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Ensuring High-Quality Data for Disease Surveillance: A Foundation for Effective Public Health Action

Accurate, timely, and reliable data are the cornerstone of evidence-based decision-making in public health. Sri Lanka's newest disease surveillance system, EPINET, based on the DHIS2 platform, serves as a critical system for collecting, managing, and analysing data from across the health sector. However, the true value of this information depends on its quality. Incomplete, inaccurate, or delayed reporting can lead to gaps in disease tracking, misallocation of resources, and delays in outbreak response. This article highlights the essential principles of data quality, common challenges encountered during data entry, and practical steps that users can take to ensure high standards in reporting.

Understanding the Dimensions of Data Quality

Data quality is assessed through several key dimensions. The DHIS2 platform contains inbuilt functionality to ensure data quality across these dimensions through customisation.

1. **Accuracy** – Data must reflect the true situation on the ground. Misclassification of diseases, incorrect numbers, or misinterpretation of case definitions can compromise analysis and reporting.
2. **Completeness** – All required fields and datasets should be filled in fully. Missing values reduce the reliability of reports and limit the effectiveness of public health interventions.
3. **Timeliness** – Data should be submitted according to the reporting schedule. Late entries can delay outbreak alerts and hinder preventive action.
4. **Consistency** – Information should remain uniform across periods and between different reporting sources.
5. **Validity** – Entries must meet the logical rules defined by DHIS2.

Each of these dimensions plays a role in ensuring that decision-makers have a clear and reliable picture of public health trends.

Common Data Quality Challenges

Experience from health information system implementations shows that certain issues occur repeatedly during data collection and entry:

- **Incomplete reporting** – Leaving fields blank, particularly in case-based surveillance, limits the usefulness of datasets.
- **Misclassification of diseases** – Using the wrong diagnosis code or selecting a similar condition by mistake can distort epidemiological statistics.
- **Delayed submission** – Failing to meet reporting deadlines reduces the value of the data for real-time monitoring.
- **Inconsistent reporting patterns** – Large fluctuations in reported numbers that are not supported by outbreak evidence may indicate recording errors.
- **Duplicate entries** – Entering the same case more than once artificially inflates numbers and misleads analysis.

Addressing these challenges requires both system-level measures and good practices by individual users.

Good Practices for Data Entry in EPINET

High-quality data entry begins at the point of collection. Whether entering data into the Weekly Returns of Communicable Diseases (WRCD) module, the H411a form, or any other EPINET dataset, the following principles should be followed:

1. **Verify source documents before entry** – Double-check the paper-based records or source data against the case definitions.
2. **Use the correct data element or diagnosis code** – Always refer to the current case definition guidelines and ICD coding standards to avoid misclassification.

3. **Review before submission** – Use the DHIS2 "Validation" function to detect logical errors (e.g., more deaths than cases).

4. **Submit on time** – Adhere to the national reporting schedule to ensure timely analysis and action.

5. **Avoid duplicate entry** – Check whether the case has already been recorded in the system before adding it again.

6. **Report according to the assigned catchment area** – Ensure that the cases entered correspond to the relevant PHI, MOH, or hospital jurisdiction.

By making these steps routine, data providers can significantly reduce errors and strengthen the quality of national health information.

Data Quality Monitoring in DHIS2

DHIS2 provides several tools for monitoring and improving data quality:

- **Data Quality App** – Allows users to run validation rules, identify outliers, and detect inconsistencies in datasets.
- **Completeness and timeliness reports** – Summarise reporting rates by facility or district, highlighting areas where submission is delayed or incomplete.
- **Validation rules** – Built-in logic checks that flag impossible or illogical values for correction before finalisation.
- **Outlier analysis** – Identifies unusual values compared to previous reporting periods, prompting follow-up investigation.

These tools are most effective when used regularly by both field-level staff and supervisors.

The Role of Supervisors and Feedback

Sustaining high data quality requires active supervision and feedback. Supervisors should:

- Review reports promptly after submission.
- Provide constructive feedback to staff when errors are detected.
- Encourage peer learning by sharing examples of good reporting practices.
- Use regular review meetings to highlight trends in completeness, timeliness, and accuracy.

A feedback culture not only improves data but also increases staff engagement and ownership of the reporting process.

Why Data Quality Matters for Public Health

Accurate data is essential for:

- Detecting and responding to outbreaks rapidly.
- Monitoring the impact of public health interventions.
- Allocating resources efficiently.
- Supporting research and policy development.

When data is unreliable, these functions are weakened, leading to delayed or ineffective responses. In the context of infectious disease surveillance, poor data quality can result in missed outbreaks, underestimation of disease burden, and misdirection of limited resources.

Conclusion:

The quality of EPINET data is a shared responsibility across all levels of the health system. The DHIS2 platform provides functionality to ensure the quality of data in the system. Field staff, supervisors, programme managers, and national-level analysts all have a role to play in ensuring that health information is accurate, complete, timely, consistent, and valid. By following good data entry practices and making use of the system's quality monitoring tools, Sri Lanka's health sector can maintain a strong and reliable foundation for public health action.

High-quality data is more than a technical requirement — it is a public health necessity. Every data entry contributes to the bigger picture of national health and shapes the ability to protect communities from disease threats.

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Table 1: Selected notifiable diseases reported by Medical Officers of Health 24th–30th May 2025 (22nd 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	302	5688	0	15	0	3	2	6	0	5	12	220	0	5	1	11	0	0	5	251	0	29	0	1	37	861	**94**	100
Gampaha	197	3545	1	23	1	23	0	1	8	63	33	371	1	8	1	7	0	0	29	419	7	70	2	22	20	471	**100**	100
Kalutara	71	1070	0	24	2	8	0	8	0	26	17	324	0	1	0	4	0	0	30	421	1	24	0	1	5	252	**96**	200
Kandy	105	1538	1	33	1	3	0	4	4	16	3	129	0	29	0	6	0	0	8	224	0	12	1	34	15	327	**96**	100
Matale	20	687	0	14	0	1	0	0	1	47	5	113	0	3	0	5	0	0	2	60	0	2	3	111	2	67	**100**	100
Nuwara Eliya	7	106	2	36	0	4	0	4	0	45	1	56	0	25	0	0	0	0	9	117	0	10	0	0	5	123	**100**	100
Galle	44	906	2	23	0	3	0	1	3	36	16	379	0	37	0	7	0	1	11	357	8	84	1	3	10	222	**95**	100
Hambantota	8	406	2	14	0	4	0	0	0	3	2	218	0	14	0	3	0	0	1	183	0	13	2	138	3	64	**100**	100
Matara	26	748	0	7	0	2	0	1	0	4	7	234	1	11	0	6	0	0	6	201	0	22	5	55	2	77	**71**	100
Jaffna	20	674	0	44	0	2	0	10	0	25	1	118	7	334	0	2	0	1	3	219	0	16	0	0	3	93	**86**	93
Kilinochchi	2	60	0	8	0	0	0	4	1	5	0	56	0	11	0	1	0	0	0	3	0	0	0	1	1	25	**100**	100
Mannar	2	103	0	4	0	0	0	0	0	2	0	19	0	11	0	0	0	0	0	15	0	12	0	0	0	22	**80**	100
Vavuniya	1	42	0	7	0	0	0	1	0	28	0	56	0	7	0	0	0	0	2	23	0	13	0	11	0	25	**100**	100
Mullaitivu	1	36	0	4	0	0	0	1	21	23	1	47	0	7	0	0	0	0	0	17	1	5	1	2	3	18	**100**	100
Batticaloa	52	1298	1	86	0	11	0	0	3	82	3	61	0	1	0	16	0	0	6	108	0	19	0	1	2	64	**93**	100
Ampara	10	113	4	25	1	9	0	0	0	5	7	118	0	2	0	3	0	0	5	88	2	23	2	15	3	28	**100**	100
Trincomalee	39	755	0	26	0	2	0	1	1	26	2	92	0	9	1	5	0	0	4	71	0	10	0	3	0	47	**100**	100
Kurunegala	60	653	2	26	0	11	0	1	0	25	18	415	0	20	1	3	0	1	19	369	7	73	7	247	9	155	**100**	100
Puttalam	11	362	3	12	1	3	0	0	1	5	3	166	0	28	0	1	0	1	2	87	5	48	2	17	12	92	**85**	100
Anuradhapura	11	335	1	22	0	6	0	3	0	16	5	262	0	14	1	10	0	0	3	170	2	42	12	330	6	122	**87**	100
Polonnaruwa	12	141	0	9	0	3	0	1	2	5	9	148	0	1	1	15	0	0	3	95	1	11	2	174	1	37	**100**	90
Badulla	26	364	1	18	1	8	0	3	0	0	4	168	0	15	1	21	0	0	11	208	0	36	1	20	9	127	**94**	100
Monaragala	26	431	0	11	0	3	0	0	0	4	14	357	0	23	2	12	0	0	2	77	1	27	4	95	4	55	**78**	100
Ratnapura	197	2500	1	73	0	5	0	3	0	22	20	777	0	16	1	6	0	1	4	225	2	61	2	100	12	189	**70**	100
Kegalle	61	699	2	39	1	9	0	9	1	27	17	355	0	7	0	9	0	0	23	408	3	55	0	16	6	125	**91**	100
Kalmunai	4	241	1	18	0	2	0	0	2	17	6	62	0	1	1	2	0	0	3	87	4	23	0	0	5	62	**100**	100
SRILANKA	**1315**	**23501**	**24**	**621**	**8**	**125**	**2**	**62**	**48**	**562**	**206**	**5321**	**9**	**640**	**11**	**155**	**0**	**5**	**191**	**4503**	**44**	**740**	**47**	**1397**	**175**	**3750**	**93**	**99**

Source: Weekly Returns of Communicable Diseases (esurvillance.epid.gov.lk). T=Timeliness refers to returns received on or before 23rd 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

24th – 30th May 2025 (22nd 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	00	01	00	00	00	00	00	00	01	01	28	34	-17.6%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Mumps	04	00	01	00	01	01	00	00	00	07	04	102	128	-20.3 %
Measles	00	00	00	00	00	00	00	00	00	00	02	01	211	-99.5%
Rubella	00	00	00	00	00	00	00	00	00	00	00	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	03	02	50 %
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	11	9.1 %

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.

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.

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ON STATE SERVICE

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