, but foetal malformations following infection with mumps virus during pregnancy have not been found. Pancreatitis is reported as a complication in approximately 4% of cases, but the relationship between mumps pancreatitis and diabetes mellitus remains speculative.

Diagnosis

An assay for the detection of mumps-specific immunoglobulin M antibodies in serum and oral fluid specimens is available. Serological confirmation of immunity is based on the demonstration of specific serum immunoglobulin G using readily available immunoassays.

Global burden

In most parts of the world, the annual incidence of mumps in the absence of immunization is in the range of 100–1000 cases/100 000 population, with epidemic peaks every 2–5 years.

Sri Lankan burden

Morbidity due to disease is high even though mortality is low. The data that is available on Mumps is mainly from inward data from hospitals. There is no data on OPD treatment seeking patterns or community level disease burden. Therefore, an estimation of disease burden is arrived at by applying the lowest reported incidence to Sri Lanka. It gives an annual incidence of 20,000 cases (i.e. 0.1% into 20 million). This gives rise to an annual loss of 280,000 days if we were to apply the estimated average loss of 14 days per case (conversely, if the worst case scenario were to apply, it would give rise to 200,000 mumps cases and 2.8 million days of disability per year)

According to statistics of the Medical Statistics Unit, 3,127 and 3,441 cases of live discharges were reported from government hospitals for the years 2008 and 2009 respectively. Completeness of the reporting for that period was 75% and there were no reports from the private sector. Therefore it is safer to assume 4000-5000 cases per year, after allowing for these factors. Some of the reasons for hospitalization were severe complications of Mumps, such as mumps encephalitis, meningitis, parotitis and orchitis, which required an average of 7 days of hospitalization. Fifty percent (50%) of the reported cases were below 15 years of age, stressing the importance of immunization of children at an early age.

Prevention

A killed mumps virus vaccine that was licensed in the United States in 1948 and used from 1950 to 1978 induced only short -term immunity with low protective efficacy. Since then, live attenuated mumps virus vaccines have been developed in Japan, the former Soviet Union, Switzerland and the United States. Different strains of mumps virus are used for the development of the vaccines. Furthermore, vaccine preparations utilizing a given parent strain of mumps virus may not be identical because of differences in passage history, cell substrates or manufacturing. All live attenuated mumps vaccines are lyophilized and must be reconstituted before use.

Accumulated global experience shows that 2 doses of the vaccine are required for long-term protection against mumps. The first dose of the mumps vaccine (monovalent or MMR) should be given at the age of 12–18 months. Because of programmatic considerations aimed at optimizing vaccination coverage, the age of administration of the second dose may range from the second year of life to age at school entry (about 6 years of age). The minimum interval between the first and second doses is 1 month.

Adverse reactions to the vaccine

In general, adverse reactions to mumps vaccination are rare and mild. Apart from slight soreness and swelling at the injection site, the most common adverse reactions are parotitis and low-grade fever. Occasionally, orchitis and sensorineural deafness have been observed after mumps vaccination. Moderate fever occurs rarely, and aseptic meningitis has been reported at widely varying frequencies (for example from 1case/400 vaccinations to 1/1 500 000 vaccinations). The difference in frequency of vaccine-associated aseptic meningitis is not only a reflection of differences in vaccine strains and their preparation, but also of variation in study design, diagnostic criteria and clinical practice. Delayed onset of aseptic meningitis may limit the ability to detect cases by passive surveillance. The onset of aseptic meningitis usually occurs 2–3 weeks after vaccine administration; the median interval is 23 days (range, 18–34 days). Some meningitis cases are characterized by pleocytosis of the cerebrospinal fluid without clinically significant disease.

Contraindications to the vaccine

Contraindications to mumps vaccination are few. As with all live attenuated vaccines, mumps vaccine should not be administered to individuals with advanced immune deficiency or immune suppression. Mumps vaccination is contraindicated during pregnancy; however foetal damage has not been documented when mumps vaccines have been given to pregnant women. Allergy to vaccine components, such as neomycin and gelatin, is a contraindication to administration of the vaccine.

Current WHO Recommendations

Recommended schedule depends on epidemiology and programmatic considerations. First dose is recommended at 9 months where attack rates are high and where the risk of serious disease among infants is high, but first dose is recommended at 12-15 months where risk of infant infection is low. Two doses, at 6 and 9 months, are recommended for HIV infected infants. Routine mumps vaccination is recommended in countries with a well established, effective childhood vaccination programme with the capacity to maintain a high-level vaccination coverage (coverage >80%). Combination of mumps vaccine with measles and rubella vaccines is recommended.

More details on new the MMR vaccine are available from the general circular No 02-123/2011, dated 22nd August 2011.

Sources

1. *WHO Position Paper on mumps 2007, available from http://www.who.int/wer/2007/wer8207.pdf*
2. *General circular No 02-123/2011, available from http://www.epid.gov.lk/pdf/Immunization/MMRV%20circuler%20on%20MIN%20Letter%20Head%20F.pdf*

Compiled by Dr. Sudath Peiris, Assistant Epidemiologist.

Table 1: Vaccine-preventable Diseases & AFP

10th – 16th September 2011 (37th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2011	Number of cases during same week in 2010	Total number of cases to date in 2011	Total number of cases to date in 2010	Difference between the number of cases to date in 2011 & 2010
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	01	01	00	00	00	00	00	00	02	01	64	66	+ 03.0 %
Diphtheria	00	00	00	00	00	00	00	00	00	-	-	-	-	-
Measles	00	01	00	00	00	00	00	00	00	01	01	106	74	+ 44.4 %
Tetanus	00	02	00	00	00	00	00	00	00	02	00	20	18	+ 11.1 %
Whooping Cough	04	00	02	01	01	00	00	00	00	08	02	40	25	+ 60.0 %
Tuberculosis	63	05	17	18	17	33	01	17	43	214	158	6615	6770	+ 02.3 %

Table 2: Newly Introduced Notifiable Disease

10th – 16th September 2011 (37th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2011	Number of cases during same week in 2010	Total number of cases to date in 2011	Total number of cases to date in 2010	Difference between the number of cases to date in 2011 & 2010
	W	C	S	N	E	NW	NC	U	Sab					
Chickenpox	12	09	13	04	07	09	10	05	10	80	78	3187	2475	+ 28.8 %
Meningitis	02 GM=2	03 KN=1 ML=2	01 GL=1	00	01 TR=1	01 KN=1	01 AP=1	02 BD=1 MO=1	03 RP=3	14	15	638	1246	- 48.8 %
Mumps	05	16	10	02	02	09	03	03	14	64	21	2338	855	+ 173.4 %
Leishmaniasis	00	00	00	00	00	00	09 AP=4 PO=5	00	00	09	07	554	251	+ 120.7 %

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.

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

10th – 16th September 2011 (37th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Returns Received
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	143	7213	1	154	0	6	10	163	1	49	12	318	0	7	0	56	0	2	**77**
Gampaha	43	2815	7	109	1	16	6	61	0	27	8	406	0	21	14	221	0	6	**67**
Kalutara	24	975	6	119	1	6	7	57	0	21	13	238	1	3	0	7	0	1	**100**
Kandy	46	721	3	324	0	7	0	25	0	38	2	141	2	92	2	47	0	0	**83**
Matale	4	260	3	134	0	3	0	27	1	19	0	150	0	14	1	8	0	0	**92**
Nuwara	7	156	4	296	0	4	2	48	0	89	2	44	4	59	1	19	0	1	**100**
Galle	19	646	1	81	0	6	1	18	0	6	9	157	1	35	1	10	0	5	**74**
Hambantota	5	336	3	50	0	4	0	3	1	29	9	464	0	52	1	11	0	1	**92**
Matara	7	374	4	68	0	2	0	13	0	28	14	263	1	61	1	16	0	1	**94**
Jaffna	6	260	19	213	0	3	2	204	0	71	0	2	1	194	0	23	0	1	**82**
Kilinochchi	0	48	1	22	0	3	0	9	0	12	0	2	0	10	0	3	0	0	**75**
Mannar	0	26	2	19	0	0	0	29	0	82	0	13	0	32	0	2	0	0	**100**
Vavuniya	1	66	1	25	0	12	1	9	1	48	0	44	0	2	0	1	0	0	**100**
Mullaitivu	0	15	0	44	0	1	0	4	0	9	0	5	0	1	0	2	0	0	**75**
Batticaloa	6	698	3	534	0	5	1	6	0	25	0	26	0	3	0	2	0	6	**79**
Ampara	1	125	4	104	0	1	0	10	18	47	0	56	0	1	0	7	0	0	**86**
Trincomalee	1	140	5	573	0	2	0	7	0	11	0	87	0	7	0	7	0	0	**83**
Kurunegala	15	714	5	278	0	12	3	83	4	73	14	1424	1	67	3	35	0	4	**87**
Puttalam	2	384	1	156	0	1	0	25	0	9	2	104	0	17	0	6	0	2	**75**
Anuradhapu	2	220	2	107	0	1	1	4	0	33	0	237	0	16	0	16	0	1	**79**
Polonnaruw	3	244	3	101	0	1	0	9	0	22	0	78	0	1	0	15	0	0	**86**
Badulla	3	476	13	286	0	5	0	49	0	9	1	66	4	74	2	55	0	0	**88**
Monaragala	14	197	3	83	0	4	0	31	3	13	1	172	4	62	2	62	0	0	**82**
Ratnapura	24	726	6	424	0	6	0	45	0	17	16	439	0	26	1	36	0	2	**61**
Kegalle	26	577	2	96	0	12	0	63	0	23	3	273	1	29	9	170	0	0	**82**
Kalmune	0	28	0	505	0	0	0	1	0	65	0	5	0	2	0	3	0	1	**46**
SRI LANKA	**402**	**18440**	**102**	**4905**	**02**	**123**	**34**	**1003**	**29**	**875**	**106**	**5214**	**20**	**888**	**38**	**840**	**00**	**34**	**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 16th September , 2011 Total number of reporting units =329. Number of reporting units data provided for the current week: 267
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.**

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