IMPROVING DATA FOR DECISION-MAKING: LEVERAGING DATA QUALITY AUDITS IN HARYANA, INDIA

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IMPROVING DATA FOR DECISION-MAKING: LEVERAGING DATA QUALITY AUDITS IN HARYANA, INDIA

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ACRONYMS

ANC	Antenatal Care
CHC	Community Health Centre
DHIS	District Health Information System
DQA	Data Quality Audit
HFG	Health Finance and Governance project
HIS	Health Information System
HMIS	Health Management Information System
M&E	Monitoring and Evaluation
MCTS	Mother and Child Tracking System
MOHFW	Ministry of Health and Family Welfare
NHSRC	National Health Systems Resource Centre
NRHM	National Rural Health Mission (*now known as National Health Mission*)
PEPFAR	President's Emergency Plan for AIDS Relief
PHC	Primary Health Centre
RMNCH+A	Reproductive, Maternal, Newborn, Child and Adolescent Health
RDQA	Routine Data Quality Assessment
TT	Tetanus Toxoid
USAID	United States Agency for International Development

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EXECUTIVE SUMMARY

The Government of India has initiated a Call to Action intended to accelerate progress toward attaining Millennium Development Goals 4 and 5: reduction of under-five mortality and improvement of maternal health outcomes. The government has prioritized 184 of the 640 districts in the country for focused maternal and child health interventions under an integrated program called the Reproductive, Maternal, Neonatal, Child and Adolescent Health (RMNCH+A) initiative. A key factor in the success of this initiative is the ability of the government to effectively track health outcomes through the routine collection of data from service delivery points across the high-priority districts.

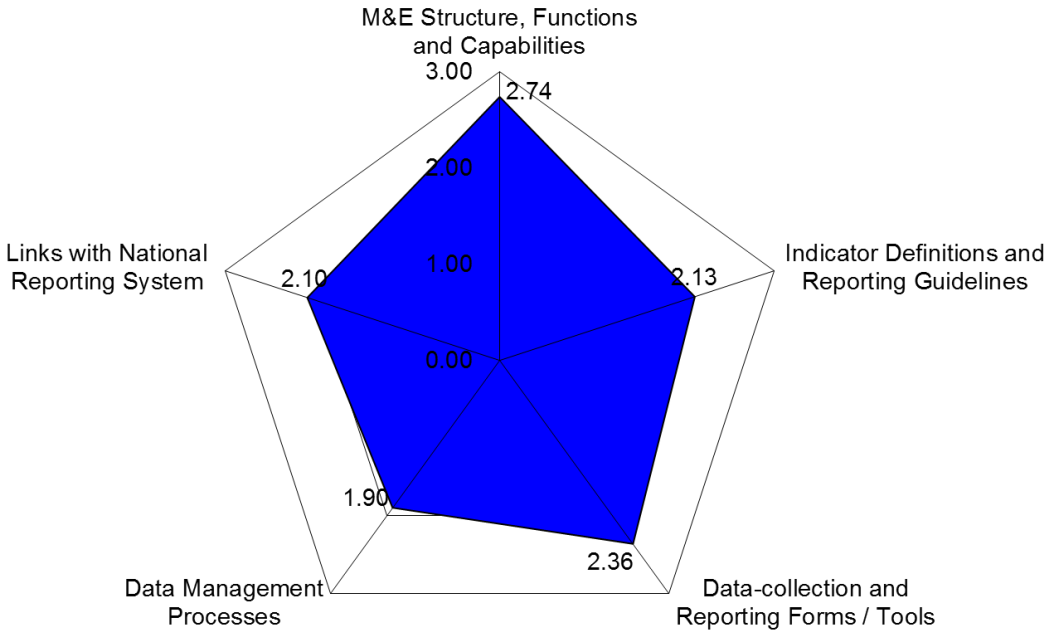
The National Rural Health Mission (NRHM)[1] is responsible for monitoring RMNCH+A indicators across the country and has leveraged the rollout of a web-based national health management information (HMIS) since 2008 for this purpose. In several states, another information system – the web-based District Health Information System (DHIS) 2.0 – is used to compile routine data up to the state level, where the data are then uploaded separately to the national HMIS portal. A number of reviews of the data produced through the national HMIS have indicated that there are data quality issues. However, there are limited reviews of data quality taking place across the NRHM facilities and no systematic assessment mechanism is currently in place.

To address these issues, the Haryana State NRHM partnered with the USAID-funded Health Finance and Governance Project (HFG) to conduct a data quality audit (DQA) across four of the state's high-priority districts using a methodology and set of tools intended to assess underlying systems and structures supporting the flow of health data. The DQA exercise took place from 4 – 13 December 2013, beginning with a presentation of the methodology to a cadre of Haryana NRHM Program Managers, HMIS Officers, and District Monitoring and Evaluation (M&E) Officers. The DQA methodology used was comprised of two components (Protocol 1 and Protocol 2), which looked at the systems in place to support data reporting and the factors impacting the validity and timeliness of data submissions, respectively.

The DQA exercise was conducted by HFG as an audit using a purposive sample of 10 health facilities across the four districts of Bhiwani, Narnaul, Mewat, and Palwal. At each of the facilities visited, the DQA team examined the systems in place to support data reporting and validated the accuracy and timeliness of reporting of four indicators with multiple data elements monitored by NRHM to track RMNCH+A progress. In addition, discussions with the Haryana NRHM M&E staff provided insights into the reporting of data into the national HMIS web portal after initial compilation of data in the District Health Information System 2.0 (DHIS 2.0). The findings from the qualitative components of the DQA exercise are visually summarized in the spider graph shown below, which resulted from data gathered using Protocol 1. The spider graph, where a 3 is the best possible score and a 1 the lowest, shows that the Data Management Processes were the weakest overall component evaluated with a composite score of 1.90, while Monitoring and Evaluation Structure, Functions and Capabilities scored the highest with a 2.74 rating.

[1] NRHM has been merged with the National Urban Health Mission to be known as the National Health Mission; NRHM is maintained throughout the report as it reflects the status of the agency during the study period.

Figure 1: Spider Graph of Protocol 1 Summary



Presented here is a brief summary of the findings and recommendations, sorted by the five domains evaluated in the DQA exercise:

M&E Structure, Functions, and Capabilities

- There is a clear assignment of duties for data management and reporting within health facilities, including the review of data for consistency prior to submission into the DHIS 2.0, although there are no formal written job descriptions for Information Assistants.
- Health facilities are consistently staffed with and well-supported by a cadre of Information Assistants who have been trained on the use of the DHIS 2.0.
- Once data are entered into the DHIS, there is very little feedback to health facility staff on the impact, quality or utility of the data being reported. The absence of a routine monitoring and feedback loop leads to a disconnect between the data compilers and the data being reported.
- Data are rarely being used by health facilities to track their own progress over time and/or to engage with their target populations to better meet their catchment area's needs.

Indicator Definitions and Reporting Guidelines

- While written guidelines and data definitions have been compiled and distributed across districts, copies of the written guidelines are not available to the staff recording routine data at the health facilities and few of them have been formally trained on the indicators.
- For some indicators (e.g., 'newborns less than 2.5 kg' and 'women with obstetrical complications'), unclear definitions directly led to inaccurate data being reported. In one case it resulted in the

wrong indicator being reported as the units counted were 'pills distributed' rather than the 'number of women receiving the pills.'

- For the indicators reviewed, there are mixed results with data validity. Using a verification factor that reflects over-reporting (greater than 1.0), under-reporting (less than 1.0) or an accurate match (exactly 1.0) between counted and reported, the following were the overall data validation results:

Table 1: Verification Factor for DQA Indicators

Facility Name	Institutional Deliveries to ANC Registrations	Newborns Weighing less than 2.5kg to Newborns Weighed at Birth	Cases of pregnant women with obstetric complications and attended at public facilities to reported deliveries	Post Partum Sterilization as a ratio to Total Female Sterilization
Bhiwani District Hospital	1.00	1.00	1.00	1.00
CHC Loharu	1.00	1.00	1.00	1.00
CHC Tosham	1.00	0.65	N/A	1.13
Narnaul District Hospital	0.99	0.97	1.00	0.95
CHC Kanina	N/A	N/A	1.00	1.00
CHC Nangal Choudhary	1.00	0.38	1.00	1.00
Mewat District Hospital	1.00	0.53	0.61	1.00
CHC Ferozpur Zirka	0.98	1.05	N/A	N/A
CHC Nuh	0.88	0.42	2.82	N/A
CHC Hathin	1.07	1.00	N/A	N/A

Data Collection and Reporting Forms / Tools

- The use of the DHIS 2.0 for reporting purposes streamlines and simplifies the data aggregation process within districts and across the state.
- All facilities visited have sufficient information technology infrastructure in place to support the routine reporting of data, including working computers and regular access to the Internet.
- Although the DHIS 2.0 is uniformly being used for reporting data, there is a wide variation among health facilities with regard to the source documents being utilized. Standard, pre-printed registers for data collection are not available to most health facilities, resulting in multiple reporting formats and increasing the possibility of data reporting errors.

Data Management Processes

- Staff members responsible for collecting and recording data to the source documents (i.e. individual patient records and/or consolidated registers) are performing well given the absence of formal training and notable resource constraints.
- Reporting deadlines are widely known and consistently followed across most health facilities visited. However, the timeliness of reporting submission from the health facilities could not be documented during the DQA exercise due to the absence of DHIS 2.0 generated reports showing which facilities submitted their reports on time for the review period. This functionality does exist within the DHIS 2.0 but is not being effectively utilized.

Links with National Reporting System

- Due to the lack of compatibility between the DHIS 2.0 and the national HMIS web portal, extensive data management activities must take place at the state level in order to comply with the GoI reporting requirements.
- The existence of multiple information systems at the health facility level (i.e. DHIS and Mother and Child Tracking System) leads to duplicative data entry and extra workloads on data reporting staff.

RECOMMENDED WAY FORWARD

- The distribution to all health facilities of written indicator definitions, data reporting guidelines, and standardized RMNCH+A registers (in both English and Hindi) will likely improve data consistency.
- Development and implementation of a routine data reporting training plan will likely increase the understanding and knowledge of health facility staff on the indicators they are reporting.
- Establishment of a routine data feedback mechanism by the Haryana NRHM to all facility staff involved in the collection, recording, and compilation of facility data can improve the likelihood that data will be used by the health facilities. Implementation of the data feedback mechanism could be rolled out with the routine training discussed above.
- Implementation of a routine data quality assessment process within the existing NRHM supportive supervision structure by the District M&E Officers may facilitate regular dialogue on data and open opportunities for data usage.

- Recognizing that this effort is beyond the state NRHM controls, the development and implementation over the long-term of a nationally integrated electronic health information system based on unique patient identifiers, unique health facility identifiers, and patient-level data captured on a daily basis may eliminate some of the duplicative reporting and the time associated with those processes. The GoI has the resources, technology, and skills to implement such a system with the appropriate level of prioritization from the national level.

Overall, the Haryana NRHM health facilities are leveraging limited resources to routinely compile and report required data. Data-gathering burdens on service delivery staff are very high given the volume of indicators required to be reported and the lack of staff dedicated exclusively to the recording of facility data. Data quality can likely be improved with the implementation of several key interventions requiring a moderate increase in resources. The opportunity exists for Haryana NRHM to significantly improve the reporting of health data so that indicators tracking progress toward the key Millennium Development Goals of reduced maternal and infant mortality are more readily available and trusted to inform decision-making around improving the impact of the RMNCH+A initiative.

1. INTRODUCTION

The Government of India's strategic approach to the Reproductive, Maternal, Newborn, Child and Adolescent Health (RMNCH+A) initiative is based on the central tenets of equity, universal access to care, entitlement, and accountability. Furthermore, it envisions a comprehensive continuum of care with integrated service delivery at various life stages: adolescence, pre-pregnancy, childbirth and the postnatal period, childhood, and through the reproductive ages. Within each of the RMNCH+A program areas, a set of priority interventions shown to have a notable impact are being rolled out across India, with emphasis on a set of 184 high-priority districts with high maternal and child morbidity and mortality indicators. The National Rural Health Mission (NRHM) has been tracking a set of 16 indicators that measure the impact of these interventions and is promoting the use of a dashboard based on data generated by the Health Management Information System (HMIS). The dashboard seeks to improve state accountability for RMNCH+A indicators and catalyze states into using the HMIS data for improved decision-making. Figure 2 shows the indicator set in relation to the RMNCH+A continuum of care structure.

Figure 2: NRHM Indicators in Relation to the RMNCH+A Continuum of Care

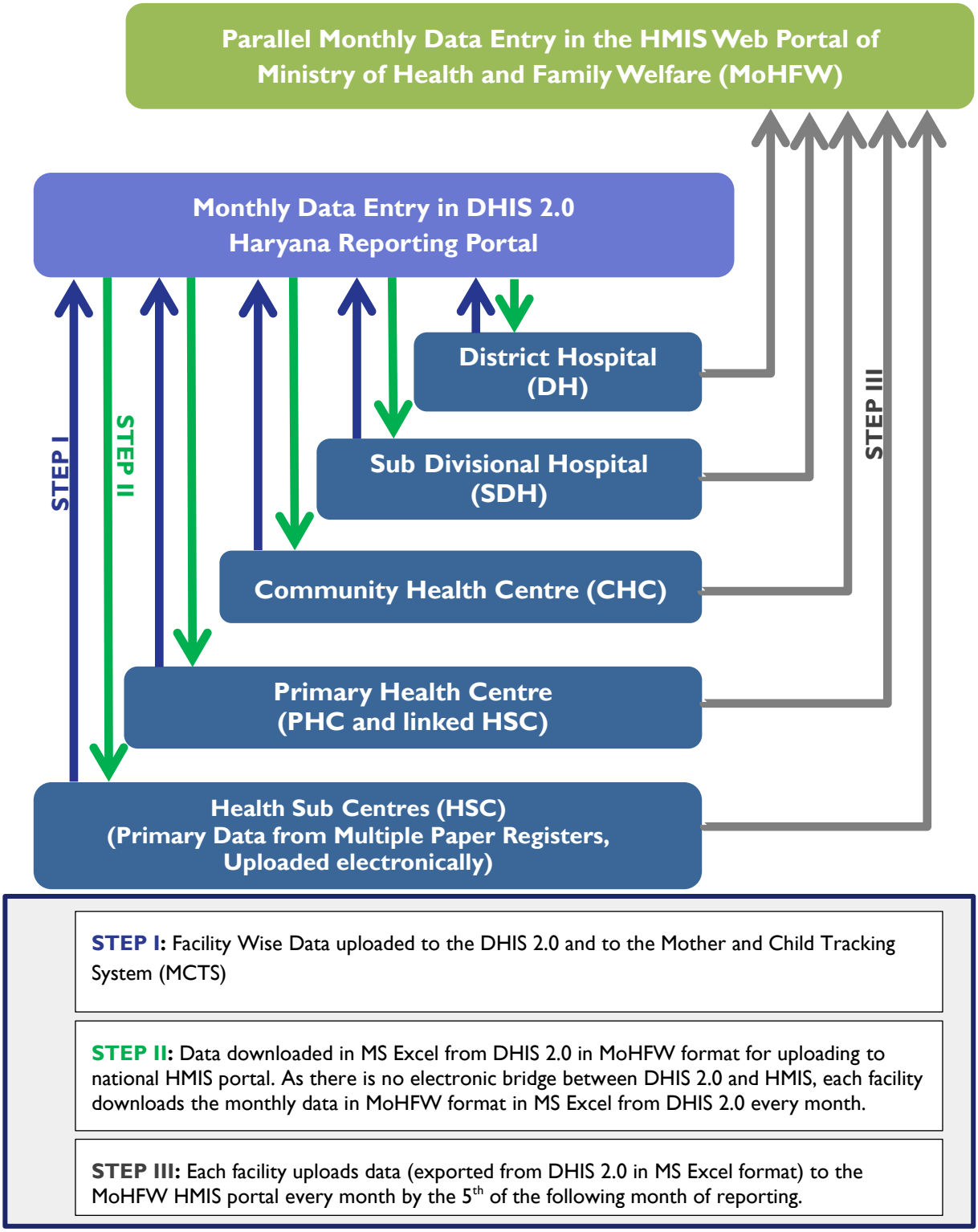
Pregnancy care	Childbirth	Postnatal maternal and newborn care	Reproductive age group
• 1st trimester registration to ANC registration • Pregnant women received 3 ANC check-ups to total ANC registration • Pregnant women given 100 IFA tablets to total ANC registration • Cases of pregnant women with obstetric complications and attended to reported deliveries • Pregnant women receiving TT2 or booster to total number of ANC registered	• SBA attended home deliveries to total reported home deliveries • Institutional deliveries to ANC registration • C-section to reported deliveries	• Newborns breast fed within 1 hour to total live births • Women discharged in less than 48 hours of delivery in public institutions to total number of deliveries in public institutions • Newborns weighing less than 2.5 kg to newborns weighed at birth • Newborns visited within 24 hours of home delivery to total reported home deliveries • Infants 0 to 11 months old who received Measles vaccine to reported live births	• Postpartum sterilization to total female sterilization • Male sterilization to total sterilization • IUD insertions in public plus private accredited institution to all family planning methods (IUD plus permanent)

Note: ANC = antenatal care, IFA = iron folic acid, TT = tetanus toxoid, SBA = skilled birth attendant, IUD = intrauterine device

Monitoring of the RMNCH+A strategy is not solely based on data from the national HMIS. A set of 19 outcome and service coverage indicators related to health, nutrition, and sanitation are drawn from various national and subnational surveys and are supposed to be reviewed on an annual basis. Although much of the data from these surveys are captured by the HMIS (e.g. maternal mortality rates and immunization coverage) concerns with HMIS data quality prompt the utilization of alternative data sources for program planning and decision-making. The District Health Information System (DHIS) 2.0 is used by health facilities to report their data electronically up to the State NRHM level; district-level information (i.e. all health facilities within a district) is automatically aggregated within the system. At the state level the NRHM team is using DHIS 2.0 monthly data to create the RMNCH+A dashboard. However, the Information Assistants at the facilities are also required to export their DHIS 2.0 data into a Microsoft Excel format and then upload it into the national HMIS web portal in order to meet the national NRHM reporting requirements.

In addition, health facilities are responsible for capturing patient-specific data within the Maternal and Child Tracking System (MCTS) to track care of pregnant mothers and children. Much of the information captured in the MCTS could also be used to track the RMNCH+A indicators, yet there is no connection (electronic or otherwise) between the MCTS, DHIS 2.0 or the national HMIS. The presence of multiple systems results in significant levels of duplicate data entry at the health facility level and a heavy reporting burden on both the Auxiliary Nurse Midwives and the Information Assistants, who are involved in recording and reporting the data, respectively, as represented in the data flow diagram provided in Figure 2 on the next page.

Figure 3: Health Management Information System Data Flow in Haryana



STEP I: Facility Wise Data uploaded to the DHIS 2.0 and to the Mother and Child Tracking System (MCTS)

STEP II: Data downloaded in MS Excel from DHIS 2.0 in MoHFW format for uploading to national HMIS portal. As there is no electronic bridge between DHIS 2.0 and HMIS, each facility downloads the monthly data in MoHFW format in MS Excel from DHIS 2.0 every month.

STEP III: Each facility uploads data (exported from DHIS 2.0 in MS Excel format) to the MoHFW HMIS portal every month by the 5th of the following month of reporting.

The Health Finance and Governance (HFG) project, funded by USAID, has been tasked with supporting six states and territories in India, particularly the RMNCH+A high-priority districts, to strengthen the domains of health finance, human resources for health and health information systems (HIS). A key domain within HIS that HFG is supporting is in improving the production and usage of high-quality health data. At meetings in October 2013, the HFG and Haryana NRHM teams began discussions about concerns that NRHM had with the quality of data being reported through the state-sponsored DHIS 2.0 and agreed to develop a work plan to implement a data quality audit (DQA) across key districts in Haryana. This was followed on 4 December 2013 by a workshop in Panchkula with the district health teams and state NRHM program officers to share the DQA methodology and to develop a timeline for field visits. The field visits took place during the week of 6 December 2013 and the initial phase of the DQA exercise concluded with a debriefing in Panchkula for the Mission Director NRHM's representative on 13 December 2013.

DQA METHODOLOGY

Reviews in the spring of 2013 by the National Health Systems Resource Centre (NHSRC) in Haryana noted that there was routine over-reporting of data across many districts in Haryana State. For example, looking at data reported through the DHIS 2.0 for the period of April 2012–March 2013, NHSRC found that the Palwal District reported that antenatal care (ANC) registrations were 47 percent higher than the total number of expected deliveries; reported deliveries were 11 percent higher than expected deliveries; and measles vaccines administered were 16 percent higher than the number of live births reported. Overall, NHSRC found that only one district (out of 21 in Haryana) did *not* have reported occurrences (e.g. immunization rates, deliveries, children weighed) higher than their population totals.[2]

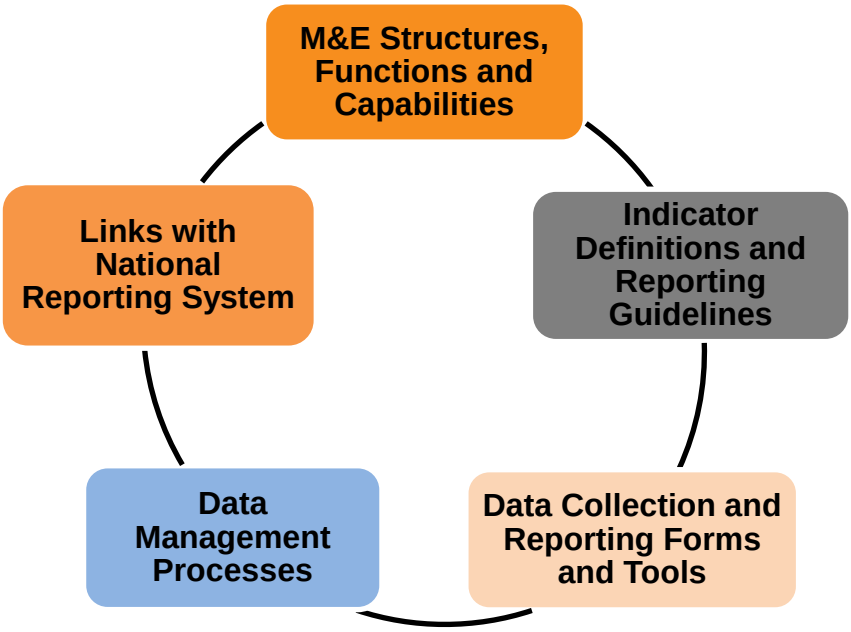
An effective means to evaluate the validity of data generated by a routine HIS in compiling and reporting health information system is to perform a DQA. The DQA methodology, as implemented in Haryana by HFG India, was designed to accomplish the following tasks:

- Verify that appropriate data management systems are in place in Haryana;
- Verify the quality of reported data for key RMNCH+A indicators at selected sites; and
- Contribute to monitoring and evaluation (M&E) systems strengthening and capacity building for NRHM.

The DQA methodology used in Haryana is based on two distinct protocols built into a Microsoft Excel template; the methodology was first piloted in mid-2006 by a group of international partners including the President's Emergency Plan for AIDS Relief (PEPFAR), the United States Agency for International Development (USAID), the World Health Organization, the Global Fund to Fight Tuberculosis, AIDS, and Malaria and the MEASURE Evaluation project.[3] Protocol I is intended to assess the underlying systems and structures supporting the flow of health data through the routine NRHM reporting system, while Protocol 2 is intended to assess, on a limited scale, if health facilities are collecting and reporting data in an accurate and timely manner.

[2] National Health Systems Resource Centre, *HMIS Analysis: Haryana – Palwal – April 2012 – March 2013* (, National Health Systems Resource Centre, May 2013).
[3] Data Quality Tool: Guidelines for Implementation, MS-08-29, 2008.

Figure 4: The Five Domains of the Monitoring and Evaluation System



Protocol 1 is comprised of a series of questions across five domains that support the M&E system (Figure 4). The full set of 39 questions can be found in Annex I. Answers to the questions in Protocol 1 across these categories provide a systematic way to catalogue common issues found across multiple facilities and to compile recommendations for system improvements. Protocol 1 includes such questions as: whether or not staff had written copies of data definitions; whether written manuals documenting how to compile data and how the electronic reporting tools function had been distributed to each and every facility; and whether the appropriate and routine training had been provided to staff to build their capacity. The overall objective of this Protocol is to document whether the appropriate system structures are in place to promote the collection and reporting of high-quality data on a timely basis.

Each question is then scored by the reviewer using a three point rating scale. Full compliance with the elements of a question elicits a "Yes, completely" response and equates to a 3 score. "Partly" refers to some criteria for a given measure being met and equates to a 2. "No – not at all" is used when none of the criteria for a question are met by the health facility, district team or, as applicable, by the state level NRHM team, and results in a score of 1. Each question can also be marked "N/A" by the reviewer if it is not applicable, which will keep that specific question from being used to calculate the resulting DQA scores by category.

Protocol 2 focuses on verifying that the data being captured at the facility level (i.e. on source documents used by health facility staff and ultimately entered into the DHIS 2.0) are consistently compiled on an accurate and timely basis. In Haryana, the DHIS 2.0 electronic reporting system allows each health facility with an internet connected computer and a user identification for the DHIS 2.0 to directly enter their facilities monthly report. The DHIS 2.0 electronically stores the information by facility, but has been programmed to compile district level reports by aggregating data from all health facilities within the district. Thus, for Protocol 2, the DQA teams reviewed reports of the selected DQA indicators generated by the DHIS 2.0 for each of the facilities and then conducted field visits to the facilities to review the source documentation for those indicators. In most cases, the field visits

required the DQA teams to review two or three distinct paper registers at the facilities to compare the individual records for the relevant time periods with the compiled reports from the DHIS 2.0.

INDICATOR SELECTION

To initiate work on the DQA, four indicators were selected for review from the 16 being used for RMNCH+A benchmarking in Haryana. Each of the indicators selected comprises multiple data elements, which required the review of multiple data sources at each facility. The following are the indicators that were used in the DQA exercise, with definitions taken from the *Health Programme Managers' Manual* published by NRHM, and the guidelines for where this data should be recorded at each facility[4]:

- Institutional deliveries to ANC registration
  - Data sources: Labour Room Register, Delivery Register, Antenatal Register, Pregnancy Register
- Newborns weighing less than 2.5kg to newborns weighed at birth
  - Data sources: Pregnancy Register, Labour Room Register
- Cases of pregnant women with obstetric complications and attended at public facilities to reported deliveries
  - Data sources: Labour Room Register, In-patient Department (IPD) Register, Obstetric IPD Register, Obstetric Out-patient Department (OPD) Register
- Post-partum sterilization to total female sterilization
  - Data sources: Family Planning Register, Operation Theatre Register

According to the official definitions provided for the indicators above, examining the selected data elements could require the review of no fewer than nine different registers (see Findings section for the full discussions of issues related to indicator definitions). In reality, none of the health facilities visited by the DQA team maintained distinct registers as defined above. In most cases, there were two or three registers to review and often these registers had been drawn by hand in empty log books rather than being pre-printed with the requisite columns, definitions, and guidelines as defined above. In all site visits the DQA team found that the data being audited was being recorded on the registers, even when they were printed by hand.

In addition to the facility reviews detailed in Protocols 1 and 2, a number of system assessment questions were addressed to the District and State Data Officers in order to obtain multiple perspectives on the data reporting system. The results from each of the interviews and site visits were compiled to provide a summary overview of the data reporting processes which make up the findings for this exercise.

[4] *Service Provider's Manual: Understanding Health Management Information Systems, Volume I*, National Rural Health Mission, Ministry of Health and Family Welfare, Government of India, *Service Provider's Manual: Understanding Health Management Information Systems, Volume I* (Nirman Bhavan, New Delhi, January 2011).

SITE SELECTION

The Haryana NRHM data management team classified its districts into four quadrants based on their performance relative to India as whole against the RMNCH+A indicators for the dashboard as shown in Figure 5.

Figure 5: NRHM Classification of Districts in Haryana

High Performance Districts	Promising Districts
Kaithal, Kurukshetra, Mahendragarh/ Narnaul, Panchkula, Rohtak	Ambala, Jhajjar, Rewari, Sirsa, Yamunanagar
Low Performance Districts	**Very Low Performance Districts**
Faridabad, Gurgaon, Jind, Karnal, Sonipat	Bhiwani, Fatehabad, Hisar, Mewat, Palwal, Panipat

Source: HMIS Data April 2012- March 2013

The DQA team proposed using a purposive selection process that would stratify facilities from across Haryana based on the varying volumes of services and ensuring that most were relevant to the indicators selected (i.e. not all intensive services, such as complicated pregnancies, are managed at lower-level facilities). As it turned out, there were some facilities visited for which the indicators were not relevant (in the case of 'post-partum sterilizations') due to community preferences rather than the service not being offered. Discussions between the NRHM State Program Managers and the DQA team led to the selection of three Very Low Performance Districts (Bhiwani, Mewat, and Palwal) and one High Performance District (Mahendragarh/Narnaul) in order to provide a varied, but not fully random or representative sample. A total of 10 health facilities from across these four districts were selected to allow for multiple facility types to be included in the sample. Based on discussions with the State NRHM team, the accessibility of the facilities within the time available to the DQA team (limited to one week of field visits) was used to determine the sites to visit.

The Haryana state Data Manager facilitated introductions of the DQA teams to the M&E Officers from each district, who in turn arranged for the two DQA teams to visit the selected district hospitals and community health centers (CHCs) during the week of 6 – 11 December 2013.

Table 2: Site Visit Schedule

Facility Name	District	Date of Visit
Bhiwani District Hospital	Bhiwani	6 December 2013
CHC Loharu	Bhiwani	7 December 2013
CHC Tosham	Bhiwani	7 December 2013
Narnaul District Hospital	Narnaul	9 December 2013
CHC Kanina	Narnaul	9 December 2013
CHC Nangal Choudhary	Narnaul	9 December 2013
Mewat District Hospital	Mewat	10 December 2013
CHC Ferozpur Zirka	Mewat	10 December 2013
CHC Nuh	Mewat	10 December 2013
CHC Hathin	Palwal	11 December 2013

2. DATA QUALITY AUDIT FINDINGS

The Haryana DQA exercise resulted in a relatively uniform set of findings across the sites visited. Overall, data are being reported on a timely basis with all staff involved in the process aware of the deadlines and required formats for monthly reporting of data. All facilities use the DHIS 2.0 electronic web portal to transmit monthly data, submitted by a trained Information Assistant specifically assigned to each health facility. The DQA team found no significant reports of problems in accessing the DHIS 2.0 or with the computers and IT infrastructure used to conduct the monthly reporting exercises.

As noted in the methodology section, the DQA tools score each facility based on answers to questions on a 1-3 point scale, with 1 being the lowest. Provided below in the Table 3 is a numerical representation of the qualitative findings from Protocol 1 (shown in Appendix 1). The table is color-coded based on the 1-3 ratings to Protocol 1 questions as follows:

Color Code for Protocol 1 ratings		
Green	2.5 - 3.0	Yes, completely
Yellow	1.5 - 2.5	Partly
Red	1.0 - 1.5	No - not at all

Overall, Section IV, Data Management Processes, was the lowest scoring component of the review. This reflects, in large part, the absence of routine data quality reviews, the use of nonstandardized (and in many cases handwritten) registers and the absence of unique identifiers across health facilities to track patients and avoid potential double counting. These are structural components of the reporting system that have a direct impact on the compilation and reporting of data across the system.

Table 3: Assessment of Data Management and Reporting Systems

Facility Name	M&E Structure, Functions and Capabilities	Indicator Definitions and Reporting Guidelines	Data Collection and Reporting Forms/Tools	Data Management Processes	Links with National Reporting System	Average (per site)
Bhiwani District Hospital	3.00	3.00	2.67	1.80	2.50	2.59
CHC Loharu	3.00	2.00	2.33	2.60	2.25	2.44
CHC Tosham	2.67	2.25	2.33	2.00	2.00	2.25
Narnaul District Hospital	2.33	2.00	2.00	1.60	1.75	1.94
CHC Kanina	3.00	2.00	2.33	1.40	2.00	2.15
CHC Nangal Choudhary	2.67	2.00	2.33	2.25	2.00	2.25
Mewat District Hospital	2.67	2.00	2.00	2.00	2.25	2.18
CHC Ferozpur Zirka	2.67	1.50	2.33	1.80	1.75	2.01
CHC Nuh	3.00	2.00	2.33	1.80	1.75	2.18
CHC Hathin	2.67	3.00	2.67	2.00	2.50	2.57
Average (per functional area)	**2.74**	**2.13**	**2.36**	**1.90**	**2.10**	**2.25**

The highest-scoring component overall was Section I, M&E Structure, Functions, and Capabilities, which is largely due to the use of the DHIS 2.0 at all facilities and districts, the ability of staff to easily navigate the system, and the consistent availability of access to the DHIS 2.0 via computers and Internet connections. The DQA team also found that the DHIS 2.0 facilitates the compilation of data across the NRHM system as a number of the 16 indicators used in the RMNCHA+A dashboard are automatically calculated rather than requiring the health facility staff to calculate them on their own. For example, the "Number of cases of pregnant women with obstetric complications and attended at public facilities" is automatically calculated from the sub-data elements comprising "obstetric complications: those treated with antibiotics, those treated for eclampsia, those treated with antihypertensive injections, those receiving blood transfusions after having severe anaemia (Hb < 7 mg)," and those "receiving 100 IFA tablets to treat iron deficiencies." This automatic aggregation simplifies the reporting process and minimizes potential aggregation errors.

Based on the implementation of Protocol 1, the following are the findings, by domain:

M&E Structure, Functions, and Capabilities

- District hospitals and CHCs are well supported by trained Information Assistants. The Information Assistants were clear about the timeframes, tools, and process for compiling monthly data and entering that data into the DHIS 2.0.
- Duties for data management, reporting, and review of data prior to submission are clearly assigned. While none of the health facilities visited had written job descriptions, there was no confusion as to who was responsible for data capture, review, and reporting.
- At all of the facilities visited, the computer and Internet connections were found to be in working order with no significant reports of system outages.
- While there is regular reporting of information up from the facilities, there is a clear lack of routine feedback to facilities on the data that they have reported.
- In line with the prior finding, there is also minimal use of gathered information at the facility level for reviewing such targets as population coverage for immunizations or outreach for various services. These two findings appear to be a function of district-facility interactions, rather than of DHIS 2.0 functionality, as the monthly reports can be directly accessed by facility level staff if they so choose.

Indicator Definitions and Reporting Guidelines

- Submission dates and processes were found to be well known and followed; written reporting guidelines, however, are not widely distributed. There were several reports of the guidelines having been distributed at some point, but none of the facilities visited could provide the DQA team with a copy of these guidelines.
- There were found to be varying interpretations of indicator definitions among the reporting staff at the sites visited. For example, for the indicator "Newborns Weighing less than 2.5 kg to Newborns Weighed at Birth" staff members at some facilities were including newborn weights of 2.5 kg exactly within the numerator, while the definition clearly states only those weighing *less than 2.5 kg.*
- In another example, the "obstetric complications" indicator as defined did not directly correspond to the reporting formats on the monthly HMIS forms. The definition focuses on the *diagnosis* and provides examples of symptoms that qualify as complications: eclampsia, obstructed labor and acute anemia are examples. The monthly HMIS reporting forms, however, use the aggregation of *treatments* for complications: provision of hypertensive pills, distributing IFA tablets and conducting blood transfusions. The DQA exercise team further noted confusion among a number of facility staff

surrounding the units of measure to be reported. Whereas "obstetric complications" calls for the *number of women treated* to counted, some facilities were found to be counting, for example, the *number of pills distributed* to the women instead. This would essentially invalidate the data being reported and should be corrected as soon as possible.

Data Collection and Reporting Forms / Tools

- The DHIS 2.0 and the monthly HMIS forms used to compile data for entry into the DHIS 2.0 were found to be consistently used across all the facilities visited.
- However, there was no uniformity found among the source registers used at the service delivery sites visited. Only one of the sites visited was found to have pre-printed forms to use for data capture of monthly pregnancies and deliveries. All other sites were using either blank registers modified by hand to record information, or existing registers created for another purpose (e.g. Medical Store Supplies) that were modified by adding columns and rows as needed. With the hand printed registers, the relevant data was consistently available for review by the audit team.
- In line with the prior finding, recording practices on source documents varies widely across the sites visited. For example, some weights of newborns were recorded with two decimal places, while others used only one (i.e., 2.1 versus 2.15). This may be due to the lack of standardized forms (registers) in use and the absence of written indicator guidelines distributed across facilities.

Data Management Processes

- The staff at the facilities generally demonstrated the capacity to compile data, as required. There were, however, some cases noted of miscounting due in part to the non-standardized registers and inconsistencies with alignment of reporting periods.
- Data confidentiality appears to be effectively maintained; data registers are uniformly maintained in a locked room after clinical hours. However, a number of staff noted concerns with not having a defined location for the routine storage of patient records.
- There are no unique facility identifiers in use with the reporting system. A cursory review of the DHIS 2.0 by the DQA auditors did not reveal any obvious duplication of facility names. Given that there are more than 24,000 primary health clinics in India[5], however, there exists a possibility of duplicating names within the reporting systems at some point, particularly as they either come on line or are removed from the health system.

Links with National Reporting System

- There is a mixed finding with regard to linkages to the national reporting system. There is a clear and consistent link to national reporting system via the DHIS 2.0 with regard to the data elements captured and the timelines for reporting. However, there is no system interoperability between the DHIS 2.0 and the national HMIS web portal, which leads to a complex process of data exports from the DHIS 2.0 at the state level in order for the national HMIS reporting to be completed.

[5] All India Health Status Report, as of 31 December 2013, NRHM website: http://nrhm.gov.in/images/pdf/mis-report/Dec-2013/1-NRHM.pdf

- In addition, there is significant duplicative data capture for the DHIS 2.0 and the MCTS, which is burdensome for the staff at the health facility level. While the MCTS appears to capture a significant portion of the data that is also reported through the DHIS 2.0 (*not verified by the DQA team during this exercise, however*), there is no electronic interface between the two systems. Streamlining the MCTS, the DHIS 2.0, and the national HMIS data capture and transfers would significantly reduce the duplication of effort across the health system.

The following findings are a result of the implementation of Protocol 2 during the DQA exercise, which entails validation of reported data versus re-counted data and reviewing the timeliness of data reporting. The latter component could not be reviewed during the DQA exercise as no logs from the DHIS 2.0 were available to the audit team to review reporting timeliness.

Source Documents

- During the site visits by the DQA team, most source documents for the indicators being reviewed were readily available at the facilities for the audit period in question, in spite of the fact that the facilities were not using standardized, pre-printed registers.
- Although they were not uniform in their structures, the registers reviewed were generally complete and well-kept by the staff at the facilities. While reviewing the handwritten documents, the DQA team had only moderate trouble interpreting some of the results and in most cases all of the required data elements for the indicators under review were captured.
- As noted above, the lack of standardized source documents with clearly written indicator definitions has an impact on the understanding of how and what the staff are responsible for counting for each indicator, which ultimately impacts the data quality.

Indicator Validations

- When reviewing the source documents at facilities and comparing the data counts to the reports generated by the DHIS 2.0 for the same period, most facility counts were found to match within a relatively small range of variation (plus/minus 10 percent).
- Those errors that were identified were typically based on varying understandings of the indicator definitions rather than an inability to accurately tally the totals for data elements. For example, in the summary table provided below (Table 5) for the validation checks conducted of the indicator on "obstetric complications" reviewed during the DQA exercise, one CHC was found to be counting the wrong units ("number of pills dispensed" versus "women experiencing complications").
- Provided below are the summary tables of the data validations conducted. The table columns show: the facility name, the verified counts by the auditors, the reported counts from the DHIS 2.0 and a verification factor that reflects over-reporting (greater than 1.0), under-reporting (less than 1.0) or an accurate match (exactly 1.0) between counted and reported.
- There were no major validation discrepancies found for the indicator in Table 4, "institutional deliveries to ANC registrations."

Table 4: Trace and Verify: Institutional Deliveries to ANC Registrations

Facility Name	Verified Counts at Audited Sites	Reported Counts at Audited Sites	Site Verification Factor
Bhiwani District Hospital	356	356	1.00
CHC Loharu	10	10	1.00
CHC Tosham	28	28	1.00
Narnaul District Hospital	663	670	0.99
CHC Kanina	0	0	-
CHC Nangal Choudhary	53	53	1.00
Mewat District Hospital	154	154	1.00
CHC Ferozpur Zirka	194	197	0.98
CHC Nuh	180	205	0.88
CHC Hathin	223	208	1.07

- Table 5 below reflects several major data collection errors on validations of "newborns weighing less than 2.5 kg to total newborns," each with a unique set of reasons:
  - Missing one underweight newborn at CHC Kanina meant a 100 percent reporting discrepancy.
  - CHC Nangal Choudry reflects that they were using a reporting period from the 29th of one month to the 28th of the next, rather than the calendar month. Thus, when compared with the DQA team's count of the calendar month, there was a discrepancy.
  - CHC Nuh was stopping their counts before the end of the calendar month in order to review the monthly data internally with their teams before submitting. This resulted in a discrepancy when compared to the calendar month tally conducted by the DQA team.
  - Mewat District Hospital's discrepancy resulted from a listing in the Admissions-Discharge register of data ranges for weights (e.g., <1 kg, 2-2.5 kg, 2.5-3.0 kg.) rather than recordings of the actual weight in kilograms. When staff used the weight ranges, they included those newborns whose actual weight was exactly 2.5 kg, which, according to the official indicator definition, should not be included as underweight. This resulted in reporting of the wrong indicator for this component and should be corrected as soon as possible.
  - The reason for the discrepancy noted at CHC Tosham could not be readily identified during the DQA team's site visit.

Table 5: Trace and Verify: Newborns Weighing Less than 2.5 kg to Total Newborns

Facility Name	Verified Counts at Audited Sites	Reported Counts at Audited Sites	Site Verification Factor
Bhiwani District Hospital	10	10	1.00
CHC Loharu	2	2	1.00
CHC Tosham	11	17	0.65
Narnaul District Hospital	113	117	0.97
CHC Kanina	1	0	--
CHC Nangal Choudhary	5	13	0.38
Mewat District Hospital	46	86	0.53
CHC Ferozpur Zirka	23	22	1.05
CHC Nuh	8	19	0.42
CHC Hathin	20	20	1.00

- For the most part, data for the indicator "Cases of Pregnant Women with Complications and Attended at Public Facilities to Reported Deliveries" showed only minor discrepancies.
  - CHC Nuh (noted with a * in Table 6) was found to be counting the wrong units ("number of pills dispensed" versus "women experiencing complications") for this indicator. While the Trace and Verify notes over-reporting of the indicator, in fact, the wrong data was reported.

Table 6: Trace and Verify: Cases of Pregnant Women with Complications and Attended at Public Facilities to Reported Deliveries

Facility Name	Verified Counts at Audited Sites	Reported Counts at Audited Sites	Site Verification Factor
Bhiwani District Hospital	290	290	1.00
CHC Loharu	10	10	1.00
CHC Tosham	0	0	--
Narnaul District Hospital	45	45	1.00
CHC Kanina	32	32	1.00
CHC Nangal Choudhary	0	0	--
Mewat District Hospital	11	18	0.61
CHC Ferozpur Zirka	N/A	N/A	N/A
CHC Nuh	141	50	2.82*
CHC Hathin	0	0	--

- There were no major validation discrepancies found for the indicator "postpartum sterilizations to total sterilizations":

Table 7: Trace and Verify: Postpartum Sterilizations to Total Sterilizations

Facility Name	Verified Counts at Audited Sites	Reported Counts at Audited Sites	Site Verification Factor
Bhiwani District Hospital	73	73	1.00
CHC Loharu	0	0	--
CHC Tosham	18	16	1.13
Narnaul District Hospital	55	58	0.95
CHC Kanina	10	10	1.00
CHC Nangal Choudhary	23	23	1.00
Mewat District Hospital	10	10	1.00
CHC Ferozpur Zirka	0	0	--
CHC Nuh	0	0	--
CHC Hathin	0	0	--

3. RECOMMENDATIONS AND NEXT STEPS

There are a number of clear recommendations emanating from the DQA exercise undertaken by HFG in December 2013. The key findings described above showed both consistent strengths within the NRHM reporting system, as well as addressable gaps. The following is a set of recommendations and next steps suggested for Haryana NRHM to continue strengthening the quality of data reported through the HIS.

M&E Structure, Functions, and Capabilities

- **Develop training plan for districts and health facilities**
  - As the written guidelines are distributed, a training plan to reinforce the reporting guidelines should also be developed and implemented. Individuals involved in recording data should receive an initial training upon assuming their data reporting roles and should also be routinely updated as indicators, definitions, or timelines are updated.
  - Part of the training program for health facility staff should focus on the indicator definitions, how to properly calculate them and how to interpret them. The *Service Provider's Manual* developed by the central NRHM offices provides useful tools and exercises to promote the understanding and recording of accurate indicators. However, these manuals are not available to health facility staff as either reference or training tools.
  - Additionally, the trainings should demonstrate to program staff how to use data at the facility level. For example, using local population data to define target health impacts, creating simple charts and graphs to track services and targets over time, and comparing data across health facilities in order to benchmark performance are all effective ways of promoting the use of information collected at health facilities.
- **Provide regular feedback on data submitted into DHIS 2.0**
  - Establishing routine data review mechanisms, such as a quarterly review of data at the district level with representatives of local health facilities (e.g. Medical Officers in charge or Information Assistants), will provide an opportunity to highlight data trends (positive, negative, or potential anomalies), concerns that may exist with data quality/timeliness, and to provide constructive feedback to the staff compiling and reporting the data.
  - Developing a log system for recording data changed after submission will help document routine issues that arise and verify the means by which issues have been addressed.
  - The Haryana NRHM has recently embarked on an effort to promote the usage of data for addressing implementation research questions. This effort is believed likely to positively impact both the reporting of data and the usage side of data for program improvement.
  - Implement pop-up windows or "help" section within DHIS 2.0 that would allow users to review the data definitions and reporting guidelines as they are entering data. It could be implemented as a full online guide or tagged to specific fields of relevance.

Indicator Definitions and Reporting Guidelines

- **Provide clearly written indicator definitions and reporting guidelines to all facilities**
  - The written guidelines should include clear due dates for each facility, to whom information developed by the central NRHM team should be distributed beyond the district levels to ensure that all health facilities have been trained on them and have them readily available for reference.
  - A number of indicator definitions reviewed by the DQA team need clarification. Some are not well matched to the reporting requirements (e.g. obstetric complications), while others are being misinterpreted by the reporting staff (e.g. newborns weighing less than 2.5 kg). Distributing a revised set of written indicator definitions will help to standardize the recording and reporting of data. The following is a detailed summary of the indicators reviewed during the DQA exercise that would benefit from refinement and clarification to all staff:

Cases of pregnant women with obstetric complications and attended at public facilities to reported deliveries

[Cases of pregnant women with obstetric complications and attended]

M5	Complicated pregnancies
13	*Data Element: Number of cases of pregnant women with Obstetric Complications and attended at Public facilities* **Definition:** Total number of cases of pregnant women with obstetric complications who have been attended to at the facility during the reporting month. **Guideline:** An obstetric complication would include obstructed labour, post partum haemorrhage, ante partum haemorrhage, eclampsia, puerperal sepsis etc. **Data Source – Labour Room Register/ IPD Register**

[Reported deliveries]

M2	Deliveries
8	*Data Element : Deliveries conducted at Facility* **Definition:** Total number of deliveries conducted at the PHC during the reporting month. **Guideline:** The deliveries conducted in private nursing homes and the referred cases to any higher facility are not to be reported by PHC. The number of C-section deliveries if performed at the PHC will also be included here. Home deliveries if any in the area are to be reported by the ANM in the Sub Centre Format and not in this form. *(While reporting, please follow this:* *Deliveries conducted at Facility (Data element 8) = Total number of Normal Deliveries conducted at Facility + Total number of C-section deliveries performed at facility* **Data Source – Labour Room Register**

Concern(s) with current definition:

- The subcomponent "obstetric complications" is vaguely defined. Examples are provided but even they are sometimes misinterpreted by those recording the indicator. The list should be expanded and definitions of complications should be more detailed and clear. Reviews of the data registers at several health facilities indicated inconsistent interpretation of the term "obstetric complications." For some examples provided in the manual, such as "eclampsia," there is no clinical description.
- On the reporting forms, the "Number of eclampsia cases managed during delivery" and "Number having Hb level <11 (tested cases)"" are shown in section M1, "Ante Natal Care Services." However, "Number of Complicated Pregnancies treated with [IV antibiotics], [IV antihypertensive/magsulph injection], [IV oxytocin], and/or [blood transfusion]" are in section M5, "Complicated pregnancies." This shows that the **guidelines reflect the definitional diagnosis while the reporting forms reflect the possible treatments.**
- Some facilities considered "total number of pregnant women given 100 IFA tablets" to be included in the "Number of Complicated Pregnancies…." indicator. However, rather than reporting the **number of pregnant women** treated, they reported the **number of pills** distributed to pregnant women, which would clearly result in the reporting of the wrong indicator.

Recommendations:

- Provide a comprehensive checklist of clinical conditions that are classified as meeting the definition of "obstetric complications" so that labor room teams can actively and rapidly record the data in the register.
- Consolidate within one section of the reporting forms where the various types of "obstetric complications" are listed so that tallies are more accurate.

Institutional Deliveries to ANC Registration

[Institutional Deliveries]

M2	Deliveries
8	*Data Element : Deliveries conducted at Facility* **Definition:** Total number of deliveries conducted at the PHC during the reporting month. **Guideline:** The deliveries conducted in private nursing homes and the referred cases to any higher facility are not to be reported by PHC. The number of C-section deliveries if performed at the PHC will also be included here. Home deliveries if any in the area are to be reported by the ANM in the Sub Centre Format and not in this form. *(While reporting, please follow this:* *Deliveries conducted at Facility (Data element 8) = Total number of Normal Deliveries conducted at Facility + Total number of C-section deliveries performed at facility* **Data Source – Labour Room Register**

[ANC Registration]

M1	**Antenatal Care Services** (ANC) is the health care a woman receives during pregnancy. ANC starts with 'history-taking' and is followed by examination of the woman, which includes recording weight and height, doing a blood test for anaemia, measuring blood pressure, and doing a regular abdominal examination as per the guidelines. The woman is advised for diet, regular antenatal check-ups, and counseled for family planning. She is also provided with immunisation for TT and IFA tablets along with proper treatment required in case of any complication. Ideally, as per the Reproductive and Child Health Programme schedule, the first ANC check-up is to be done within 12 weeks, preferably as soon as the pregnancy is suspected, the second ANC check-up between 14 and 26 weeks, the third between 28 and 34 weeks, and the fourth between 36 and 40 weeks, but due to unawareness, mobility, distance, and so forth, the timing for the check-ups may vary.

1	*Data Element : Total number of pregnant women Registered for ANC* **Definition:** Total number of NEW pregnant women registered for ante natal care during the reporting month. **Guideline:** Registration should include ANC check-up. First ANC check-up is same as ANC registration. **Data Source – Antenatal Register / Pregnancy Register**

Concern(s) with current definition:

- One challenge with this indicator is that deliveries take place at higher level care facilities with obstetrical beds, while ANC registrations take place at a much broader range of facilities, including those without obstetrical services. Because of this, there may or may not be a correlation between the number of women registered for ANC services and the number of deliveries conducted at any given facility.
- The ANC registration definition indicates that only **new** pregnant women registering for ANC services that month should be included in the count. However, most of the registers reviewed during the DQA exercise used unofficial or adapted registers made by facility staff that did not distinguish between first, second, or subsequent ANC visits. For the DHIS 2.0 and HMIS web portal reporting, the staff members use the registers for data consolidation, not the MCTS, which creates a tracking sheet for the ANC visits.

Recommendation:

- Use only standardized, NRHM-issued registers entitled "First ANC visit/registration."

Newborns Weighing less than 2.5 kg to Newborns Weighed at Birth

[Newborns Weighing less than 2.5kg] / [Newborns Weighed at Birth]

11.1	*Data Element : Number of Newborns weighed at birth* **Definition:** Number of newborns (live births) weighed within 24 hours of birth during the reporting month. **Data Source – Pregnancy Register/ Labour Room Register**
11.2	*Data Element : Number of Newborns having weight less than 2.5 kg* **Definition :** Total Number of newborns (live births) who were weighed (*out of data element 11.1*) and found to be less than 2500 grams during the reporting month. **Data Source – Pregnancy Register/ Labour Room Register**

Concern(s) with current definition:

- The definition does not state explicitly whether newborns weighing exactly 2,500 grams (2.5 kg) should be included in the list of "less than 2,500 grams." At some of the facilities visited, newborns weighing exactly 2,500 grams were included while at other facilities they were not.

Recommendation:

- Add one line of text to the definition to state: 'Newborns weighing exactly 2,500 grams' at birth should not be included in the totals for 'less than 2,500 grams.'

Data Collection and Reporting Forms / Tools

- **Provide proper reporting tools to all district offices and facilities**
  - In accordance with the written guidelines, each facility should be given an adequate number of the paper registers it needs to report on each service it provides. A comprehensive maternal and child health register has been developed and distributed to the state-level teams, but these have not been uniformly distributed across districts and health facilities.

Data Management Processes

- **Incorporate routine data quality audits as continuous, internal review mechanisms for facilities**
  - An ongoing, NRHM-driven process to review source-level data across facilities would assist in identifying and reducing errors in a timely manner. A simple Excel-based Routine Data Quality Assessment (RDQA) Tool can be used to document structures in place at facilities, review key indicators for accuracy and develop action plans for improvement where necessary.
  - The RDQA Tool (or similar approach) can be incorporated into the routine supportive supervision visit carried out by district-level staff to facilities within their district. This would allow the NRHM to leverage existing systems and relationships while minimizing the need to mobilize additional resources.

Links with National Reporting System

- **Streamline reporting systems**
  - While the electronic data systems used in Haryana eventually feed into the national reporting system, there are many layers of duplication. The NRHM programs would benefit greatly from the creation of electronic data interfaces between systems (in the short term) and the

consolidation of many of the duplicate systems into a single electronic system with patient-level records (in the long term).

Source Documents

- **Guidelines on maintain source documents**
  - In all cases during the DQA site visits, the requested source documents reflecting the original data for the period under review were located and available to the team. However, there do not appear to be any uniformly followed standards for length of time that source documents are maintained. NRHM should provide guidelines on timelines for maintaining such records.

Indicator Validations

The Recommendations provided earlier in this section are likely to address the validation issues raised during the DQA exercise.

Conclusion

Based on the findings from the DQA exercise conducted by HFG, implementing the recommendations provided here can systematically improve the quality of data being reported and promote the use of that information for program planning and M&E for the RMNCH+A strategy. Each activity within the recommendation that is implemented will move NRHM a step closer to helping the RMNCH+A approach reach its goal of improving maternal and child health outcomes across Haryana.

ANNEX I: DQA PROTOCOL I QUESTIONS

LIST OF ALL QUESTIONS - *For reference only* (Protocol 1 - System's Assessment)

	Component of the M&E System	Check mark indicates reporting system level at which the question is asked			Supporting documentation required?
		M&E Unit	*Aggregation Levels*	*Service Points*	
I - M&E Structure, Functions and Capabilities					
1	There is a documented organizational structure/chart that clearly identifies positions that have data management responsibilities at the M&E Unit.	✓			Yes
2	All staff positions dedicated to M&E and data management systems are filled.	✓			-
3	There is a training plan which includes staff involved in data-collection and reporting at all levels in the reporting process.	✓			Yes
4	All relevant staff have received training on the data management processes and tools.	✓	✓	✓	-
5	A senior staff member (e.g., the Program Manager) is responsible for reviewing the aggregated numbers prior to the submission/release of reports from the M&E Unit.	✓			-
6	There are designated staff responsible for reviewing the quality of data (i.e., accuracy, completeness and timeliness) received from sub-reporting levels (e.g., regions, districts, service points).	✓	✓		-
7	There are designated staff responsible for reviewing aggregated numbers prior to submission to the next level (e.g., to districts, to regional offices, to the central M&E Unit).		✓	✓	-
8	The responsibility for recording the delivery of services on source documents is clearly assigned to the relevant staff.			✓	-
II- Indicator Definitions and Reporting Guidelines					
12	… *how* (e.g., in what specific format) reports are to be submitted.	✓	✓	✓	Yes
13	… *to whom* the reports should be submitted.	✓	✓	✓	Yes
14	… *when* the reports are due.	✓	✓	✓	Yes
15	There is a written policy that states for how long *source documents* and *reporting forms* need to be retained.	✓			Yes

III- Data-collection and Reporting Forms / Tools					
16	The M&E Unit has identified a standard *source document* (e.g., medical record, client intake form, register, etc.) to be used by all service delivery points to record service delivery.	✓			Yes
17	The M&E Unit has identified standard *reporting forms/tools* to be used by all reporting levels.	✓			Yes
18	Clear instructions have been provided by the M&E Unit on how to complete the data collection and reporting forms/tools.	✓	✓	✓	Yes
19	The *source documents* and *reporting forms/tools* specified by the M&E Unit are consistently used by all reporting levels.		✓	✓	-
20	If multiple organizations are implementing activities under the Program/project, they all use the same reporting forms and report according to the same reporting timelines.	✓	✓	✓	-
21	The data collected by the M&E system has sufficient precision to measure the indicator(s) (i.e., relevant data are collected by sex, age, etc. if the indicator specifies disaggregation by these characteristics).	✓			-
22	All *source documents* and *reporting forms* relevant for measuring the indicator(s) are available for auditing purposes (including dated print-outs in case of computerized system).	✓	✓	✓	-
IV- Data Management Processes					
23	The M&E Unit has clearly documented data aggregation, analysis and/or manipulation steps performed at each level of the reporting system.	✓			Yes
24	There is a written procedure to address late, incomplete, inaccurate and missing reports; including following-up with sub-reporting levels on data quality issues.	✓	✓		Yes
25	If data discrepancies have been uncovered in reports from sub-reporting levels, the M&E Unit or the Intermediate Aggregation Levels (e.g., districts or regions) have documented how these inconsistencies have been resolved.	✓	✓		-
26	Feedback is systematically provided to all sub-reporting levels on the quality of their reporting (i.e., accuracy, completeness and timeliness).	✓	✓		-
27	There are quality controls in place for when data from paper-based forms are entered into a computer (e.g., double entry, post-data entry verification, etc).	✓	✓	✓	-
28	For automated (computerized) systems, there is a clearly documented and actively implemented database administration procedure in place. This includes backup/recovery procedures, security admininstration, and user administration.	✓	✓	✓	Yes
29	There is a written back-up procedure for when data entry or data processing is computerized.	✓	✓	✓	Yes
30	*If yes* , the latest date of back-up is appropriate given the frequency of update of the computerized system (e.g., back-ups are weekly or monthly).	✓	✓	✓	-
31	Relevant personal data are maintained according to national or international confidentiality guidelines.	✓	✓	✓	-

IV- Data Management Processes					
The reporting system avoids double counting people …					
32	… *within* each point of service/organization (e.g., a person receiving the same service twice in a reporting period, a person registered as receiving the same service in two different locations, etc).	✓	✓	✓	-
33	… *across* service points/organizations (e.g., a person registered as receiving the same service in two different service points/organizations, etc).	✓	✓	✓	-
34	The reporting system enables the identification and recording of a "drop out", a person "lost to follow-up" and a person who died.	✓	✓	✓	-
35	The M&E Unit can demonstrate that regular supervisory site visits have taken place and that data quality has been reviewed.	✓			Yes

V- Links with National Reporting System					
36	When available, the relevant national forms/tools are used for data-collection and reporting.	✓	✓	✓	Yes
37	When applicable, data are reported through a single channel of the national information systems.	✓	✓	✓	-
38	Reporting deadlines are harmonized with the relevant timelines of the National Program (e.g., cut-off dates for monthly reporting).	✓	✓	✓	-
39	The service sites are identified using ID numbers that follow a national system.	✓	✓	✓	-

BOLD THINKERS DRIVING
REAL-WORLD IMPACT