WEEKLY EPIDEMIOLOGICAL REPORT

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Measles

Measles is a highly contagious, serious disease caused by a virus. It remains one of the leading causes of death among young children globally, despite the availability of a safe and effective vaccine. An estimated 164000 people died from measles in 2008, mostly children under the age of five.

Measles is caused by a virus in the paramyxovirus family. The measles virus normally grows in the cells that line the back of the throat and lungs. Measles is a human disease and is not known to occur in animals. Targeted vaccination campaigns have had a major impact on reducing measles deaths. From 2000 to 2008 nearly 700 million children aged 9 months to 14 years who live in high risk countries were vaccinated against the disease. During this period global measles deaths were decreased by 78%.

Signs and symptoms

The first sign of measles is usually a high fever, which begins about 10 to 12 days after exposure to the virus, and lasts four to seven days. A runny nose, a cough, red and watery eyes, and small white spots inside the cheeks can develop in the initial stage. After several days, a rash erupts, usually on the face and upper neck. Over about three days, the rash spreads, eventually reaching the hands and feet. The rash lasts for five to six days, and then fades. On average, the rash occurs 14 days after exposure to the virus (within a range of seven to 18 days).

Severe measles is more likely among poorly nourished young children, especially those with insufficient vitamin A, or whose immune systems have been weakened by HIV/AIDS or other diseases.

Most measles related deaths are caused by complications associated with the disease. Complications are more common in children under the age of five, or adults over the age of 20. The most serious complications include blindness, encephalitis, severe diarrhoea and related dehydration, ear infections, or severe respiratory infections such as pneumonia. **As high as 10% of measles cases result in death among populations with high levels of malnutrition and a lack of adequate health care.**

People who recover from measles are immune for the rest of their lives.

Risk Groups

Unvaccinated young children are at highest risk of measles and its complications, including death. Any non-immune person can become infected.

Measles is still common in many developing countries particularly in parts of Africa and Asia. More than 20 million people are affected by measles each year. The overwhelming majority (more than 95%) of measles deaths occur in countries with low per capita incomes and weak health infrastructures.

Measles outbreaks can be particularly deadly in countries experiencing or recovering from a natural disaster or conflict. Damage to health infrastructure and health services interrupts routine immunization, and overcrowding in residential camps greatly increases the risk of infection.

Transmission

The highly contagious virus is spread by coughing and sneezing, close personal contact or direct contact with infected nasal or throat secretions.

The virus remains active and contagious in the air or on infected surfaces for up to two hours. It can be transmitted by an infected person from four days prior to the onset of the rash to four days after the rash erupts. Measles outbreaks can result in epidemics that cause many deaths, especially among young, malnourished children. In countries where measles has been largely eliminated, cases imported from other countries remain an important source of infection.

Treatment

Severe complications from measles can be avoided though supportive care that ensures good nutrition, adequate fluid intake and treatment of dehydration with WHO-recommended oral rehydration

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solution. This solution replaces fluids and other essential elements that are lost through diarrhoea or vomiting. Antibiotics should be prescribed to treat eye and ear infections, and pneumonia. Vitamin A supplements have been shown to reduce the number of deaths from measles by 50%.

Prevention

Routine measles vaccination for children, combined with mass immunization campaigns in countries with high case and death rates, are key public health strategies to reduce global measles deaths. The measles vaccine has been in use for over 40 years. It is safe, effective and inexpensive. It costs less than one US dollar to immunize a child against measles.

The measles vaccine is often incorporated with rubella and/or mumps vaccines in countries where these illnesses are problems. It is equally effective in the single or combined form. In 2008, about 83% of the world's children received one dose of measles vaccine by their first birthday through routine health services – up from 72% in 2000. Two doses of the vaccine are recommended to ensure immunity, as about 15% of vaccinated children fail to develop immunity from the first dose.

Global health response

The fourth Millennium Development Goal (MDG 4) aims to reduce the under-five mortality rate by two-thirds between 1990 and 2015. Recognizing the potential of measles vaccination to reduce child mortality, and given that measles vaccination coverage can be considered a marker of access to child health services, routine measles vaccination coverage has been selected as an indicator of progress towards achieving MDG 4.

The **Measles Initiative** is a collaborative effort of WHO, UNICEF, the American Red Cross, the United States Centers for Disease Control and Prevention, and the United Nations Foundation. The Initiative, together with other public and private partners, plays a key role in advancing the global measles strategy. This strategy includes:

1. **Strong routine immunization** for children by their first birthday.
2. **A second opportunity' for measles immunization** through mass vaccination campaigns, to ensure that all children receive at least one dose.
3. **Effective surveillance** in all countries to quickly recognize and respond to measles outbreaks.
4. **Better treatment of measles** cases, to include vitamin A supplements, antibiotics if needed, and supportive care that prevents complications.

Sri Lankan Situation

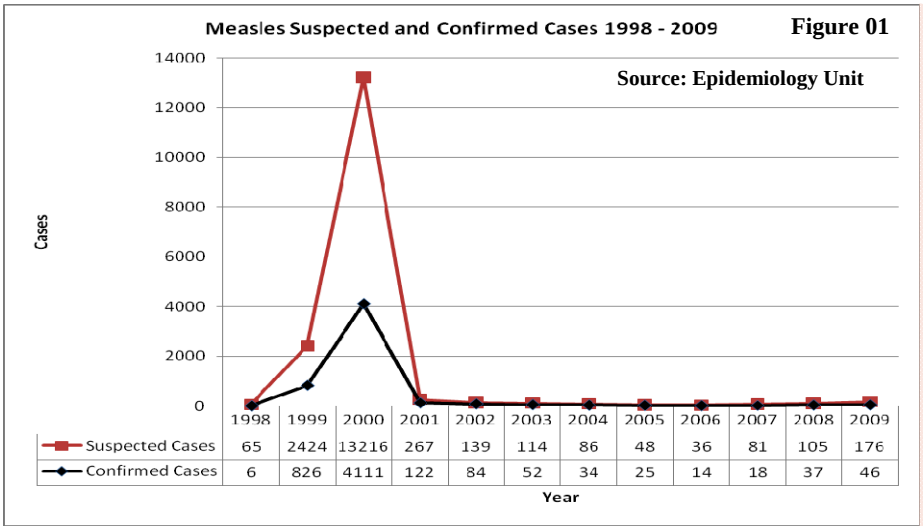
In Sri Lanka also, measles was a major public health problem until the recent past. According to available data from 1950, number of measles cases per 100000 population hover around 35 – 40 in a given year. Outbreak proportion of measles cases were reported in 1982. All these facts led to the Ministry of Health to decide to start measles vaccination in Sri Lanka. Hence, it was introduced to the Expanded Program on Immunization in 1984.

According to the measles epidemiology in Sri Lanka, infants around the age of 6th month of their lives onwards are more susceptible to the disease. When there is no immunization during infancy around the age of 6th month approximately 50% of the infants are susceptible to the disease due to weaning of the maternal antibodies against measles. In the absence of immunization at the age of 18th month of life almost 100% infants are susceptible to measles. Early immunization with measles vaccine has a lower sero-conversion rate. Considering all these facts it was decided to introduce the measles vaccination at the completion of 9th month of life as a single dose monovalent vaccine.

With the introduction of measles vaccine at the age of 9 month, effective control over the disease was achieved. According to the surveillance data, around 1995, overall measles disease rates of the country came down to about 5 cases per 100000 population per year when compared to the pre immunization era against measles. At this time with high vaccine coverage well over 80%, a cohort of children was accumulating due to the **failure in vaccination** (see Box 1). In addition children who were born before 1982 were not included in the measles vaccination programme. When combined these two groups was large enough to erupt a measles outbreak. At this time they were in their adolescence, in year 2000 after 16 years of measles vaccine introduction (figure 01). Causality assessment of year 2000 outbreak shows this was due to the **primary vaccine failure** because efficacy of vaccine at this age of 9th month of infancy is around 85%. This leads to offer 2nd dose of measles vaccination at the age of 3 months of life in the form of measles-rubella (MR) bivalent vaccine in year 2001. Measles catch up programmes were also carried out to increase the measles vaccination coverage. This effectively reduced the accumulation of primary failures of measles vaccination. The decision of MR vaccination on completion of 3rd year of life was taken to give the child to get in contact with primary healthcare system as there was a considerable gap between the 18th month immunization and 60th month immunization.

Source: WHO

Figure 01



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Suspected Cases	65	2424	13216	267	139	114	86	48	36	81	105	176
Confirmed Cases	6	826	4111	122	84	52	34	25	14	18	37	46

Box 1

Vaccine failure is when disease occurs in a person despite being vaccinated agaist it. It is of two types:

Primary vaccine failure: This is when a person fails to produce antibodies (at detectable levels) or does not produce enough antibodies considered necessary to protect from the disease.

Secondary vaccine failure: This is when a person does produce antibodies in response to vaccination; however the levels wane and decline at a faster rate than normally expected. However, antibodies to almost all vaccines decline over time, even after booster shots, as such, secondary vaccine failure in outbreaks of disease amongst the vaccinated is frequent.

Table 1: Vaccine-preventable Diseases & AFP

26th June – 02nd July 2010(26th 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	00	01	00	00	00	00	00	00	01	02	45	41	+ 09.7 %
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	-
Measles	00	00	00	02	01	00	01	00	00	04	01	54	60	- 10.0 %
Tetanus	00	00	00	00	00	00	00	00	00	00	01	13	19	- 31.5 %
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	14	21	- 33.3 %
Tuberculosis	79	89	01	00	39	33	01	37	26	305	158	4719	4342	+ 08.7 %

Table 2: Newly Introduced Notifiable Disease

26th June – 02nd July 2010(26th 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	01	02	04	02	19	07	18	02	06	61	128	1910	10197	- 81.7 %
Meningitis	09 CB=3 GM=1 KT=5	02 NE=1 ML=1	00	00	03 TR=3	12 KN=9 PU=3	06 PO=3 AP=3	06 BD=4 MO=2	01 KG=1	39	10	967	521	+ 85.6 %
Mumps	01	02	02	09	02	00	13	03	06	38	33	525	973	- 46.0 %
Leishmaniasis	00	00	00	00	00	00	04 AP=4	00	00	04	08	160	444	- 64.0 %

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

You have a duty and a responsibility in preventing dengue fever. Make sure that your environment is free from water collections where the dengue mosquito could breed

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

26th June – 02nd July 2010(26th 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	308	2893	18	153	1	14	2	37	0	25	5	341	0	6	2	33	0	1	**85**
Gampaha	85	2333	2	52	0	13	0	27	1	10	4	222	0	5	2	53	0	4	**47**
Kalutara	22	975	6	116	0	11	0	12	0	65	5	193	0	1	0	17	0	1	**50**
Kandy	69	902	15	196	0	1	2	16	0	3	4	55	2	89	0	34	0	1	**78**
Matale	20	416	3	212	0	2	2	19	0	67	1	64	0	4	0	28	0	0	**92**
Nuwara	8	95	10	224	0	0	3	82	1	83	0	16	2	44	1	26	0	0	**92**
Galle	70	601	17	143	0	3	0	2	0	12	6	47	2	6	0	7	0	3	**89**
Hambant	30	441	0	42	1	4	0	1	0	9	1	60	1	52	0	5	0	0	**91**
Matara	19	255	3	101	2	5	1	4	1	43	2	188	2	80	3	14	0	0	**82**
Jaffna	66	2373	14	145	0	3	8	373	0	05	0	1	1	106	1	42	0	2	**75**
Kili-	1	4	2	4	0	0	2	3	0	0	0	0	0	0	0	0	0	0	**75**
Mannar	30	173	2	28	0	0	0	33	0	10	0	0	0	0	0	12	0	0	**80**
Vavuniya	5	512	0	23	0	2	4	34	0	8	0	2	0	1	0	10	0	1	**75**
Mullaitivu	0	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**20**
Batticaloa	16	1086	6	85	0	2	1	16	0	28	0	10	0	1	0	3	0	2	**86**
Ampara	1	81	0	47	0	1	0	6	0	6	0	30	0	0	0	9	0	0	**57**
Trincomal	31	811	4	98	1	11	0	3	0	9	4	17	0	10	0	13	00	1	**70**
Kurunega	37	763	15	164	0	14	0	19	1	9	4	206	3	31	5	67	0	3	**85**
Puttalam	33	705	1	50	0	5	0	40	0	124	0	57	0	0	2	19	0	1	**100**
Anuradha	13	797	2	38	0	3	3	8	1	33	1	54	0	22	0	28	0	3	**84**
Polonnar	18	293	1	47	0	1	0	4	0	7	0	47	0	1	1	33	0	0	**86**
Badulla	37	427	8	110	0	1	0	58	0	13	2	42	1	47	6	68	0	0	**73**
Monaraga	38	383	4	118	0	1	3	27	0	4	0	27	3	34	0	58	1	2	**100**
Ratnapur	77	1489	20	297	0	4	0	10	0	22	12	247	0	37	2	60	0	2	**67**
Kegalle	39	556	5	88	1	9	4	32	0	19	8	137	2	10	3	50	0	0	**100**
Kalmunai	0	473	3	143	0	1	0	5	0	2	0	0	0	0	0	8	0	1	**77**
SRI LANKA	**1073**	**19838**	**162**	**2725**	**06**	**111**	**35**	**872**	**05**	**616**	**59**	**2063**	**19**	**587**	**28**	**697**	**01**	**28**	**79**

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 02nd July, 2010 Total number of reporting units =311. Number of reporting units data provided for the current week: 252
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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