

Roll Out of RDQA in

Provincial and Federal Hospitals



Government of Nepal
Ministry of Health and Population

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Acknowledgement

The analytical study report 'Roll out of RDQA in Federal and Provincial Hospitals' presents the findings of a routine data quality assessment of HMIS in three federal and three provincial hospitals in Nepal's Province 2 and Lumbini Province. This document contains a full report on the lessons learned from a web-based RDQA in hospitals, as well as an action plan for improving data quality. I believe that this document will help hospitals make evidence-based decisions based on high-quality data.

First, I'd want to thank my colleagues in the Monitoring and Evaluation Section, Policy, Planning and Monitoring Division, particularly Mr. Sambhu Prasad Gyawali, Mr. Ravikanta Mishra and Mr. Manoj Tamrakar, for their hard work and devotion. My deep sense of gratitude goes to the report developer and reviewer team members.

My sincere gratitude also goes to the federal and provincial hospital's medical superintendent and medical officers for their assistance in completing the work. I'm also grateful to every one of the hospital workers that contributed significant information to this assessment.


Dec 17, 2021

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Executive Summary

The Federal Ministry of Health and Population (FMoHP) initiated the Routine Data Quality Assessment (RDQA) in six secondary and tertiary hospitals managed by the federal and provincial governments in Province 2 and Lumbini Province. Gajendra Narayan Singh Hospital, Bheri Hospital, Narayani Hospital, Rapti Provincial Hospital, Lumbini Provincial Hospital, and Provincial Hospital Janakpur were selected to conduct the RDQA.

The RDQA tool consists of two domains: data verification and system assessment. The data verification domain of the RDQA tool helps assess whether service delivery sites (health facilities) at different levels and the national M&E system are collecting, consolidating, and reporting data to measure the selected indicator(s) accurately and on time. It also crosschecks the reported results with other data sources. The system assessment domain of the RDQA tool identifies strengths and potential threats to data quality posed by the design and implementation of the data management and reporting system at different levels of the M&E and service delivery sites. System assessment has five functional areas: M&E structure, functions and capabilities; indicator definitions and reporting guidelines; data collection and reporting forms and tools; data management processes; and use of data for decision making.

The baseline score of the assessments done in six hospitals were established, action plans were prepared and capacity enhancement on the use of the tool were carried out in the hospitals following the implementation of the RDQA. The assessment data shows that none of the health facilities met the benchmark in terms of verification factors for register vs. tally. The benchmark set for acceptable data quality was >90%<110%. However, the scores of all six hospitals fell below the standard. Similarly, the scores for register vs. monthly monitoring sheet and tally vs. monthly monitoring sheet were zero because the hospitals did not maintain monthly monitoring sheet. Regarding the record register vs. HMIS 9.4, only Lumbini Provincial Hospital was within the given benchmark.

In terms of the system assessment domain, the hospitals had a satisfactory score (an average of 2.5) in indicator definitions and reporting guidelines while they fared averagely in two sub-domains: M&E structure, functions, and capabilities; and data management processes. The hospitals were weak in two domains: data collection and reporting forms and tools and use of data for decision making. Further analysis of the data showed that provincial hospitals fared better than their federal counterparts.

The major reasons for the low scores in verification factors and system assessment dimensions were the low use of data for decision making, lack of proper use of recording and reporting tools, and lack of training on HMIS and data use. Other reasons included few monitoring and supervision visits to the hospitals and supply issues associated with HMIS reporting tools.

The assessment also clearly points out the financial aspects and ways to institutionalize RDQA. An important takeaway from this is that the RDQA can be performed twice a year with minimal costs.

As a way forward, it is essential for the health facilities to prioritize human resources for the Record Section while motivating the use of data by all units. Also, the provincial and federal health authorities should regularly monitor data quality and provide feedback while also training health personnel on the Health Management Information System and data use. As this assessment clearly points out the low use of data, it is essential to understand, through research, the reasons behind the low use of data in health facilities.

Acronym/Abbreviations

<i>RDQA</i>	Routine Data Quality Assessment
<i>DQA</i>	Data Quality Assessment
<i>MOHP</i>	Ministry of Health and Population
<i>DOHS</i>	Department of Health Services
<i>VF</i>	Verification Factors
<i>HMIS</i>	Health Management Information System
<i>M&E</i>	Monitoring and Evaluation
<i>FCHV</i>	Female Community Health Volunteers
<i>PHD</i>	Provincial Health Directorate
<i>MoSD</i>	Ministry of Social Development
<i>AWPD</i>	Annual Work Plan and Budget (AWPB).

Table of Contents

Executive Summary	iii
Acronym/Abbreviations	v
1. Background and introduction	1
1.1 Conceptual Framework of the RDQA	3
2. Approaches to onsite coaching and mentoring of the Routine Data Quality Assessment (RDQA)	5
2.1 Verification factor	5
2.2 System assessment domain	6
3. Findings and discussion	11
3.1 Verification factor	11
3.2 System assessment score	12
3.3 Hospitals and their system assessment scores	15
3.4 Federal hospitals	15
3.4.1 Gajendra Narayan Singh Hospital	15
3.4.2 Bheri Hospital	17
3.4.3 Narayani Hospital	19
3.5 Provincial hospitals	21
3.5.1 Rapti Provincial Hospital	21
3.5.2 Lumbini Provincial Hospital	23
3.5.3 Provincial Hospital Janakpur	24
3.6 Good practices associated with the system	26
3.7 Factors associated with low scores in the Verification factor and System assessment	26
Shortfall of human resources	26
Lack of training	27
Low prioritization of data and record management	27
Irrelevance of indicators	28
Action points for individual hospitals	29
Financial implications for RDQA implementation	30
On path to institutionalize the RDQA	31
Addressing the challenges associated with the RDQA	31
Conclusion	32

Recommendations	34
For health facilities	34
For the ministries of social development (MoSD) and provincial health directorates (PHDs)	34
For the federal Ministry of Health and Population (MoHP)	35
For agencies regarding technical assistance	35
Annex 1	36
Annex 2	39
Annex 3	43

List of Tables

Table 1: Hospitals and date of event	9
Table 2: Number of participants in the event	9
Table 3: Scores of each hospitals in system assessment components	15
Table 4: Common issues among federal and provincial hospitals	28
Table 5: Details on common identified weakness and its action points	29
Table 6: Financial details while conducting RDQA	30

List of Figures

Figure 1: HMIS reporting mechanism	1
Figure 2: An example of information flow.	2
Figure 3: Conceptual Framework of the RDQA	3
Figure 4: Steps in the RDQA process	6
Figure 5: Distribution of six hospitals where RDQA was conducted.	7
Figure 6: Average scores for Register vs. Tally	11
Figure 7: Average scores for Record Register vs. HMIS 9.4	12
Figure 8: System assessment score for all six hospitals	13
Figure 9: System assessment scores for three federal and three provincial hospitals	14
Figure 10: Common issues among federal and provincial hospitals	29

Background and introduction

A robust data programme is a prerequisite for a resilient health system. From a broader perspective, the quality of data can represent the world we understand—poor quality data means a poor representation of the real world and vice versa. Nepal remains a signatory to global commitments, including the Sustainable Development Goals, and the government must track its progress periodically.

The data produced at the health facility level is self-audited by the Routine Data Quality Assessment (RDQA) tool. The RDQA was designed based on the implementation of the Data Quality Assessment (DQA) tool, which was primarily used to measure and monitor the progress made in a number of specific and vertical health programmes, including for HIV/AIDS, tuberculosis, and malaria. However, the DQA alone was inadequate to improve data quality, and a need arose for a tool to self-assess the programmes. It was then that the RDQA was developed.

The fundamentals of RDQA are based on the dimensions of data quality: accuracy, reliability, precision, completeness, timeliness, integrity, and confidentiality. This means that the tool verifies the quality of reported data and assesses the underlying data management and reporting systems for standard programme-level output indicators. The effective implementation of RDQA helps generate good quality data and its use at the point of generation. The tool consists of two domains: 'verification of data' and 'assessment of the system'. It calculates quality metrics using HMIS data by verifying the data under the domain of 'data verification'. Within the 'system evaluation' domain, the five functional areas of the Monitoring and Evaluation (M&E) system are evaluated.



Figure 1: HMIS reporting mechanism

Poor quality data from the health facility level has long been a problem for Nepal's health system. The lack of coherent information and comprehensive reporting statistics, coupled with accuracy and reliability issues, have been challenges for the Health Management Information System (HMIS).

It is essential to understand the working of the HMIS reporting mechanism. The mechanism entails several steps to record and report statistics, as shown in Figure 1. In stage one, the health facility maintains a record register that documents each individual that used its services. Multiple programmes can maintain different records. Next, these are compiled and counted in a tally sheet. In the third stage, HMIS reporting formats (HMIS 9.3, HMIS 9.4 and HMIS 9.5) are used to generate a monthly aggregate report; during this stage a monthly monitoring sheet is also maintained to monitor service statistics each month. All of these data are then entered into HMIS reporting system (DHIS2).

A further example of information flow from the HF level to the central database is provided in Figure 2 below. It shows that HFs either report to local government which then enters the data into central database, or the HFs directly enters the data into the central database.

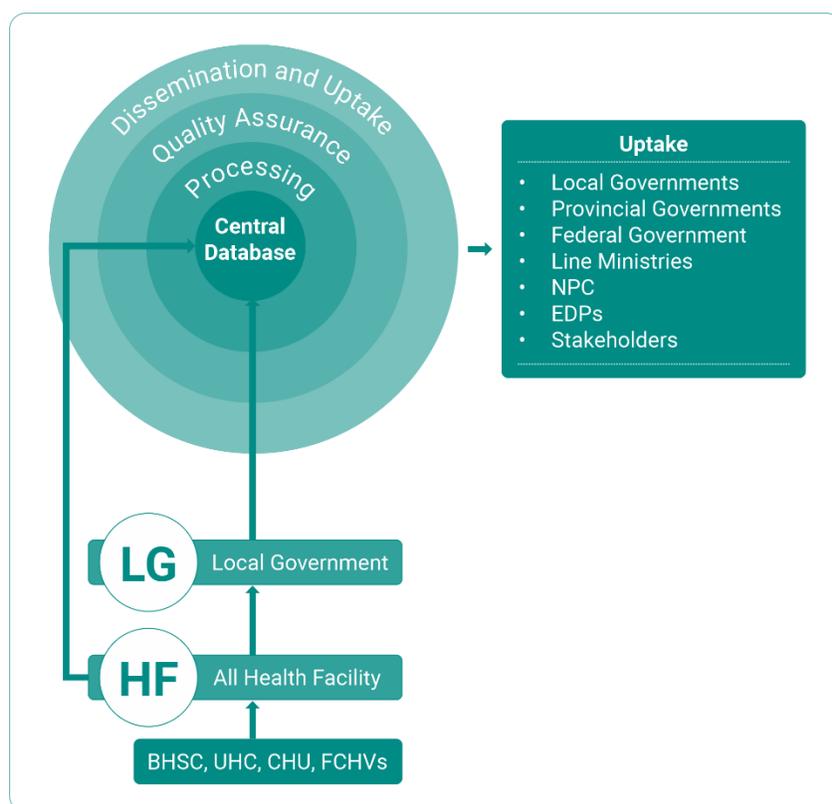


Figure 2: An example of information flow.

This multi-step process invites numerous errors in data. Such errors mainly occur during data extraction and its transformation to the required reporting formats, and this is the chief contributor to low data quality.

It was for this reason that Nepal required the RDQA tool, especially from 2015 in the new Federal context. This transition led to changes in the health system reporting methods. Prior to 2015, health facilities maintained record registers and tally sheets, which they put into HMIS reporting formats. These were submitted to the district public/health offices that would then enter the data to the HMIS. Monthly

monitoring sheets were also maintained by health facilities. After 2015, there have been two ways of reporting. In one method, the health facility collects reports from its units, including from Female Community Health Volunteers and Community Health Units, and enters the data to the system. In the other, the health facilities submit the reports to the local government that then upload the entries to the HMIS system. Despite these changes, HMIS reporting carried remains fraught with errors, as readily acknowledged by officials.

In 2018, the FMOHP, with support from multiple partners (NHSSP, GiZ and WHO), developed the web-based RDQA system. Since then, the tool has undergone multiple modifications that have been adapted to changing reporting and data needs. The RDQA tool self-assesses the quality of data gathered from health facilities, programmes, and governance units of the HMIS3. It can be used by the FMOHP, and provincial, district, municipality, and health facility users. The tool has a series of data auditing steps that later produce interactive graphs and diagrams. Additionally, an Action Plan feature allows health facilities to create action plans with strategies and time frames for achieving their goals.

The MoHP with technical support from NHSSP recently assessed the RDQA in six secondary and tertiary hospitals managed by the federal and provincial governments in Province 2 and Lumbini Province. The baseline score of these assessments, along with action plans, have been established, and capacity enhancement on the use of the tool has been carried out in the hospital setting. This report outlines the performed activities, interprets the generated scores, reviews and analyses the qualitative part of the system assessment, and envisions amendments with the created action plans. This report will serve as a valuable resource as part of the documentation efforts on RDQA implementation and will also guide scaling up of the RDQA in other health facilities.

1.1 Conceptual Framework of the RDQA

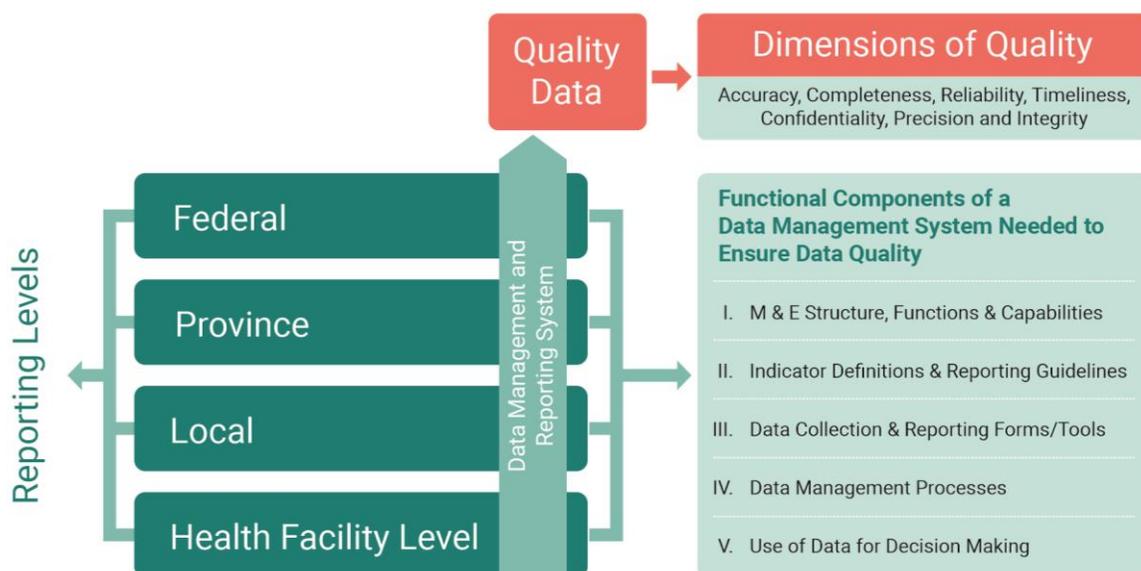


Figure 3: Conceptual Framework of the RDQA

Figure 3 represents the conceptual model of the RDQA system. Quality of reported data is dependent on the underlying data management and reporting systems; stronger systems should produce better quality data¹.

As explained in the RDQA User Manual "...for good quality data to be produced by and flow through a data management system, key functional components need to be in place at all levels of the system—the points of service delivery, the intermediate level(s) where the data are aggregated (e.g., districts, regions), and the M&E unit at the highest level to which data are reported."

¹ Routine Data Quality Assessment Tool, User Manual

Onsite coaching and mentoring of the Routine Data Quality Assessment (RDQA)

The RDQA tool operates with a few actions that are instrumental in improving the quality of the data reported by facilities:

1. Verifying the quality of the data
2. Assessing the system that produces the data
3. Developing action plans to improve both

The RDQA has two main components: it facilitates the assessment of the quality of the selected indicator data (**data verifications**) and the strength of the overall data management and reporting system (**system assessment**).

2.1 Verification factor

The verification factor of the RDQA tool helps to assess if service delivery sites (health facilities) at different levels and the national Monitoring and Evaluation (M&E) system have been collecting, consolidating, and reporting data to measure the selected indicator(s) accurately and on time, and to crosscheck the reported results with other data sources. For cross-checking, the data reported for selected indicators are verified against the recording registers/forms; register vs tally sheet; register vs monthly monitoring sheet; tally vs monthly monitoring sheet; and register vs client tracking (optional). The purpose of the crosscheck is to examine if the reported data is consistent; the process is carried out by validating the primary data source against a secondary data source (other than the client registers/forms used for verification purposes) for the same reporting period.

For each of the indicators, a documentation review was performed to verify whether:

1. all necessary data sources were available
2. data sources were complete
3. all cases were reported in the correct reporting period
4. the number of cases reported in the official documents compared accurately with those calculated from the original sources

In the data verification domain, a 90-110% score on all indicators selected for verification was considered the benchmark for accuracy.

2.2 System assessment domain

The systems assessment part consists of the quantitative assessment of the relative strengths and weaknesses of the different functional areas of the M&E system. The goal of this section was to identify potential threats to data quality posed by the system's design and execution. Five functional areas (components) of the M&E system were assessed. For each component, a set of items individually scored as 0 (N/A), 1 (No – Not at all), 2 (Partly), and 3 (Yes - Completely) was used for the assessment. The number of items varied across components, from a minimum of 4 to a maximum of 8. For each component, a summary score was produced as the average of all items related to the component, and an overall quality score was derived as the average of all 32 items. The five components considered in the assessment are listed below:

- M&E structure, functions, and capabilities (7 items).
- Indicators definitions and reporting guidelines (4 items).
- Data collection reporting forms and tools (6 items)
- Data management process (8 items)
- Use of data for decision making (7 items)

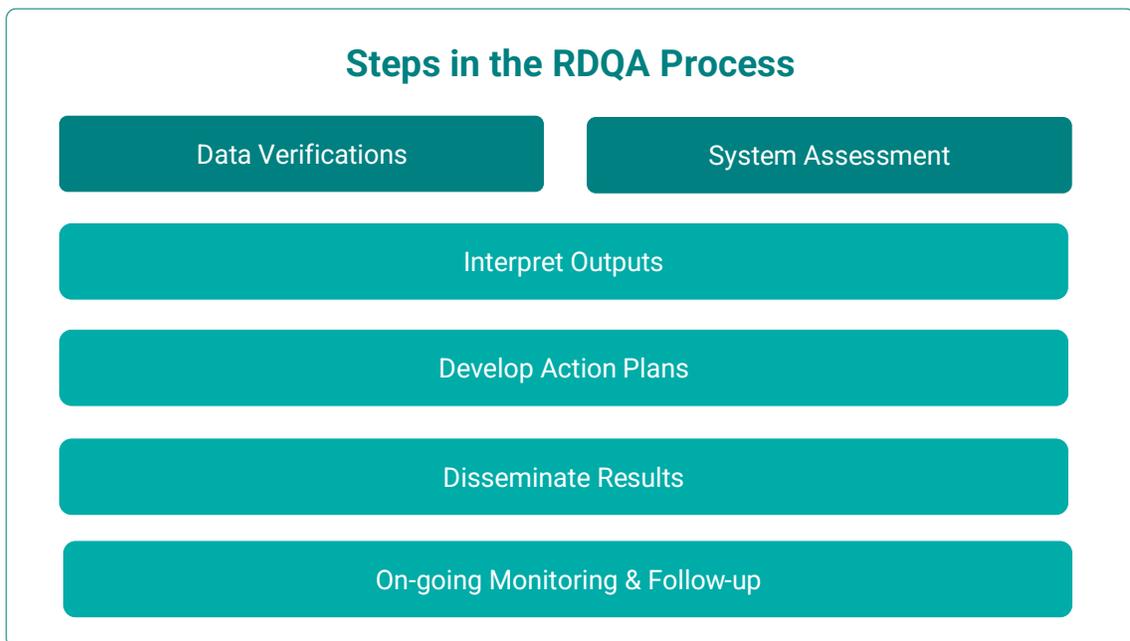


Figure 4: Steps in the RDQA process

Figure 4 above also shows the steps that were followed while conducting the RDQA. While conducting the RDQA in six hospitals, the FMOHP with technical support from NHSSP adopted multiple steps:

- **Planning on orienting hospitals on the RDQA**

The FMoHP first planned to orient hospitals on the RDQA to improve the data quality reported from the health facilities. The orientation and the hands-on implementation of the RDQA would encourage the hospitals to take the lead in improving the quality of data. In the process, it would also reflect the commitment of the federal FMoHP in assisting the units. During this planning process, officials from the FMoHP, provincial health directorate along with personnel from NHSSP provided onsite coaching on the RDQA and supported in its implementation.

- **Selection of hospitals**

The MoHP and NHSSP purposively selected six hospitals, three federal and three provincial, from two provinces. The FMoHP specifically sought the implementation in these hospitals to understand the applicability and scalability of the system in large health facilities. Gajendra Narayan Singh Hospital, Narayani Hospital, Provincial Hospital Janakpur in Province 2 and Bheri Hospital, Rapti Provincial Hospital, and Lumbini Provincial Hospital in Lumbini province were selected to conduct the RDQA. See Figure 5 for a map of the hospitals.

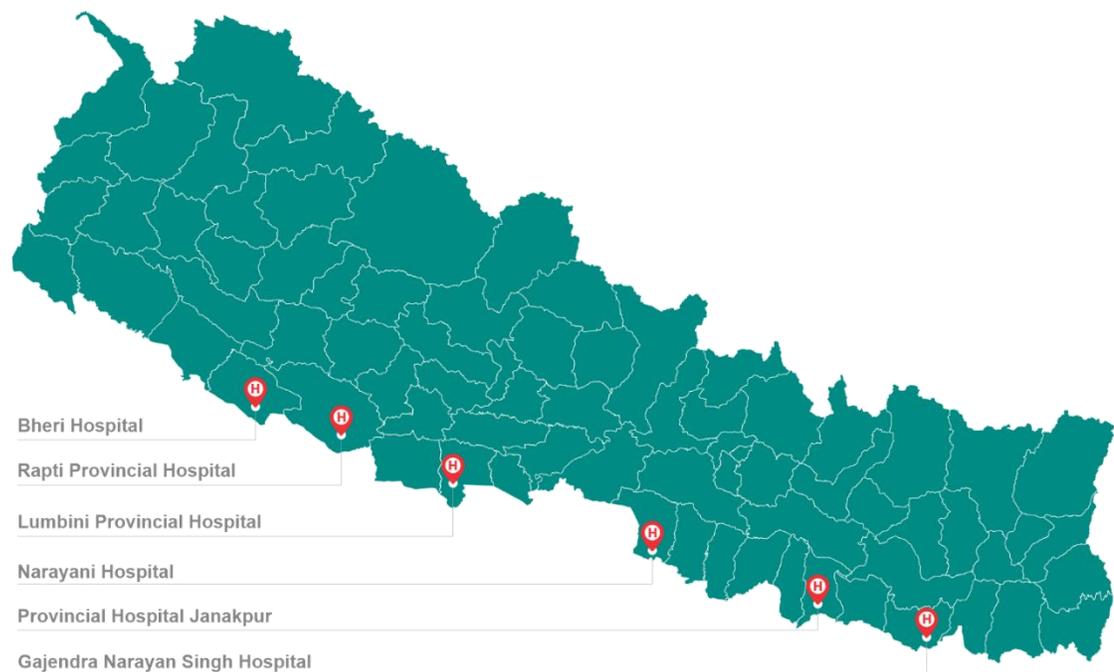


Figure 5: Distribution of six hospitals where RDQA was conducted.

- **Prior notice to hospital**

The hospitals were given prior notice about the RDQA visit from FMoHP officials. The NHSSP provincial coordinators facilitated the process and helped the hospitals arrange teams for the RDQA so that their routine work would not be affected by the assessment.

- **Initial coordination meeting**

Coordination meetings with medical superintendents, chiefs of medical records sections, or related officials were conducted at the hospitals. Discussions revolved around the objective of the RDQA and its importance, along with assessment procedural details.

- **Orientation on the RDQA and its usage**

A one-day orientation event on the RDQA and its usage was conducted at each hospital and was jointly facilitated by MoHP/ provincial health directorate official and NHSSP staff. The participants consisted of medical superintendents, statistical officers, medical record section assistants, and ward in-charges, among others. The orientations presented the aspects of the RDQA, including data quality dimensions, verification factors, system assessments, and associated details.

- **Formation of evaluation teams for the RDQA**

Following the orientation, the hospitals formed RDQA teams, which would take the lead on its implementation under the supervision and guidance of officials from the MoHP and technical agencies.

- **Selection of indicators**

Next, indicators were selected for the assessment. They were broadly based on:

- Links to direct cash benefits
- Vital events (births and deaths)
- Programmes that benefitted children and women
- Relations to commodities (family planning methods, vaccines, among others)

The details of the indicators selected for each hospital are placed in Annex 3.

- **Credentials for individual hospitals on the web based RDQA**

The FMoHP provided the hospitals with the credentials to access the RDQA tool.

- **Running the RDQA**

The work for the RDQA then started in two stages: a verification factor allowing for the quantitative comparison of recounted to reported data, and a review of the timeliness, completeness, and availability of reports. The main purpose of this part was to assess if the hospitals had been collecting and reporting data accurately, completely, and on time, and whether this information accurately matched the reported data in the national system.

Similarly, the second part of the RDQA tool enabled qualitative assessment of the relative strengths and weaknesses of the functional areas of a data management and reporting system. The purpose of assessing the system was to identify the potential threats to data quality posed by its design and implementation methods.

▪ Development of action plan

The final part of the RDQA process consisted of an action plan. The health facilities were debriefed regarding the findings of the verification factor and system assessment domain. Then, the following components were addressed:

- a. A description of the discovered data quality difficulty
- b. The data subjected to quality improvement techniques
- c. The entity in charge of implementing the indicated recommendations
- d. Calculation of the amount of time it would take to complete the improvement initiatives

▪ Debriefing session

The Online RDQA Implementation Guideline (2075) stresses on debriefing sessions, which are performed before the RDQA is completed. They are especially helpful for contextualizing scores and working on action plans. The debriefing sessions for the six hospitals consisted of displays of spider graphs and bar charts and included open discussions. Any questions or issues surrounding the tool were discussed and clarified.

▪ Minuting the event

The RDQA process and proceedings were recorded, including details of commitments from hospital administrators and staff on improving data quality.

Event details

The table shows the dates and places where the RDQA was implemented.

Table 1: Hospitals and date of event

S.N.	Hospital	Date of RDQA Implementation
1	Provincial Hospital, Janakpur	29-30 July 2021
2	Narayani Hospital, Birgunj	4-6 September 2021
3	Gajendra Narayan Singh Hospital, Rajbiraj, Saptari	18-19 August 2021
4	Lumbini Provincial Hospital	29 July 2021
5	Rapti Provincial Hospital	5 September 2021
6	Bheri Hospital	5 September 2021

Details of participants

All six hospitals had active medical superintendents, which indicated official interest in maintaining data quality. This was encouraging for other participants as well as for the supervision team. Statistical officers, medical records unit assistants, and other health professionals were also involved during the orientation and implementation of the RDQA.

Table 2: Number of participants in the event

S.N.	Hospital	Total number of participants
1	Gajendra Narayan Singh Hospital	14
2	Bheri Hospital	13
3	Narayani Hospital	15
4	Rapti Provincial Hospital	11
5	Lumbini Provincial Hospital	13
6	Provincial Hospital Janakpur	14

Box 1: Data interpretation

Interpretation of data

1. Verification Factor

The Verification Factor is the key metric for assessing the quality of the reported data, by comparing the reported data to the source data (i.e., the record register or tally sheet or other HMIS record at the hospital)

The scale for this ranges from 0-200%

Data Interpretation**:

- >100% is considered over-reporting, meaning that a lower number of people actually received the service than was reported.
- **100%**: Perfect data quality (exact match of recounted to reported), which is rare.
- <**100%**: Under-reporting (i.e., recounted data from the primary source document is higher than the reported value)

Acceptable range:

The acceptable range for data quality is between >90%<110%.

***The MoHP had changed the interpretation of over-reporting and under-reporting following confusion among the health worker during the implementation of the RDQA. In the original RDQA, the recounted data serves as numerator while the reported data serves as denominator. In Nepal's case, it is just the opposite.*

2. System Assessment

For each of the five dimensions of data quality, the RDQA tool has a series of questions. The system assessment score for each dimension is the **average** of the scores across the questions for that dimension.

For each component, a set of items individually scored as

- 0: N/A,
- 1: No – Not at all,
- 2: Partly
- 3: Yes - Completely

Color Code Key		
Green	2.5 - 3.0	Yes, completely
Yellow	1.5 - 2.5	Partly
Red	<1.5	No, not at all

Source: RDQA Manual

Findings and discussion

These findings are based on the scores generated from the verification factor and system assessments.

3.1 Verification factor

a. Register vs. tally

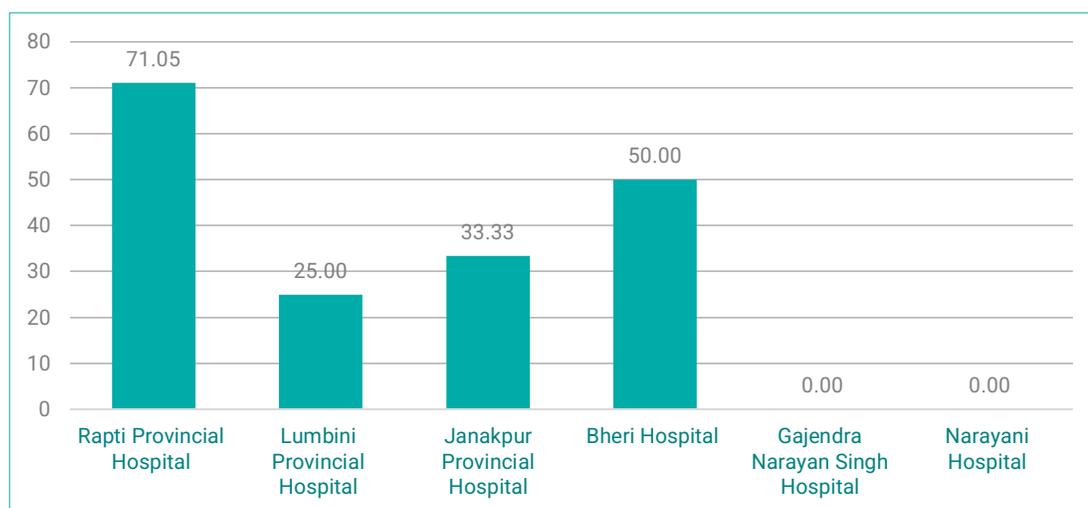


Figure 6: Average scores for Register vs. Tally

As seen in Figure 6, none of the health facilities met the benchmark (>90% <110%) in verification factors for register vs. tally. The scores of all six hospitals also fell below the standard. A major reason for this was that the facilities maintained tally sheets for only a few indicators. As these indicators were not considered when performing the RDQA, there was a high probability of the average value falling below the set benchmark. Moreover, two federal hospitals, Gajendra Narayan Singh Hospital and Narayani Hospital, did not maintain tally sheets.

Also, it was apparent that the number of service seekers from the health facilities did not match the data maintained in the tally sheets. This indicated an underreporting of people who sought these services which seriously weakens data accuracy. The information entered in the system stops reflecting the ground scenario as it cannot be corroborated with original sources. Records of death were also mismatched in one of the hospitals.

b. Register vs. monthly monitoring sheet

The scores were zero for all six hospitals because none had monthly monitoring sheets. Some hospitals reported that the concerned units, including the Provincial Health Directorate at the Ministry of Social Development and IHMIS/DoHS, were yet to send them the sheets. Ultimately, this meant that the list of service seekers in the register could not be recounted.

c. Tally vs. monthly monitoring sheet

Again, the scores were zero for all six hospitals because tally and monthly monitoring sheets were unavailable. As a result, the records of service seekers maintained in the tally and monthly monitoring sheets could not be re-counted.

d. Record register vs. HMIS 9.4

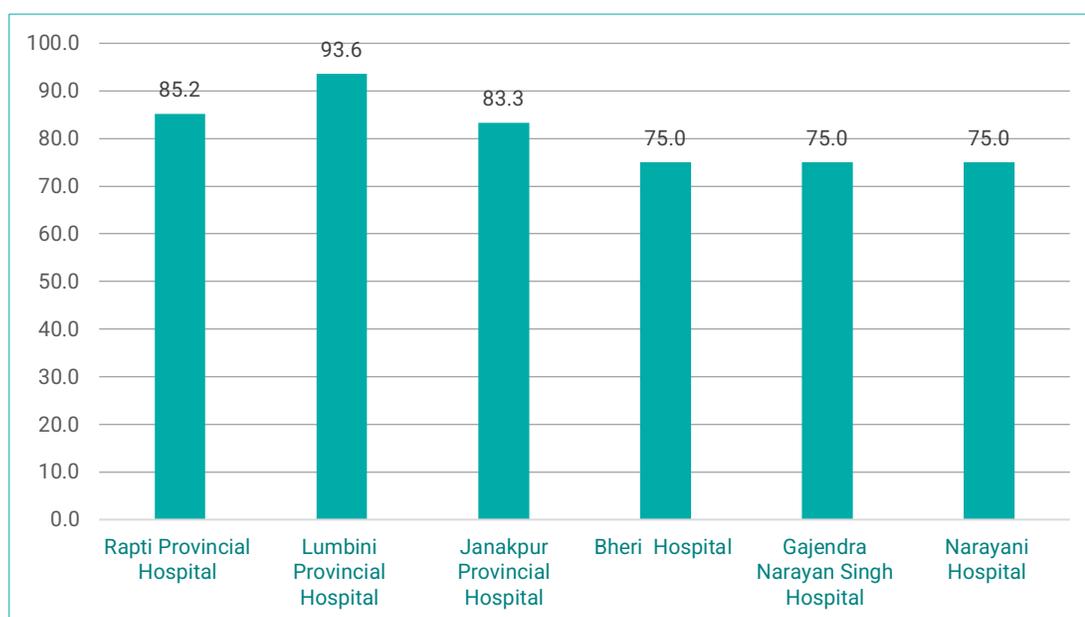


Figure 7: Average scores for Record Register vs. HMIS 9.4

As seen in Figure 7, the reporting pattern of Lumbini Provincial Hospital was the only hospital within the given benchmark. Scores of all other hospitals fell below this criterion when the data of service users was recounted from the record registers to that entered into the HMIS 9.4. At Lumbini Provincial Hospital, the re-counted data or the total people who availed of these services matched the information that was entered in the HMIS 9.4. This was not the case for all other remaining hospitals.

3.2 System assessment score

The second part of the RDQA tool enables qualitative assessment of the relative strengths and weaknesses of the functional areas of a data management and reporting system. The purpose of assessing the system is to identify the potential threats to data quality posed by its design and implementation methods.

In terms of system assessment, it was apparent that there was room for improvement in each of the domains.

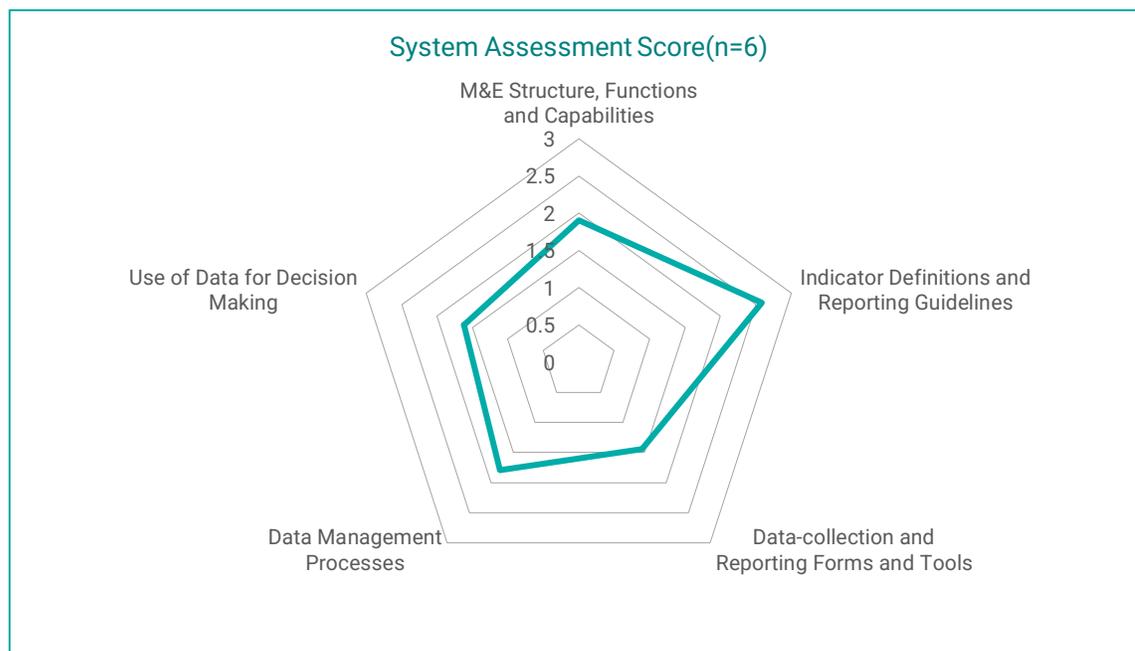


Figure 8: System assessment score for all six hospitals

Figure 8 shows that the hospitals had a satisfactory score (an average of 2.5) in indicator definitions and reporting guidelines. This means they had access to the updated HMIS reporting guidelines, other relevant guidelines and treatment protocols too were available. It can be observed that the hospitals fared average in two sub-domains: M&E structure, functions, and capabilities; and data management processes.

M&E structure, functions, and capabilities, varied across the hospitals, and a majority of the staff were still untrained in HMIS usage. They also lacked designated focal persons. Similarly, some hospitals did not have senior personnel to review aggregated numbers prior to submission, while others were in need of replacement staff in cases when designated personnel went on leave.

The results for data management processes were similar. Many hospitals did not receive details of the continuation of public health programmes for targeted groups, and of whether the services had been used; the institutions also found the details irrelevant. In addition, the hospitals lacked reporting systems that enabled the identification and recording of a 'drop-out', or a person 'lost to follow-up', among others.

The hospitals were weakest in two domains: data collection and reporting forms and tools and use of data for decision making. For data collection and reporting forms and tools, some hospitals reported the unavailability of adequate HMIS forms. Furthermore, a few indicators were irrelevant to the hospitals and contributed to lowering their scores. These included the regular collection of reports from Female Health Community Volunteers (FCHVs), and details of whether services provided from village clinics were updated in the hospital registers.

In terms of use of data for decision making, the service delivery sites barely developed visual representations, such as charts, graphs, and maps. They also lacked staff with adequate training on public health analytics. Moreover, the hospitals did not use monthly monitoring sheets to regularly gauge the progress of the programmes.

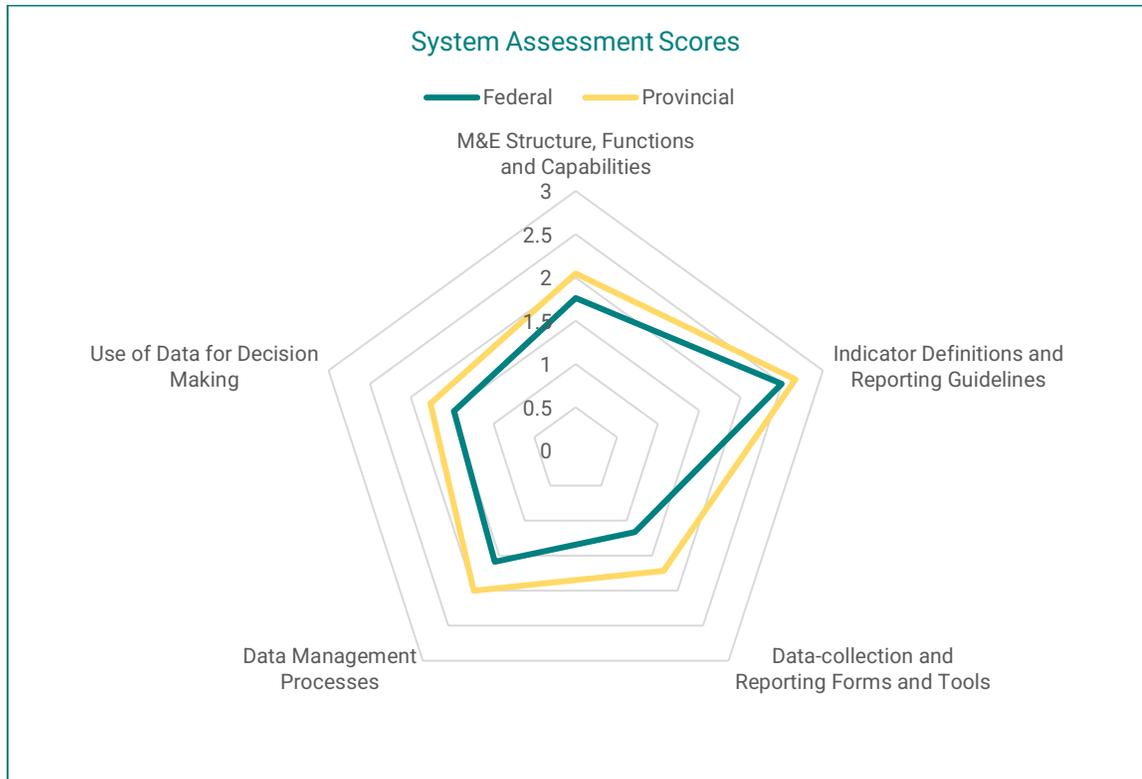


Figure 9: System assessment scores for three federal and three provincial hospitals

This analysis was undertaken to further understand the situation in provincial and federal hospitals. Figure 9 shows that provincial hospitals fared better than their federal counterparts in terms of indicator definitions and reporting guidelines, with an average score of 2.5 for federal and 2.7 for provincial hospitals.

Federal hospitals were weaker in data collection and reporting forms and tools, and also fell behind in data management processes. Federal hospitals scored low on data collection and reporting forms and tools because some indicators did not apply to them. For instance, FCHV reports and primary health care outreach clinic report collection, which have no connection with federal hospitals. However, compliance to relevant indicators was still low—none of the hospitals provided timely monthly progress reports to the HMIS.

Provincial hospitals however reported that they were sending monthly progress reports on time. Provincial hospitals were also ahead in data management processes. They were able to better identify and record persons who were ‘drop-outs’, or ‘lost to follow-up’, among others.

3.3 Hospitals and their system assessment scores

It is essential to understand that the average scores are derived from the list of indicators. Meeting the set benchmark does not mean that the institution is a perfect example of the system assessment; instead, it shows that it is on track to ensure the quality of data reported from the health facility. It further means that it can also identify the areas that need to be improved within the system. Table 3 details the scores of all the hospitals in each domain of system assessment and further analyses the results.

Table 3: Scores of each hospital in system assessment components

Name	M&E Structure, Functions and Capabilities	Indicator Definitions and Reporting Guidelines	Data-collection and Reporting Forms and Tools	Data Management Processes	Use of Data for Decision Making
Gajendra Narayan Singh Hospital_2078-05-02	2.43	2.5	1	1.38	1.43
Bheri Hospital_6 September 2021	1.43	2.25	1.33	1.75	1.43
Narayani Hospital_2078-05-20	1.43	2.75	1.17	1.63	1.57
<i>Federal Average</i>	<i>1.8</i>	<i>2.5</i>	<i>1.2</i>	<i>1.6</i>	<i>1.5</i>
Rapti Provincial Hospital_5 September 2021	2.57	2.75	1.83	1.75	1.86
Lumbini Provincial Hospital _078-4-22	1.86	2.25	2	1.75	1.86
Provincial Hospital Janakpur_2078-04-14	1.71	3	1.33	2.5	1.57
<i>Provincial Average</i>	<i>2.0</i>	<i>2.7</i>	<i>1.7</i>	<i>2.0</i>	<i>1.8</i>

3.4 Federal hospitals

3.4.1 Gajendra Narayan Singh Hospital

- **M&E structure, functions, and capabilities**

Gajendra Narayan Singh Hospital’s average score for this domain was 2.43, indicating a partial compliance to the set indicators. It was the best among the federal hospitals for this domain.

The score was based on the hospital’s answers to multiple indicators. It reported the presence of a focal person for HMIS-related work; a dedicated staff-member to review aggregated numbers prior to submission; and monitoring visits regarding data management and usage from higher authorities in the last three months, along with feedback received.

The hospital reported that only a few personnel were trained on HMIS use, while it sometimes received feedback on data management and usage. However, it did not have replacement staff for its HMIS focal person.

- **Indicator definitions and reporting guidelines**

The average score for this domain was 2.5, showing full compliance to the set indicators. This was the second highest among the federal hospitals.

The hospital reported that the guidelines related to HMIS and its usage were beneficial; it had used all the available guidelines for the different programmes and treatment protocols.

But, only limited staff in the hospital had access to the updated HMIS Records and Report Guidelines and HMIS Indicators 2070. Additionally, it only had a few guidelines for different programme and treatment protocols.

- **Data collection and reporting forms and tools**

The hospital had an average score of 1 for this domain, meaning it was extremely weak in this system assessment component.

The hospital was fully compliant in the use of HMIS records and forms, but only partly compliant in sending monthly progress reports.

Yet, the major reason for its weak score in this domain was the irrelevance of the given indicators—the hospital had no connection to FCHV reports or report collections from village clinics. It also reported that there had been no reviews of programmes based on the available evidence in the last four months.

- **Data management processes**

The average score for this domain was 1.3, denoting weakness in this component.

The hospital was fully compliant with some indicators, including the safe storage of records and progress reports (hard or electronic copies). Unauthorized personnel did not have access to personal information and details of patients, and the hospital had a safe maintenance facility for records, progress reports, and forms.

Nevertheless, it fell behind in other indicators.

For instance, the hospital did not receive details on the continuation of public health programmes for targeted groups, and of whether the services had been used; it found such details irrelevant as well. It had also failed to maintain monthly monitoring sheets for the last six months, either in hard copy or electronic form. The hospital lacked a reporting system that enabled the identification and recording of persons who were 'drop-outs', or 'lost to follow-up', among others. Similarly, it did not have a verification system for records, tally forms, monthly monitoring sheets, and reports to ensure quality of data.

Collectively, these significantly contributed to a lowered score in this domain.

- **Use of data for decision making**

With an average of 1.43, the hospital scored low in this domain.

None of its indicators were fully followed by the hospital; a majority were only partly complied with.

For instance, although the hospital created charts, graphs, and maps, it lacked technical support or guidance on data use for staff. It also had not published an annual report, which was instead developed only as a draft document. Additionally, the hospital used evidence to inform decisions in a few programmes such as safe motherhood and nutrition.

Moreover, in terms of non-compliance to the indicators, the hospital lacked staff with adequate training on public health analytics. It also did not use monthly monitoring sheets to regularly gauge the progress of the programmes.

3.4.2 Bheri Hospital

- **M&E structure, functions, and capabilities**

Bheri Hospital's average score for this domain was 1.43, showing non-compliance to the set indicators. This was the weakest among all six hospitals.

The score was based on the hospital's answers to multiple indicators. In this case, none were fully compliant.

In terms of partial compliance, the hospital reported that it had a focal person for HMIS-related work, but this arrangement was based on mutual agreement and without formal decisions or contractual obligations. Similarly, its agreement with a dedicated person for reviewing aggregated numbers prior to submission had not been formalized. The hospital also reported that it sometimes received feedback on records, reports, and data use.

Furthermore, none of the hospital personnel had received HMIS training, and it did not have replacement staff for its HMIS focal person. Bheri Hospital also lacked supervision as it had not witnessed visits regarding data monitoring and usage from higher authorities in the last three months.

- **Indicator definitions and reporting guidelines**

The average score for this domain was 2.25, denoting partial compliance to the set indicators. It was below the federal average for this domain.

The hospital authority completely agreed that the guidelines related to HMIS and its usage were beneficial.

The hospital reported that it only had digital copies of the updated HMIS Records and Report Guidelines and HMIS Indicators 2070. Soft copies were available for a few of the guidelines for different programme and treatment protocols; the hospital had made use of all available guidelines.

- **Data collection and reporting forms and tools**

Bheri Hospital had a weak average of 1.33 for this domain.

The hospital had adequate numbers of recording and reporting forms for this year. It had fully complied with the use of HMIS records and forms.

However, it only partly complied with sending monthly progress reports. This occurred due to delays in reporting of the hospital's curative services.

Yet, the major reason for its weak score in this domain was the irrelevance of the given indicators—the hospital had no connection to FCHV reports or report collections from village clinics. It also reported that there had been no reviews of programmes based on the available evidence in the last four months.

- **Data management processes**

With an average score of 1.75, this hospital was partly compliant with the indicators set in this domain.

Unauthorized personnel were not permitted to access personal information and details.

Apart from this, the hospital was partially compliant to a few of the indicators, including the safe storage of records and progress reports (hard or electronic copy). Nonetheless, it did not maintain hard copies of curative service records. It followed up with antiretroviral therapy and tuberculosis patients only if they were 'lost to follow-up'. The hospital also needed safe maintenance facilities for records, progress reports, and forms. It reported having a system in place for records, tally forms, and monthly monitoring sheets to ensure quality of data, but it had not been done in a systematic manner meaning there was lack of participation and institutional encouragement and support.

Bheri Hospital fell behind in other indicators mainly because it had no connection to them.

For instance, the hospital did not receive details on the continuation of public health programmes for targeted groups, and of whether the services had been used; it found such details irrelevant as well. It had also failed to maintain monthly monitoring sheets for the last six months, either in hard copy or electronic form.

- **Use of data for decision making**

This domain was also not up to the mark for the hospital, which had an average score of 1.43.

The only indicator that fulfilled complete compliance was the availability of data to concerned authorities for evidence-informed decision making.

As partial compliance, the hospital used evidence in a few programmes such as providing incentives to its health workers based on case load in maternity unit.

All other indicators were not complied with by the hospital. This included the absence of data visualization, such as charts, graphs, and maps. It also lacked technical support or guidance on data use. What's more, the hospital did not have staff with adequate training on public health analytics. It also did not use monthly monitoring sheets to regularly gauge programme progress.

3.4.3 Narayani Hospital

- **M&E structure, functions, and capabilities**

Narayani Hospital's average score for this domain was 1.43, showing non-compliance to the set indicators. Tied with Bheri Hospital, it was the weakest among the six hospitals.

The only indicator that the hospital completely fulfilled was that it had a focal person in place for HMIS-related work.

In terms of partial compliance, it reported that adequate HMIS training had not been provided to its staff.

The hospital did not comply with the rest of the indicators. This included the absence of a dedicated person to review the aggregated numbers prior to submission, and the lack of replacement staff for its HMIS focal person. It also practiced verbal instead of regular feedback regarding records, reports, and data use.

Like Bheri Hospital, it had not witnessed visits regarding data management and usage from higher authorities in the last three months.

- **Indicator definitions and reporting guidelines**

The average score for this domain was 2.75, a complete compliance to the set of indicators. This was the highest among all six hospitals.

The hospital stated the usefulness of the guidelines related to HMIS and its usage. It reported that it had a few of the guidelines for different programme and treatment protocols, and had used all available materials.

In terms of partial compliance, the hospital reported having access to the updated HMIS Records and Report Guidelines and HMIS Indicators 2070. Unfortunately, it had been misplaced.

- **Data collection and reporting forms and tools**

The hospital had an average score for 1.17 for this domain, denoting its weakness in the component.

The only indicator that completely satisfied this domain was the adequate availability of recording and reporting forms for this year.

The hospital was partly compliant on the use of HMIS records and forms.

For others, similar to other hospitals, there were a few irrelevant indicators, such as the collection of reports from FCHVs and village clinics. The hospital also reported that it had not practiced sending monthly progress reports as mandated by HMIS. It also reported the lack of programme reviews based on the available evidence in the last four months.

- **Data management processes**

With an average score of 1.63, the hospital partly complied with the indicators set in this domain.

It fully complied with indicators such as the safe storage of records and progress reports (hard or electronic copy). Unauthorized personnel did not have access to personal information and details of patients, and the hospital had a safe maintenance facility for records and progress reports and forms.

The hospital reported that it verified tally forms, monthly monitoring sheets, and reports to ensure data quality.

However, just like the other hospitals, it did not receive details on the continuation of public health programmes for targeted groups, and of whether the services had been used; it found such details irrelevant as well. It had also failed to maintain monthly monitoring sheets for the last six months, either in hard copy or electronic form. The hospital lacked a reporting system that enabled the identification and recording of persons who were 'drop-outs', or 'lost to follow-up', among others.

- **Use of data for decision making**

Narayani Hospital had a low score of 1.57 for this domain.

It lacked complete compliance to any of the indicators.

Yet, it had a few partial data use practices. For instance, some departments developed charts, graphs, and maps as part of evidence-based practice. Nonetheless, it did not prioritize technical support or guidance on data use. It made data available to concerned authorities for

evidence-informed decision making, but it had not prioritized use of evidence for its programmes or services.

In terms of no compliance, the hospital lacked staff with adequate training on public health analytics. It also did not use monthly monitoring sheets to regularly gauge the progress of its programmes. The hospital also had not published annual reports so far.

3.5 Provincial hospitals

3.5.1 Rapti Provincial Hospital

- **M&E structure, functions, and capabilities**

Rapti Provincial Hospital's average score for this domain was 2.57, a full compliance to the indicators of this system component. It was the highest among all six hospitals.

Out of the seven indicators, it fully complied with five, followed by a partial and a non-compliance.

The hospital had a focal person for HMIS-related work, and personnel for reviewing aggregated numbers prior to submission. It also had replacement staff for the HMIS focal person.

In terms of partial compliance, the hospital reported that adequate HMIS training had not been provided to 20 of the hospital staff.

In the past three months, the hospital had witnessed monitoring visits regarding data management and use. It also received regular feedback from higher officials on records, reports, and data use.

However, the feedback had not been properly maintained, and was the only indicator that the hospital had failed to comply with.

- **Indicator definitions and reporting guidelines**

The average score for this domain was 2.75, a complete compliance to the set of indicators that define this system assessment component. Tied with Narayani Hospital, this was the highest among the six hospitals.

The hospital stated the usefulness of the guidelines related to HMIS and its usage. It reported that it had a few of the guidelines for different programme and treatment protocols, and had used all available materials.

In terms of partial compliance, the hospital reported having access to the updated HMIS Records and Report Guidelines and HMIS Indicators 2070. Unfortunately, a hard copy was not available.

- **Data collection and reporting forms and tools**

Rapti Provincial Hospital had an average score for 1.83 for this domain, indicating partial compliance with the component.

In full compliance, the hospital had adequate stock of recording and reporting forms for this year, and practiced using HMIS records and forms. It had also reviewed programmes based on the available evidence in the last four months.

As partial compliance, the hospital had failed to send monthly progress reports on time.

Like in the other hospitals, indicators such as the collection of reports from FCHVs and village clinics did not apply to Rapti Provincial Hospital.

- **Data management processes**

With an average score of 1.75, the hospital was partly compliant with the indicators set in this domain.

It fully complied with indicators such as the safe storage of records and progress reports (hard or electronic copy). Unauthorized personnel did not have access to personal information and details of patients, and the hospital had a safe maintenance facility for records and progress reports and forms.

In terms of partial compliance, the hospital had initiated a mechanism to verify records, tally forms, monthly monitoring sheets, and reports to ensure quality of data. The hospital followed up with those 'lost to follow-up' only for the tuberculosis programme.

Rapti Provincial Hospital was completely oblivious to the continuation of public health programmes for targeted groups, and to whether the services had been availed.

- **Use of data for decision making**

Rapti Provincial Hospital had a low score of 1.86 for this domain.

It totally complied with three indicators: providing technical support or guidance on data use, presenting data to concerned authorities for evidence-informed decision making, and publishing annual reports.

In terms of no compliance, the hospital lacked staff with adequate training on public health analytics. It also did not use monthly monitoring sheets to regularly gauge programme progress. In addition, the hospital had not yet published annual reports, neither had it developed charts, graphs, and maps as part of evidence-based practice.

3.5.2 Lumbini Provincial Hospital

- **M&E structure, functions, and capabilities**

Lumbini Provincial Hospital's average score for this domain was 1.86, signifying partial compliance to the set indicators.

The hospital fully complied with two indicators: it had a focal person for HMIS-related work, and arrangement of replacement staff for the HMIS focal person. It also had a formal structure or designated official for reviewing aggregated numbers prior to submission.

As partial compliance, only five persons were trained on HMIS use.

The hospital had not witnessed monitoring visits regarding data management and usage from higher authorities in the last three months. This meant it lacked supervision and regular guidance on recording, reporting, and data use.

- **Indicator definitions and reporting guidelines**

The average score for this domain was 2.25, a partial compliance to the set indicators. It was below the provincial average score for this domain.

The hospital authorities had complete access to the updated HMIS Records and Report Guidelines and HMIS Indicators 2070.

Completely agreed that the guidelines related to HMIS and its usage are really useful.

The hospital reported that it had a few of the guidelines for different programme and treatment protocols, and had used some of the recommendations.

- **Data collection and reporting forms and tools**

The average score for this domain was 2, the highest among all six hospitals in this system assessment component.

The hospital had adequate stock of recording and reporting forms for this year, and was fully compliant in the use of HMIS records and forms. It also practiced timely reporting of monthly progress reports. It had also reviewed programmes based on the available evidence in the last four months.

Two indicators were irrelevant: the collection of reports from FCHVs and village clinics, and their update in the service register.

- **Data management processes**

With an average score of 1.75, the hospital was partly compliant with the indicators set in this domain.

Only one indicator—disallowing unauthorized personnel from accessing patients’ personal information and details—was fully complied with by the hospital. For the rest, the hospital remained either partly- or non-compliant.

The hospital had not maintained HMIS 9.4 as part of its safe storage of records and progress reports (hard or electronic copies), while not all programmes focused on the identification and recording of ‘drop-outs’ or persons ‘lost to follow-up’. Similarly, the hospital lacked safe maintenance facilities for records, progress reports, and forms. It also did not have a mechanism to verify records, tally forms, monthly monitoring sheets, and reports to ensure quality of data.

Like the others, Lumbini Provincial Hospital too fell behind on other indicators mainly because they were irrelevant.

For instance, it did not receive details on the continuation of public health programmes for targeted groups, and of whether the services had been used; it found such details irrelevant as well. It had also failed to maintain monthly monitoring sheets for the last six months, either in hard copy or electronic form.

- **Use of data for decision making**

The hospital was partly compliant with the indicators set in this domain with its average score of 1.86.

It fully complied with the indicator through the publishing of its annual progress report.

It partly complied with other indicators, such as the development of charts, graphs, and maps. It also made data available to concerned authorities for evidence-informed decision making.

However, it lacked technical support or guidance on data use. For the latter, the hospital cited COVID-19 as the reason for not holding update meetings.

On the non-compliant front, the hospital lacked staff with adequate training on public health analytics. It also did not use monthly monitoring sheets to regularly gauge programme progress.

3.5.3 Provincial Hospital Janakpur

- **M&E structure, functions, and capabilities**

Provincial Hospital Janakpur’s score for this domain was 1.71, a partial compliance to the set indicators.

The hospital had a focal person for HMIS-related work, and personnel for reviewing aggregated numbers prior to submission. However, it reported that only a few staff were trained on HMIS use.

In terms of non-compliance, the hospital did not have replacement staff for its HMIS focal person. Furthermore, it had not received feedback on data management and usage. This was expected as the hospital had not witnessed monitoring visits regarding data management and usage from higher authorities in the last three months.

- **Indicator definitions and reporting guidelines**

The average score for this domain was 3, marking full compliance to the set indicators. It was the best among all six hospitals.

The hospital had access to the updated HMIS Records and Report Guidelines and HMIS Indicators 2070, which they found beneficial.

It also had guidelines for different programme and treatment protocols, all of which were put to use by the hospital.

- **Data collection and reporting forms and tools**

The hospital had an average score of 1.33 for this domain, denoting its weakness in this system assessment component.

The hospital was fully compliant on the use of HMIS records and forms. It also sent monthly progress reports to the HMIS within the stipulated time.

However, the hospital reported that it did not have enough recording and reporting forms for the year. Moreover, neither the hospital nor the local bodies had reviewed programmes based on the available evidence in the last four months.

Like in the other hospitals, several indicators were irrelevant: report collections from FCHVs and village clinics, and their update in the service register.

- **Data management processes**

The average score for this domain was a strong 2.5; it was the highest among the six hospitals.

The hospital was fully compliant with a few of the indicators, including details on the continuation of public health programmes for targeted groups and their use of the services. It had safely stored records and progress reports (hard or electronic copies) of the past one year, while unauthorized personnel did not have access to personal information and details of patients. It also had a safe maintenance facility for records, progress reports, and forms.

However, the hospital had failed to maintain monthly monitoring sheets for the last six months, either in hard copy or electronic form. It lacked a reporting system that enabled the identification and recording of persons who were 'drop-outs', or 'lost to follow-up', among others. Similarly, it did not have a verification system for records, tally forms, monthly monitoring sheets, and reports to ensure quality of data.

- **Use of data for decision making**

With an average score of 1.57, the hospital only partly complied with the set indicators of this domain.

Provincial Hospital Janakpur was the only one among the six institutions that had trained staff on public health analytics. It also had a mechanism for technical support or guidance on data use for staff.

But on all other fronts, the hospital remained non-compliant. This included a lack of development of charts, graphs, and maps. It also did not use monthly monitoring sheets to gauge programme progress. Besides, the hospital had not published annual progress reports so far, and neither had it used evidence in the decision-making process of its programmes and services.

3.6 Good practices associated with the system

The analysis found a number of positive practices, such as completeness in reporting and use of data for decision making, at the health facility level. These were mainly related to the reporting of vertical programmes, such as for HIV/AIDS, malaria, and tuberculosis. In Gajendra Narayan Hospital, the data generated by the system was used in the system analysis and planning of programmes in the area of maternal health, including those for safe motherhood and nutrition. Similarly, Rapti Hospital followed up with tuberculosis patients when they failed to appear at the institution, and example of using the data.

3.7 Factors associated with low scores in the Verification factor and System assessment

This assessment analysed the categorization of the data based on the remarks of each dimension and its underlying indicators. A summary of the issues can be seen below in Table 4 and Figure 10.

3.7.1 Shortfall of human resources

The most prominent issue that arose in M&E functions, roles, and capabilities was the lack of human resources in the record section. Half of the hospitals reported that they did not have dedicated staff to review the data before it was uploaded to the HMIS. Instead, record section personnel took turns to enter the data into the system. This is a systemic issue that needs to be addressed based on the HR policy in health facilities. There is also a need to strengthen human resources in medical record units by building their capacity and motivating them for data use.

Similarly, the indicators of data-collection and reporting forms and tools also suffered from a shortfall of human resources, especially regarding timeliness in reporting to the HMIS.

3.7.2 Lack of training

A key issue in the health facilities was the lack of trained HMIS reporting staff. In M&E functions, roles, and capabilities, almost all of the hospitals reported that a majority of relevant staff had not received appropriate HMIS training. In addition, there were no dedicated HMIS focal persons. Even where a focal person was in place, other officials were not qualified to take over when the person in charge was unavailable. For instance, Lumbini Provincial Hospital had only five people who were trained to use HMIS reporting forms. This indicated that it did not have a dedicated person to take stock of issues that might lead to transformative errors, such as problems that may arise when the reporting data is uploaded to the HMIS system.

Insufficient training also was found to have affected the use of data for decision-making. Two hospitals, Bheri and Lumbini, reported a need for trained manpower to develop public health analytics.

All surveyed hospitals disclosed that they lacked HMIS training. The Integrated Health Information Management Section unit of the Department of Health Services conducts such trainings each year. However, given the constant transfer process, untrained employees outnumbered trained personnel.

3.7.3 Low prioritization of data and record management

A prominent theme that emerged during the implementation of the RDQA was that the data system had not been prioritized by the hospitals, and simple management issues had led to low performances in multiple indicators.

In terms of M&E functions, roles, and capabilities, the hospitals believed that higher authorities were not interested in the issue since they rarely provided feedback and the regular data related discussion were also not held. There were managerial concerns as well, such as the failure to formalize focal persons for HMIS-related activities. This lack of a formal structure meant that no single official could be held accountable if problems arose. Additionally, it hindered interested people from taking up the post if someone else had already assumed the “informal” position but neglected to perform the associated duties.

For indicator definitions and reporting guidelines, almost all hospitals reported that they did not possess the updated version of the HMIS guidelines; some stated that they only had soft copies. Interestingly, a majority of the hospitals had not bothered to make printouts of the soft copies, which indicated a low priority towards the data and reporting system.

Managerial issues remained prominent in other dimensions too. For instance, the hospitals reported the unavailability of monitoring sheets. In a few cases, the hospitals did not follow the practice of filling out monitoring sheets, while in others, they were not in use or were not made available.

3.7.4 Irrelevance of indicators

While selecting the indicators for the RDQA, a few were found to be irrelevant for certain health facilities. This emerged as a prominent issue in all the hospitals where the RDQA was carried out. For instance, the data-collection and reporting forms and tools domain enquired about the regular collection of reports from Female Health Community Volunteers (FCHVs). Another enquiry was related to whether services provided from village clinics were updated in the hospital register. However, these indicators had no connection to the hospitals. FCHVs do not have to report to hospitals, while the oversight of the village clinics is performed by the Health Office. However, as these questions were part of the domain, a failure to address them significantly lowered the score that the individual hospitals had to obtain. This was the case in all six hospitals.

Similarly, the domain of data management processes had two indicators that were irrelevant: the first was regarding the continuation of services for target groups, and the other was about whether the actual target groups had been utilizing the services and if their data matched.

Table 4: Common issues among federal and provincial hospitals

Themes	Federal Hospital			Provincial Hospital		
	H1	H2	H3	H4	H5	H6
Human Resources						
Availability of HMIS focal person	✓	X	✓	✓	✓	✓
Availability of co-focal person	X	X	X	✓	✓	X
Shortfall of HRH for data related works	✓	✓	✓	✓	✓	✓
Training						
Most of the staff trained on HMIS	X	X	X	X	X	X
Availability of trained HRH on Public Health Analytics	X	X	X	X	X	✓
Irrelevance of indicators						
Irrelevance of indicators on ...	✓	✓	✓	✓	✓	✓
Managerial and logistics issues						
Supply issue of recording and reporting forms	✓	✓	X	X	X	✓
Monitoring sheet usage	X		X			✓
Monitoring and supervision						
Monitoring visit from higher up	✓	X	X	✓	X	X

H1: Gajendra Narayan Singh Hospital; **H2:** Bheri Hospital; **H3:** Narayani Hospital; **H4:** Rapti Provincial Hospital; **H5:** Lumbini Provincial Hospital; **H6:** Provincial Hospital Janakpur



Figure 10: Common issues among federal and provincial hospitals

3.8 Action points for individual hospitals

Action points detail the work that needs to be carried out to further enhance data quality. These points are set for a fixed timeline, and are noted down in the RDQA system. They also serve as a targeted reminder for the facilities to improve the quality of their data. Broadly, the action points were centred on the structural barriers faced by Nepal’s health system. These included the shortfall of human resource personnel as well as issues of their retention, and the lack of intra-agency coordination among the health facilities, PHDs, and the FMOHP. There were other critical matters as well, such as the low priority accorded to record sections within hospitals, and mind-sets that were negative towards data reporting—instead of being viewed as a tool that would help improve quality and performance, it was mostly looked upon as an obligatory assignment. Table 5 provides a summary of action points.

Table 5: Details on common identified weakness and its action points

Identified weakness	Description of action point	Responsibility	Timeline	Name of relevant domain
Low use of data for decision making	<ul style="list-style-type: none"> • Initiate use of hospital data and display the results in the respective wards • Prepare annual reports • Conduct monthly review meetings 	Medical record unit/ward-in-charge/head of department	By July 2022	Use of data for decision making
Lack of proper use of recording	<ul style="list-style-type: none"> • Ensure proper use of HMIS 9.4, tally sheets, monthly reporting sheets 	Medical record unit/ward-in-	By July 2022	Data management processes

and reporting tools		charge/head of department		
Lack of training on HMIS and data use	<ul style="list-style-type: none"> Provide HMIS training to staff from the medical records units and other departments 	Provincial Health Directorate/ federal MoHP and IHMIS	By July 2022	M&E structure, functions, and capabilities
Low Monitoring and Supervision visits	<ul style="list-style-type: none"> Request the Provincial Health Directorate and federal MoHP for routine monitoring visits and feedback on data quality and usage 	Provincial Health Directorate/ MoSD/federal MoHP	By July 2022	M&E structure, functions, and capabilities
Supply issues of HMIS reporting forms	<ul style="list-style-type: none"> Ask higher-ups to ensure adequate availability of hard copies of guidelines and recording and reporting tools Hospital to initiate printing of HMIS-related material 	Hospital authority; Department of Health Services	By July 2022	Indicator definitions and reporting guidelines

3.9 Financial implications for RDQA implementation

Table 6 shows the total cost of the implementation of the RDQA in the six hospitals. The average cost per instance was NPR. 8,932. However, as the onsite coaching was a one-time event, the total annual cost would be NPR. 4,998, which can be reflected in the Annual Work Plan and Budget (AWPB).

Table 6: Financial details while conducting RDQA

Headings	Total Cost [NPR]	Average Cost Per instance [NPR]
Refreshment cost	29,990	4,998
Onsite coaching (one time for facilitation)	23,600	3,933

The budgeting implications are as follows:

- Average cost per instance was NPR. 8,932.
- Onsite coaching cost, which was a one-time investment for the instance. The average cost was NPR. 3,933.
- Average refreshment cost per instance was NPR. 4,998 (this can also be recommended for the AWPB).
- Cost of refreshment and local-level human resources will be needed twice a year as the RDQA guideline recommends the assessment to be carried out twice annually in each health facility.
- Internet and venue charges were not included as the hospitals were prepared for these items.

An important takeaway from this is that the RDQA can be performed twice a year with minimal costs. Therefore, given the amount, it can be concluded that institutionalizing the RDQA in the hospital setting is viable.

3.10 On path to institutionalize the RDQA

The interest shown by senior management in implementing the RDQA in hospitals was an indication of their desire to maintain data quality. For this to take place, the RDQA should be made part of the system.

During the implementation process, a few hospitals found ways to institutionalize the assessment. For instance, Narayani Hospital formed a three-member team to work on maintaining the timeliness and accuracy of the reported data. The formation of such committees can be the first step towards the institutionalization of the RDQA. Furthermore, the medical record units too can proactively include the RDQA in their AWPB.

3.11 Addressing the challenges associated with the RDQA

While the development of the web-based RDQA was done to assist easy implementation and real-time monitoring of data quality, it had its challenges.

Unstable Internet connections, frequent power outages, and delays in response due to server issues all need to be addressed. Other major challenges were low levels of digital literacy, tedious web applications, and lack of motivation. Combined, these factors led to users stopping the use of the assessment tool.

Realizing this issue, the FMOHP has already initiated the development of an offline-based RDQA, which will not require an Internet connection.

Conclusions

The Routine Data Quality Assessment (RDQA) tool was customized to suit the local context by the Ministry of Health and Population (MoHP) with support from partners like NHSSP, GiZ and WHO. The MoHP recently assessed the RDQA in six secondary and tertiary hospitals managed by the federal and provincial governments in Province 2 and Lumbini Province. The baseline score of these assessments, along with action plans, have been established, and capacity enhancement on the use of the tool has been carried out in the hospital setting.

The findings from the assessment show that the hospitals still have a long way to go to improve the quality of the data generated from their departments. An examination of the quality of the selected indicator data, a process known as data verification or verification factor, showed that none of the health facilities met the benchmark in terms of verification factors for register vs. tally. So much so that there was even a mismatch in vital records—the death report in the reported vs the recounted did not match. Similarly, all hospitals failed to maintain monthly monitoring sheets, thereby raising a serious issue of availability in terms of data quality dimensions. Regarding reporting patterns, Lumbini Provincial Hospital was within the given benchmark for record register vs HMIS 9.4. However, that of all other hospitals fell below the criterion when the data of service users was recounted from the record registers to that entered into the HMIS 9.4.

In the matter of system assessment, the six hospitals had a satisfactory score (an average of 2.5) in indicator definitions and reporting guidelines. This means they had access to the updated HMIS reporting guidelines, all of which were effective; other relevant guidelines and treatment protocols too were available. The hospitals fared averagely in two sub-domains: M&E structure, functions, and capabilities; and data management processes. However, for all others—including data collection and reporting forms and tools, and use of data for decision making—the hospitals were weak.

While analysing the issues behind the low scores of the hospitals, the study found multiple structural barriers, such as a shortfall of human resources, along with problems with their retention, and a lack of intra-agency coordination among the health facilities, the provincial health directorates, and the FMOHP. Other points included the low priority given to record sections within hospitals and the negative attitudes towards data reporting—for instance, viewing it as an unavoidable assignment rather than a helpful tool.

The way to address the issue on data quality is the development of action plan and implement it within the agreed timeframe. This assessment found that a majority of the action points emphasized on addressing gaps in few areas including low use of data for decision making; lack of proper use of recording and reporting tools; lack of training on HMIS and data use; low monitoring and supervision visit and supply issues of HMIS reporting forms. They opted for action points including assigning tasks to certain units

within the health facility and seeking support for HMIS training from provincial health directorate (PHDs)/provincial ministries of social development and the federal Ministry of Health and Population. Some of the action points also focused on the adequate use of reporting formats, such as monitoring and tally sheets.

The assessment also clearly points out that the financial aspects and ways to institutionalize RDQA. An important takeaway from this is that the RDQA can be performed twice a year with minimal costs. Therefore, given the amount and interest of the hospital authorities, it can be concluded that institutionalizing the RDQA in the hospital setting is viable.

Recommendations

For health facilities

- Institutionalize the RDQA

The RDQA tool should be routinely carried out by the health facilities, and should take place at least twice a year. It should be institutionalized within the hospital system. The assessment should be executed in the presence of ward in-charges to understand the issues faced by each ward, and to learn about transformative errors and methods of ensuring data quality. Consequently, the action plans that will be identified may also be easier to implement as they will be relatable to each ward.

- On human resources for health (HRH) and their capacity

Prioritize HRH in record units

One of the prominent issues that emerged during the implementation of the RDQA was the lack of medical record unit personnel. For that reason, health facilities should strengthen and prioritize human resources in their medical record units. In addition, focal and co-focal persons should be in place to deal with HMIS reporting and public health analytics.

Make data available to all personnel

Data should never be confined to a single unit. All health staff should be able to access, with proper authorization, the data and use it to improve their performance and quality of services. It is important to train as many personnel as possible on data use, HMIS reporting, and public health analytics, among others. To begin with, ward in-charges can undergo training and the programme can be expanded gradually.

For the Ministries of Social Development and Provincial Health Directorates

- Build capacity to prioritize data and record management

Training, along with refresher courses, should be conducted on HMIS reporting and data and record management. They should focus on medical record unit personnel but should also include human resources from other units. This should be done at least once a year, and should be part of the routine training programme run by the institutions. These capacity building programmes should be mandated by the MoSD and PHDs.

- **Enforce the use of the RDQA**

While the guideline on the use of the RDQA states that the tool can be used twice a year to understand the quality of data produced by health facilities, it has not been met with total compliance. Therefore, the MoSD/PHDs should work on reinforcing the RDQA tool and its usage among the health facilities.

For the Federal Ministry of Health and Population

- **Address logistical issues related to data management**

Almost all health facilities that were part of this study pointed out logistical challenges, such as delayed delivery of reporting forms and updated guidelines. The MoHP should ensure that these logistical challenges are addressed on time.

- **Establish quick troubleshooting mechanisms**

Quick troubleshooting mechanisms should be installed within the IHMIS units so that issues that arise during the data management processes can be addressed immediately.

- **Review set of indicators**

There were numerous indicators for the hospital-level that were irrelevant. On that account, the MoHP should update the RDQA tool and create a filter in the system so that only relevant sets of indicators are displayed. These should be based on the institutional hierarchy of the health institutes.

For agencies regarding technical assistance

- **Support the federal and provincial ministries on RDQA implementation**

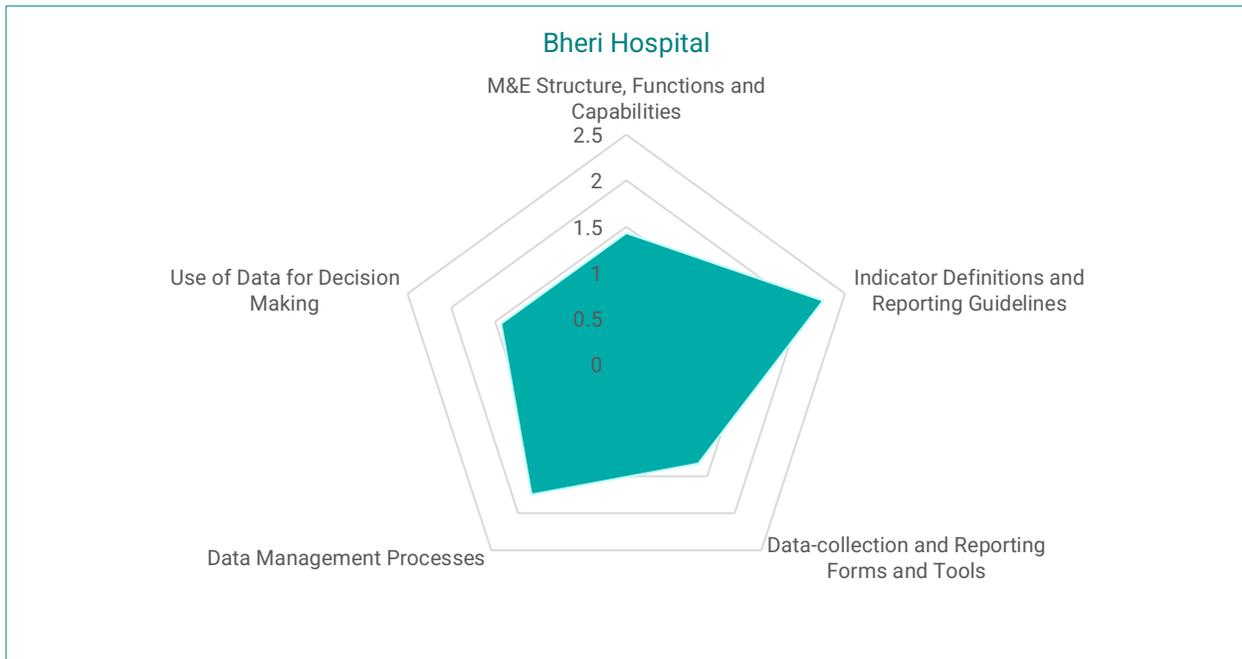
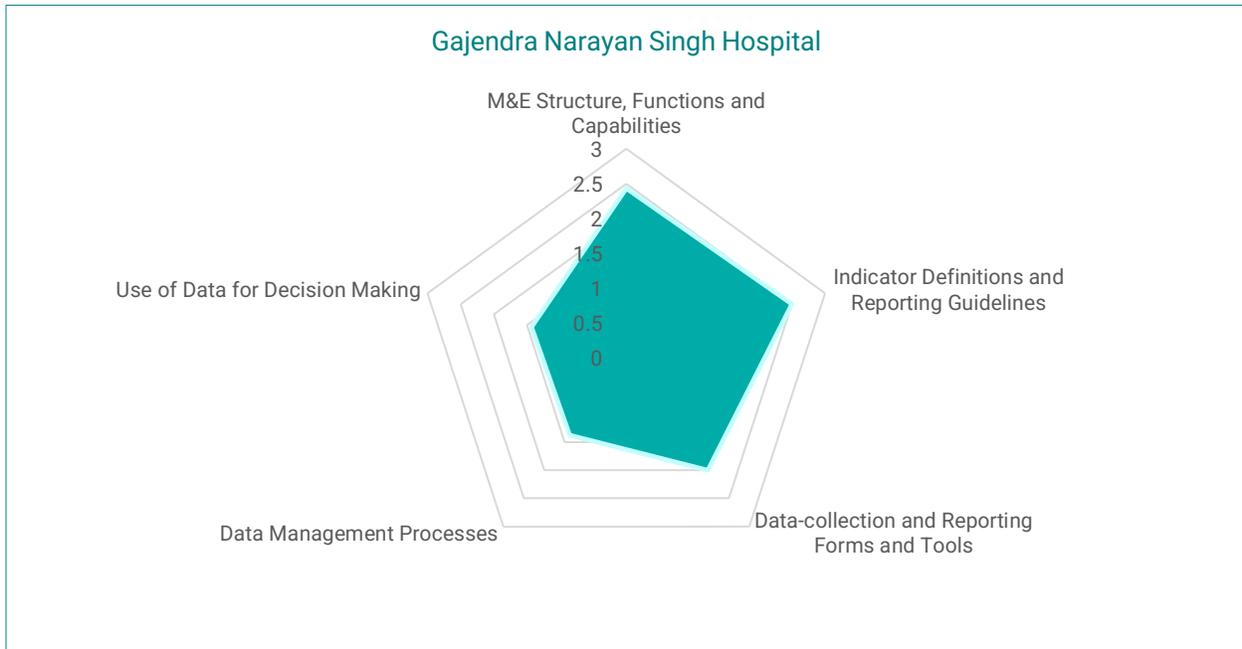
Technical assistance should be provided to the FMoHP and MoSDs in addressing the barriers to improving data quality. Support should also be given for the nationwide implementation and use of the RDQA.

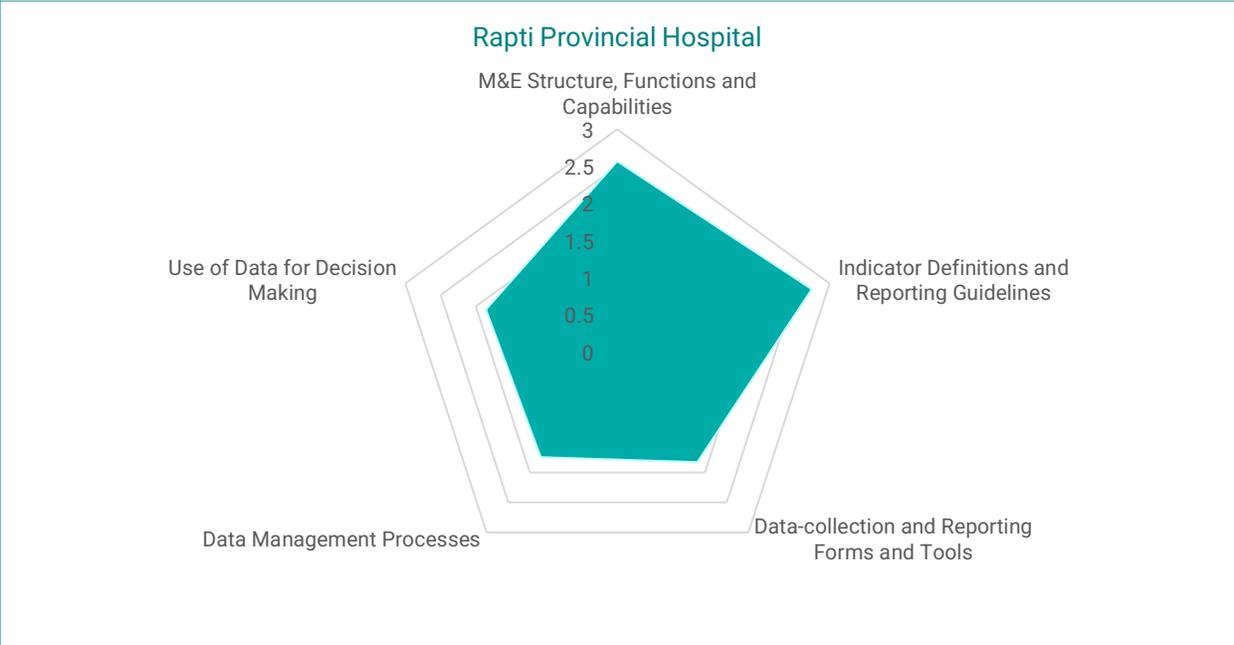
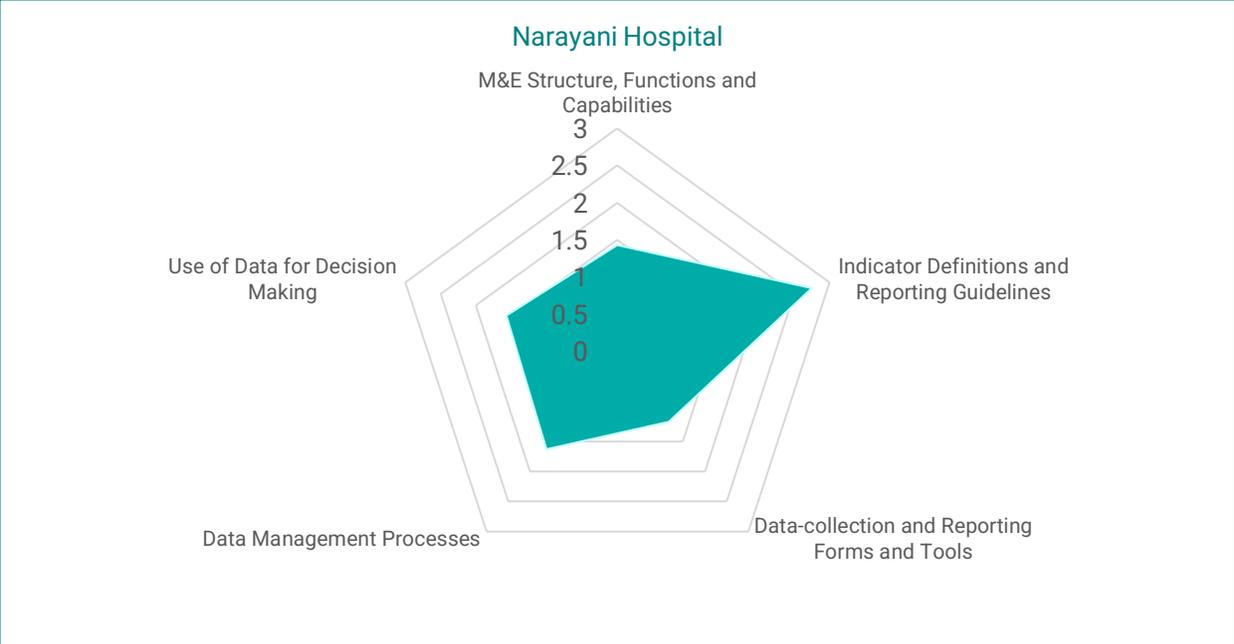
- **Research low data use**

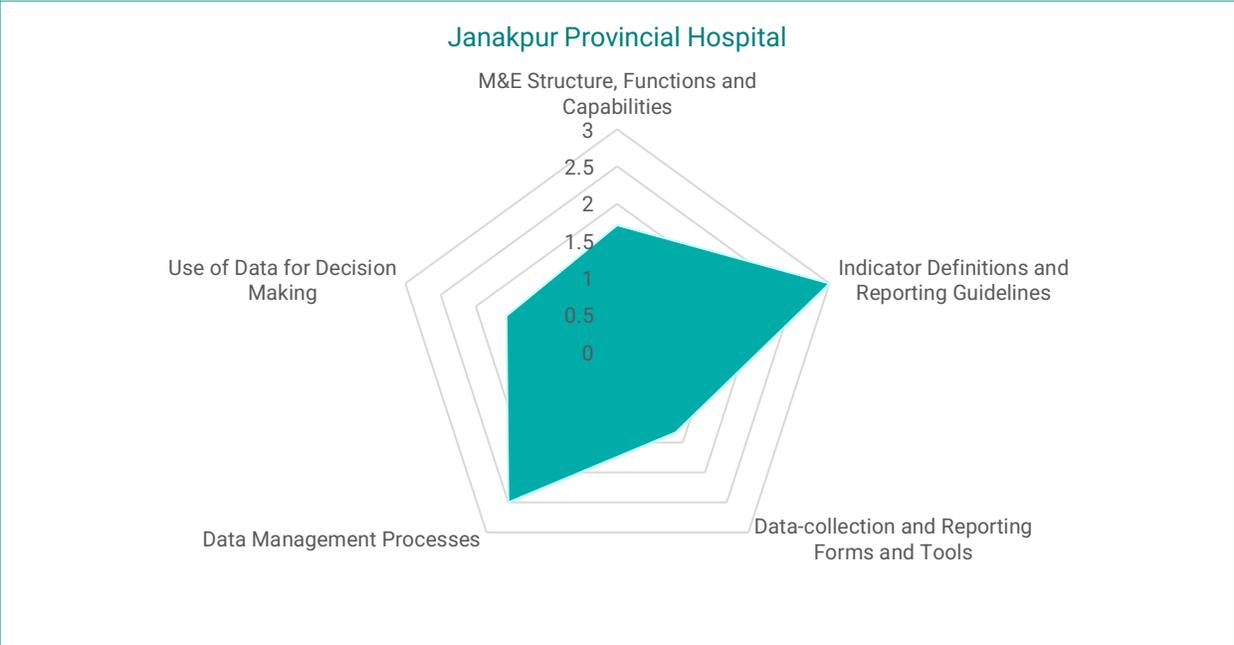
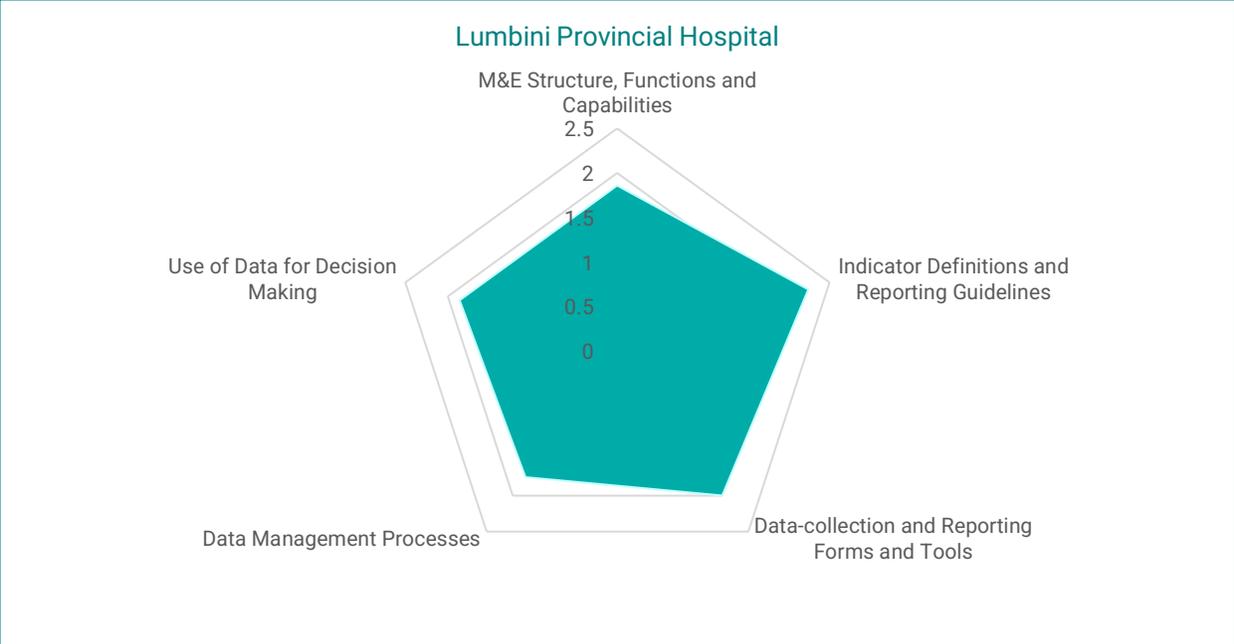
As part of their support to the FMoHP, agencies should initiate research and analysis on the reasons behind the low use of data in health facilities. This research will guide further programmes on data use and quality improvement efforts.

Annex 1

Spider Graph







Annex 2

Action points of each hospital

Provincial Hospital Janakpur

SN	System domain areas needing improvement	Action point	Responsibility	Timeline
1	Data verification	Verify service register data before entering into the HMIS 9.4	Ward in-charges, medical recorder	Regular /monthly
2	Data-collection and reporting forms and tools	Make available recording and reporting tools (tally sheets/monthly monitoring sheets/registers)	Medical recorder, medical superintendent	As soon as possible
3	Data verification	Use proper tools for the reporting of HIV/AIDS programmes	Medical recorder, HIV/AIDS focal person	Shrawan 2078
4	M&E structure, functions and capabilities	Provide HMIS training to ward personnel	Medical recorder, Provincial Health Directorate (PHD)	Fiscal Year 2078
5	M&E structure, functions and capabilities	Commence routine monitoring visits	PHD/Ministry of Social Development, Federal Ministry of Health and Population	Fiscal Year 2078
6	Use of data for decision making	Make improved use of hospital data for better planning	Ward in-charges, head of department (HOD), medical superintendent, medical recorder	1st Quarter FY 2078
7	Data management processes	Carry out sustained and improved use of data management through electronic health records	Respective HODs, ward in-charges, medical recorder	1st Quarter of FY 2078
8	Use of data for decision making	Initiate use of data with appropriate bar and graph charts; display in wards	Medical recorder, ward in-charges	1st Quarter of FY 2078

At Provincial Hospital Janakpur, an agreement was made that the data would first be verified through the service register before being entered into the HMIS 9.4. This would ensure consistency across the hospital's data.

The hospital faced issues of untrained staff, lack of monitoring visits, and unavailability of reporting forms. As a result, there were approvals on three points: HMIS training for ward human resources for health; requests for routine monitoring visits; and the adequate availability of reporting forms, including tally sheets, monthly monitoring sheets, and registers.

Similarly, action points were agreed upon for the other domains as well. Responsible authorities and timelines to complete the action points were also arranged.

Lumbini Provincial Hospital

SN	System domain areas needing improvement	Action point	Responsibility	Timeline
1	Data verification	Use HMIS tools (tally sheets, HMIS 8.1, 8.2, 8.3)	Respective departments, PHD	2078-04-32
2	Data verification	Generate monthly monitoring sheets from DHIS-2; maintain them regularly	Medical recorder	5/20/78
3	M&E structure, functions, and capabilities	Start routine monitoring visits	PHD	2078-06-31
4	Data management processes	Provide analytics training	PHD	4/16/78
5	Use of data for decision making	Prepare annual report	Lumbini Provincial Hospital, training support from PHD	5/31/78
6	Use of data for decision making	Commence monthly review meetings	Lumbini Provincial Hospital	5/11/78

At Lumbini Provincial Hospital, there was an agreement that the medical record unit would generate monthly monitoring sheets from the DHIS-2 and maintain them regularly. The hospital also agreed to coordinate with the Provincial Health Directorate to conduct training on public health analytics. Also approved were monthly review meetings focusing on the available data and its potential to improve service quality.

Rapti Provincial Hospital

SN	System domain areas needing improvement	Action point	Responsibility	Timeline
1	Data verification	Correct cases	Focal person	5/31/78
2	M&E structure, functions and capabilities	Maintain feedback register	Data recorder, statistic assistant	5/23/78
3	Indicator definitions and reporting guidelines	Publish indicator booklet	Data recorder, statistic assistant	5/23/78
4	Data-collection and reporting forms and tools	Use tally sheet	Data recorder, statistic assistant	5/31/78
5	M&E structure, functions, and capabilities	Provide HMIS training/DHIS2 training to statistic assistant	PHD	8/1/78
6	M&E structure, functions and capabilities	Supply timely monthly reports	All staff	5/15/78

At Rapti Provincial Hospital, it was agreed that discrepancies in reporting cases vs recounted cases would be corrected by the focal person. In addition, a feedback register would be maintained, and tally sheets would be utilized.

Furthermore, HMIS training for health officials would be carried out in coordination with the PHD.

Bheri Hospital

SN	System domain areas needing improvement	Action point	Responsibility	Timeline
1	Data verification	Enter reporting of missed cases	Medical recorder	Immediately
2	Data verification	Use and maintain tally sheets	Ward in-charges	5/31/78
3	M&E structure, functions and capabilities	Provide HMIS training	PHD	7/15/78
4	M&E structure, functions, and capabilities	Appoint focal and alternative focal person for reviewing recorded and reported cases	Medical superintendent	6/15/78
5	M&E structure, functions and capabilities	Provide timely reports of curative services	Medical superintendent, all staff	8/15/78
6	Indicator definitions and reporting guidelines	Print HMIS indicators and guidelines	Medical recorder	6/15/78
7	Use of data for decision making	Prepare charts/maps/graphs after annual review	Medical recorder	7/15/78
8	Use of data for decision making	Prepare annual report	Medical superintendent and medical recorder	2078-07-2078

At Bheri Hospital, it was agreed that the medical record unit would upload the details of missed cases to the HMIS. Additionally, the respective ward in-charges would use tally sheets for data verification. The medical superintendent of the hospital was as signed with appointing a focal and an alternative focal person for the review of recorded and reported cases in the HMIS.

The action points also included the creation of a visualization of the available data, as well as the preparation of their annual report.

Narayani Hospital

SN	System domain areas needing improvement	Action point	Responsibility	Timeline
1	Data verification	Use tally sheets	Ward in-charges	Monthly (ongoing)
2	M&E structure, functions and capabilities	Provide timely reports	Ward in-charges, medical recorder	Monthly (ongoing)
3	Indicator definitions and reporting guidelines	Supply printed copies of reporting guidelines	Hospital authority and DoHS, MoSD, NHSSP	By Kartik, 2078
4	M&E structure, functions, and capabilities	Give HMIS/DHIS-2 training to staff	PHD	By Kartik, 2078
5	Use of data for decision making	Display graphics of important indicators at respective wards and HOD room	Ward in-charges, medical recorder	By Kartik, 2078

At Narayani Hospital, an agreement was made that tally sheets would be used by ward in-charges for data verification. The hospital authority, the DoHS, the MoSD, and the Nepal Health Sector Support Programme (NHSSP) would ensure the availability of printed copies of the reporting guidelines. Like in the other institutions, it was agreed that the PHD would be requested to hold HMIS/DHIS-2 training for hospital staff. Apart from developing a better reporting system, this would ensure continuous reporting to the system despite the absence of dedicated personnel.

It was also agreed that the important indicators would be put into visuals and displayed in the respective wards and rooms of the heads of departments.

Gajendra Narayan Singh Hospital

SN	System domain areas needing improvement	Action point	Responsibility	Timeline
1	Use of data for decision making	Disseminate service data through appropriate graphs, summaries, and other diagrams	Medical records unit	By end of Bhadra
2	Indicator definitions and reporting guidelines	Present staff with hospital-related parts of the HMIS reporting guideline	Medical records unit	By end of Bhadra
3	Data management processes	Provide timely reporting into the DHIS-2	Medical records unit	Bhadra 1st week
4	Data management processes	Supply timely service data to the medical records unit	All concerned staff	Bhadra 2nd week
5	Data management processes	Introduce electronic health records (EHR) at the hospital	GNS Hospital	Asoj
6	M&E structure, functions, and capabilities	Give HMIS training to ward in-charges	Province Health Directorate, IHIMIS	Within three months

At Gajendra Narayan Singh Hospital, there was an agreement that the data would be disseminated after being visualized, and the HMIS 9.4 guideline would be provided to staff by the medical records unit. In addition, electronic health records would be initiated at the hospital, and ward in-charges would be given HMIS training.

Annex 3

Selected Indicators in each hospital

Date of Event	Name of the Hospital	Selected Indicators
9/5/21	Rapti Provincial Hospital_5 September 2021	Total Postmortems Done in the Hospital (2078-03-01~2078-03-31), Safe Motherhood Program-Antenatal Checkup-Four ANC Visits as per Protocol =>20 Years (2078-03-01~2078-03-31), Immunization Program-Children Immunized-Measles/Rubella-12-23 Months (2078-03-01~2078-03-31), CBIMCI <2Months-Treatment-Gentamycin Complementry dose (2078-03-01~2078-03-31)
8/6/21	Lumbini Provincial Hospital_078-4-22	Family Planning Program-Temporary FP Method-Implant-New Users =>20 Years (2078-01-01~2078-01-31), Total Brought Dead Cases in the Hospital (2078-01-01~2078-01-31), Safe Motherhood Program-Safe Abortion Service-Post Abortion Care (PAC) This facility-Surgical (2078-01-01~2078-03-31), Gender Based Violence Cases Received Free Health Services in OPD (2078-01-01~2078-03-31)
7/29/21	Provincial Hospital Janakpur_2078-04-14	Total Postmortems Done in the Hospital (2078-03-01~2078-03-31), Family Planning Program-Temporary FP Method-IUCD-New Users <20 Years (2078-03-01~2078-03-31), Safe Motherhood Program-Obstetric Complications-Eclampsia (2078-03-01~2078-03-31), Inpatient Morbidity Deaths (2078-03-01~2078-03-31), Inpatients Referred Out- Age Group 20 - 29 Years (2078-03-01~2078-03-31), Pregnant Women with Gestational Weeks (22 - 27) having Grand Multigravida (2078-03-01~2078-03-31), HIV/AIDS-Total Cases Assessed (2078-03-01~2078-03-31)
9/5/21	Narayani Hospital_2078-05-20	Total Postmortems Done in the Hospital (2078-04-01~1970-01-01), Safe Motherhood Program-Obstetric Complications-Eclampsia (2078-04-01~1970-01-01), Family Planning Program-Temporary FP Method-Implant-New Users =>20 Years (2078-04-01~1970-01-01), Total Early Neonatal Deaths in the Hospital (2078-04-01~1970-01-01)
9/6/21	Bheri Hospital_6 September 2021	Family Planning Program-Temporary FP Method-Implant-New Users =>20 Years (2078-03-01~2078-03-31), Family Planning Program-Temporary FP Method-Depo-Current User (2078-03-01~2078-03-31), Safe Motherhood Program-Aama Program-Incentive-ANC-No of Women Eligible (2078-03-01~2078-03-31), Safe Motherhood Program-Aama Program-Incentive-ANC-Number of Women Receive (2078-03-01~2078-03-31)
8/18/21	Gajendra Narayan Singh Hospital_2078-05-02	Family Planning Program-Temporary FP Method-IUCD-New Users =>20 Years (2078-03-01~2078-03-31), IMAM-Age 6-59 Month-Admission-New (2078-03-01~2078-03-31), Total Postmortems Done in the Hospital (2078-03-01~2078-03-31), Safe Motherhood Program-Obstetric Complications-Eclampsia (2078-03-01~2078-03-31)

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Roll out of RDQA in

Provincial and Federal Hospitals