



WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiology Unit
Ministry of Health

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The Return of Vaccine Preventable Diseases-The American Story

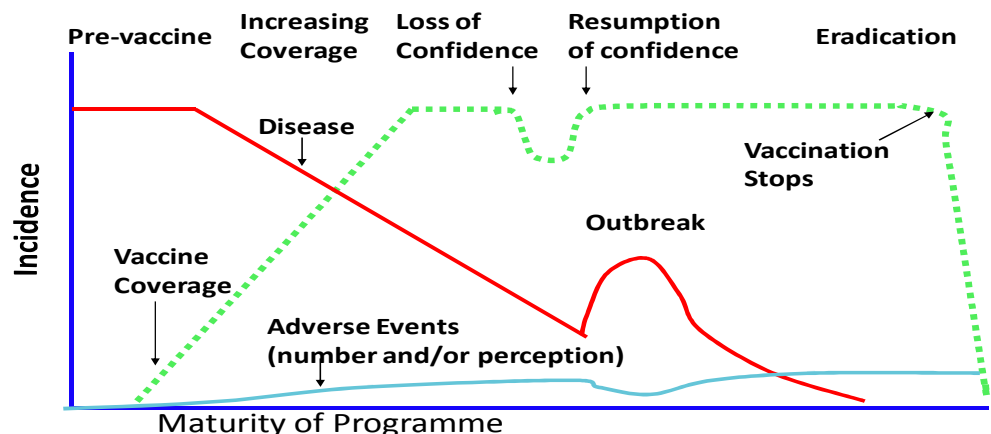
Vaccine is considered the most effective prevention tool against infectious diseases. Routine vaccination all over the world has led to successful suppression of many such diseases. Vaccine preventable diseases such as smallpox, polio, diphtheria, mumps and rubella occur at rates that are less than 1% of what they were during the pre-vaccine era. To reinforce routine vaccination, mandatory immunization requirements at the time of school entry were in existence since 1855 in the United States and they have effectively protected students from many vaccine-preventable diseases. Therefore, high vaccine coverage levels have resulted in herd immunity throughout the population, greatly reducing or eliminating many infectious diseases.

The memory of several of these dangerous, infectious diseases has faded from public consciousness due to drastic reductions in the incidence of vaccine preventable diseases over the years. Therefore, some parents are more concerned about the Adverse Events Following Immunization (AEFI) and refuse vaccination. Studies have linked increases in vaccine

refusal to parents' concerns about the safety, efficacy and side effects of the vaccines, and to a perception that the child's immune systems could not handle the number of vaccines administered simultaneously. The result was that some of the parents have opted for alternative Vaccine schedules (Not adhering to the recommended schedule) and 26% of such parents have refused the MMR vaccine for their child, while 54% delayed this vaccine.

Such vaccine refusals have resulted in a decrease in vaccine coverage, which has led to a number of outbreaks of measles and pertussis in the United States. According to the 2009 National Immunization Survey of United States, 25.8% of parents with children aged 24-48 months delayed one or more recommended vaccine doses for their children, 8.2% refused one or more recommended vaccine doses, and 5.8% both delayed and refused vaccines. Vaccine coverage among the children of parents who delayed and refused was found to be significantly lower for nine of the ten recommended childhood vaccines including DTaP (65.3% vs. 85.2%) and m (68.4% vs. 92.5%).

Evolution of Immunisation Programmes



Adapted from: Grabstein JD, Hospital Pharmacy 1996

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WEBER SRI LANKA - 2013

In 2000, the measles virus was eliminated from the United States, as a result of successful implementation of measles vaccination programme. However, vaccine refusal combined with importations of measles into the United States has resulted in measles outbreaks since then. In 2011, 17 measles outbreaks were reported to the Centre for Disease Control and Prevention and a total of 222 people in the United States contracted measles, the highest number of cases in a single year since 1996. Of the 222 cases, 112 (50%) were associated with the 17 domestic outbreaks and 200 (90%) were associated with importations from other countries. Most of the patients (86%) were unvaccinated or had unknown vaccination status. Of the 17 measles outbreaks in 2011, the Minnesota outbreak was the largest outbreak in the United States since 1991. The outbreak originated when a 30-month-old toddler returned from a trip to Kenya. The toddler directly infected three others at a day-care facility, and subsequently additional individuals were exposed, including seven infants who were too young to receive MMR vaccine. Many infected children during this outbreak in Minnesota were unvaccinated due to parental concerns about MMR vaccine safety.

Another large measles outbreak occurred in San Diego, California in 2008. This outbreak began when an intentionally unvaccinated 7-year-old boy who was unknowingly infected with measles returned from Switzerland. The importation resulted in the largest outbreak in San Diego since 1991, exposing 839 persons and infecting 11 (all unvaccinated children).

Half of the cases in the measles outbreak of in San Diego California in 2008 occurred among children whose parents refused vaccination for their children on philosophical or religious grounds. Many parents of this population believed that vaccinations could cause autism in their children.

Later it was found that the San Diego outbreak was attributable to clusters of intentionally unvaccinated children. Recently, there have been numerous other measles outbreaks, such as in Tucson, (Arizona), Los Angeles County (California) and in Western and Central Pennsylvania.

In addition to suffering cause to these children, treatment and prevention of these outbreaks can be prohibitively expensive: up to US\$ 25,000 in the case of a single infected foreign refugee in the United States. During the Tucson outbreak, two hospitals spent approximately \$800,000 treating seven patients. On the other hand, it costs only \$78 to vaccinate an individual for measles.

Vaccine refusal has enabled the spread of other vaccine preventable diseases such as Pertussis in the United States. More than 32,000 cases of pertussis were reported in 2012, the largest outbreak in 12 years. Recent outbreaks and high rates of pertussis were reported in several states such as Washington, Colorado, Minnesota, and Wisconsin. Risk factors for contracting pertussis include incomplete vaccinations and waning immunity. Unlike measles, immunity from the pertussis vaccine begins to wane 5 to 10 years after completion of the childhood immunization schedule, thus leaving adults and adolescents at high risk. Still, unvaccinated children are eight times more likely to contract pertussis than vaccinated ones. Similar to measles, clusters of children intentionally unvaccinated for pertussis exist in the United States. Previous studies have indicated that the risk of community-level pertussis outbreaks is greatly increased by the presence of these geographically concentrated unvaccinated children. Another study found higher risk of pertussis associated with exposure to unvaccinated children in school outbreaks as well as higher incidence of pertussis among vaccinated children living in counties with unvaccinated children. In order to understand the impact of unvaccinated children on the potential resurgence of once-eradicated infectious diseases, mathematical models of vaccination behaviours have been developed. These studies show that vaccine

refusal not only increases the individual's risk of disease but also increases the risk for those who cannot be vaccinated due to medical conditions, those too young to be vaccinated, and those who were vaccinated but did not mount an immune response due to vaccine failure. Major reasons for vaccine refusal in the United States are parental concerns about the safety of vaccination as well as a lower level of concern about the risk of infection. Therefore, if the vaccination levels necessary to achieve the population's herd immunity are to be maintained, increased efforts will be needed to educate the public on vaccine safety and infection risks

Source-Childhood Immunization Refusal: The Return of Vaccine-Preventable Diseases- available from <http://www.omicsonline.org/2157-7560/2157-7560-3-e115.php?aid=10680>

Compiled by Dr. Sudath Peiris-Assistant Epidemiologist

Water Quality Surveillance			
Number of microbiological water samples - February / 2013			
District	MOH areas	No: Expected *	No: Received
Colombo	12	72	53
Gampaha	15	90	32
Kalutara	12	72	13
NHIS	2	12	15
Kandy	23	138	2
Matale	12	72	14
Nuwara Eliya	13	78	8
Galle	19	114	NR
Matara	17	102	13
Hambantota	12	72	NR
Jaffna	11	66	24
Kilinochchi	4	24	13
Manner	5	30	22
Vavuniya	4	24	54
Mullatvu	4	24	0
Batticaloa	14	84	11
Ampara	7	42	NR
Trincomalee	11	66	NR
Kurunegala	23	138	45
Puttalam	9	54	73
Anuradhapura	19	114	57
Polonnaruwa	7	42	24
Badulla	15	90	65
Moneragala	11	66	15
Rathnapura	18	108	NR
Kegalle	11	66	51
Kalmunai	13	78	NR

* No of samples expected (6 / MOH area / Month)
 NR = Return not received

Table 1: Vaccine-preventable Diseases & AFP

09th - 15th March 2013 (11th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2013	Number of cases during same week in 2012	Total number of cases to date in 2013	Total number of cases to date in 2012	Difference between the number of cases to date in 2013 & 2012
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	01	00	00	00	00	00	00	00	01	00	11	09	+ 18.2 %
Diphtheria	00	00	00	00	00	00	00	00	00	-	-	-	-	-
Measles	13	01	00	01	00	01	00	01	00	17	03	88	16	+ 450.0 %
Tetanus	00	00	00	00	00	01	00	00	00	00	00	06	02	+ 66.6 %
Whooping Cough	00	00	00	00	00	00	00	00	00	00	01	18	21	- 14.3 %
Tuberculosis	85	00	25	03	07	00	07	15	13	155	127	1909	1882	+ 01.4 %

Table 2: Newly Introduced Notifiable Disease

09th - 15th March 2013 (11th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2013	Number of cases during same week in 2012	Total number of cases to date in 2013	Total number of cases to date in 2012	Difference between the number of cases to date in 2013 & 2012
	W	C	S	N	E	NW	NC	U	Sab					
Chickenpox	12	06	17	02	02	09	03	04	21	76	174	942	1233	- 23.6 %
Meningitis	07 KL=5 GM=5	00	00	02 VU=2	00	01 KG=1	03 AP=3	01 MO=1	02 RP=1 KG=1	16	12	211	156	+ 35.3 %
Mumps	02	01	06	00	04	01	03	09	00	26	226	323	1041	- 69.0 %
Leishmaniasis	00	00	01 HB=1	00	00	00	07 AP=5 PO=2	00	00	08	06	262	187	+ 40.1 %

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.
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.

Influenza Surveillance in Sentinel Hospitals - ILI & SARI									
Month	Human						Animal		
	No Received	Infl A untyped	Infl B	A(H1N1)pdm09	A(H3N2)	RSV	Pooled samples	Serum Samples	Positives
Feb	386	1	57	17	22	2	260	470	0

Source: Medical Research Institute & Veterinary Research Institute

Dengue Prevention and Control Health Messages

Thoroughly clean the water collecting tanks bird baths, vases and other utensils once a week to prevent dengue mosquito breeding.

Table 4: Selected notifiable diseases reported by Medical Officers of Health
09th - 15th March 2013 (11th 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	80	1867	3	33	0	7	0	33	0	9	8	54	0	2	1	17	0	0	69
Gampaha	38	889	2	23	1	6	0	11	0	1	20	66	0	6	6	60	0	0	67
Kalutara	13	375	0	38	0	8	0	20	0	7	15	98	0	1	0	5	0	0	46
Kandy	27	484	1	21	0	4	2	5	0	1	4	18	1	32	6	33	0	0	91
Matale	6	110	2	26	0	0	0	1	0	0	3	10	0	1	1	11	0	0	69
NuwaraEliya	5	56	1	18	0	2	1	2	0	2	1	6	0	17	0	1	0	0	69
Galle	10	168	3	23	1	7	1	1	0	2	5	36	1	11	0	3	0	0	84
Hambantota	4	91	0	14	0	2	1	5	0	8	7	79	2	24	4	47	0	0	83
Matara	10	155	5	15	1	7	1	4	0	4	14	50	6	25	1	69	1	1	94
Jaffna	10	220	5	48	0	3	3	115	1	5	0	0	20	168	0	6	0	0	75
Kilinochchi	0	13	0	9	0	0	0	4	0	1	0	2	1	7	0	0	0	0	50
Mannar	2	38	1	13	0	1	3	34	0	11	0	5	0	6	0	0	0	0	80
Vavuniya	2	27	0	14	0	8	0	4	0	4	1	17	0	1	0	0	0	0	50
Mullaitivu	2	26	0	2	0	1	1	3	0	0	1	6	0	2	0	0	0	0	80
Batticaloa	12	175	5	31	0	2	0	0	0	2	0	6	1	1	1	4	0	0	64
Ampara	1	38	0	32	0	0	0	1	0	0	0	4	0	0	0	1	0	0	29
Trincomalee	6	77	1	14	0	1	0	0	0	0	0	28	1	3	0	2	0	0	67
Kurunegala	48	1359	2	51	1	14	0	17	0	3	31	72	1	11	0	17	1	1	88
Puttalam	19	382	1	16	1	3	0	5	0	1	2	6	1	5	1	1	0	0	83
Anuradhapu	11	184	0	19	0	9	0	0	0	1	21	86	0	6	0	5	0	0	84
Polonnaruw	9	102	0	30	0	0	0	5	0	0	1	65	0	1	1	13	0	0	86
Badulla	6	119	5	31	0	0	0	4	0	0	0	9	3	12	1	11	0	0	76
Monaragala	2	63	5	24	1	3	2	6	0	17	2	50	1	16	1	19	0	0	91
Ratnapura	22	397	8	109	1	67	1	11	0	12	8	84	0	11	4	82	0	1	78
Kegalle	28	301	1	14	0	10	2	5	0	3	8	26	0	21	7	69	0	0	91
Kalmune	11	317	2	20	0	1	0	0	0	7	0	4	0	1	0	4	0	0	54
SRI LANKA	384	8033	50	688	07	166	18	296	01	101	152	887	39	391	35	480	02	03	76

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 15th March, 2013 Total number of reporting units 336. Number of reporting units data provided for the current week: 255

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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