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Strengthening National Health Laboratory Services in Sri Lanka: Aligning National Efforts with Global and Regional Standards

Figure 1. Framework of Laboratory Partners
Source: CDC Partners with Laboratories for Readiness and Response.
CDC Laboratories. https://www.cdc.gov/labs/partners/index.html

Health laboratory services are vital for disease surveillance, outbreak detection, diagnosis, and monitoring. They form a foundation for broader health system strengthening. Globally and regionally, efficient laboratory systems are essential for achieving Universal Health Coverage (UHC) and meeting the International Health Regulations (IHR 2005). Strengthening health laboratory services in Sri Lanka requires a multisectoral approach involving hospitals, public health institutions, commercial and veterinary labs and academia. Aligning with the global framework (Figure 1), improved coordination, quality systems, workforce development, and expanded testing capacity, including point-of-care and mobile testing, are key to enhancing readiness and response to public health emergencies.

In Sri Lanka, the health laboratory network is anchored by the Medical Research Institute (MRI). Further, it serves as the national reference laboratory. It offers diagnostic and research services in communicable disease surveillance, including Measles, Rubella, Influenza, Dengue, Typhoid, Japanese Encephalitis, and COVID-19 etc. Other services include food and water microbiology, outbreak investigations, genomic surveillance, and nutritional assessments. MRI also leads to external quality assurance and laboratory capacity building.

Despite these strengths, Sri Lanka faces challenges such as fragmented services, limited integration, and resource constraints. These issues are especially evident outside vertical disease control programs. There is an urgent need to align national laboratory systems with global and regional frameworks. This article summarises the WHO and Asia Pacific strategies for laboratory system strengthening. It also reviews national priorities and identifies gaps. The goal is to highlight the importance of laboratories in health security and guide future investment, capacity building, and integration efforts.

Global Perspective: WHO's Framework for Laboratory System Strengthening

The World Health Organization (WHO) supports countries in strengthening laboratory systems across preparedness, response, and recovery. WHO guidance emphasizes developing national policies, regulatory frameworks, and governance structures. It promotes enhancing lab institutions and networks to support both daily healthcare needs and epidemic responses.

Workforce development is a core component. WHO helps countries build a trained, competent lab workforce for timely and accurate diagnostics. It also assists with biosafety, biosecurity, specimen transport, and Laboratory Quality Management Systems (LQMS). WHO facilitates simulation exercises, proficiency testing, and external quality assessments (EQA).

Despite advances in technology, biosafety and biosecurity remain weak in many countries. WHO provides guidance, training, and tools to address biological risk management. . It supports safe transport of infectious substances and helps laboratories meet accreditation standards (WHO, 2011; WHO, 2020).

Regional Context: Asia Pacific Strategy for Strengthening Health Laboratory Services

In the Asia Pacific Region, laboratory systems often evolved around disease-specific programs such as polio, HIV/AIDS, TB, and malaria. While effective for targeted control, this approach led to fragmentation and underinvestment. National-level coordination was often limited.

The Asia Pacific Strategy (2010–2015) proposed an integrated, system-wide approach. It emphasized the need for national policies, strategic planning, and governance. A key recommendation was developing tiered laboratory networks with defined roles, infrastructure, and referral systems.

The strategy also prioritized equitable financing. It promoted pooled funding over user fees to ensure accessibility. Capacity building was emphasized, especially in biosafety, diagnostics, quality assurance, and research. WHO support was encouraged for planning and coordination (WHO WPRO, 2010).

National Landscape: Sri Lanka's Approach to Laboratory System Strengthening

Sri Lanka is making structured efforts to improve laboratory services. These align with global and regional standards and cover policy, infrastructure, workforce, digital transformation, and data use.

National Health Laboratory Policy (2006)

This policy provides a framework for laboratory services across all levels. It sets national standards for infrastructure, diagnostics, and equipment. It also proposes a National External Quality Assurance Scheme (NEQAS) to ensure test consistency. Human resource development and laboratory-based research are also encouraged. The policy outlines a multi-tiered network for efficient service delivery (Ministry of Health, 2006).

Strengthening Primary Healthcare Laboratory Services

To improve services at the grassroots level, guidelines have been developed for Primary Medical Care Units (PMCUs). These cover basic infrastructure, infection prevention, and internal quality assurance. They promote patient-centred diagnostics and align with the Asia Pacific Strategy's focus on tiered services (Ministry of Health, 2018).

Digital Transformation

Sri Lanka is prioritizing digital health. The National Digital Health Guidelines and Blueprint aim to digitize laboratory services. They support interoperability between lab systems and clinical platforms and integration with the National Electronic Health Record (EHR). Improved communication infrastructure supports real-time reporting and surveillance (Ministry of Health, 2020).

Data-Driven Planning and Monitoring

Laboratory data is central to planning. The Annual Health Bulletin captures lab distribution, capacity, and usage. It provides performance metrics and identifies service gaps. This supports evidence-based decisions and highlights the lab system's role in surveillance (Ministry of Health, 2024).

Strategic and Sectoral Plans

Several documents support lab strengthening. The Health Master Plan (2016–2025) addresses infrastructure, HR, and service delivery. The Hospital Management Manual provides operational guidance for lab quality and safety. Sectoral strategies for AMR, dengue, and COVID-19 incorporate lab services into disease control plans.

Moving Forward: Key Priorities for Sri Lanka

Looking ahead, the planned National CDC of Sri Lanka can play a central role in coordinating lab services. Key actions include operationalising NEQAS and expanding EQA/ proficiency testing. A national laboratory strategy aligned with disease surveillance priorities is essential. Referral systems and service standards must be strengthened across all levels.

Addressing workforce shortages through training and updated curricula is critical. Expanding digital Laboratory Information Management Systems (LIMS), especially in district hospitals, will support real-time data use. Biosafety and biosecurity need to be institutionalised at all lab levels. Regular simulation exercises and After-Action Reviews (AARs) can improve emergency readiness.

CDC Sri Lanka should promote innovation, mobile labs, genomic surveillance, and sustainable financing. These steps will strengthen laboratory capacity and resilience.

Conclusion

A strong laboratory system is foundational to public health. Sri Lanka is making significant progress by aligning national strategies with global and regional guidance. Sustained investment, collaboration, and innovation will be crucial to building a resilient, efficient, and high-quality laboratory system.

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Table 1: Selected notifiable diseases reported by Medical Officers of Health 03rd–09th May 2025 (19th Week)

RDHS	Dengue Fever		Dysentery		Encephalitis		En. Fever		F. Poisoning		Leptospirosis		Typhus F.		Viral Hep.		H. Rabiies		Chickenpox		Meningitis		Leishmania-		Tuberculosis		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	T*	C**
Colombo	310	4691	0	15	0	3	0	4	0	5	9	187	0	5	0	8	0	0	1	216	3	26	0	1	33	771	**100**	100
Gampaha	194	2916	0	22	2	22	0	1	4	50	12	296	0	7	0	5	0	0	21	365	4	58	1	19	35	426	**87**	100
Kalutara	63	872	3	23	0	6	0	5	11	24	7	286	0	1	0	4	0	0	23	347	0	23	0	1	16	215	**68**	100
Kandy	77	1209	3	31	0	2	0	4	1	11	5	120	1	27	0	5	0	0	14	186	0	12	3	31	16	294	**100**	100
Matale	23	631	2	12	0	1	0	0	3	46	9	97	0	3	0	5	0	0	4	53	0	2	6	98	2	60	**100**	100
Nuwara Eliya	7	86	0	30	0	4	0	4	1	45	2	52	0	24	0	0	0	0	1	100	1	10	0	0	9	112	**85**	100
Galle	32	762	1	21	0	3	0	0	0	29	7	333	1	35	0	6	0	1	13	319	1	72	0	1	22	195	**65**	100
Hambantota	16	358	2	11	0	4	0	0	0	3	10	195	0	14	0	3	0	0	4	176	0	9	4	123	0	58	**100**	100
Matara	17	674	0	7	0	2	0	1	1	4	4	208	1	10	0	2	0	0	13	179	0	20	7	49	1	68	**82**	100
Jaffna	18	592	0	39	0	2	0	10	1	22	1	115	3	315	0	2	0	1	10	190	1	14	0	0	4	79	**93**	93
Kilinochchi	1	52	1	8	0	0	0	4	0	4	3	53	0	11	0	1	0	0	1	2	0	0	0	1	0	19	**100**	100
Mannar	1	94	0	4	0	0	0	0	0	2	1	18	0	10	0	0	0	0	0	14	1	12	0	0	3	22	**100**	100
Vavuniya	0	37	0	6	0	0	0	1	0	26	2	50	2	7	0	0	0	0	1	20	0	13	1	9	3	21	**75**	100
Mullaitivu	1	32	1	4	0	0	0	1	0	2	2	46	0	6	0	0	0	0	0	17	0	4	0	1	4	15	**83**	100
Batticaloa	59	1135	2	83	1	10	0	0	3	73	3	46	0	1	2	13	0	0	2	90	0	19	0	1	2	56	**93**	100
Ampara	4	91	2	17	0	7	0	0	0	5	5	92	1	2	1	3	0	0	3	72	1	17	1	11	1	22	**71**	100
Trincomalee	55	628	0	26	0	2	0	0	0	25	3	81	1	8	0	4	0	0	2	59	0	9	0	3	0	36	**100**	100
Kurunegala	30	502	1	19	1	11	0	1	0	23	19	367	1	19	0	2	0	1	13	328	4	61	5	208	13	136	**30**	100
Puttalam	12	330	0	9	0	1	0	0	0	4	12	155	1	26	0	1	0	0	3	76	0	37	0	13	0	80	**92**	100
Anuradhapura	11	300	0	21	0	6	0	3	0	15	8	230	0	14	0	7	0	0	3	147	1	40	7	287	8	107	**65**	100
Polonnaruwa	10	116	0	9	0	3	0	1	0	3	18	118	0	1	0	13	0	0	5	81	1	8	8	165	1	33	**100**	91%
Badulla	7	306	0	16	0	6	0	3	0	0	4	150	2	15	1	20	0	0	9	184	0	33	3	17	8	105	**88**	100
Monaragala	10	373	0	9	0	3	0	0	0	4	9	311	0	22	1	8	0	0	5	72	1	23	9	79	6	44	**78**	100
Ratnapura	242	1849	1	71	0	5	0	3	0	22	30	697	0	16	1	4	0	1	9	204	0	57	6	75	9	164	**90**	100
Kegalle	43	550	0	37	3	8	2	9	1	26	17	289	0	7	0	7	0	0	11	344	2	47	1	15	9	113	**73**	100
Kalmunai	13	219	1	15	1	2	0	0	3	15	3	51	0	1	0	1	0	0	6	78	6	17	0	0	2	53	**92**	100
SRILANKA	**125**	**19405**	**20**	**565**	**8**	**113**	**2**	**55**	**29**	**488**	**205**	**4643**	**14**	**607**	**6**	**124**	**0**	**4**	**177**	**3919**	**27**	**643**	**62**	**1208**	**207**	**3304**	85	99

Source: Weekly Returns of Communicable Diseases (esurvillance.epid.gov.lk). T=Timeliness refers to returns received on or before 09th May, 2025 Total number of reporting units 361 Number of reporting units data provided for the current week: 360 **C****-Completeness ·
A = Cases reported during the current week. B = Cumulative cases for the year.

Table 2: Vaccine-Preventable Diseases & AFP

03rd - 09th May 2025 (19th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2025	Number of cases during same week in 2024	Total number of cases to date in 2025	Total number of cases to date in 2024	Difference between the number of cases to date in 2025 & 2024
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	00	01	01	00	00	0	01	00	00	03	00	26	31	-16.1%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Mumps	00	01	01	01	03	01	01	00	00	08	08	89	110	-19.1 %
Measles	00	00	00	00	00	00	00	00	00	00	05	01	209	-97.6%
Rubella	00	00	00	00	00	00	00	00	00	00	01	01	02	-50%
CRS**	00	00	00	00	00	00	00	00	00	00	00	01	00	0 %
Tetanus	00	00	00	00	00	00	00	00	00	00	00	02	02	0 %
Neonatal Tetanus	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Japanese Enceph-alitis	00	00	00	00	00	00	00	00	00	00	00	04	01	300 %
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	12	06	100 %

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

Take prophylaxis medications for leptospirosis during the paddy cultivation and harvesting seasons.

It is provided free by the MOH office / Public Health Inspectors.

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

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