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Strengthening Dedicated Public Health Laboratories in Sri Lanka: Integrating the National CDC for Surveillance - Part I

This is the first article of two in a series on "Strengthening Dedicated Public Health Laboratories in Sri Lanka: Integrating the National CDC for Surveillance"

Public health laboratories are essential for disease prevention, early outbreak detection, vaccine safety, and health system resilience. They provide the evidence needed for timely public health action. Unlike clinical laboratories focused on individual patient diagnosis, public health laboratories generate population-level data that drive decision-making, policy development, and emergency response. These laboratories are important in detecting emerging pathogens, monitoring infectious disease trends, and evaluating interventions such as vaccination campaigns and environmental health measures, including microbial and water quality testing.

Public health laboratory workflow consists of standardized pre-analytical, analytical, and post-analytical processes that ensure timely and reliable data for surveillance and response. This includes proper specimen and environmental sample collection, quality-assured testing under biosafety standards, and rapid validation, reporting, and integration of results with surveillance systems. Efficient workflows are essential for early warning, outbreak detection, and evidence-based public health action.

Globally, the World Health Organization emphasizes that strengthening public health laboratories is critical for meeting obligations under the International Health Regulations (IHR 2005) and for achieving Universal Health Coverage. Effective laboratory systems require clear governance, trained workforce, quality management systems, biosafety, and integrated surveillance platforms. In the Asia-Pacific region, integrated and tiered laboratory networks are promoted to link peripheral, district, and national reference laboratories, enabling efficient sample referral and comprehensive coverage.

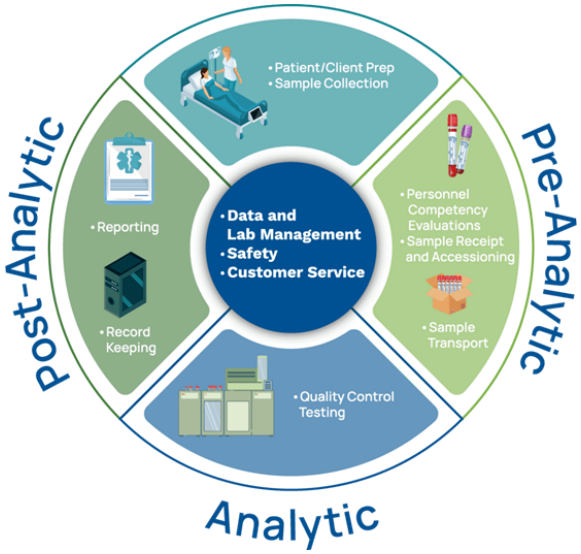

Figure 1: Public Health Laboratory Testing Phases

Public Health Surveillance Laboratories Vs National Reference Laboratories

Public Health Surveillance Laboratories and National Reference Laboratories have complementary but distinct roles within a national laboratory system. Clear definition and coordination of these roles are critical within a National Centre for Disease Control (CDC) framework. Public Health Surveillance Laboratories focus on population-level monitoring, early detection, and trend analysis to support timely outbreak detection and public health action, rather than routine clinical diagnosis. In contrast, National Reference Laboratories provide technical leadership by ensuring accuracy, standardization, and quality of testing nationwide through confirmatory testing, protocol development, quality assurance, and advanced diagnostics. Together, surveillance laboratories generate timely signals of public health threats, while reference laboratories validate findings, strengthen quality, and guide policy, forming an integrated system essential for effective disease surveillance and response.

In Sri Lanka, communicable disease surveillance is conducted through two distinct arms within the Epidemiology Unit and laboratory services. Laboratory-based surveillance, including for measles, rubella, dengue, COVID-19, and other priority diseases, is primarily undertaken by the Medical Research Institute (MRI). While the MRI also fulfils many national reference functions, the coexistence of clinical diagnostics, research, and surveillance responsibilities has created competing priorities. This dual mandate has limited the flexibility and timeliness of surveillance, constrained early warning capacities, and reduced opportunities for operational research that could inform rapid response and policy decisions.

International experience offers valuable lessons for Sri Lanka. In the United States, the CDC coordinates national laboratory networks, sets standards (including biosafety and quality benchmarks), and serves as a central reference authority for complex threats. In Australia, the CDC model strengthens existing public health laboratory networks without centralizing all testing functions emphasizing coordination, data systems, and laboratory workforce development. Thailand's collaboration with the US CDC demonstrates how workforce training, integrated surveillance systems, and laboratory capacity strengthening can enhance rapid outbreak response across regions.

Regionally, research from the Republic of Korea highlights the importance of integrated surveillance systems that link laboratory findings with epidemiological data for national risk assessment and preparedness. National influenza and respiratory virus surveillance systems generate standardized laboratory and clinical data to support vaccine strain selection and enhance public health readiness in Republic of Korea. Their experience with digital notification systems and extensive laboratory networks further illustrates how coordinated infrastructure can expand testing capacity and improve response times during pandemics.

Malaysia provides a regional example of strategic planning and coordination for public health laboratories. Malaysia has developed a National Laboratory Strategic Plan to strengthen multi-tiered laboratory networks and align resources across federal, state, and district levels. A national public health laboratory coordinates quality assurance, capacity building, and integration of laboratory services to ensure preparedness for epidemic-prone diseases. The Malaysian experience supported by ASEAN initiatives to establish regional reference networks and harmonize laboratory quality standards demonstrates the importance of national strategic frameworks for public health laboratories and the benefits of regional cooperation.

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 To be Continued….

Table 1: Distribution of Notified Diseases reported by Medical Officers of Health 12th – 18th Jan 2026 (03rd Week)

RDHS	Dengue Fever		Dysentery		Encephaliti		En. Fever		F. Poisoning		Leptospirosis		Typhus Fev.		Viral Hep.		H. Rabies		Chickenpox		Meningitis		Leishman.		Tuberculosis		Leprosy		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	A	B	A	B	T*	C**
Colombo	555	1583	0	1	0	1	0	1	0	2	5	26	0	0	0	0	0	0	11	32	1	2	0	0	35	93	3	24	98	100
Gampaha	234	837	4	7	1	1	0	0	2	4	20	70	0	0	0	1	0	0	8	40	8	27	0	0	24	70	1	7	98	100
Kalutara	91	323	1	5	0	0	0	2	0	1	6	26	0	0	0	0	0	0	7	45	1	3	0	0	19	51	2	5	97	100
Kandy	66	263	0	1	0	0	0	1	2	3	6	33	1	1	5	5	0	0	0	28	0	3	0	2	20	43	1	2	100	100
Matale	25	90	0	0	0	0	0	0	0	0	7	30	1	1	1	2	0	0	13	23	1	2	20	42	5	11	1	1	91	100
Nuwara Eliya	9	25	0	2	0	0	0	0	1	2	12	23	0	3	0	1	0	0	20	30	2	8	0	0	4	12	0	1	93	100
Galle	148	339	0	1	0	0	0	0	1	4	13	54	4	7	2	2	0	0	31	63	2	10	1	1	2	17	3	4	98	100
Hambantota	92	215	3	6	0	0	0	0	0	1	6	21	1	3	0	1	0	0	9	26	1	4	8	17	1	9	0	4	98	100
Matara	180	382	0	1	0	0	0	0	0	6	6	20	0	2	0	0	0	0	9	50	1	2	3	11	7	16	1	1	99	100
Jaffna	37	145	0	2	0	1	2	2	0	0	4	24	10	34	0	0	0	0	10	29	1	2	0	0	8	14	0	2	96	93
Kilinochchi	2	7	0	0	0	0	0	0	0	0	0	5	0	0	1	2	0	0	10	10	0	0	0	0	2	2	0	0	100	100
Mannar	0	6	0	0	0	1	0	0	0	0	0	8	0	0	0	0	0	0	12	12	1	1	1	2	1	2	0	0	100	100
Vavuniya	4	9	0	3	0	0	0	1	0	0	2	8	0	1	0	0	0	0	11	12	1	2	0	0	0	2	0	0	96	100
Mullaitivu	7	14	0	1	0	0	0	0	0	1	1	5	0	0	0	1	0	0	0	0	0	1	0	1	0	1	0	1	100	100
Batticaloa	49	83	0	6	0	0	0	0	1	1	8	21	0	0	2	2	0	0	21	26	2	2	0	0	3	7	5	10	95	100
Ampara	14	45	0	6	0	0	0	0	0	0	4	16	0	0	1	1	0	0	0	16	0	3	1	2	0	0	1	3	80	100
Trincomalee	20	61	1	5	0	0	0	0	0	1	5	10	1	1	0	0	0	0	4	11	0	1	0	0	3	8	2	2	95	100
Kurunegala	44	131	1	1	2	2	1	1	3	13	16	40	3	8	0	0	0	0	24	60	2	9	9	26	9	18	1	4	95	100
Puttalam	26	93	0	3	0	1	0	0	1	1	5	54	0	1	0	0	0	1	5	13	4	7	0	1	0	11	0	0	93	100
Anuradhapur	20	70	0	0	1	1	0	0	0	2	14	52	0	3	0	0	0	0	0	10	0	2	13	48	3	11	2	5	82	100
Polonnaruwa	19	42	0	1	0	1	0	0	4	8	12	29	0	0	2	2	0	0	7	32	1	2	3	24	2	8	1	4	100	100
Badulla	29	94	1	5	1	1	0	0	1	2	8	23	0	1	1	16	0	0	14	30	1	5	4	13	1	12	0	1	89	100
Monaragala	26	74	0	3	0	0	0	0	0	0	5	34	3	5	1	4	0	0	3	23	3	4	11	18	1	4	0	0	100	100
Ratnapura	101	258	0	1	0	0	1	2	1	3	24	72	1	2	1	2	0	0	12	28	1	1	1	3	9	24	0	5	98	100
Kegalle	50	152	1	2	0	2	0	0	0	4	7	26	1	2	1	2	0	0	17	63	0	5	0	0	4	16	0	0	89	100
Kalmunai	26	59	4	7	0	0	0	0	0	1	4	8	0	1	0	0	0	0	1	30	4	7	0	0	4	9	1	3	98	92
SRILANKA	**1874**	**5400**	**16**	**70**	**5**	**12**	**4**	**10**	**17**	**60**	**200**	**738**	**26**	**76**	**18**	**44**	**0**	**1**	**259**	**742**	**38**	**115**	**75**	**211**	**167**	**471**	**25**	**89**	**95**	**99**

Source: WRCD module of the EPINET.
A = Cases reported during the current week;
T*=Timeliness refers to returns received on or before 18th Jan, 2026.
B = Cumulative cases for the year.
Total number of reporting units 360.
Data provided for the current week: 360.
C**-Completeness;

Table 2: Selected Vaccine Preventable Diseases & AFP 12th – 18th Jan 2026 (03rd Week)

Disease	No. of Cases by Province									Number of cases during current week in 2026	Number of cases during same week in 2025	Total number of cases to date in 2026	Total number of cases to date in 2025	Difference between the number of cases to date in 2026 & 2025
	W	C	S	N	E	NW	NC	U	Sab					
AFP[1]	00	01	00	00	00	00	01	00	00	02	02	09	04	125%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Mumps[2]	02	01	00	00	00	00	00	01	01	05	03	07	10	-30 %
Measles[3]	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Rubella[3]	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
CRS[2]	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Tetanus[2]	00	00	00	00	00	00	00	00	00	00	00	00	01	-100 %
Neonatal Tetanus[2]	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Japanese Encephalitis[3]	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Whooping Cough[2]	00	00	00	00	00	00	00	00	00	00	02	01	03	-66.6 %

Key to Table 2
Provinces: **W**: Western, **C**: Central, **S**: Southern, **N**: North, **E**: East, **NC**: North Central, **NW**: North Western, **U**: Uva, **Sab**: Sabaragamuwa.

Data Sources:
Weekly Return of Communicable Diseases: Diphtheria, Mumps, Tetanus, Neonatal Tetanus, Whooping Cough.
Special Surveillance: AFP, Measles, Rubella, CRS.

AFP[1] = No Polio cases
Mumps[2], CRS[2], Tetanus[2], Neonatal Tetanus[2], Whooping Cough[2]—Clinically and/ or laboratory confirmed cases
Measles[3], Rubella[3], Japanese Encephalitis[3]— Laboratory Confirmed cases

AFP—Acute Flaccid Paralysis
CRS = Congenital Rubella Syndrome
NA = Not Available

AFP and all Vaccine Preventable Diseases except Mumps should be investigated by the MOH Personally.

Number of Malaria Cases Up to End of January 2025,

05

All are Imported!!!

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.** The Epidemiology Unit should be formally acknowledged in all resulting publications as the primary data source.

ON STATE SERVICE

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