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Maternal and Newborn Health Focus in Urban Health Management Information Systems

Experience from Pune and Bhubaneswar

2014-2015

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INTRODUCTION

Slum population in India is growing fast (25.1% decadal growth – Census 2011). [1] Its health and nutrition indicators are worse than that of the non-slum urban areas and comparable to that of rural India.[2] Urban slums manifest critical inequalities for maternal and newborn health which are likely to be worse than in rural areas.[3]

The National Urban Health Mission (NUHM), launched in 2013, focuses on improving the health of the urban slum population through a needs-based, city-specific urban health care system that includes a revamped primary care system, targeted outreach, equitable access, and involvement of the community and urban local bodies (ULBs). It has adopted a flexible and accommodative approach for its implementation. For cities where capacity exists with the ULBs (Municipal Corporations and subsidiaries), the states may hand over the management of NUHM to them. For others, the state health department would be the primary implementation agency for NUHM and leverage on the existing National Rural Health Mission (NRHM) and ULB processes. [4]

The NUHM recognizes that lack of disaggregated data collected at local and/or city level impedes efficient planning with focus on the urban poor, and that data availability is a critical need.[4] In response, it has created positions for urban health data officers and monitoring & planning managers, and has suggested the establishment of resource centres or units at state and national levels for urban health data. However, little is documented about current urban data systems and practices. There is a need to characterize existing information systems and practices at state, facility and population levels and to identify gaps and implementation challenges therein for action.

Save the Children's Saving Newborn Lives (SNL) project, in its ongoing third phase, works with the mandate to demonstrate that evidence-based newborn health interventions can be effectively implemented at scale. The project works with and through local champions and partners to ensure that SNL-supported activities complement maternal and newborn health initiatives at the national and global levels. In India, SNL is building upon its experience-to-date to deliver short-term and long-term technical assistance to mobilize political support for maternal and newborn health, inform and influence national policies and guidelines, and document and disseminate program learnings.

In August 2012, a national level consultation was held in Lucknow in which Save the Children, the Government of Uttar Pradesh and UNICEF collaborated,with engagement of various stakeholders, including the private sector, to create a continuum of care approach for maternal and newborn health (MNH) for the urban poor. This consultation identified certain models for MNH, but the evidence was limited. In a subsequent consultation with key stakeholders in May

1 Primary Census Abstract for Slum, 2011. Office of the Registrar General & Census Commissioner, India. Accessed on 2016 Jun 13. Available from: http://www.censusindia.gov.in/2011-Documents/Slum-26-09-13.pdf

2 Kamla Gupta, Fred Arnold, and H. Lhungdim. 2009. Health and Living Conditions in Eight Indian Cities. National Family Health Survey (NFHS-3), India, 2005-06. Mumbai: International Institute for Population Sciences; Calverton, Maryland, USA: ICF Macro.

3 Patel P, Desai K, Modi B, Bansal R. Urban Slums Are New and Important Areas for Inequalities in Maternal and Newborn Health in Many Areas. TAF Prev Med Bull. 2014; 13(3): 217-224. doi:10.5455/pmb.1-1358580387

4 National Urban Health Mission: Framework for Implementation. Ministry of Health and Family Welfare. Government of India. May 2013

2013,urban MNH was identified as a priority area for SNL. The consultation noted that the recent launch of the National Urban Health Mission coupled with rapid urbanization, expectations of increased resources, and a lack of evidence of effective urban models of service delivery to the poor provided SNL's modest investments an opportunity to be a significant catalyst at national and state levels.

SNL identified systems for management of health information as one of the areas needing exploration. Consequently, this Urban Health Management Information Systems (HMIS) work was conceptualized with the following objectives:

1. To describe the prevalent facility and population-based HMIS practices in selected cities
2. To identify potential challenges for implementation of population-based data capture from slums using frontline workers and facility-based data collection for Urban HMIS in the selected cities

Three related sub-studies comprised the overall investigation of urban health management information systems in the selected cities:

1. Exploration of existing system processes ("overview of the environment")
2. Review of current HMIS processes at selected facilities
3. Assessment of potential opportunities and challenges for urban data collection across outreach and facility settings

Study Sites:

The study was carried out in the cities of Pune and Bhubaneswar. The cities were purposively selected for this effort because of the presence of the Health of the Urban Poor project (HUP). Implemented by the Population Foundation of India (PFI)-led consortium, the project focused on the feasibility of key processes laid out in the NUHM Implementation Framework in five cities across India (Delhi, Jaipur, Agra, Bhubaneswar and Pune), and had almost three years of field presence with trained in-position staff and established rapport with the system as well as the community. Bhubaneshwar and Pune were selected because they had the greatest population level coverage amongst project cities, and have different governance structures that might provide insights for formulation of urban HMIS strategies. Profiles of Pune and Bhubaneswar cities have been provided in Annexure 1.

The study activities were centrally coordinated from New Delhi by a joint team of SNL & PFI consisting of the urban health advisor and the monitoring and evaluation advisor from SNL and the monitoring and evaluation officer for the HUP project at PFI.

More information about the HUP project can be found at: http://populationfoundation.in/panel-health-of-the-urban-poor/

METHODS

Sub-study 1: Exploration of existing system processes ("overview of the environment")

In both cities, direct observations in communities and facilities were carried out to better understand service platform availability and to gain an oversight of the data management processes:

- Outreach level: Visits were made to slums during which the team interacted with community representatives/ stakeholders and families with newborns. The following were explored:
    - Organization of Urban Health and Nutrition Days (UHND) including roles and responsibilities of government and HUP
    - Mahila Arogya Samiti (MAS) roles, responsibilities and activities
    - HUP implementation efforts and staff roles and responsibilities, including the Mother-Child Tracking System (MCTS)
- Facility level: Services provided at the key public and some private health facilities (chosen due to proximity to slums/ prominent providers) were assessed through direct observations and interactions with the doctors-in-charge and staff nurses on duty.
    - Pune:
        - Public facilities: Kamala Nehru Hospital; Sassoon Hospital; Rajiv Gandhi Hospital, Yerawada; Dispensary near Rajiv Gandhi Hospital;
        - Private providers: Sonawane Maternity Home (Timber Market Slum); Private Provider (MBBS) at Tadiwala Road Slum;
    - Bhubaneswar:
        - Public facilities: Capital Hospital; Municipal Corporation Hospital in Bhubaneswar
        - Private providers: Sanjita Maternity Care & Ultrasound (located around the corner from Capital Hospital)
- In addition, informal interviews were carried out with a purposive sample of key informants. Key informants were identified by the study team (the central coordinating team as mentioned above, with help from the local HUP staff) and selected based on the informants' knowledge and understanding of service delivery and information systems for the city/state of interest. The key informants were:
    - Pune: Medical Officer of Health (MOH); Deputy MOH; Assistant MOH (Nodal person for NUHM); Executive Director, State Health System Resource Center; Deputy CMO, Pune Municipal Health Corporation (PMC); Ex-Director – Health Services, Maharashtra;
    - Bhubaneswar: JointDirector (Technical), Office of the Mission Director, NHM; Technical Director, State Health System Resource Centre; Chief Municipal Medical Officer (CMMO); MIS Consultant at National Health Mission Office

Interviews explored the following content areas:

- Management structures and information processes in the public health system
- Data flow pathway, including data sources (public and private), key stakeholders and their involvement
- Information currently collected, including key data elements and formats routinely used,
- Data capture mechanisms, including personnel involved, manual/electronic approaches, frequency, logic, accuracy, timeliness, completeness
- Archiving and retrieval practices
- Bi-directional reporting practices (to higher departments and lower facilities),

- Linkages between rural-urban and state-national HMIS
- Use of the HMIS data for planning.
- Existence of separate mechanisms, if any, for the then-newly-launched NUHM

Sub-Study 2: Review of current HMIS at Selected Facilities

In-depth interviews and document reviews were used to better understand the existing systems and processes in each of the two cities.Three facilities were purposively sampled in each city, based on inputs from the key informants interviewed for Sub-Study 1. Facilities were selected in order to capture realities at functional primary, secondary and tertiary levels of care, as well as those adjacent or nearest to slum communities, in each of the two cities. Facilities were also limited to those run by the public health system, either the Municipal Corporation or State authorities (Health Department). Within each facility, key informants were purposively selected to participate based on who would likely have most comprehensive knowledge of the issues to be explored. Table 1 presents the facilities sampled and personnel interviewed.

Table 1: Personal Interviewed for Review of Current HMIS Practices at Facilities

City	Facility	Personnel interviewed
Pune	Amrale Urban Health Post (Primary Care Facility)	Medical Officer-In-Charge
	Rama Bai Ambedkar Maternity Home (Secondary Care Facility)	Medical Officer-In-Charge
	Kamala Nehru Hospital(Tertiary Care Facility)	Medical Superintendent, Head Obstetrician, Head Pediatrician (NICU)
Bhubaneswar	Bhubaneswar Municipal Corporation City Hospital (Secondary Care Facility)	Chief Municipal Medical Officer (CMMO also serving as Head Pediatrician), Pharmacist
	Special Newborn Care Unit (SNCU) at Capital Hospital (Tertiary Care Facility)	SNCU-In-Charge
	Nodal office for MIS at State level	Assistant Director MIS (Directorate of Health Services), State Family Welfare Bureau

The document review aspect of this study focused on review of registries and documentation processes. Relevant data collection formats available in each facility visited were reviewed for content in order to identify what data was routinely collected. These included the registers used for record keeping by the Obstetric and Pediatric Units in the facilities (e.g., outpatient registration, inpatient admission and discharge/ referral sheets, case sheets etc.). In Bhubaneswar, all monthly formats used at state level were also reviewed.
Signed letters of permission were obtained from relevant authorities (Deputy Medical Officer– Health, Pune Municipal Corporation, Pune; Joint Director–Technical at Bhubaneswar, Government of Odisha) to facilitate review of existing data practices and systems in the facilities identified.

Sub-Study 3: Assessment of urban data collection across outreach and facility settings

Based on learnings from Sub-studies 1 and 2, this sub-study was conducted to:

1. Identify challenges and opportunities on how to establish urban HMIS focused on MNH.
2. Adapt the existing data collection system for MNH by introducing new relevant indicators, and pilot it in the HUP sites

Modified formats for data collection and reporting were introduced in both outreach and facility settings. Data were collected prospectively for a six-month period (October 2014- March 2015). Slums were purposively selected in each of the study cities based on existing HUP activities (home visits to pregnant women). Janata Vasahat and Tadiwala Road slums in Pune and 60 slums surrounding Lingaraj Temple in South (Old) Bhubaneswar were included. The facility based HMIS exercise was conducted in Pune only (Kamala Nehru Hospital and Ramabai Ambedkar Hospital) because of delays in buy-in from Bhubaneswar officials. The facilities in Pune were selected based on their role as key public health facility for intra-partum care in the city, and in synthesis of MNH data.

Outreach setting:

Community-level outreach was rolled out through the HUP field teams consisting of link-workers (LWs) (only in Pune; n=8), cluster coordinators (CCs; 5 each in Pune and Bhubaneswar) and project coordinators (PCs; 1 each in Pune and Bhubaneswar). [7]

The HUP MCTS Register: The HUP outreach had already developed a composite family planning and mother-child tracking register to record household details and identify those that would require more attention. The register captured information on birth spacing (current method of family planning, reason for not using or stopping the use of any method), demographic and contact details of pregnant women and under-five children (for identification and tracking) along with cursory information on antenatal services, care during delivery, three post natal visits (within 48 hours, within 7 days, and between 8-42 days), infant feeding and immunization. However, the registers lacked data recording system for MNH leading us to adapt the existing data collection tool.

Development of HMIS tools: After review of HUP-HMIS (manual registers and electronic data entry systems), the register was fortified with a much detailed list of data elements that were in alignment with the existing Reproductive, Maternal, Newborn, Child, and Adolescent Health (RMNCH+A) Strategy of GOI, the India Newborn Action Plan (INAP) dashboard, and Home Based Newborn Care strategy. Thus, the updated register now focused exclusively on an in-depth enquiry of MNH events in pregnant women and newborns, and excluded collecting information from non-pregnant non-lactating women of reproductive age (i.e., information on family planning) and from children beyond 28 days of age (i.e., details of immunization) as was done with the previous HUP MCTS register. The updated registers were printed in English with Marathi translation for Pune and in English only for Bhubaneswar, based on the stated preferences of those to use the registers.

[7]In Pune, the HUP project had an active field staff which consisted of link-workers (LWs), cluster coordinators (CCs) and project coordinators (PCs) [in that order of reporting hierarchy i.e., bottom to top]. The LWs matched the profile of urban ASHA as proposed by NUHM. These were women residents from the study slums with education up to at least standard eighth. The LWs served as the community agents for collecting the data for this activity in Pune.
The HUP Project in Bhubaneswar had leveraged on the presence of LWs working for the NHM Odisha-Bhubaneswar Municipal Corporation- local NGOs collaborative (Public Private Partnership) project called the Urban Slum Health Project (USHP). The HUP project thus had recruited only the project and cluster coordinators that worked through close interaction with these USHP LWs. After the closure of the Urban Slum Health Project (March 2014), these LWs were disbanded. Thus, the community based data for this activity was collected by the HUP Cluster Coordinators (CCs) in Bhubaneswar. The CCs in Bhubaneswar (three females, two males) had formal education till graduation level (profile can be loosely compared to that of ANM/ Anganwadi Supervisor). They resided outside of the study community.

Training of the teams: One-day integrated training workshops, led by the SNL and PFI study staff, were held in each of the study cities (Pune and Bhubaneswar) before the updated registers were introduced. During the workshops, the city teams (PCs, CCs and LWs) were oriented to key MNH concepts with a public health perspective. They were explained about the implication of each of the data element in the updated HMIS and on how to record the relevant information. The workshops were followed by one week of supervised outreach-based data collection for hands-on training; these data were excluded from the study analysis.

Data handling practices:

Pune: Data from the house visits were entered into the manual field registers by the LWs who also prepared a summary data sheet each day. This summary sheet, along with a daily work log, was submitted to the respective supervisor CCs on a daily basis. The CCs visited 10% of the households selected randomly for supportive supervision and quality assurance. Data were entered into the electronic HUP-HMIS by a data entry operator (social worker undertaking post-graduate training in Medical Social Work) while a Management Information System Expert directly observed data entry.

Bhubaneswar: After the closure of the Urban Slum Health Project (March 2014), the LWs had been disbanded. The activities for this sub-study were undertaken by the five HUP CCs remaining in place and not by LWs. The PC provided supportive supervision and quality checks (target: at least 10% of the households). A data entry operator entered the data into the Excel HMIS with guidance from the MIS-cum-documentation officer for HUP.

At the end of the 6-month study period, the teams from both the cities compiled a final data sheet and submitted it to the central team of investigators

Quality Assurance:

a) Internal Quality Assurance:
    - The city study teams had a hierarchical arrangement of supervision for methodological adherence during data collection. The LWs were supervised by the CCs who were in turn supervised by the PCs. Field responsibility was equitably assigned to the Link Workers/ Cluster Coordinators without overlap to ensure accountability.
      The field teams at both the study sites had monthly meetings in which they reviewed the progress with project timelines and data capture, and discussed to address operational issues.

a) External Quality Assurance:
    - Three monitoring visits were carried out to the study sites at almost bimonthly frequency during data collection by the SNL team. The external team interacted with the field staff to understand their experiences and troubleshoot technical and managerial queries while providing feedback on adherence to procedures reviewed during training.
    - Data Validation Audit: A data validation audit was carried out retrospectively in May 2015, after the 6 month data was compiled and submitted by both the city teams in late April 2015. From the compiled data, using the study participants as the sampling frame, a part sample was randomly drawn for validation. Random lists of 157 and 100 participants were generated from Pune and Bhubaneswar respectively, by taking the women ID as the identifier (conservative 50% prevalence for the data elements,

7% precision and 95% confidence level). These women were visited at home by the LWs (Pune) and CCs (Bhubaneswar). To minimize bias, the LWs/CCs were allocated an area different from the one s/he collected the data during the six month experiment. The data verification was carried out through verbal consent and under the direct supervision of the SNL team of investigators. Women were asked to recall information on the data elements in the MCTS register. The initial and the validation data sets were compared. Agreement between categorical data was verified using Cohen's Kappa (K) and between numerical data, using correlation analyses (r/rho, as appropriate). The data elements had good alignment (>0.80).

Consolidation of Experience:

One group discussion was held with all data collectors in each of the study sites (LWs in Pune and CCs in Bhubaneswar) to explore the key challenges faced during the six month implementation of the outreach-based efforts.

Ethics consideration: The respective state governments gave permission for the outreach and facility-based data collection and related processes to be implemented. All data collection was carried through verbal consenting (informed) and confidentiality was maintained.

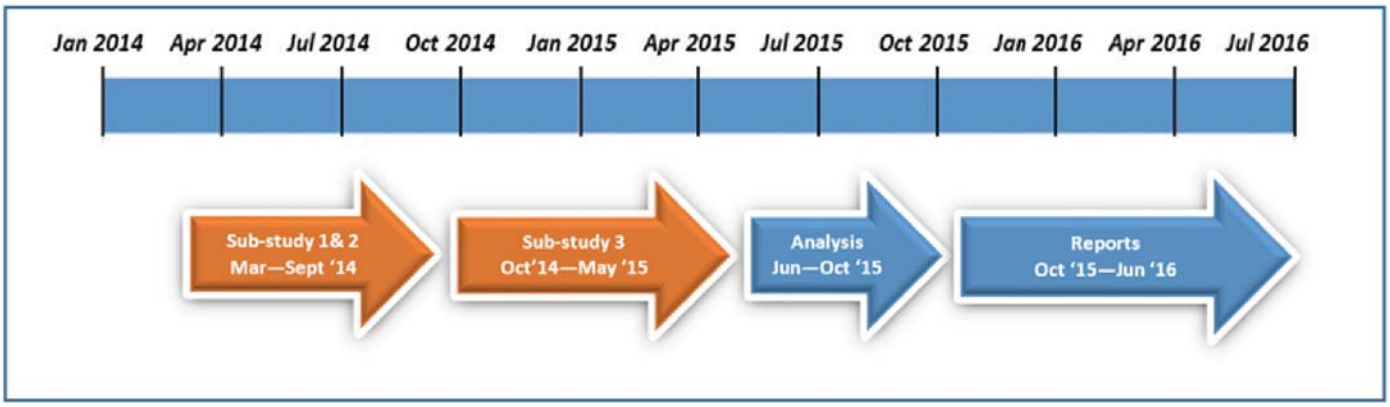
Facility-based Study:

A set of 49 data elements were added to the existing HMIS format used at the facility. This was in alignment with the format used for the outreach exercise. An updated monthly data collection format with a total of 142 data elements was introduced in the two facilities to capture information. The facilities were visited by the project coordinators on the 5th of every month during the six month duration of the outreach exercise to extract data from these formats; the training for this was incorporated in the one-day training for the introduction of the outreach registers.

The data collected on the 49 newly added data elements was reviewed at the end of the 6-month period to identify those for which data could not be captured at all. In addition, logic checks were tested on the entire 142 data elements using the Government of India (GOI) prescribed rules. The GOI (www.nrhm-mis.nic.in) has prescribed a set of 27 rules (logic checks) to examine the internal consistency of HMIS (Annexure 2). Five of these rules (#22-26) pertain to routine vaccination and vaccine stock management; these were not applicable in the study context and hence, were not considered. The remaining 22 logic checks were applied on the facility data collected by the project each month for six consecutive months. The number of months these rules could not be applied (due to data insufficiency) or were violated over the study period was noted and reasons were identified intuitively by the investigator team.

The three sub-studies were conducted over one-and-a-half years in Pune and Bhubaneswar, between March 2014 and October 2015. Activities were scheduled in such a way that the learning from the exploratory components (Sub-Studies 1 and 2) informed the pilot of the outreach and facility-based HMIS systems (Sub-study 3).

Table 1: Timelines for the Study



RESULTS

Sub-Study 1: Exploration of existing system processes ("overview of the environment")

The sub-study identified existing structures that could be lever aged for population and facility-based data collection and use. Additionally, informal interviews with key informants gave an orientation to the overall data related situation and practices for the two selected cities.

The study team made visits to two slums in Pune (Tadiwala Road slum, Shinde Wasti slum) and three slums in Bhubaneswar (two units of Akhandalami Basti slum, and Bharatpur slum). One UHND was observed in Pune while in Bhubaneswar the team visited a family with newborn residing in the slum. It also interacted with MAS members from one slum in Pune and two slums in Bhubaneswar. A total of 10 key informant interviews were carried out, six in Pune and four in Bhubaneswar. Six public sector facilities and three private sector facilities were also visited across the two cities.

(a) Observation at the outreach level

- **Organization of Urban Health and Nutrition Days (UHND) including roles and responsibilities of Government and HUP**

  It was reported through interviews in Pune that the UHNDs had been extremely successful in increasing immunization rates; the UHNDs were utilized mostly for immunization services (including counselling) and ANC and PNC services were not prioritized. The visiting team also found that the LWs had high capacity and confidence regarding their job responsibilities. The LWs explained the entire process of maintaining the data in their daily diaries and the information collected, maintained and followed up for the MCTS. They also emphasized the need to strengthen MCTS data capture for second and third post-natal visit, as the first visit is mostly assured as most deliveries take place in institutions.

- **Mahila Arogya Samiti (MAS) roles: responsibilities and activities**

  It was noted through interviews and interactions with slum dwellers that most of the women in the HUP slums in Pune were involved in at least some form of group activity e.g., MAS and other Self Help Groups (SHGs). These groups were engaged in sharing of information, providing support to the women in the community, and even in income generation activities. The MAS had evolved as instruments for reinforcing the information shared by the CCs and the LWs, and for providing support to the women for care seeking e.g., during transfer to the facilities, microcredit, etc. The MAS had also been actively coordinating with the LWs, Anganwadi workers (AWWs) and with the nearby health centres and aided provider-client rapport building and community mobilization for care seeking (from PMC hospitals). The MAS members at Tadiwala Road slum had taken up a lot of issues with the Ward Coordination Committees (WCC) including those of sanitation and tap-water availability.

- **HUP implementation efforts**

  The HUP, in both Pune and Bhubaneswar, was trying to operationalize five approaches for urban health. These included the community-level outreach (using ASHA-like Link Workers), Mahila Arogya Samiti (MAS), the Urban Health and Nutrition Day (UHND), the City/Ward Coordination Committee (Kalyan Samiti), and the City Health Plan. While the entire outreach team (LW, CCs, PCs) in Pune was directly recruited by the HUP, in Bhubaneswar HUP had leveraged on the presence of LWs working for the NHM Odisha-Bhubaneswar Municipal Corporation- local NGOs collaborative (Public Private Partnership) project called the Urban Slum Health Project (USHP). The HUP project thus had recruited only the project and cluster coordinators that worked through close interaction with these USHP's LWs.

  The HUP community-level outreach was for general counselling on health and WASH with the household as the unit of focus. It also played a facilitator role between urban households and the system. However, it neither had a MNH focus (including post natal and home based newborn care) nor a practice of scheduled home visit for counselling, and identification and referral of sick newborns with danger signs. (As a part of sub-study 3, these elements were added to their existing activities.)

(b) Observations at the Facility level

The facilities visited provided various capacity for newborn and obstetric care. Each maintained some register to record details of those seeking care from these set-ups. While the labour room register appeared to be the most commonly and sincerely maintained record, the respondents said that vital events may be under-reported, especially in the case of stillbirths. The registers were much variegated for format and the quality of entries made therein. One of the critical revelations of the facility reviews in both cities was that newborn related data was seldom recorded and rarely transmitted through the DHIS-2 format; this is a reflection of the overall national system, where newborn data have yet to be incorporated, following the release of INAP. Moreover, data flows only in bottom-to-top direction and downstream stakeholders (care providers, managers) seldom use the data for action.Health care providers do not have access to information beyond their health facility, and as such are unable to compare their performance to that of other health facilities. The data elements on which data is collected mostly focus on processes and little information is available on the quality of services provided.

(c) Insights from the Informal Interviews with Stakeholders

The review of the overall HMIS and MCTS system in the two cities showed existing mechanisms for data collection, compilation, analysis and feedback in both the cities. Progress of the urban areas was reported by the municipal bodies using the national system, District Health Information

System (DHIS) – 2.[8] The urban facilities contributing to the database used NRHM instruments and in some cases self-developed ones. Consequently, the urban processes tried to generate information on the data elements used by the NRHM dashboard. There were problems in the frequency, content, quality and format of the data submitted by Corporation-managed facilities as well as the private sector; the primary-secondary-tertiary level hierarchies set up within the public sector do not align with the organization of the private sector leading to mismatch in the level of data aggregation.

8 DHIS-2 is a Java-based online web-application called with customization to the state context; it supports the capture of data linked to any level in an organisational hierarchy with any data collection frequency and a high degree of customization at both the input and output side. It comes with easy-to-use analytics through tailored dashboards, charts, pivot tables and maps.

The HMIS characteristics in Pune and Bhubaneswar have been summarized in the table below

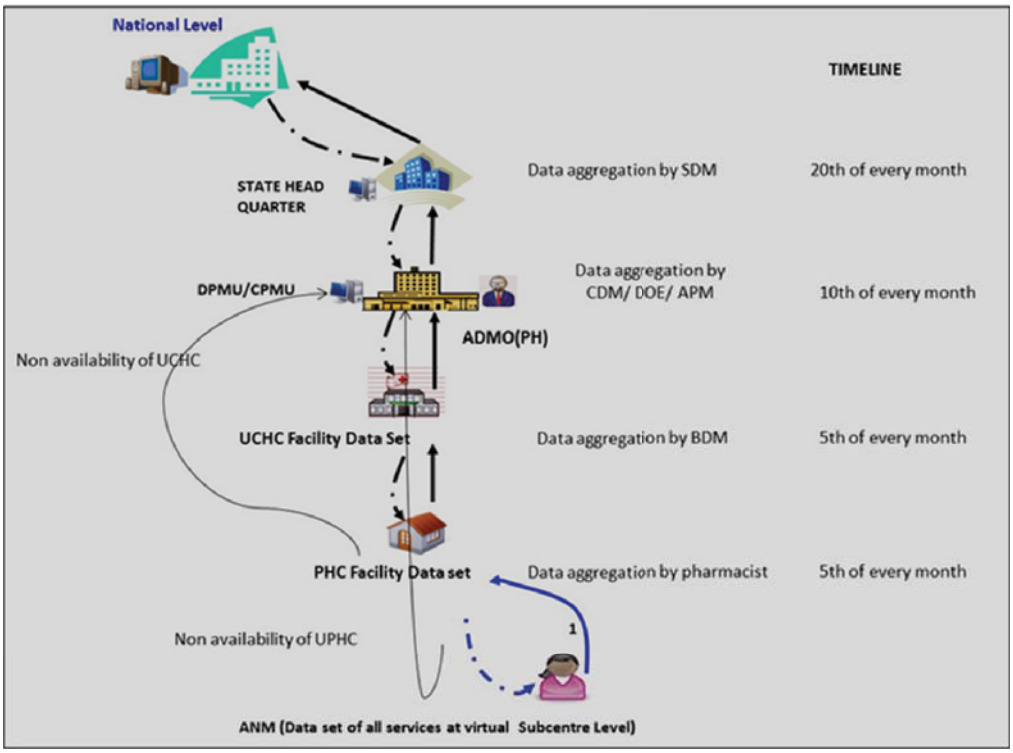
Table 2: HMIS Characteristics in the Study Cities

Domain	Pune	Bhubaneswar
Mechanism	• No customized reporting system for NUHM in Maharashtra. • DHIS-2 modified by Maharashtra for collecting NRHM data utilized for urban data.	• No customized HMIS for urban areas. • DHIS-2 platform as used by the state utilized for urban data.
Data Sources	• 2 tertiary care facilities, 16 maternity homes and 57 PHCs/dispensaries under Pune Municipal Corporation. • 35 Dispensaries and 17 Maternity Hospitals reported to the DHIS-2 system. These included Corporation and private owned facilities. • 450 private providers reporting into DHIS2, via 29 family welfare centers • Maharashtra state also captured information through MCTS.	• Sources of data included DHIS-2, MCTS, surveys, and those emanating from supportive supervision activities. • 170 facilities were registered with NHM from Bhubaneswar of which 50 were reporting data on monthly basis • The facilities owned by Bhubaneswar City Municipal Corporation reported information only about vital statistics (Birth & Death registrations) to the state level system. • Informants noted that there were several private hospitals in Bhubaneswar that regularly reported on various data elements to the government (NHM) HMIS.
Formats used for data collection	• Instruments (registers and forms) for urban data capture were same as that for the rural areas. • Municipal corporation-run facilities sent their report to the State Family Welfare Bureau in the DHIS-2 formats. • The private hospitals used the DHIS-2 format meant for District Hospitals (DH).	• Instruments (registers and forms) for urban data capture were same as that for the rural areas. • The private hospitals used the DHIS-2 format meant for District Hospitals (DH).

Domain	Pune	Bhubaneswar
Key data elements captured	• As prescribed by the NHM,with some more data elements included in the Maharashtra state DHIS-2 platform as per the state's needs.	• Data elements on the DHIS-2 platform as required for submission to the National HMIS
Data management practices	• (No information on data management plan was retrieved by the study)	• Tentative data management plan designed, not operationalized as of visit *(see Fig. 1 below).*
a) Form: manual or electronic?	• Both	• Both
b) Frequency of data reporting	• Inconsistent; monthly reporting frequencyfor private facilities	• Inconsistent; monthly reporting frequencyfor private facilities
c) Timeliness	• Inconsistent	• Inconsistent
d) Completeness	• Inconsistent	• Inconsistent
e) Reporting practices	• Inconsistent	• Inconsistent
f) Quality checks	• Collected data was validated in both the cities (by the M&E cell in Bhubaneswar and SFWB in Pune) by checking for outliers. • No systematic process of generating validation error report or outlier report in both the cities.	
Linkages with state and national HMIS	• Maharashtra's DHIS-2 was linked to the national NHM HMIS. • information was routinely available at http://maha-arogya.gov.in/.	• Odisha's DHIS-2 was linked to national NHM HMIS.
Use of HMIS data for planning	• Information collected through MCTS was used by ANMs for planning their outreach services. • Data for planning, monitoring, and evaluation was sourced from the State Family Welfare Bureau (SFWB).	• (No information on use of HMIS reports for planning was retrieved by the study)
Stakeholders on the data flow pathway	• All providers in the public health system at the system-client interfaces captured some information. However, not all information was transmitted beyond the documentation register. • The SFWB acted as the data repository and helped in integrating the individual data sources. • Participation of the private sector was apparently ad-hoc and without a binding mandate (for data submission, access and use). Data accountability framework was loose for the public health personnel and almost inexistent for the private sector. Issues related to data ownership were not explored.	• The Odisha State Monitoring and Evaluation Cell served as the central authority for managing data generated from the public health system (PHCs, CHCs, FRUs and District Hospitals) and from accredited private owned facilities.

Concrete data management practices had not evolved for both the cities and for all practical purposes, NRHM 'good practices' were being emulated. There was a sense amongst the decision makers interviewed in both the cities of a need to have an HMIS system adapted to urban areas while still being aligned to the NRHM system. It should capture a) the situation of health related indicators demarcated by some geographic or socioeconomic categories (such as neighbourhoods or slum/ non-slum); and b) NUHM processes at outreachand facility levels (service coverage, quality, monitoring and supervision situation). Those interviewed felt it would not only help in meeting the requirements of NUHM, but also would capture the delivery and use of health services in urban areas through disaggregated urban data, provide information on equity and the coverage of poor and vulnerable groups, and also help improve the accuracy of reporting, attribution of results, and avoid data duplication due to double-counting. There was unanimity among those interviewed that improved information systems were important for measuring and improving the quality and coverage of health services. Similarly, a need for reliable, accurate and timely health information was felt strongly for operational and strategic decision-making.

Figure 2: Schematic of Odisha State NUHM HMIS Data Management Plan (Source: Odisha DPM)



Sub Study 2:Review of current HMIS processes at selected facilities

The observations for sub-study 2 have been summarized in Table 3.

Table 3: Review of Data Processes at Selected Facilities in Pune and Bhubaneswar

Domain	**PUNE**	
	Kamala Nehru Hospital	**Ramabai Ambedkar Hospital**
Tier of the Health Care Facility	Tertiary	Secondary
Nature of Service/ Capacity	A major delivery point in Pune (about 2500-3000 babies delivered annually) with a functional Newborn Intensive Care Unit (NICU)	The maternity hospital closest to the HUP catchment area. Reported rate of about 20 deliveries per month. ANMs at the Hospital provide outreach services and
Management	Pune Municipal Corporation	Pune Municipal Corporation
HMIS type (web-based or paper-based)	**Paper based:** Had its own record keeping system; captured information in the form of individual case records (manually entered) using semi-structured formats. NICU captured details of perinatal events, the newborns clinical course in the NICU and the management protocol followed. Data from the NICU was not transmitted anywhere nor put to any use.	**Both Paper and Web-based:** Datacollected on a variety of registers. The hospital also kept individual level records in MCTS system. ANMs collected data related to immunization services. They also compiled immunization-related data from private facilities on monthly basis. All data reports were collated and sent to the state office in DHIS-2 formats. Inevitably, some information remained restricted to the hospital records and was never used.

		BHUBANESHWAR	
	PMC dispensary	**City Hospital**	**SNCU at Capital Hospital**
	Primary	Tertiary	Tertiary
	Antenatal care and immunization services.	108-bedded hospital; mostly provided obstetric, postnatal and immunization services. It was the only facility for delivery in Bhubaneswar City apart from the Capital Hospital. About 250-300 deliveries were conducted every month in this hospital. The hospital did not provide sick newborn care services.	16 beds for sick newborns and four step-down beds where mother & babies were kept together for two days before final discharge
	Pune Municipal Corporation	Managed by BMC in a Public-Private Partnership mode.	Health Department, Odisha
	Paper-based: The staff nurse in the dispensary maintained data records in different registers through manual entry. Dispensary reports were submitted to the government State Family Welfare Bureau in DHIS-2 format on monthly basis.	**Paper-based:** Separate records for out-patient department (registration records), in-patient department (individual case files for those admitted) and labour room (a labour room register). Information on maternal and newborn morbidities, referrals and cause of death was not recorded. Information was seldom available in digital/ soft copy form. The hospital also had a MIS for collecting vital statistics. Birth, Death & Immunization related information was reported to the City Health Officer, BMC.	**Paper based:** 8 page Admission sheet; 4 page Neonatal Case Record Sheet; Investigation Sheet; Continuation Sheet; 2 page Mother Information Sheet; Follow-up papers; 4 page discharge sheet; 4 page community follow-up card; and a Monitoring Sheet.

Sub-study 3: Assessment of urban data collection across outreach and facility settings

a) Findings from Outreach-based Efforts

In total, 928 women [Pune: 601 (585 pregnant women, 16 women in puerperium), Bhubaneswar: 327 (309 pregnant women, 18 women in puerperium)] were captured in the outreach registers between October 2014 to March 2015. Data validation was done in April and May 2015. We observed that of the 142 data elements on which data collection was attempted during the population-based study, chances of a blank cell were less likely (<50%) for socio-demography, antenatal services, and perinatal events and more likely (60-100%) for post natal data elements (clinical check-ups, home visits, post natal counselling on danger signs, immunization coverage, contraception). This may reflect experience with service delivery, as those activities occurring before the enhanced register were introduced were more likely to be completed.

The following challenges were identified for the operationalization of a robust population-based HMIS in the study sites viz.,

Contact with Populations: Owing to the floating nature of the study population, it was very difficult for the LWs to enroll and follow up with every household. Pregnant women often went to their villages for delivery and immediate care thereafter. Additionally, a substantial number of the participants were working and were out of the household for most part of the day. Due to prevalence of nuclear families, non-response was high as both husband and wife would have to be out of home for work. Many households in the slums were difficult to access (open drains and garbage dumps) which could compromise the efficiency of household visits for service deliveryand data collection. Additionally, in the Pune study slums, there was a socio-cultural norm of not letting anybody outside the household to see the newborn, which made data enumeration during the postpartum period more difficult. Some families were reluctant to provide information and frequently enquired about why the information was being collected. This was reasonable as in a programmatic setting, data would be collected as a part of service delivery. This required the LWs to use their skills at communication and social engagement to tap data from such families, and may also explain the challenges in collecting some of the data elements in the register.

Recording of Data and Services Used: In Pune, date of Last Menstrual Period (LMP) was recorded tentatively due to difficulty with recall and the Expected Date of Delivery (EDD) was generated from that, making it of little value to follow-up with the families; in LMICs, especially in settings with low literacy and antenatal care, recall and accuracy of LMP is often poor.[9]

9 Moxon SG, Ruysen H, Kerber KJ, Amouzou A, Fournier S, Grove J, et al. Count every newborn; a measurement improvement roadmap for coverage data. BMC Pregnancy Childbirth. 2015;15 Suppl 2:S8. doi: 10.1186/1471-2393-15-S2-S8.

In both Pune and Bhubaneswar, only first two PNC checkups were documented in the data. This is probably more of a service issue than that of data capture. The majority of the deliveries were institutional and the mother continued to be at the facility for at least 48 hours after delivery; the first two PNC visits were more likely to be conducted during the initial postnatal period. Outreach PNC visits were not done. Self-initiated care seeking rate by mothers was low for self/ neonate unless there was a symptom of serious concern. During post natal facility visits for the newborn, 1st day and 3rd day information were usually filled according to the hospital card; the 7th and 42nd day facility visits were often not made by the mother. In addition, newborn data such as date of birth, colostrum feeding and visits for newborn check-ups were not available for those mothers not having institutional deliveries in urban areas, as the mothers often travelled to their villages a month or two before the delivery and missed out on maintaining the records (like discharge cards and immunization cards) created in the villages at the time of the delivery.Cards / data points weresometimes not available for verification/ triangulation. Some werenever recorded, or recorded on multiple cards which were inconsistently retained when women travelled from one place to another, as some may travel to home villages a month or two before delivery. There was no record of Vitamin K injection at birth.

Matching of population-based data with the facility data was difficult because of availability of multiple private health care providers in close proximity, frequent change in choice of care provider, and inconsistent retention of health documents (ANC cards, prescriptions, etc).

b) Findings from Facility Data (Pune only)

For the 49 data elements added onto the facility HMIS register and on which data collection was attempted for six months, we observed that information was entirely missed for 13 data elements at Kamala Nehru Hospital and for 25 data elements at Ramabai Ambedkar Maternity Home (Annexure 4).

We applied 22 of the 27 internal consistency rules set by GOI for HMIS to the facility data received for six consecutive months (study duration) (Table 4).

Table 4: Performance of Facility based HMIS data from Pune against Logic Rules for Validation

Rule No.	RULE	KAMALA NEHRU HOSPITAL		RAMABAI AMBEDKAR HOSPITAL	
		Over 6 months follow-up, no. of months the rule:			
		Could not be applied	Was violated	Could not be applied	Was violated
1	Live Births <= Total Deliveries	0	1	0	0
2	Number of new born breastfed <=Live births	0	0	0	0
6	Number registered within first trimester cannot be more than "Total number of pregnant women registered"	0	0	0	0
9	Newborns weighed at Birth < = "Live Birth Male + Live Birth female + Still Births"	0	0	0	0
10	Number of newborns having weight less than 2.5 kgs <= Newborns weighed at Birth	0	0	1	0
11	Blood Transfusion < = "Number of cases of pregnant women with Obstetric Complications and attended at facility"	1	0	5	0
12	Women receiving post partum checkups within 48 hours after delivery< (live birth male + live birth female+ still birth)	0	2	0	6
17	Number of women registered under JSY < Total number of women registered for ANC	0	0	1	0
21	Number of Infants who received OPV 0 (Birth Dose) <= Total Number of deliveries	0	0	0	2
27	Number of infant deaths under 24 hours <= Number of live births	0	0	0	0
3	Number receiving postpartum check up within 48 hours after delivery <= Total Pregnancy outcome	0	0	6	N/A
4	Number receiving postpartum check up between 48 hours and 14 days <= Total Pregnancy outcome	0	0	6	N/A
5	If Ambulance service available is Zero then it cannot be used for transporting patients	0	5	6	N/A
7	Number discharged under 48 hours < =Deliveries at Facility	0	0	6	N/A
8	Pregnancy outcome (Live births+ still births+ Abortion) should be equal to or greater than total deliveries (in case of twins)	0	0	6	N/A
18	Number of newborns visited within 24 hours of Home delivery <= Total of Home deliveries	0	0	6	N/A
19	Number of Caesarean deliveries performed in Private facilities <= Number of deliveries at accredited Private institutions	3	0	6	N/A
20	Total MTPs conducted at Public and Private Institutions <= Spontaneous and induced abortions	0	3	6	N/A
13	Total number of children aged between 9 and 11 months who have been fully immunized (BCG + DPT123 + OPV123 + Measles) during the month MALE + FEMALE <= Measles	6	N/A	6	N/A
14	Children (< 19 years) admitted should be >= Number admitted with Respiratory Infections	6	N/A	6	N/A
15	Number having Hb < 7 mg < = Total Number of tests for Hb	6	N/A	6	N/A
16	VDRL Female with ANC < = New ANC registrations	6	N/A	6	N/A

It was observed that data capture was comparatively more effective at Kamala Nehru Hospital as compared to Ramabai Ambedkar Maternity Home. Consequently, many of the logic rules could be tested for the former unlike the latter. It is probably indicative of increasing inadequacies in capacity as one moves down the tier of health facilities. It was also observed that HMIS data was most consistent for information on birth outcomes and weak on service related data elements (e.g., birth weight, post natal check-ups, ambulance services, etc). Thus, the facility based HMIS could be used to enrich knowledge on vital statistics and program outcome/ impact but could be of limited utility for service monitoring. Capture of any data that involved sourcing from private sector was a critical difficulty. The data gap was more obvious for sensitive information like abortions and medical termination of pregnancies (MTPs), and services like caesarean section.

LIMITATIONS OF THE STUDY:

This study adopted an exploratory approach to address its objectives, with substantial learning on-the-go. An overall limitation, affecting all sub-studies, is that Maternal and Newborn Health (newborn health, in particular) are not well-captured in the overall HMIS system at present. Therefore, information gathered on data and related experiences, whether rural or urban, are limited.

Sub-studies 1 & 2:

1. This study did not look at whether the issues faced in urban settings were similar to or different from those in rural areas. As the key officials interviewed and processes examined were in fact much attuned to NRHM good practices, this differentiation was all the more inconspicuous.

Sub-study 3:

1. Leveraging on HUP activities could have led to biased study learnings. The HUP staff had established community rapport built over the years. While Pune site had ASHA-like workers (LWs) for data collection, Bhubaneswar data was collected by personnel (CCs) with higher capacity than what is envisaged for urban ASHA (LW). In addition, the matured systems and practices of supportive supervision and inherent quality control habits (thanks to the project mode of operation) could have led to better data capture than might not be expected when attempted in a non-project situation.
2. The personnel involved in outreach data collection for this sub-study were trained in using the updated registers. They had not been trained in home-based newborn care (HBNC).
3. The community members' experience with workers asking questions in the absence of service delivery was not explored.
4. The outreach data validation audit was not adequately powered to capture differences between the study and validation data sets. Moreover, recall and response bias cannot be ruled out. With additional time between event and data verification (versus study data collection), women's recall could be less. Depending on how questions were asked, women might have felt it important to report receiving care even if they would have not received any (social desirability bias). In other words, replicability in real life situation for data capture is likely to be weaker, at least initially, once the mandate is transferred from the project mode to the NUHM mode unless strong structures of recruitment, training (including training in

HBNC), monitoring and supervision are put in place.

5. Interpretation of the results for the facility component of sub-study 3 was done intuitively by the study team given its background with implementation of the activities. The reasons provided should be considered as proposed hypothesis for further exploration. Also, we did not explore the extent to which the addition of data elements adds to the work burden of existing health personnel.
6. The study could not explore the care seeking linkages between the community and the facility. This has important implications for planning for a referral mechanism and tracking.

RECOMMENDATIONS

a. Health Systems level:

i. *Adaptation of DHIS-2 platform to urban context while retaining alignment with NRHM:* In both Pune & Bhubaneswar, various formats and practices are prevalent in both the cities at each level of care. Thus, there is need to achieve data integration across the continuum of information flow. Given the current use of DHIS-2 in urban areas, the results point to a need to fortify the existing DHIS-2 platform with the data elements relevant to MNH and strengthen the data management protocols and use of data critical for MNH services e.g., community-facility-community referrals. This fortification should align with NRHM data protocols so that data integration and comparison is possible.

ii. The reinforcement, in *alignment with national strategies* e.g., INAP for monitoring of newborn health, would benefit both the rural and the urban services. This may require further work at national level to fully define the indicators proposed in INAP (including sources of numerators and denominators) and frequency of reporting.

iii. *Identification of Data-needs*:It is difficult to evolve an efficient HMIS mechanism unless a decision-making process is put in place to identify what data should be prioritized and at what level. The process should also identify the potential sources for capturing such information.It must also decide on how the collected information could be best used for perceivable benefit at facility and outreach levels, as well as municipality, state and national levels. It is important to be able to not only compare data from urban and rural settings, but to be able to look at these data at a common aggregate level for planning at state level.

iv. *Data utilization*: Mechanisms need to be put in place so that timely feedback on data trends and action points is provided to the facilities / data contributors downstream and decision-makers upstream (municipalities, state and national stakeholders).

b. Facility level:

i. *Within-facility data consolidation*: Different instruments and formats are used by the various departments within the same facility. There is frequent non-alignment and complementarity between these formats. Thus, there is a need to structure and standardize the instruments and move towards an electronically synchronized database so that data efficiency improves. There is also a need to understand what the current documentation burden is, and to prioritize

the addition of data elements based on what will be most important for decision-making.

ii. *Identify and Address Needs for Capacity strengthening at various levels:* Quality of data deteriorates as one moves from top to bottom tier facilities, and is probably indicative of poorer data management capacity at the bottom, as well as limited use of data for decision-making at facilities. This needs further exploration for identification of appropriate solutions.

c. Outreach level:

i. *Operational innovations to improve data capture*: Poor urban communities offer challenges to timely and quality data collection (due to migration, locked houses, poor accessibility, etc). These are practical challenges and need managerial innovations in system approaches, and intelligent maneuvering and commitment at frontline worker and supervisor levels. Frontline workers should be trained in communication and social engagement skills with due attention to the context in which they are expected to perform.

ii. *Leveraging on Community Processes*: Once data needs for planning and decision-making are identified, there is an opportunity to leverage community-based groups for contributory participation in strengthening HMIS practices. It seems needful to engage community-based organizations (MAS, etc) for facilitation of community-based data collection activities. This machinery can also help in social accountability for ensuring worker performance and appropriate remuneration. The UHNDs can be utilized as opportunities to triangulate any data gaps/ validate information. However, the health system's need for data to design and manage programs should be balanced with individual, family and community rights to privacy and minimization of potential harms emerging from inappropriate access to individual information – particularly since these populations may be among the most vulnerable / most marginalized.

Annexure 1: Profile of Study Cities

Pune

[Demography](#) (Census 2011)
Population: 3.1m
[9th most populous in India]
Area: 479 km^2 [2nd in Maharashtra]
Population density: 6.5K/ km^2
Sex ratio: 948
Literacy: 89.6%

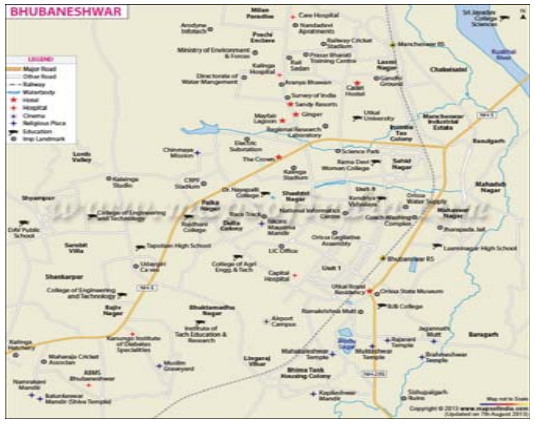
[Slums in Pune](#)
564 slums (357 notified)
Population: 33% of Pune
Density: 6 times of non-slum area
Population Growth Rate: 1.5 times of Pune city

Medical Units with PMC

1 General Hospital
1 Infections Disease hospital
15 Maternity Homes
44 dispensaries
2 mobile dispensary
2 polyclinics
1 central immunization centre
7 ICDS projects
21 urban family welfare centres

531 Regd. **Private Facilities**

Bhubaneswar



[Demography](#) (Census 2011)
Population: 0.9m
Area: 422 km^2
Population density: 2.1K/ km^2
Sex ratio: 892
Literacy: 91.7%
Annual Population Growth Rate: 3.0%

[Slums in Bhubaneswar](#)
377 slums (99 notified)
Population: 36% of Bhubaneswar
Density: 6.2K/ km^2
Annual Population Growth Rate: 7.7%

Medical Units with BMC

1 Tertiary Hospital
2 Referral Hospital (UCHC)
15 Urban PHC
3 Dispensaries
102 AWC
18 Balwadis
596 MAS
106 ASHA

Annexure 2: List of Validation Rules for HMIS Monthly Data (Source:www.nrhm-mis.nic.in)	
Sl.	Data Validation Rule
1	Live Births <= Total Deliveries
2	Number of new born breastfed <=Live births
3	Number receiving postpartum check-up within 48 hours after delivery <= Total Pregnancy outcome
4	Number receiving postpartum check-up between 48 hours and 14 days <= Total Pregnancy outcome
5	If Ambulance service available is Zero then it cannot be used for transporting patients
6	Number registered within first trimester cannot be more than "Total number of pregnant women registered"
7	Number discharged under 48 hours < =Deliveries at Facility
8	Pregnancy outcome (Live births+ still births+ Abortion) should be equal to or greater than total deliveries (in case of twins)
9	Newborns weighed at Birth < = "Live Birth Male + Live Birth female + Still Births"
10	Number of newborns having weight less than 2.5 kgs <= Newborns weighed at Birth
11	Blood Transfusion < = "Number of cases of pregnant women with Obstetric Complications and attended at facility"
12	Women receiving post-partum checkups within 48 hours after delivery< (live birth male + live birth female+ still birth)
13	Total number of children aged between 9 and 11 months who have been fully immunized (BCG + DPT123 + OPV123 + Measles) during the month MALE + FEMALE <= Measles
14	Children (< 19 years) admitted should be >= Number admitted with Respiratory Infections
15	Number having Hb < 7 mg < = Total Number of tests for Hb
16	VDRL Female with ANC < = New ANC registrations
17	Number of women registered under JSY < Total number of women registered for ANC
18	Number of newborns visited within 24 hours of Home delivery <= Total of Home deliveries
19	Number of Caesarean deliveries performed in Private facilities <= Number of deliveries at accredited Private institutions
20	Total MTPs conducted at Public and Private Institutions <= Spontaneous and induced abortions
21	Number of Infants who received OPV 0 (Birth Dose) <= Total Number of deliveries
22	Number of Immunization sessions held where ASHA was present <= Number of Immunization sessions held
23	(Balance Stock + Stock Received) - (Unusable Stock+ Stock Distributed) = Total Stock
24	Unusable Stock <= Total Stock
25	Unusable Stock <= (Balance Stock + Stock Received) - (Unusable)
26	Unusable Stock <=(Balance Stock + Stock Received) - (Unusable)
27	Number of infant deaths under 24 hours <= Number of live births

Annexure 3: Data Performance for the MNH indicators added to facility HIMS

Sl. No.	MNH Indicators added to the existing facility HMIS	KAMALA NEHRU HOSPITAL						RAMABAI AMBEDKAR MATERNITY HOME					
1	Total number of new pregnant women below 19 years registered for ANC	Nil	-	-	-	-	-	-	-	-	-	-	-
2	Number of pregnant women received 1 ANC check up	391	403	430	393	384	421	48	49	47	68	56	54
3	Number of pregnant women received 2 ANC check ups	456	392	364	338	340	273	36	30	38	39	34	65
4	Number of pregnant women received 4 ANC check ups	1270	1289	298	313	573	593	20	15	66	14	26	20
5	Total number of pregnant women given 200 IFA tablets (Therapeutic)	6	7	10	18	12	35	70	50	50	20	30	20
6	Number of fully protected ANC (3 ANC Visits+ TT2/TT Booster + IFA 100/200) (No. of Pregnant women who have received 3 ANC checkups and given TT@ or TT booster as well as IFA (100 or 200)	428	538	340	313	450	393	22	20	54	50	50	40
7	Hypertensive pregnant women managed at UPHC in the City out of total pregnant women diagnosed with hypertension in the Slum/Ward/City (%)	-	-	-	-	-	-	5	-	-	-	-	-
8	Pregnant women who improved from severe to moderate anemia out of total severe anemia cases line listed (%)	181	96	90	96	154	-	-	-	-	-	-	-
9	Total number of high risk mothers (By all causes)	306	165	102	168	-	117	5	4	2	2	9	4
10	Pregnant women who delivered before 37 weeks (%)	1	1	Nil	3	2	318	3	2	-	-	-	-
11	Pregnant women who delivered before 37 weeks and received ante-tal corticosteroids (%)	4	Nil	Nil	Nil	Nil	3	3	2	-	-	-	-
12	Pregnant women who received uterotonic drug post-delivery as part of Active Management of the Third Stage of Labour (AMTSL) (%)	Nil	Nil	Nil	Nil	Nil	Nil	14	-	-	-	-	-
13	Number discharged between 48 hours and 72 hours of delivery (GOI New Definition)	193	116	140	102	105	135	14	12	10	8	17	15
14	DPs using Safe Birth Checklist (%)	-	Nil	Nil	Nil	Nil	Nil	-	-	-	-	-	-
15	ANMs/SNs/LHVs trained in SBA (%)	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
16	Identified L3 facilities without full triad of paediatrician, anaesthetist / LSAS trained doctor, and OBGYN/EmOC trained doctor (%)	106	88	83	72	81	104	-	-	-	-	-	-
17	L3 facilities not providing CEmoC services (%)	-	Nil	Nil	Nil	Nil	Nil	-	-	-	-	-	-
18	Women with antenatal and postnatal complications managed at L3 facilities out of the total reported (%)	40	31	31	21	37	22	1	-	-	-	-	-
19	Functional Ambulances with the Urban Health Facility in the City/district *covering more than 100 kms per day (average of the last two quarters) (%)	3	Nil	Nil	Nil	Nil	Nil		-	-	-	-	-
20	No. of Mothers provided free transport				-								
21	Home to Institute	Nil	Nil	Nil	Nil	Nil	Nil		-	-	-	-	-
22	Institute to Institute	40	31	31	21	37	22	6	6	2	2	9	4
23	Drop back to Home	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
24	Total No. of times transport services were provided to mothers		31	31	21	37	22	-	-	-	-	9	-
25	C-section out of total deliveries at L3 levels (%)	-	-	-	-	-	-	"	"	"	"	"	"
26	Mothers paid JSY Incentive against Home Deliveries by SC/ST/Others	Nil	Nil	Nil	Nil	Nil	Nil	-	-	-	-	-	-
27	New Born weight less than 2.5kg against New born weighed (It will be helpful to record information for other weight categories viz., below 1500gms, below 900 gms, etc.)	<1500: 46 <900: Nil	<1500: 73 <900: Nil	<1500:67 <900: Nil	63	54	104	3	2	-	1	1	2
28	Total no. of sick neonates admitted in the facility	101	181	87	98	79	183	-	-	-	-	-	-
29	No. of sick neonates provided free transport	-			-	-	2	-	-	-	-	-	-
30	Home to Institute	Nil	Nil	Nil	Nil	Nil	Nil	-	-	-	-	-	-
31	Institute to Institute	Nil	Nil	Nil	21	14	2	3	-	2	1	1	2
32	Drop back to Home	Nil	Nil	Nil	Nil	Nil	Nil	-	-	-	-	-	-
33	Total No. of times transport services were provided to sick neonates	Nil	Nil	Nil	Nil	Nil	Nil	3	-	-	-	-	-
34	L3 delivery points that have at least two ANMs/ SN trained in infant and young child feeding practices/ IMNCI deputed in PNC ward (%)	-	-	-	-	-	-	-	-	-	-	-	-
35	DPs with functional Newborn Care Corner (%)	-	-	-	-	-	-	-	-	-	-	-	-
36	DPs with NSSK trained staff (%)	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
37	Asphyxiated newborns successfully resuscitated (%)	7	8	-	-	-	-	1	Nil	Nil	Nil	Nil	Nil
38	Trained NSSK staff who provided newborn resuscitation services (%)	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
39	ANMs oriented in Gentamicin use (%)	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
40	Young infants (0-2 months) diagnosed with sepsis by the ANM and given pre-referral dose of injection Gentamicin and syrup Amoxicillin (%)	-	-	-	-	-	-	-	-	-	-	-	-
41	Newborn admission due to asphyxia out of total inborn admissions at SNCU (and/or NICU) (%)	7	8	-	-	-	-	-	-	-	-	-	-
42	Total SNCUs (and/or NICU) with FBNC trained and designated Medical Officer (%)	-	-	-	-	-	-	-	-	-	-	-	-
43	Total SNCUs (and/or NICU) with trained and designated Staff Nurses (%)	-	-	-	-	-	-	-	-	-	-	-	-
44	SNCU (and/or NICU) admissions due to asphyxia (%)	7	8	-	-	-	-	-	-	-	-	-	-
45	Ratio of inborn to outborn referrals to SNCUs(and/or NICU)	-	-	-	-	-	-	-	-	-	-	-	-
46	Ratio of male to female infants in outborn admissions	-	-	-	-	-	-	-	-	-	-	-	-
47	Mortality rate (asphyxia and sepsis)at SNCU (and/or NICU) in newborns weighing 2.5 kg or more	-	6	-	-	-	-	-	-	-	-	-	-
48	Mortality rate in young infants (0-2 months) treated with antibiotics	-	45	-	-	-	-	-	-	-	-	-	-
49	PPH cases managed at L2 facility out of total complications reported in postpartum period (%)	8	5	-	-	-	-	Nil	Nil	Nil	Nil	Nil	Nil

NOTES

NOTES

Save the Children®

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