Best Practices - Facility Based Newborn Care Data Base

Child health cell, Madhya Pradesh
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1. Title:
Using data for action: Facility based newborn care database, Madhya Pradesh

2. State:
Madhya Pradesh

3. Problem Statement
First SNCU was developed in West Bengal in Purulia but somehow state lagged behind in scaling up. State of Madhya Pradesh has taken up facility based newborn care as priority and developed its first SNCU in 2007 and universal coverage of units across the districts was achieved in 2013. It was an achievement for the state that SNCUs were established with a rapid pace but state lacked strong data management and monitoring system. SNCUs scale up was progressive but the state was dependent on districts for monthly reports of SNCUs. For districts, developing a monthly report for SNCU was too difficult as they had to count cases manually and due to complexity of formats and time required for preparing the report, it was difficult for districts to comply with the timeline of reporting. Analyzing huge data generated from SNCUs, was a herculean task for the state child-health team. With manual reports, chances of errors were very common. State was struggling for availability of quality real time data in absence of strong data management system.

Approximately 100,000 newborns are being treated in SNCUs every year, while annual investment on SNCU is more than 50 million USD. Government of India has made huge investments to reduce neonatal deaths by setting up of Special Newborn Care Units (SNCUs) at district level, with more than 500 such units made functional across the country. These units are meant to provide specialized care to sick and low birth weight newborns. On one hand establishment of SNCUs has contributed in reduction of stagnant neonatal mortality, on other hand, it has also exposed the inadequacies of data systems to monitor quality of care in SNCUs. The lack of credible data made it difficult to justify the continued investments on establishing SNCUs amongst other competing priorities and interest in health sector. This has also limited the efforts for corrective actions to improve performance of these units and the perinatal care in government hospitals.

Additionally, newborns discharged from the SNCU were untraceable after the discharge, due to absence of follow up and feedback system. There was no follow up system for these newborns leading to nearly 10% newborns deaths after discharge within first year of life, many of them having growth failure and developmental delays.

To address these gaps Government of MP and UNICEF took a lead to develop an online data management and follow up tracking system, which can be used in SNCUs across the state and country.

4. Project description
UNICEF has piloted desktop version of SNCU database management system in 2011 in Guna and Shivpuri. Desktop version was beneficial but has its own limitations such as no online access, no facility for compilation of data in GoI reporting format, no data security etc. Need of real-time data led the state to improve this further. Government of MP and UNICEF developed an online data management and follow up tracking system, which can be used in SNCUs for data entry and analysis at a click.
4.1 Starting year

SNCU online data management and monitoring system was piloted in 2011 by joint efforts of UNICEF and NHM, Madhya Pradesh and in 2012 scaled up in all the SNCUs, across the state. It was of immense help for the SNCU staff, program manager, administrators, policy makers, and academia because of its capacity to generate the information required for efficient monitoring at different levels. This database can provide information on more than 250 different parameters within seconds. In 2013, GoI adopted this software for scaling up in all the SNCUs, all over the country.

4.2 Description of intervention

The application consists of two main utilities, one of which is a repository for facility based newborn care and contains prototypes for designs of SNCU, training material, operational guidelines on facility based newborn care, government circulars, data recording formats and teaching aids.

The second utility is the online data application, which consists of different web pages to record data on admission, discharge and follows up. It permits generation of reports and graphs on various parameters stratified by gender, caste, admission weight, maturity, cause of death and other critical parameters. The report generated can be used by SNCU staff, district and state level managers and decision makers for informed decision making for addressing the areas of improvement in quality of care.

In addition, the application permits tracking of newborn after discharge for long-term outcome. Introduction of online system has helped in effective monitoring of performance and improving the quality of care. A regular follow up system has been put in place, which involves 6 community visits, by health worker in first month and five hospital visits in first year of life. The follow up reminders are being sent using SMS through the online system.

The system is currently operational in all 53 functional units in the State. Looking at the relevance and strength of this system, Government of India has decided to use this application across the country with scale up already achieved in Haryana, Maharashtra and Assam.

4.2.1 Key features

- “Facility Based Newborn Care Database” provides different user levels for all type of neonatal care facility (NICU, SNCU, NBSU, and Private Hospitals etc.)
- It provides real time data on 250 + parameters (Basic information, Mother’s and Baby’s information.)
- Large number of customized reports and 1000+ analytical graphs on admission, treatment, and outcome of neonates are available. It also includes area wise and facility wise analysis, such as block wise and place of delivery wise analysis.
- Simplified data entry system for which the uniform and compatible stationary formats were also developed as per FBNC Guideline.
- It helps in robust tracking and establishing follow up system both in community and in facility for improving long-term survival, growth,& development of SNCU discharged newborns.
- It provides strong community workers linkage with SNCUs for tracking and follow-up of newborns after discharge.
- Generating follow-up schedule for the day: SCNU data operator can generate the list of babies whose community & facility follow-up is scheduled for the day.
- It can provide a comparative report between different SNCUs in the state, which can be prioritized for supportive supervision, as it can generate the data as per need of the user.
Real time reports and automatic generation of discharge card is saving the precious time of SNCU staff, which was previously wasted in writing all the details of newborn on discharge card.

- It also records the functionality status of all the major equipments with the last updated date.
- It also provides line listing of human resource, a HR report – details of staff with their training status.
- Facility of SMS reminders is incorporated within the system to provide SMS alerts to community workers and the parents for scheduled follow up.
- Online IP camera is installed to observe the basic protocols and for vigilant supervision of individual unit.

**Process flow**

- Based on case record sheet, admission entry is done in database.
- After saving the entry of treatment of discharged newborn, follow up dates are generated from the software.
- After generation of discharge card, a community follow up card with dates of community follow up is given to parents of SNCU graduate. This card is used by ASHA to note follow up details. Counseling of parents is done by data entry operator for follow up.
- On the day of discharge, a SMS alert is sent automatically to ASHA about the newborns discharged from SNCU.
- Discharge card contains the dates of facility follow up which needs to be brought to facility where SNCU doctors record post discharge follow-up details.
- Tele communication by DEO of SNCU reminds parents and community workers for follow-up of SNCU graduate.
- After each facility follow-up, software updation is ensured by DEO.
- Community follow-up is confirmed by tele calling and entered in software.

**Figure 1:** Community followup tracking and information dissemination by SMS
Glimpse of some useful analysis

1. Based on the admission analysis, it can be interpreted easily that community referrals need to be improved.

![Admissions: Inborn Vs Outborn: Madhya Pradesh, INDIA](chart)

**Admissions: Inborn Vs Outborn: Madhya Pradesh, INDIA**

Duration: 01/01/2012 to 07/03/2015

- **TOTAL**: 42,903
- **Inborn**: 22,903 (52.7%)
- **Outborn(Facility Ref)**: 11,800 (26.9%)
- **Outborn(Comm. Ref)**: 2,000 (4.2%)

2. Free transport under JSSK but half do not get:

![Transport Used to Reach SNCU: Madhya Pradesh, INDIA](chart)

**Transport Used to Reach SNCU: Madhya Pradesh, INDIA**

Duration: 01/01/2012 to 07/03/2015

- **TOTAL**: 22,903
- **Govt. Provided**: 17,173 (75.0%)
- **Self Arranged**: 9,220 (40.2%)

There is a provision of free referral transport for the sick new-borns but only half them are able to access the service.
4. Availability of Nurses Still a Bottleneck

Scarcity of nurses is still a bottleneck for SNCU, HR report shows that SNCUs such as Alirajpur, Ashoknagar are facing problem of deficiency of staff.

4.3 Other implementing partners

Technical support and initial funding from UNICEF were vital for development and scale up of software across the SNCUs of the state.

4.4 Outcomes

A monitoring cell at national level is being constituted by Ministry of health for supporting system administration and data management and similar cells will be created at state level. This cell will look after enhancement, system administration, training and monitoring of the data for providing feedback and initiating corrective actions. Periodical backup of database is taken and back up mirror server is used. Once the application is shifted to NIC server, the standard data safety and back up protocols of NICU will be applicable. Entire data management and reporting in SNCU is online, helping paper less reporting and ensures availability of latest and real time data for prompt corrective actions. It saves time & enables SNCU staff to focus on patient care.

There is provision of monitoring each unit online from the State and National level with the help of online cameras included in SNCU software. It has helped in tracking presence of staff on duty, adherence to aseptic protocols and behaviour of staff with families of patients.

The follow up tracking has been integrated in the system with system generated SMS being sent to the community worker and family on the day of follow up with telephonic contact and the follow up status is entered at the end of the visit. This has ensured follow-up of nearly
two third of newborns after discharge. Establishment of follow up system has helped in reducing post discharge mortality from 10% to 3% at one year of age as was seen in the pilot units. The objective of monitoring quality of care in SNCU and establishing robust data management system has been achieved by this software. Entire data of SNCU is now available for analysis, feedback and initiating corrective actions. Nearly 245052 newborn admission, 189373 discharges, and 29376 deaths are currently recorded in the system. In addition, information on follow up is captured for nearly 330752 follow up visits.

Information generated by the software has influenced policy decisions such as introduction of SNCU follow-up, both community and facility, introduction of antenatal steroids, C-PAP and ventilators. Human Resource related decisions have been taken such as additional staff for delivery room – neonatal nurses and introduction of performance based incentives for SNCU staff, dedicated PGMOs and staff nurses for medical college SNCUs based on data analysis. State has provision of supportive supervision by pool of mentors for poor performing SNCUs, monitoring of SNCU on selected parameters and ROP screening & management to start on pilot basis.

Software is helping the state to improve quality by providing performance of different districts on several parameters such as out born admission, LAMA rate, referral rate and death rate, antibiotic usage etc.
**Wide variations in mortality across SNCUs:** As per this database, SNCUs across the state are showing wide variation in mortality rate, which affects the state average.

**Certain diseases contribute to higher mortality:** Certain diseases are having high mortality rate such as RDS, based on this data, decision for focusing on use of antenatal corticosteroid was taken by the state. State is pushing the use of antenatal corticosteroids in preterm labour cases for reducing the RDS related mortality.

**Majority of SNCU deaths are preventable:** Graph shows that most of the cases of SNCU deaths are due to preventable such as Birth Asphyxia, and Sepsis accounting for more than 35% of deaths.
**Need simultaneous investment in level 3 care:** Around 40% referrals were for ventilation, which demands strengthening of level 3 care. The state has proposed to support medical colleges for infrastructure development and HR (4 PGMO and 8 staff nurses) in NHM PIP.

<table>
<thead>
<tr>
<th>Referral: By Indication: (Over All): Madhya Pradesh, INDIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Outcome: 222688, Total Referred: 13345 (6.0 %)</td>
</tr>
<tr>
<td>Outcome in selected Category: 222688, Referred in selected Category: 13345 (6.0 %)</td>
</tr>
<tr>
<td>Duration: 01/06/2012 to 07/03/2015</td>
</tr>
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Real-time monitoring in child health cell at state level: Real time monitoring provides opportunity to monitor observation of standard protocols in these units.

5. Evaluation

FBNC Database is evaluated by Madhya Pradesh IT award team. Based on the capability of the database in providing quality data with ease, FBNC database is declared winner in "Best use of ICT for e-Governance" category of MAP-IT award. This database is also adapted by the Government of India for scale up in other states based on its usefulness.
6. **Financial management**

   Initial commissioning was supported by the UNICEF, which was followed by NHM funding to support the FBNC database. At district level computer with net connectivity, uniform case recording formats and data entry operators are being provided under NHM. SNCU data manager is supported by NHM to monitor the software from state level. Every year Rs. 50,000/- is sanctioned in programme implementation plan of the state to support the successful functioning of the database with its utility. This fund is utilized for the payment of the telephone connection, maintenance of online cameras and SMS system for FBNC database.

7. **Conclusion/lesson learnt**

   The rapid scale up of SNCUs highlighted the inadequacy of data, which was the biggest obstacle in monitoring the performance of these units. Units were generating huge data but there was no way to ensure timely and quality reporting. In the absence of good quality data, policy decisions were mostly based on other country’s or other state’s experiences. To address this, UNICEF with joint support of NHM developed an online real time monitoring system, which records vital information for sick newborns admitted on more than 250 parameters related to newborn, mother’s history and care during delivery and post discharge follow up.

8. **Potential for scale up**

   Policy decision for scale up of database has already been taken up by the Government of India based on efficiency of the database to support informed decision-making. Currently, nine states covering 245 SNCUs are linked to online FBNC database management system. More than 400,000 newborns enrolled in the database make it the largest available database for sick newborns globally.

9. **Contact person**

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