



WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiology Unit
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AEFI in Sri Lanka: is it real or a perceived risk? (part 1)

Importance of vaccination:

Edward Jenner's revolutionary discovery of vaccination against once world's most feared disease, smallpox, practically demonstrated its effect on public health. World is immeasurably grateful to his discovery since it paved the way for eradication of smallpox from the face of the earth. It was a successful precedence to man's attempt to test the effectiveness of the same principle for controlling the multitude of communicable diseases which were threatening the very existence of the mankind. Based on the far reaching success of the smallpox vaccine, many other vaccines have been produced with a view to minimizing morbidity and mortality of major communicable diseases in the world. These vaccines, over the years, showed their promising capability of controlling the disease burden and ensuring well being of the population in affected countries, world over.

Sri Lanka is also a proud nation that utilized vaccination as a long term social investment to control major communicable diseases in the country. Its wealth of surveillance information on vaccine preventable diseases is a clear testimony to this incredible effect of disease control through vaccination against targeted diseases.

For an instance, figure 01 shows the incidence of tetanus for the period spanning 57 years from 1951 to 2008. One can obviously see the case load of tetanus from 1951 to 1977. This case load should be perceived not as mere numbers but in the sense of enormous suffering undergone by the patient, their family members and enormous resources spent to manage these patients by the health services as well as their families. The disease burden in terms of morbidity and mortality was so significant that, the tetanus toxoid was introduced as a control strategy to the Sri Lankan health system around 1961 as the "Tripple Vaccine". The effects of immunization was drastic and the reduction of tetanus cases in the country with increasing DTP3 coverage scientifically testified it. Today, any tetanus case is hardly seen in the country so much so that the younger generation is not aware of the dreadful effects of the disease. Thus, practically savouring the effects of vaccination, it is our moral obligation to be bold enough to acknowledge the protection given by vaccination and carry it forward by strengthening currently available vaccines and considering new vaccines for other disease with a view to protecting our children from the devastating effects of vaccine preventable diseases.

Incidence of tetanus and immunization coverage , 1951 - 2008

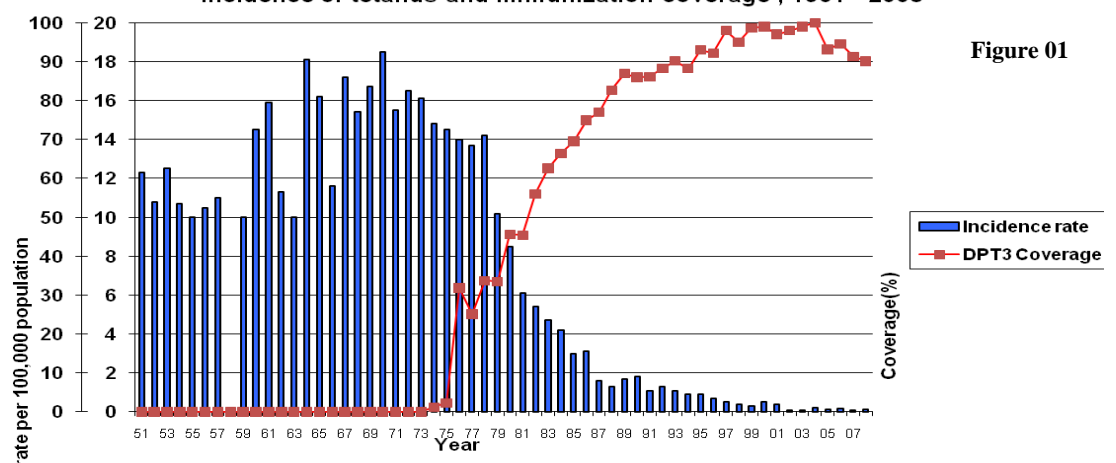


Figure 01

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WEBER SRI LANKA - 2010

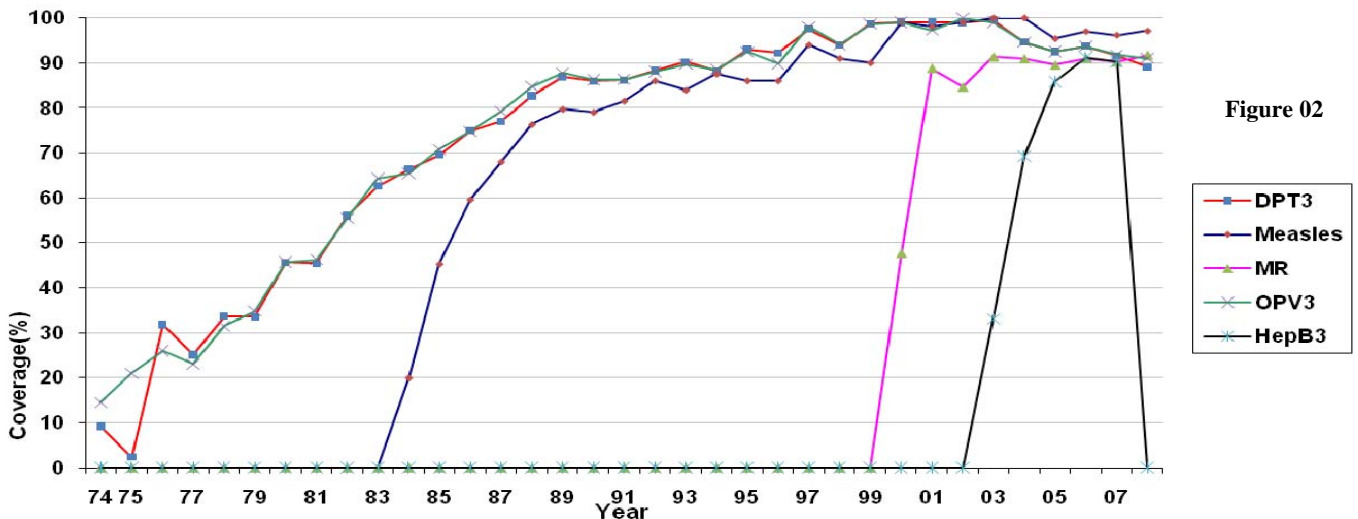


Figure 02

Though it is necessary to strengthen immunization, motivation of the recipient in the case of adults or parents/guardians in the case of children is essential to accept the vaccine. However, motivating them to receive a vaccination is not easy. This is considered as a major behavioral change in a person's life because usually one should be persuaded to receive a vaccine while that person is enjoying a healthy life. It is also very difficult at times when the effects of vaccination cannot be seen clearly. Figure 02 ably demonstrates this phenomenon. In early years, when DTP vaccine was introduced in 1961, it took almost 40 years to reach 100% coverage. However, measles which was introduced to the EPI program in 1983 took only around 15 years to achieve 100% coverage. In spite of these prolongations in early years, hepatitis B vaccine, which was introduced relatively recently, took only less than 5 years to achieve 100% coverage. This is explained by the fact that at the time of introduction of hepatitis B vaccine, people were aware of the usefulness of hepatitis B vaccine. They had already developed confidence in the EPI programme which was catering to their needs through the well developed infrastructure. This success in internalization of the value of vaccination was not achieved overnight. It was fruition of hard labour of health personnel at all levels and enormous amount of finances invested by the health sector on the National program of Immunization.

What is Adverse Events Following Immunization (AEFI)?

While Sri Lanka has achieved high coverage for antigens used in the EPI, currently, AEFI has acquired the status of an important determinant of the success of the Sri Lankan EPI programme against a back ground of eradication or elimination of many vaccine preventable diseases. AEFI is defined as a medical incident of concern that takes place after an immunization and is believed to have been caused by immunization. But in actual terms, causality of the event that took place may be due to one of the following; it could be due to the vaccine itself, error of the procedures related to vaccination, coincidental, vaccine reaction or other unexplained causes. In causality assessment in vaccinology, determining the actual cause of AEFI is a very tedious, lengthy and costly procedure.

What is the relevance of vaccine coverage (above mentioned phenomena) with the AEFI?

In a background of enormous suffering from the disease,

local pain or episodes of high fever experienced by vaccine recipients after DTP vaccination in the era of tetanus was not a reason to cry about. Suffering from the disease itself was much feared and naturally they had to tolerate the said AEEFI without much complaints.

Today, with advanced technology in vaccinology, Adverse Events

Following Immunization are occurring at very low rates as newer vaccines have sound safety profiles. AEFI are usually expressed in terms of number of cases per 100,000 doses administered. Therefore in a situation of low coverage, rates of AEFI is significantly less than the same in a situation of high coverage. This has a importance as in a situation of low coverage, public only see sporadic cases of AEFI during a lengthy period of time, whereas in a situation of high coverage, quite often, the same will be experienced within a short period of time. This is liable to be brought forward erroneously as a quality issue of the vaccine that is used in the programme. As a result, public may lose faith on vaccination simply due to the reason that the high numbers of AEFI are products of high rates of vaccine administration. This erroneous perception of increased AEFI tends to be attributed to poor quality of vaccines by the public hindering the acceptance of vaccines (vaccine coverage). The resultant outcome will be the reemergence of vaccine preventable diseases previously brought under control by the EPI.

Are our AEFI rates higher than the estimated rates?

Not only the lay persons, but also medical practitioners erroneously perceive that the AEFI rates are higher in Sri Lanka. Therefore it is essential to compare Sri Lankan rates with the expected rates of AEFI for EPI vaccines of concern listed by the WHO for reference.

Vaccine	AEFI	Expected Rate (WHO)	SL Rates (2008)
BCG	Lymphadenitis	1 in 10000	0.16 in 10000
Measles	Seizures	1 in 3000	0.13 in 3000
DTP	Seizures	1 in 1750	0.46 in 1750
	HHE	1 in 1000 - 33000	0.01 in 1000
	Persistent screaming	1 in 15 - 1000	0.001 in 15

Table 1: Vaccine-preventable Diseases & AFP

09th - 15th January - 2010 (02ndWeek)

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	00	00	00	00	00	00	00	00	03	01	03	- 66.6 %
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	-
Measles	00	01	00	00	00	00	00	00	00	01	01	13	07	+ 85.7 %
Tetanus	00	00	00	00	00	01	00	00	00	01	02	01	02	- 50.0 %
Whooping Cough	00	00	00	00	00	00	00	00	00	00	03	00	07	+100.0%
Tuberculosis	40	02	08	15	09	18	01	20	30	143	56	277	405	- 31.6 %

Table 2: Newly Introduced Notifiable Disease

09th - 15th January - 2010 (02ndWeek)

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	07	02	07	04	04	13	18	01	04	61	92	123	186	- 33.9 %
Meningitis	03 CB=2 KT=1	02 ML=2	10 GL=8 MT=2	02 MN=2	00	12 KR=11 PU=1	08 AP=8	00	10 KG=1 RP=9	47	15	121	33	+ 266.6 %
Mumps	01	01	02	03	01	02	02	03	06		41	46	90	+ 48.9 %
Leishmaniasis	00	00	06 HB=3 MT=3	00	00	00	01 AP=1	00	01 RP=1	08	07	13	14	- 7.1 %

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.

Special Surveillance: Acute Flaccid Paralysis.

Leishmaniasis is notifiable only after the General Circular No: 02/102/2008 issued on 23 September 2008.

10th South East Asia Regional Scientific Meeting of the International Epidemiological Association

23rd - 26th May 2010

Colombo, Sri Lanka

Theme

"Epidemiological Methods in Evidence Based Healthcare"

Visit <http://www.episea2010.com>

Table 4: Selected notifiable diseases reported by Medical Officers of Health
09th - 15th January - 2010(02ndWeek)

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	137	317	2	11	0	0	1	5	1	4	10	19	0	1	0	2	0	0	0
Gampaha	152	356	2	2	0	0	0	2	0	0	2	6	0	0	2	6	0	0	0
Kalutara	37	69	5	8	1	2	0	2	0	4	6	12	0	0	0	0	0	0	0
Kandy	32	120	8	29	0	0	0	1	0	0	4	6	3	7	3	6	0	0	0
Matale	12	44	1	3	0	0	0	1	0	0	2	6	0	0	2	5	0	0	0
Nuwara	12	21	4	7		0	5	8	0	0	2	3	1	3	2	2	0	0	0
Galle	9	19	6	6	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0
Hambant	11	23	1	3	0	0	0	0	0	0	2	7	6	9	0	0	0	0	9
Matara	9	23	6	8	0	0	0	0	0	0	3	6	8	14	1	2	0	0	0
Jaffna	184	351	6	7	0	0	22	54	0	0	0	0	15	26	1	4	0	0	0
Kili-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mannar	5	7	1	6	0	0	4	6	0	0	0	0	0	0	1	0	0	0	0
Vavuniya	82	256	1	3	0	1	6	10	0	0	0	0	0	0	1	3	0	0	0
Mullaitivu	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batticaloa	54	118	1	8	0	0	1	2	0	2	0	0	1	1	0	0	0	0	0
Ampara	0	6	1	5	0	0	0	0	0	2	1	8	0	0	0	3	0	0	0
Trincomal	81	111	1	11	0	0	0	0	0	0	3	6	0	1	1	3	0	0	0
Kurunega	60	115	7	16	1	2	1	3	0	0	0	9	2	3	3	5	0	0	0
Puttalam	41	128	3	15	0	1	3	6	0	0	1	3	0	0	0	0	0	0	0
Anuradha	43	108	2	8	0	0	1	2	0	0	1	2	0	1	0	1	0	0	0
Polonnar	3	11	2	11	0	0	0	0	0	0	2	5	0	0	0	2	0	0	0
Badulla	6	31	2	10	0	0	2	4	0	0	3	6	0	2	1	3	0	0	0
Monaraga	5	20	10	18	0	0	1	2	0	0	2	5	0	2	0	0	0	0	0
Ratnapur	16	37	8	17	0	2	1	3	0	6	11	22	5	6	6	11	0	1	0
Kegalle	26	55	1	2	0	1	2	3	0	0	6	9	0	0	2	6	0	0	0
Kalmunai	36	81	5	11	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
SRI LANKA	1053	2427	86	225	02	10	50	115	01	20	61	140	41	76	25	66	00	01	00

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 January, 2010 Total number of reporting units =311. Number of reporting units data provided for the current week: 1

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

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