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INDIA

DATA QUALITY ASSESSMENT



Strengthening the Health Management Information System: Pilot Assessment of Data Quality in Five Districts of India

The Government of India's Ministry of Health and Family Welfare (MoHFW) places rigorous emphasis on evidence-based planning, monitoring, and supervision of public health services. Generation and use of reliable, quality health data is crucial for improving the quality of health services, especially to achieve the maternal and child health goals aimed for under the strategic reproductive, maternal, newborn, child, and adolescent health (RMNCH+A) initiative. The Health Management Information System (HMIS), envisioned as the "single window" for all public health data in the country, is thus a critical resource for the government. The MoHFW was supported by the USAID-funded Health Finance and Governance (HFG) project for third party assessment (TPA) of HMIS data quality to strengthen HMIS performance.

Enhancing the Quality and Use of Data Generated by the HMIS is a Key Focus of the HFG Project in India.

The government recognizes that ascertaining the current status of data recording and reporting systems is the first step to improving the HMIS. In support of the MoHFW's efforts to improve HMIS data quality, the HFG project piloted a methodology for structured data verification.

HFG undertook the pilot implementation based on the proceedings of the Technical Advisory Group that was constituted to provide guidance on the TPA of HMIS. HFG had previously administered data quality assessment (DQA) methodologies in the state of Haryana. HFG piloted the DQA methodology in five districts from five geographically dispersed states—Chirang from Assam, Ernakulam from Kerala, Ferozepur from Punjab, Kota from Rajasthan, and Birbhum from West Bengal. The purpose of the pilot was to test a modified version of the MEASURE Evaluation project Routine Data Quality Assessment (RDQA) methodology, as adopted by the WHO. The pilot has generated valuable preliminary insights that could inform the MoHFW's efforts to improve data quality and use.

Improved data quality and use are critical for establishing a responsive and accountable public health delivery system. The commitment to, and capacity for, generating reliable data must be strengthened from the ground up so that policymakers and health program managers at all levels can be equipped with quality data to monitor health programs, make informed, data-based decisions, and initiate effective program evaluation to plug gaps in health services delivery.

Key Findings of the DQA Pilot

The DQA pilot was conducted at health administrative units and 126 randomly selected health facilities. Using stratified sampling, all health facility types were represented, including sub-centers (SCs), primary health centers (PHCs), community health centers (CHCs), sub-divisional hospitals (SDHs), and district hospitals (DHs). Twenty-eight data elements, drawn from RMNCH+A scorecard, Star rating, and Min-max report of HMIS, were selected for verification. The assessment entailed quantitative and qualitative data collection using three instruments: Protocol 1 to assess the underlying systems and structures that support flow of health data through the routine reporting system; Protocol 2 to assess if the data were accurately collected at the health facility level; and a Service Data Verification Form to verify service delivery registers. FluidSurveys, an internet-based platform, was employed to facilitate data collection. The assessment was done in January–February 2016. The key findings of the DQA pilot are summarized¹ in this brief.

How ready is the HMIS system?

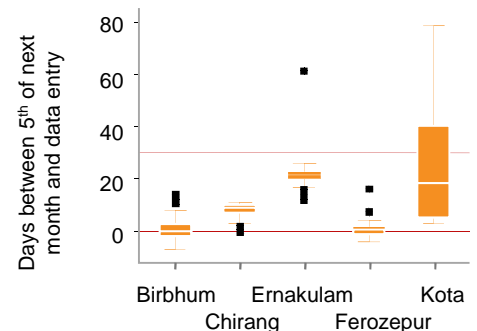
The DQA pilot provided results on the coverage of HMIS and the system's readiness in major functional domains. Across the five districts, all functional public health facilities were found to be mapped in the HMIS portal. In fact, the study found HMIS coverage to be over 100 percent in some districts, perhaps due to a greater number of facilities being mistakenly mapped in the HMIS portal by the state monitoring and evaluation (M&E) staff. The organizational structure for HMIS was also present in all districts, with established district and block M&E units. Importantly, district M&E unit positions were 100 percent filled in all districts except Kota, which had 40 percent positions vacant. The availability of standard HMIS reporting formats at health facilities and access to IT infrastructure at data entry points (DEPs) were also established in most districts, as was regular HMIS data use by state and district M&E units.

The pilot assessment also identified some areas that require attention. Inadequacy of training emerged as a key area of weakness, particularly training of facility-level staff on data definitions; this was a major gap in Birbhum and Chirang. Dissemination of standardized data definitions and recording and reporting guidance to ground-level facilities were also found to be weak. Some gaps were also found in HMIS data management processes, as seen from the limited staff available for data verification, absence of written procedures to address low-quality reports, and lack of formalized feedback mechanisms. Another area that appeared to require attention was the lack of regular data analysis and use at the block and health facility level.

How timely is the data reporting?

The DQA assessed timeliness as a measure of data quality. Results on this count suggest that submissions were mostly done on time, with Ernakulam, Chirang, and Ferozepur showing no delay in facilities submitting monthly summary reports to DEPs; Kota and Birbhum were not as prompt. Results on timeliness of data entry by DEPs into the HMIS portal revealed that only about 20 percent facility reports were entered within the stipulated timeframe (5th day of the following month). Only about 65 percent reports were entered into the portal by the 20th day of the next month. Differences between districts were quite marked. While reporting for half of the facilities' reports from Birbhum and Ferozepur had been completed within those five days, Ernakulam and Kota had not even started data entry by the 5th day. Use of an intermediate application (DHIS-2 and PCTS, respectively) in Ernakulam and Kota may have directly contributed to the delay.

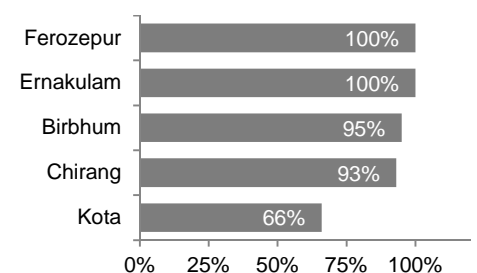
Delay in Reporting of Monthly Data



How complete is the reported data?

Completeness of data is a key measure of data quality. Results at the service delivery level were encouraging, with registers complete for 91 percent of the selected data elements. There was variation between districts, from 66 percent in Kota to 100 percent in Ernakulam and Ferozepur. As the data flowed ahead, about 6 percent of the data were found to be lost between the service delivery register and the monthly summary report. Assessment of data loss between the monthly summary report and the HMIS portal brought some interesting insights and attested to the overall robustness of the HMIS. About 41 percent of the data elements missing from monthly summary reports resurfaced in the HMIS portal, possibly due to the informal practice of DEPs checking back with facilities on the missing entries.

Completeness of Data in Service Delivery Registers



¹ The complete report is available at <https://www.hfgproject.org/where-we-work/asia/india/>.

How accurate is the reported data?

Assessment of data accuracy, the most critical measure of data quality, provided sharp insights. The assessment began by verifying the services recorded in registers with the account of beneficiaries. A whopping 97 percent beneficiary participants confirmed availing the services mentioned in the service delivery register. However, when the service delivery register data was matched with the data in the monthly summary report, overall only 63 percent data matched exactly; Birbhum recorded just 28 percent exact matches. Notably, the assessment considered a deviation of no more or less than 10 percent (or 10 cases where applicable) as ‘acceptable variation’. On this count, when the overall exact matches and data within the range of acceptable variation (31%) for the five districts was considered together (63% + 31%), the acceptable entries stood at a high of 94 percent. The assessment also did not find evidence of systemic under- or over-reporting.

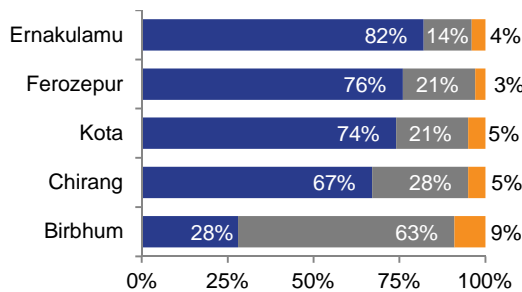
As the data flowed ahead in the HMIS, the system was found to have succeeded in ensuring data accuracy. Overall, the five districts indicated minimal accuracy loss between monthly summary report and HMIS portal—92 percent exact matches and a total of 98 percent within the acceptable range. Interestingly, lower data accuracy was seen at higher-level

facilities (SDHs and DHs), pointing to the likely impact of high caseload and service multiplicity/complexity. For the two districts (Ernakulam and Kota) that use an intermediate application, data on 251 of the total 253 data elements matched exactly between the intermediate system and the HMIS portal, indicating that perhaps the use of an intermediate application may have no bearing on accuracy. Assessment of accuracy loss between the service delivery register and the HMIS portal also found a high percentage of entries (91%) in the acceptable range.

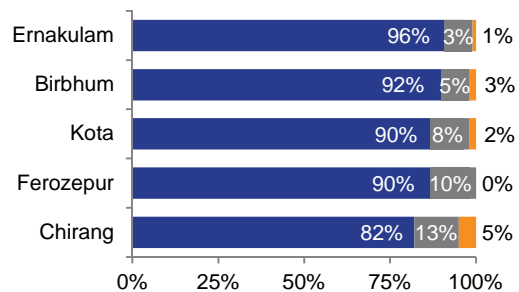
Finally, the assessment examined instances of inaccuracy in the HMIS portal with the status of select reporting procedures to ascertain the impact of systemic elements. Findings from this analysis suggest² that absence of a printed register at the service delivery point, staff’s poor understanding of data definitions, lack of a process for double counting, and recording of a service delivery event by more than one facility may be linked with higher instances of inaccuracies. Interestingly, however, availability of service register in the local language, delay between actual service delivery event and recording of data in the service register, and the provision of the same service by different departments/facilities did not appear to result in more inaccurate data.

HMIS Data Flow and the Site of Data Accuracy Loss

Data Match Between Service Delivery Register and Monthly Summary Report



Data Match Between Monthly Summary Report and HMIS Portal



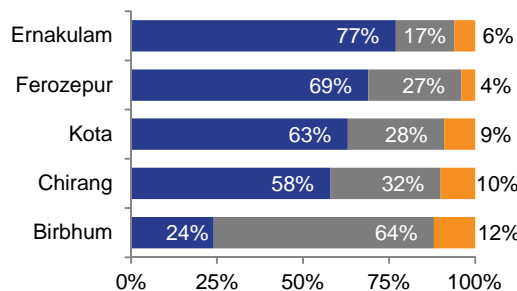
SERVICE DELIVERY REGISTER



MONTHLY SUMMARY REPORT



HMIS PORTAL



Data Match Between Service Delivery Register and HMIS Portal

Key

- Data matching exactly
- Data matching within acceptable range (± 10% or 10 cases)
- Discrepant data beyond acceptable range

² A small 'n' limits the establishment of definitive conclusions.

District-wise Summary of Findings: Areas for Attention

Birbhum

The relatively low accuracy of the reported health data in Birbhum was evident from the low number of exact matches between the service delivery register, the monthly summary report, and the HMIS portal. At the systemic level, gaps were visible in the lack of staff training on data definitions and poor communication of reporting guidelines.

Chirang

The district's performance on HMIS data quality was evidently in need of improvement. Chirang was also found to be faced with some systemic challenges, including inadequate training on data definitions, lack of written guidelines, and irregular internet connectivity.

Ernakulam

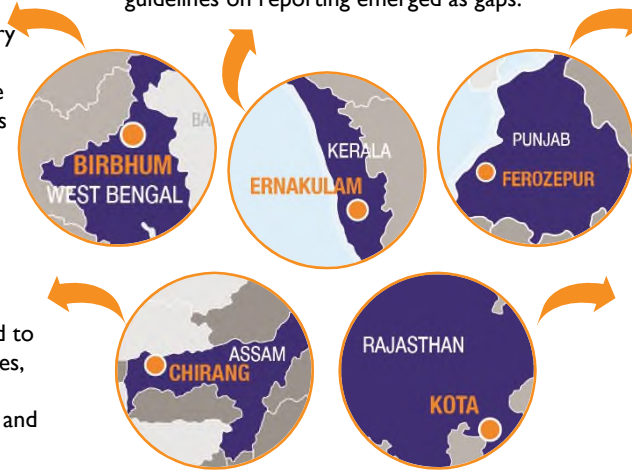
The overall quality of data in terms of completeness and accuracy was found to be robust. However, delayed entry of monthly data into the HMIS portal, poor use of HMIS formats at the facility level, and weak availability of written guidelines on reporting emerged as gaps.

Ferozepur

The district fared well on data quality, as seen in the timeliness, completeness, and accuracy of the reported data. While no major systemic gaps emerged, Ferozepur could further strengthen data use for managerial operations.

Kota

The district was found to have gaps at both systemic level and in data quality, as seen from the high number of vacancies in the district M&E unit, delayed data reporting by health facilities, and data loss between the service delivery register and the monthly summary report.



Conclusion and Recommendations

The DQA pilot has lent important preliminary insights about systemic readiness for HMIS reporting and the quality of data within the system. Although the findings cannot be assumed as generalizable across districts, the insights may prove valuable to the MoHFW in its efforts to improve the quality and use of data for better planning and management of health services. Overall, the pilot findings have confirmed systemic readiness for HMIS and the information system's optimal performance at various levels, as evidenced by robust data recording in service delivery registers and data reporting by DEPs into the HMIS portal. However, at some other levels, for example, in the transfer of data from service delivery registers to the monthly summary report, data quality appeared to be compromised by several issues, including lack of staff, poor understanding of data definitions, and inadequate use of standard formats. Based on these and other preliminary findings of the DQA pilot, the following emerged as the possible areas for further research and endeavour to strengthen the HMIS:

- Strengthen the health information workforce to ensure improved availability of trained HMIS resources
- Ensure dissemination of standardized data definitions and data collection guidelines to ground-level facilities and ensure use of standardized reporting formats by all health facilities

- Formalize data management practices and processes for data verification, correction, and feedback and supervisory support
- Improve data use for planning and management of health services, especially for day-to-day managerial planning and decision making at the facility level
- Strengthen IT infrastructure, particularly to ensure regular internet connectivity
- Improve coverage of private facilities in the HMIS, perhaps through regulatory guidelines and customized reporting formats

The Way Forward

The DQA pilot represents an important step in efforts to improve the performance of the national HMIS. The pilot implementation of DQA methodology and the wide range of insights it has generated have demonstrated the feasibility and efficacy of the assessment methodology. Institutionalization of such a data quality assessment mechanism is imperative to ensure the country's health information system can regularly generate reliable data that must be the foundation for decisions to improve delivery of public health services.

The Health Finance and Governance (HFG) project works with partner countries to increase their domestic resources for health, manage those precious resources more effectively, and make wise purchasing decisions. Designed to fundamentally strengthen health systems, the HFG project improves health outcomes in partner countries by expanding people's access to health care, especially to priority health services. The HFG project is a five-year (2012-2017), \$209 million global project funded by the U.S. Agency for International Development under Cooperative Agreement No: AID-OAA-A-12-00080.

The HFG project is led by Abt Associates in collaboration with Avenir Health, Broad Branch Associates, Development Alternatives Inc., Johns Hopkins Bloomberg School of Public Health, Results for Development Institute, RTI International, Training Resources Group, Inc. For more information visit www.hfgproject.org/

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