WEEKLY EPIDEMIOLOGICAL REPORT

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231, de Saram Place, Colombo 01000, Sri Lanka
Tele: + 94 11 2695112, Fax: +94 11 2696583, E mail: epidunit@sltnet.lk
Epidemiologist: +94 11 2681548, E mail: chepid@sltnet.lk
Web: http://www.epid.gov.lk

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Measles Elimination Strategic Plan Part III

Post-exposure prophylaxis

In unimmunized or insufficiently immunized indi-vidu-als, measles vaccine may be administered within 72 hours of exposure to measles virus to protect against the disease. If the disease does develop, symptoms are usually not severe and the duration of illness is shortened. For susceptible individuals for whom MCV is contraindicated, human immune globulin may be given after measles virus exposure, particularly to pregnant women, infants aged <6 months, and individuals with impaired immune systems. If administered within 6 days of expo-sure, this method of passive immunization can prevent illness or reduce its severity.

Naturally-acquired immunity

Whereas the presence of circulating, neutralizing anti-body against the H antigen is sufficient to prevent infec-tion with measles virus, cell-mediated immunity is required to clear the virus once infection has occurred. Long-lasting, possibly lifelong, immunological memory following wild-type virus infection includes both continued production of measles virus-specific antibod-ies and the circulation of measles virus-specific CD4+ and CD8+ T lymphocytes. Although the levels of anti-measles-virus antibodies may diminish over time, the ability to rapidly mount secondary humoral and cellular immune responses ensures protection from infection. Infants can be protected temporarily by maternal anti-measles IgG antibodies which cross the placenta to the foetus. Depending on the concentration of passively-acquired maternal antibodies, infants are usually protected against measles for 6–9 months. However, infants whose mothers have vaccine-induced immunity receive less maternal antibody than infants whose mothers had had wild-type measles virus infection, resulting in a shorter duration of protection. A large infective dose of the virus may occasionally overcome the protection afforded by maternal antibodies, and measles has been observed in neonates and infants whose mothers escaped wild-type virus infection and had never been vaccinated against measles. This can give devastating effects on infants to suffer from long term morbidity.

Measles vaccines

Measles vaccines were first licensed globally in 1963. Currently, only live attenuated products are available in the market. Several live attenuated measles vaccines are available, either as monovalent vaccine or in combination with rubella, mumps, or with varicella vaccines. When using the combined measles–rubella (MR) vaccine, measles–mumps–rubella (MMR) vaccine, or measles–mumps–rubella–varicella (MMRV) vaccine, the protective immune response to each individual vaccine antigen is largely unchanged.

Vaccine characteristics, content, dosage, administration, storage

Measles vaccine, as a single antigen or combina-tion, protects equally well against all wild-type measles virus genotypes. The standard volume of MCVs is 0.5 ml. Measles vaccines are usually

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injected subcutaneously but are also effective when injected intramuscularly. The preferred site of injection is the anterol-ateral thigh or upper arm depending on the child's age. Mea-sles vaccines are licensed for use starting as early as 6 months of age to be used for countries experiencing measles outbreaks or for specific strategies such as traveller vaccina-tion. In countries where incidence and mortality from measles are high in the first year of life, WHO recommend that vaccina-tion be initiated at 9 months or preferably after12 months for better sero conversion and protection. In coun-tries where en-demic transmission is low, vaccination can be delayed until 12 –15 months of age as mature immune system develops better level of protective antibodies. For primary immunization, 2 dos-es are recommended. The second dose of MCV is preferably recommended to provide in the second year of life, but it may be administered as early as 4 weeks after the first dose. The second dose is needed to protect children who did not develop protective immunity after the first dose. Vaccinating infants before or at the age of 6 months often fails to induce seroconversion due to the immaturity of the immune system as well as the presence of neutral-izing maternal antibodies. Even giving the first dose at 9 months have been identified the possibility of primary vaccination failures up to 10–15%.

The development of a high avidity antibody response (IgG) to provide long term immunity if only provided as a single dose before 12 months. Antibody avidity to measles virus is generall-ly lower in children vaccinated at 6 or 9 months of age com-pared with the avidity obtained in children vaccinated at age 12 months as a single dose. Therefore, the recommended age at vaccination must balance the risk of primary vaccine failure, which decreases with increas-ing age, with the risk of contract-ing measles virus infection prior to vaccination which increases with age.

In general, it is recommended that the freeze-dried vaccine be stored in a refrigerated condition at 2–8 °C together with the diluent. The vaccine is also sensi-tive to light and usually the product presents to the market in coloured glass vials aiming to protect from sunlight. After reconstitution, the vaccine must be stored at 2–8 °C, without direct exposure to sunlight and only to be used within 6 hours after reconstitution.

Immunogenicity, efficacy and effectiveness

Measles vaccine induces both humoral and cellular immune responses similar to those induced by wild-type measles virus infection, although antibody concen-trations are usually lower.

Duration of protection

Although the duration of protection following measles vaccina-tion is more variable than following wild-type virus infection, evidence indicates that a single dose of correctly administered measles vaccine which results in seroconversion will afford lifelong protec-tion for most healthy individuals.

Vaccine safety

Adverse reactions following measles vaccination are generally mild and transient. Within 24 hours of vacci-nation, vaccine recipients may experience slight pain and tenderness at the site of injection, which usually resolves in 2–3 days. Approxi-mately 7–12 days after vaccination, systemic reactions occur in about 5–15% of recipients including fever of >39 °C and tran-sient rash occurs in about 2% of recipients for 1–2 days. Ad-verse events, with the exception of anaphylactic reactions, are less likely to occur after MCVvaccination.

Allergic reactions to vaccine components including neomycin and the stabilizers have also been reported after measles vac-cination. Hypersensitivity reactions, such as urticaria at the injection site, rarely occur after measles vaccination. Anaphy-lactic reactions to MCV are considered extremely rare, occur-ring at a rate of 3.5–10 cases per million doses. Anaphylactic reactions are usually attributed to gelatin stabilizers used in vaccine production and not to residual egg proteins.

MCV occasionally induces febrile seizures. An association between residual seizure disorders and measles vaccination has not been established. Transient thrombocytopenia follow-ing measles vaccination occurs rarely in approximately 1 per 30 000–40 000 vaccinated children.

As with single-antigen measles vaccine, adverse events follow-ing administration of MMR and MMRV vaccines are mostly mild and transient, although the rate of febrile seizures occur-ring 7–10 days after the first dose in children vaccinated with MMRV is about double (9/10 000) that in children who receive MMR and vari-cella vaccines separately at the same visit.

Mild, concurrent infections are not considered a contra-indication to vaccination, but MCVs should be avoided if the patient has high fever or other signs of serious acute illness. Contraindications for MCVs include a history of anaphylactic reactions or severe allergic reac-tions to any component of the vaccine (e.g. neomycin or gelatin), pregnancy, and immuno-suppression. Measles vaccine is contraindicated in cases of severe immuno-deficiency; advanced HIV disease; advanced leukaemia or lymphoma; other serious malignant disease; treat -ment with high-dose steroids, alkylating agents or anti-metabolites; treatment with immunosuppressive thera-peutic radiation.

Compiled By;Dr. Saman Pathirana,

Senior Registrar in community Medicine,Epidemiology Unit

to be continued ...

Table 1: Selected notifiable diseases reported by Medical Officers of Health 18th – 24th August 2018(34th Week)

RDHS Division	Dengue Fever		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Chickenpox		Meningitis		Leishmania-sis		WRCD	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	T*	C**
Colombo	142	7079	2	59	1	7	0	33	1	29	2	140	2	10	1	4	0	0	11	483	0	34	0	2	**63**	**100**
paha	94	3848	0	53	0	8	1	17	1	15	6	156	0	4	0	11	0	0	8	517	1	33	2	32	**65**	**100**
Kalutara	46	2302	2	64	0	3	0	10	8	53	4	403	0	5	3	11	0	0	4	443	2	73	0	9	**53**	**100**
Kandy	50	2613	2	79	0	5	0	3	0	11	2	53	0	78	0	16	0	0	11	246	0	29	0	21	**60**	**100**
Matale	14	745	2	15	0	1	0	4	0	31	3	70	0	2	0	6	0	0	1	29	0	11	2	83	**61**	**100**
NuwaraEliya	3	149	1	43	0	3	0	9	0	47	0	28	1	102	0	21	0	0	5	180	1	27	0	0	**30**	**100**
Galle	13	746	0	39	1	10	0	4	2	9	6	288	1	39	0	2	0	1	6	232	1	44	0	5	**21**	**100**
Hambantota	11	675	0	12	0	4	0	2	0	4	2	47	3	49	0	2	0	1	4	191	0	6	13	520	**72**	**100**
Matara	20	760	0	29	1	6	0	5	0	22	3	168	4	34	0	11	0	0	4	205	1	10	11	295	**55**	**100**
Jaffna	26	2266	0	115	0	4	0	37	0	212	0	10	1	252	0	1	0	2	0	208	0	9	0	3	**38**	**93**
Kilinochchi	9	238	1	23	0	1	0	15	0	2	0	3	0	15	0	0	0	1	1	29	0	2	0	1	**51**	**100**
Mannar	3	186	0	17	0	0	0	3	0	2	0	1	0	0	0	0	0	0	0	27	1	4	0	3	**38**	**100**
Vavuniya	19	457	0	15	0	4	1	35	0	12	0	31	0	7	0	0	0	1	0	38	0	5	0	8	**57**	**100**
Mullaitivu	5	82	0	5	0	0	1	9	0	10	0	8	0	5	0	0	1	1	0	6	0	1	0	2	**24**	**100**
Batticaloa	17	4186	1	118	0	5	0	4	0	24	0	38	0	1	0	2	1	3	4	115	0	17	0	0	**66**	**100**
Ampara	2	191	0	49	0	3	0	2	0	5	0	33	0	0	0	5	0	1	8	194	0	19	0	2	**66**	**100**
Trincomalee	9	902	1	36	1	2	0	4	0	13	0	42	0	19	0	1	0	0	2	157	0	7	0	18	**27**	**100**
Kurunegala	23	1860	1	101	1	13	0	13	0	3	1	108	0	17	1	17	0	1	8	380	3	73	8	247	**63**	**100**
Puttalam	2	1369	0	32	0	6	0	4	0	4	0	31	0	11	0	2	0	0	0	101	0	61	0	2	**63**	**100**
Anuradhapura	9	698	0	38	0	7	0	3	0	38	1	104	0	17	1	9	0	1	4	312	0	30	6	294	**44**	**95**
Polonnaruwa	3	240	0	26	0	2	0	0	0	12	0	91	0	0	0	4	0	1	4	180	0	15	7	160	**59**	**88**
Badulla	10	395	0	89	0	5	0	7	1	11	1	121	5	56	0	28	0	0	11	345	2	87	0	7	**47**	**100**
Monaragala	16	694	0	56	0	2	0	1	0	2	1	218	1	103	0	20	0	0	5	123	4	87	0	29	**67**	**100**
Ratnapura	26	1738	1	127	1	36	0	19	0	5	17	477	0	22	3	16	0	2	1	220	4	90	1	156	**47**	**100**
Kegalle	22	1080	0	47	0	7	0	6	1	76	3	166	0	56	0	11	0	0	4	255	1	36	0	10	**66**	**100**
Kalmune	17	1501	0	29	0	3	0	2	0	31	0	5	0	1	0	1	0	0	5	146	1	9	0	1	**52**	**100**
SRILANKA	**611**	**37000**	**14**	**1316**	**6**	**147**	**3**	**251**	**14**	**683**	**52**	**2840**	**18**	**905**	**9**	**201**	**2**	**16**	**111**	**5362**	**22**	**819**	**50**	**1910**	**53**	**99**

Source: Weekly Returns of Communicable Diseases (WRCD).

*T=Timeliness refers to returns received on or before 24th August , 2018 Total number of reporting units 353 Number of reporting units data provided for the current week: 351 C**-Completeness

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

Table 2: Vaccine-Preventable Diseases & AFP

18th – 24th August 2018(34th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2018	Number of cases during same week in 2017	Total number of cases to date in 2018	Total number of cases to date in 2017	Difference between the number of cases to date in 2018 & 2017
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	01	01	00	01	00	00	00	00	00	02	02	41	47	- 12.7 %
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Mumps	02	01	00	01	01	00	00	02	00	07	03	237	219	8.2 %
Measles	00	00	00	00	00	00	02	00	00	02	06	86	165	- 47.8 %
Rubella	00	00	00	00	00	00	00	00	00	00	01	04	06	- 33.3 %
CRS**	00	00	00	00	00	00	00	00	00	00	00	00	01	0%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	15	11	36.3 %
Neonatal Tetanus	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Japanese Encephalitis	00	00	00	00	00	00	01	00	00	01	00	22	21	4.7 %
Whooping Cough	00	00	00	00	01	00	00	00	00	01	00	36	11	227.2 %
Tuberculosis	33	01	13	18	01	00	00	00	00	66	109	5470	5527	- 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.

RDHS 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, Neonatal Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps., Rubella, CRS,

Special Surveillance: AFP* (Acute Flaccid Paralysis), Japanese Encephalitis

CRS =**Congenital Rubella Syndrome

NA = Not Available

Number of Malaria Cases Up to End of August 2018,

05

All are Imported!!!

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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. Prior approval should be obtained from the Epidemiology Unit before publishing data in this publication**

ON STATE SERVICE

Dr. S.A.R. Dissanayake
CHIEF EPIDEMIOLOGIST
EPIDEMIOLOGY UNIT
231, DE SARAM PLACE
COLOMBO 10