



WEEKLY EPIDEMIOLOGICAL REPORT

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Ministry of Health

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Data Safety Monitoring Board (DSMB) in Vaccine Trials

A vaccine trial is a clinical trial. A vaccine trial aims to establish the safety and efficacy of a vaccine. As a prerequisite for licensing a vaccine, it is mandatory to complete several phases of clinical trials. Before a vaccine enters clinical trials, the target antigen is identified in the pre-clinical assessment. Vaccine safety and efficacy are tested in laboratory & animal models.

In phase I clinical trials vaccine dose level and safety are tested among participants recruited on a volunteer basis. In phase II clinical trials, hundreds of participants are recruited. In this phase, the safety & immunogenicity of the vaccine are tested.

In phase III clinical trials, more than thousands of participants are recruited. In this phase, the safety and efficacy of the vaccine are tested among humans. Phase III trials take years to complete. After the trial, all collected data are assessed by regulatory bodies to assess vaccine safety and effectiveness before the vaccine is licensed. The process of vaccine development up to licensure takes around 10 years.

the risk and benefits to the human being by the trials. Several regulatory guidelines are made to monitor the vaccine trial process.

The Greenberg report (National Heart Institute in the 1960s) and NIH policy (1979) recommended that “every clinical trial should have provision for data and safety monitoring”. Data Safety Monitoring Board is a body that was formulated to assure that clinical trials are in the hands of independent experts. DSMB, DMC, or DSMC is an independent and representative group of experts that monitor and advise the investigators & the sponsor of a trial (Phase I to Phase III). Safeguarding the interests of study participants & assuring the integrity and validity of the trial is the key responsibility in making recommendations.

The members of the DSMB should represent the disciplines and specialties like medical and dental that are necessary to interpret the data of the clinical trial and to evaluate participant safety.

Generally, DSMB consists of three to seven members including expert(s) in the clinical aspects of the disease or the patient population being studied; One or more biostatisticians; and investigators with expertise in the current clinical trials conduction and methodology.

The number varies depending on the phase of the trial, medical issues, complexity of the design and analysis method, and potential level of risk. Members should not have any conflict of interest. None of the members should be directly involved in the conduct of the trial.

Conventional pathway of vaccine development

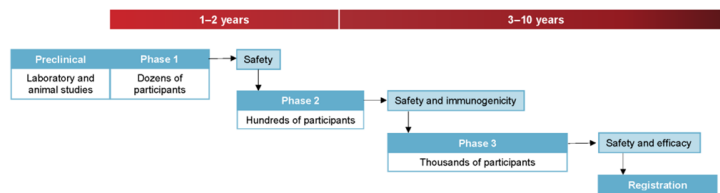


Figure 1 – Conventional pathway of vaccine development
Source:- <https://ncirs.org.au/>

Pharmacovigilance is a process of continuous monitoring and evaluation by weighing

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Further should not have any financial, proprietary, professional, or any other interest which may affect the independent decision-making of the DSMB.

Figure 2- Functions of DSMB



Roles and Responsibilities of DSMB

Primary responsibilities are to review unblinded study data for participant safety regularly, to assess the study conduct & progress, and where appropriate immunogenicity & efficacy. Thereby make recommendations concerning the continuation, modification, or termination of the trial. Further DSMB assesses the data specific to the trial with the publications, data from other trials, and the vaccine participant population as well.

DSMB reviews the protocol before the conduction of the trial and defines the process. After the implementation, the cumulative study data are reviewed to evaluate the safety, conduct of the study to ensure the validity and integrity of the trial. Further the timeliness, completeness, and accuracy of the data. The overall performance of the trial and any other relevant issues are assessed where necessary. The specific areas that are reviewed to assess the trial integrity are evidence of efficacy according to statistical guidelines, data quality, completeness, and timeliness. The performance of each centre of the trial is assessed. The compliance of the recruited participants with the retention with a special focus on women and minors is another aspect. The trial's adherence to the protocol is reviewed with the factors that could affect the study outcome such as protocol violations, unmasking, etc., as external factors might affect the safety of the participants by violating the ethical background.

Study-related adverse events is another aspect reviewed by DSMB. Trial-related adverse events (AEs) including early reactogenicity are a major concern. Those should be reported at DSMB meetings such as Severe adverse events (SAEs), Severe unexpected serious adverse reactions (SUSARs), and Adverse events of special interest (AESI) – product specific, nonserious, or serious should be reported to DSMB at the earliest opportunity.

The level of immunogenicity and efficacy are other two specific areas of concern for DSMB in a vaccine trial.

The impact of the recommendations of the DSMB on a vaccine trial

The board can Stop or hold a clinical trial. The decision is taken based on safety, futility, efficacy, new external evidence, and the conduct of the trial.

In the publications related to the trial, the transparency can be improved by mentioning the DSMBs in trial reports such as DSMB recommendations that significantly modified the protocol and the adherence to guidelines. This will improve transparency. The role of a DSMB does not change even in a pandemic or emergency response. It is always in place of clinical trials for safeguarding the interests of study participants & assuring trial integrity and validity.

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Table 1: Selected notifiable diseases reported by Medical Officers of Health 05th- 11th Aug 2023 (32nd Week)

RDHS	Dengue Fever		Dysentery		Encephalitis		Enteric Fever		Food Poi-		Leptospirosis		Typhus		Viral		Human		Chickenpox		Meningitis		Leishmania-		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	275	10895	3	11	1	11	1	2	3	10	10	226	0	0	1	4	0	0	8	201	0	29	0	5	34	100
Gampaha	190	11039	2	17	0	13	0	7	0	3	19	387	0	7	0	12	0	0	5	188	5	65	2	32	6	100
Kalutara	98	3669	0	14	0	2	0	0	0	6	9	572	0	1	1	6	0	1	14	337	0	65	0	1	26	100
Kandy	325	5021	1	28	0	0	0	8	0	15	8	206	1	45	0	3	0	1	5	177	1	19	1	25	88	100
Matale	69	1143	0	2	0	3	0	1	1	11	0	119	0	13	1	4	0	0	3	42	0	4	4	215	27	100
NuwareEliya	14	193	4	100	1	4	0	3	0	43	5	94	0	52	1	5	0	0	8	106	3	14	0	1	63	100
Galle	111	1935	1	37	0	12	0	5	0	21	32	676	6	43	0	1	0	1	4	229	3	19	0	3	38	100
Hambantota	25	1175	0	8	0	3	0	1	1	9	3	231	3	59	0	8	0	0	2	108	0	16	21	436	28	100
Matara	55	1404	0	19	0	8	0	1	0	12	2	405	0	26	0	5	0	2	13	205	0	16	2	128	56	100
Jaffna	29	1820	1	67	0	2	0	9	9	26	1	11	4	492	0	2	0	1	7	136	2	12	0	2	65	93
Kilinochchi	1	85	1	8	0	0	0	1	0	16	0	8	0	7	0	0	0	0	0	13	0	2	0	0	24	100
Mannar	0	77	0	6	0	0	0	1	0	0	1	31	0	5	0	0	0	0	0	2	0	8	0	0	45	100
Vavuniya	4	132	0	5	0	1	0	0	0	2	0	29	0	8	0	1	0	0	0	20	0	11	0	10	13	100
Mullaitivu	4	111	0	11	0	0	0	3	0	12	3	33	0	5	0	1	0	0	0	12	1	2	0	6	25	98
Batticaloa	22	2083	3	154	0	7	0	5	0	18	0	71	0	1	0	5	0	1	7	69	0	25	0	1	61	100
Ampara	0	197	0	5	0	1	0	1	0	52	1	109	0	2	0	1	0	0	2	58	1	39	1	6	6	100
Trincomalee	4	1965	0	19	0	1	0	0	0	65	3	58	0	15	0	2	0	0	2	45	0	25	1	2	28	100
Kurunegala	55	2396	0	32	0	8	0	0	0	6	10	261	1	10	0	9	0	2	7	365	12	138	9	361	27	100
Puttalam	34	2794	1	11	0	3	0	1	0	2	1	47	0	8	0	1	0	0	2	84	3	47	1	18	25	100
Anuradhapur	17	639	1	9	0	0	0	1	0	7	1	230	0	30	0	3	1	1	8	183	2	41	24	397	26	99
Polonnaruwa	6	487	0	12	0	5	0	1	1	11	2	139	0	5	0	12	0	0	0	60	0	16	16	286	35	100
Badulla	30	857	1	27	0	5	0	0	0	43	5	251	3	42	2	73	0	0	1	119	0	34	2	30	66	100
Monaragala	12	471	0	17	0	6	0	0	0	1	10	427	0	32	1	21	0	1	2	53	3	54	13	137	26	100
Ratnapura	63	1706	0	33	1	14	0	2	0	16	22	876	3	26	1	16	0	2	14	146	3	114	13	138	36	100
Kegalle	74	2362	0	19	0	2	0	2	2	13	16	512	1	31	1	5	0	0	8	298	2	53	1	30	32	100
Kalmune	20	1627	4	56	0	10	0	0	0	0	3	42	0	1	0	0	0	0	2	59	0	27	0	0	45	100
SRILANKA	1537	56283	23	727	3	121	1	55	17	420	16	6051	22	966	9	200	1	13	12	3315	41	895	11	2270	39	99

Source: Weekly Returns of Communicable Diseases (esurveillance.epid.gov.lk). T=Timeliness refers to returns received on or before 11th Aug, 2023 Total number of reporting units 358 Number of reporting units data provided for the current week: 358 C**=Completeness *

Table 2: Vaccine-Preventable Diseases & AFP

05th– 11th Aug 2023 (32nd Week)

Disease	No. of Cases by Province									Number of cases during current week in 2023	Number of cases during same week in 2022	Total number of cases to date in 2023	Total number of cases to date in 2022	Difference between the number of cases to date in 2023 & 2022
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	00	02	01	00	00	00	00	00	01	04	03	60	50	18 %
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Mumps	00	00	01	00	00	00	01	00	00	02	02	142	50	184%
Measles	18	06	03	16	01	00	03	00	02	49	00	212	16	1225 %
Rubella	00	00	00	00	00	00	00	00	00	00	00	01	00	0 %
CRS**	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Tetanus	00	00	00	00	00	00	00	00	00	00	00	06	05	20 %
Neonatal Tetanus	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Japanese Encephalitis	00	00	00	00	00	00	00	00	00	00	00	02	07	- 71.4 %
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	05	01	400 %
Tuberculosis	59	34	12	15	10	20	05	05	19	179	62	5754	3582	60.6 %

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

Seek medical advice if you get a fever after exposure to muddy water or soil.

It could be Leptospirosis.

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

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