

Analysis on Assessment of Supportive Supervision for Data
Quality Improvement in Rampur District of Uttar Pradesh
State

By

Sekhar Das

*Dissertation submitted for the partial fulfillment of the
MBA Hospital and Health Management*

Academic year, 2016-2018



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TO WHOMSOEVER MAY CONCERN

This is to certify that **Mr. Sekhar Das** student of MBA Hospital and Health Management from The IIHMR University, Jaipur has undergone internship training in **India Health Action Trust, Uttar Pradesh Technical Support Unit, Lucknow** from **5th-Feb -2018 to 5th May-2018**.

The Candidate has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.

I wish him all success in all his future endeavors.



Dr. (Col) Ashok Kaushik

Dean, Academics and Student Affairs

The IIHMR University, Jaipur



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Dean Research

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Ref. No. IHAT/HR/CERT/2018-2019/27

Date: 17 May 2018

CERTIFICATE

The certificate is awarded to

Mr. SEKHAR DAS

In recognition of having successfully completed his
Internship in the department of

Monitoring and Evaluation

and has successfully completed his Project on

**An Analysis on effects of supportive supervision for data quality improvement in Rampur
District of Uttar Pradesh State**
from

Date - 7th Feb to 15th May

**Indian Health Action Trust,
U.P.T.S.U, Lucknow.**

He comes across as a committed, sincere & diligent person who has a strong
drive and zeal for learning.

We wish him all the best for future endeavors.



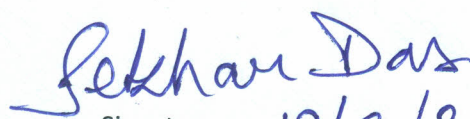
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CERTIFICATE BY SCHOLAR

This is to certify that the dissertation **An Analysis on assessment of supportive supervision for data quality improvement in Rampur district of U.P** submitted by **Sekhar Das** Enrollment No- **IIHMR-U/01/2016-18/0490** under the supervision of **Dr. D K Mangal** for award of MBA in Hospital and Health of the University carried out during the period from **7th FEBRUARY 2018** to **15th MAY 2018** embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.


Signature 19/3/2018.

Acknowledgement

I, Sekhar Das, student of MBA in Health at IIHMR University, Jaipur, would like to sincerely express my heartfelt gratitude to Mr. Vikas Gothwal IAS, Executive Director, IHAT, for providing me the opportunity for training. Mr. John Anthony, Project Director(RMNCH+A) for providing me the opportunity for training. Mr. Satyendra Chauhan for granting me the opportunity for training.

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ABSTRACT

Background: Ministry of Health and Family Welfare launched the National Rural Health Mission (NRHM) to ensure necessary architectural corrections in the basic health care delivery system. The interventions have increased the demand for data on population and health for use in both micro-level planning and programmed implementation. All levels in a health department; be it a Primary Health Centre or a District Hospital or the State or National Office, need information on regular basis. Therefore, a robust information system which can provide *accurate, up-to-date, and timely information* to the health department is needed at every level. Data flows from sub center level to state level. So gaps and quality issues at sub center level may hinder the analysis, and will lead in to false interpretation.

Objective: The objectives of the present were;

- 1) To identify the effectiveness of Supportive Supervision audit for the data quality improvement in MNCH.
- 2) To identify the factors of good quality reporting and poor quality reporting of selected indicators among block/DWH in Districts.

Methodology: The present study was descriptive study. The respective study was conducted in Four Technical support unit Blocks (Bilaspur, Milak, Swar, Tanda) of District Rampur, Uttar Pradesh. 4 BPM and 4 MOIC, block was taken as respondents to collect the desired information for the study. Analysis was done at sub center level. Primary data was collected. Quantitative analysis was done.

Findings: Study shows that bottle necks were identified at sub center level due to which data quality was affected. Factors resulting into poor data quality are not using the format. There are 1 facility which need special attention, which have deteriorated in data quality assurance. i.e. CHC Tanda.

There is a substantial gap in understanding of arrival and admission

The major gaps in the register are found is;

Availability of source register mainly for maternal and new-born complication related data elements are low among facility.

The improvement in the availability of source documents are relatively lower among these poor performing facilities while considering their potential scope for improvement.

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Abbreviations

ANM- Auxiliary Nurse Midwife

IHAT/UPTSU- Indian Health Action Trust/Uttar Pradesh Technical Support Unit

SC- Sub Center

GoI- Government of India

HMIS- Health Management Information System

NRHM- National Rural Health Mission

NFHS- National Family Health Survey

DLHS- District Level Household and Facility Survey

SRS- Sample Registration System

DHIS- District Health Information Software.

NHSRC- National Health System Resource Center

M&E- Monitoring and Evaluation

RMNCH+A- Reproductive Maternal Neonatal Child Health and Adolescent.

MoHFW- Ministry of Health and Family Welfare.

RCH- Reproductive Child Health

MCTS- Mother and Child Tracking System

2. Introduction

Uttar Pradesh is the most populous state having area of 4540. Sq.km with 199.8 million people and population growth 20.2%. Sex ratio 912 and having male population is 104.4 million and Female population is 95331831. Total no. of tehsil in UP is 316 and 821 Gram panchayat. Literacy rate of UP is 67.7%

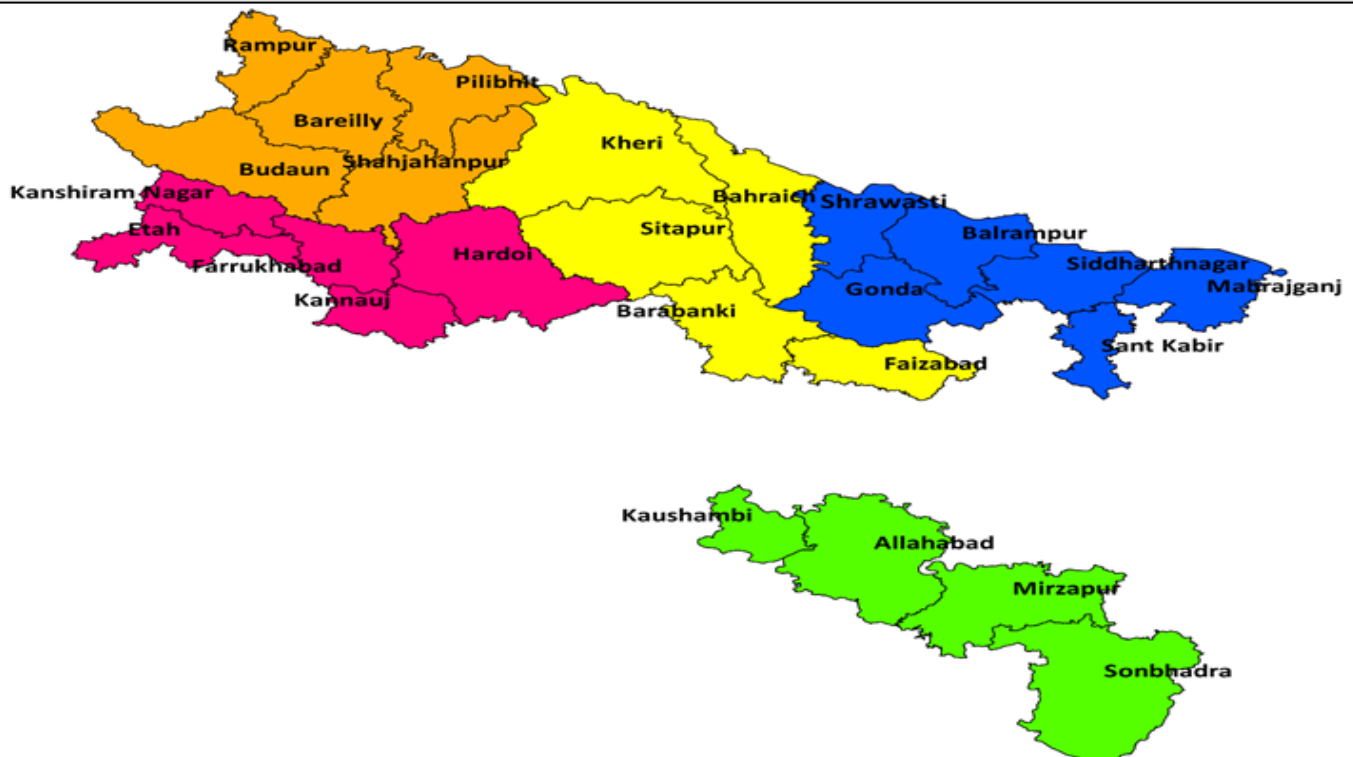
Maternal mortality rate of UP is 258 and crude birth rate is 24.8.

High Priority District population is **69 million**, 100 Block population is **31 million** and Expected annual number of deliveries in 100 Blocks is approx. **1 million**.

2.1 UP-TSU focus areas for RMNCH+A

Specific support systems rolled out in 100 blocks (4 blocks per district) for demonstration (2 with high and other 2 with lower proportion of institutional deliveries) and support the Go UP to diffuse/replicate/adapt beyond the 100 Block

HPDs divided into 5 zones



TSU support across all 25 districts

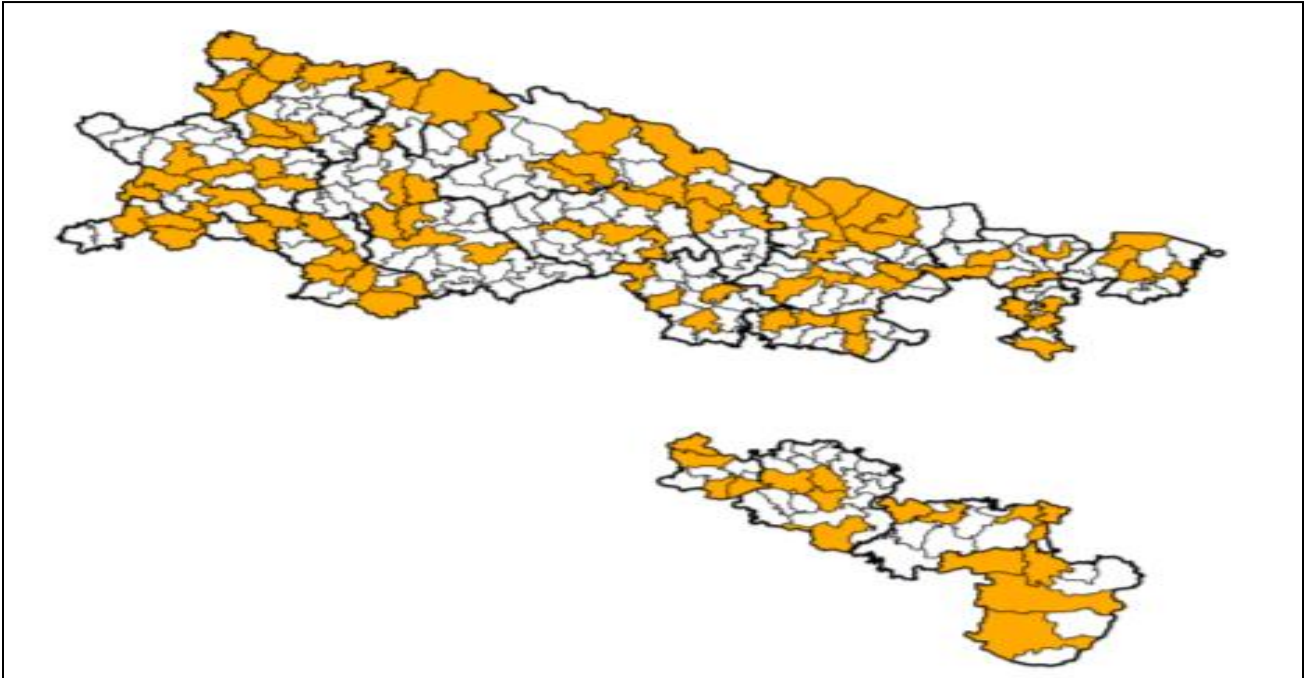


Figure 1 25 HPD District

- Go UP invited the Bill & Melinda Gates Foundation to provide techno-managerial assistance through the establishment of a comprehensive Technical Support Unit (TSU) focussed on supporting the Go UP to reach its goals in RMNCH+A (MoC signed by the Foundation and Go UP in December 2012)
- Mutually agreed that the approach of the TSU would be support the government, not to implement on its own program building the capacity of the health system to execute according to its own mandate, with strong political, bureaucratic and administrative ownership.

Goal:

Provide techno managerial support to Go UP to improve the efficiency, effectiveness and equity of delivery of key RMNCH+A intervention.

Objectives:**RMNCH+A (Sep 13-Oct 16): Support Go UP in improving**

1. the quality and quantity of FLW interactions
2. the quality of RMNCH+A services at facilities
3. strategies and systems required to improve FLW capabilities and service delivery at primary care facilities
4. its capacity to fund, contract, regulate, mandate private providers
5. the scale and quality of community accountability mechanisms

Family planning (Nov 14 - Mar 17): Support Go UP in enhancing

1. availability and accessibility of FP services in public health facilities
2. quality of contraceptive services in public health facilities
3. Utilization of FP services.

Nutrition project: (2016-2019)

1. Improve **ICDS capacity** for MIYCN services
2. Improve Health Systems **capacity** for MIYCN services
3. Strengthening of system.

Pneumonia and Diarrhoea Pilot project (2014-2020)

1. Improved treatment and referral of childhood pneumonia and diarrhoea by **public and private FLWs** and **Block level facility** staff to reduce case fatality rate.

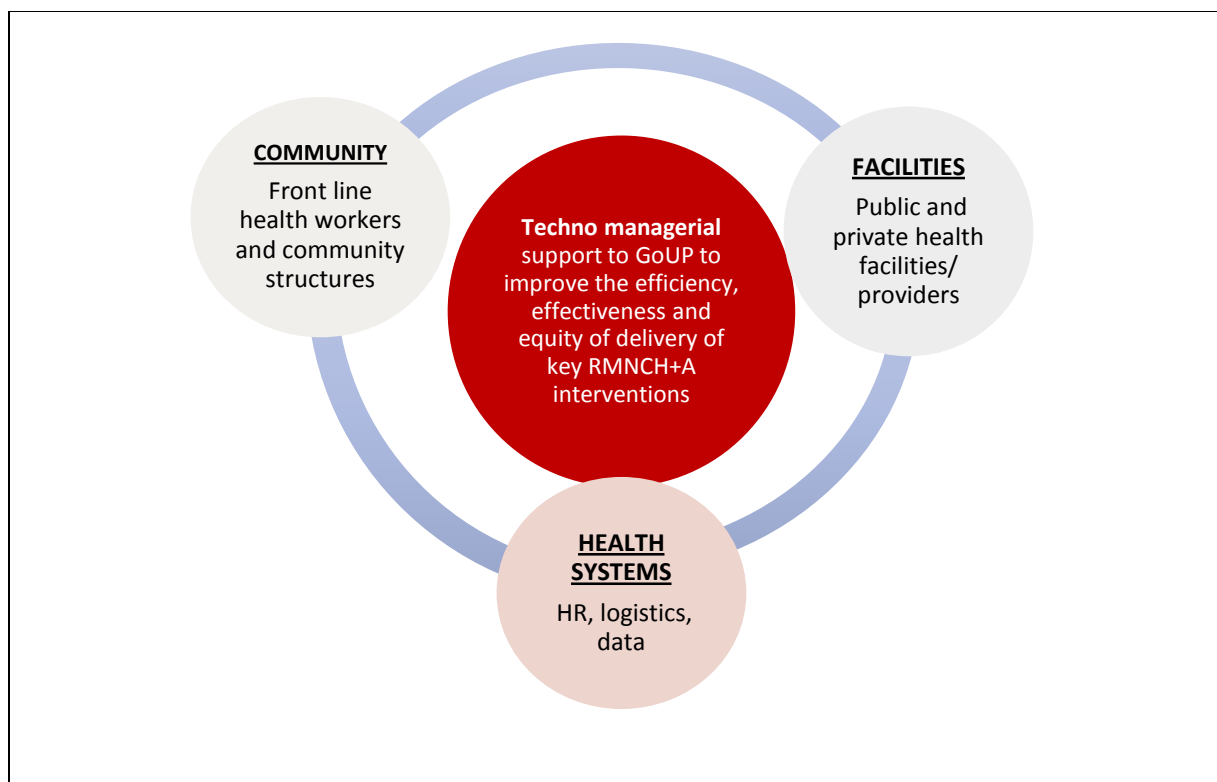


Figure 2: The TSU leverages three platforms to support the government at scale

Techno-managerial support to government aimed at “improving the use of data culture within government for decision making”

- In **Planning** TSU do Gap analysis based on needs, supplies and according to prioritization.
- During **Implementation** TSU team monitor the program and demonstrate the program and other activities and they also give handholding support to Staff nurse, MOI/C, BPM and other nodal officers.
- In **concurrent monitoring**, team track the implemented programs and measures the outcomes of the indicators and identifying the gaps and vis analysis of data and use of data we improve planning technique and service delivery based on the data.

2.2 ORGANOGRAM of UPTSU AT DISTRICT

District Teams

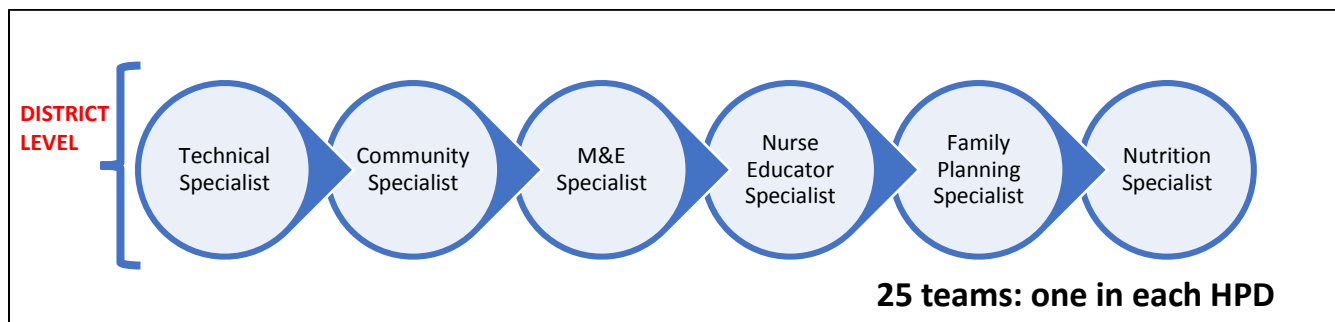


Figure 3: District teams

One of the team members identified as District Monitor for coordinating RMNCH+A activities

Block Teams

100 teams - one in each focus block



2.3 MNCH – New Project Strategy:

Goal:

To provide techno-managerial support to government's health programs in UP.

Objective:

IMR decline to 40 per 1,000 live births (Current IMR UP=48)

Maternal mortality rate of 170 in the 25 high priority districts (HPDs) by 2020 (Current MMR UP=285)

Expected outcome: To reduce maternal & neonatal mortality in **100 blocks** through enhanced learning, strategy development, testing and application.

To improve and sustain coverage rates of critical MNCH interventions in 194 additional blocks by scaling up the TSU interventions.

Community Process:

- KMC & VHND strengthening Pilot in 4 Blocks.
- District Level System Strengthening support in 194 Blocks
- ASHA Sangini Mentoring(ASM) in 86 Blocks through ASM during Home visit

Strengthening different Community platforms by ASM Mentoring:

- AAA (ANM, ASHA, Anganwadi) meeting
- Cluster meeting
- VHND

Nurse Mentoring:

Nurse mentor is new cadre of nurses (MSc/ BSc) trained on clinical skills & quality improvement process in primary healthcare setup.

NM initiate monitoring, Rigorous onsite monitoring, reporting format.

M&E Activities:

1. HMIS/UPHMIS/MCTS:

Strengthening HMIS/UPHMIS/MCTS, training/handholding district and block staff, supporting validation committee meeting ensuring quality data reporting, and analysing the data and sharing to CMO/MOIC for review.

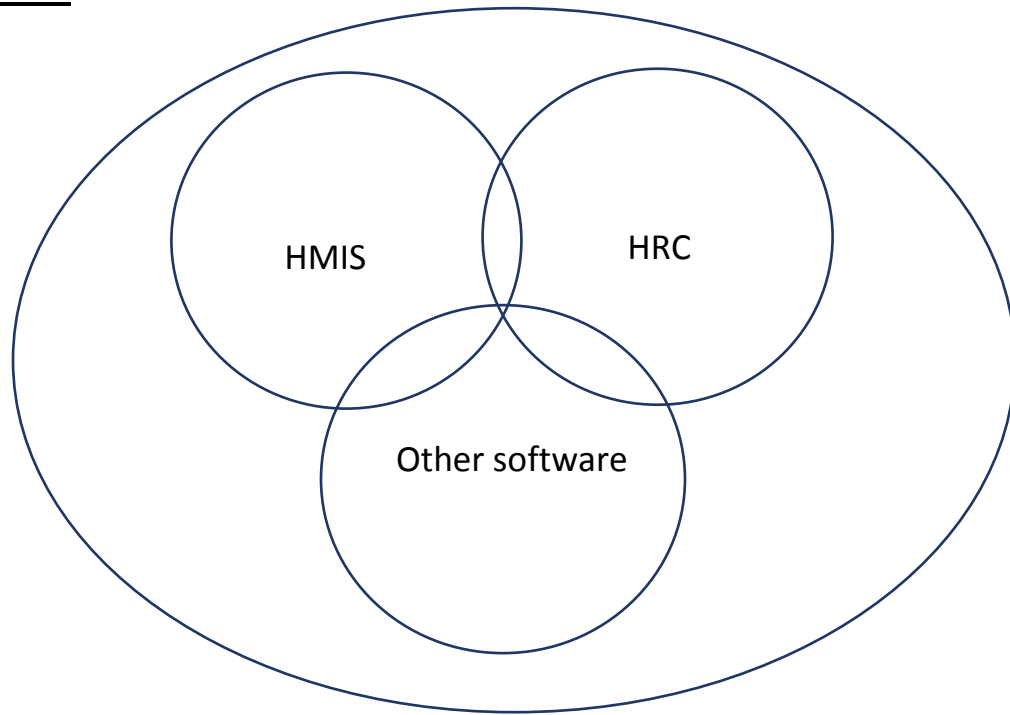
2. Supporting program team:

Ensuring support to program team (community and technical) by analysing program data

3. Supporting review meetings:

By analysing different data source like HMIS/MCTS/UPHMIS, survey data (CBTS) , GOI SS data and program data ensuring support to regular review meetings like MMRM & RMNCH+A meetings.

2.4 UPHMIS



- UPHMIS is integrated portal for all data sources like GOI portal, Health report card, Manual reporting (MPR).
- Data will be imported from GOI HMIS portal to UPHMIS, and allow other programmes like MPR and HRC portal to enter directly to the instance.
- Integrated data set will be generated and analyzed through UPHMIS.
- Dashboard will be populated through UPHMIS
- GIS map would be populated on UPHMIS portal

Flow of information and Process in UPHMIS portal:

In 1st phase:

- UPHMIS will be pulled HMIS portal data.
- Manual reports (MPR) & HRC data will be directly entered on UPHMIS instance

In 2nd phase:

- HR and other national program data will be pulled from HRMS and other portal in UPHMIS

UPHMIS portal include HMIS (health management information system) portal, HRMS, National program portal like RNTCP, NBVDCP, IDSP, NLEP, NBCP etc., from DH (District Hospital) MPR, HRC, other RMNCH+A services are imported.

Process of data entry of CHC/PHC*/SC* include:

Data is collected from each department of facilities and after validation by MOI/C, ARO, and BPM data is entered in the UPHMIS portal by operator.

After importing data, we can integrate dashboard and analyses data for further use in decision making.

Purpose of importing other portal data into UPHMIS portal.

- Single platform to view all relevant data
- Comprehensive HMIS system is for capturing all data requirements of different programs going on in the state
- One stop data entry portal for the GOI HMIS data requirement and Go UP internal data requirement
- Minimize the manual and duplication in data capture
- Data visualization for review and planning: HMIS bulletin, dashboards & dynamic reports.

Indicators required for driving decision are input indicators which is availability and quality and output indicators which is service utilization and outcome indicator like mortality morbidity etc.

Strategy for Data quality:

1. **Analysis and use of HMIS, GOI SS, Survey, and program monitoring:** Only analysis has to be done for identification of gap in program status and quality and prepare an action plan.
2. **Strengthening, analysis and use of UPHMIS:** Efforts have to made to strengthen the UPHMIS in all 25 HPDs and start using the data in gap analysis during review meeting
3. **Capacity Building for CMO/ACMO and DDM:** Capacity building of district level program manager and DDM will be planned for data analysis and use
4. **RCH Portal/Application Pilot:** RCH will be piloted in selected district for effective implementation of RCH register, portal and ANMOL.

2.5 SUPPORTIVE SUPERVISION

“Supportive supervision is a facilitative approach to supervision that promotes hand hold support, joint problem-solving and communication between facilitator and participant”

Objective:

1. To validate and reduce the data element reported as blank and zero
2. To validate the data of some critical data element requires for frequent analysis
3. To develop the capacity of block facility staff for providing the hand hold support to lower facility (SC and PHC)

Supportive supervision for improvement of data quality:

- Gap Identification: Through gap identification we get to know which data element/section in the format is not matched with source register either left blank or entered zero in the format. Gaps are due to error in compiling source register and also in understanding data elements during reporting.
- Problem Solving: First step to correct the data, which is entered in the period from 25 to 30 of every month in the UPHMIS portal, second step to add additional column in record book, third change the process of compiling the data by giving responsibility to individual person, fourth every SN, MOI/C, BPM, pharmacist, should have clarity on each data element.

- Capacity building: Make it sustainable, so that this whole process remains same for certain months, share the gaps with MOI/C after the SS visit, and discuss the reasons of gap, and orient staff on data element definition, and explain the process to conduct a SS in other facility.

Components of SS tool in Checklist as below: -

1. Delivery Point facility details
2. Maternal & New-born complication
3. Validation of Critical data element
4. Summary of validation of Critical data element
5. Validation of zero and blank data element
6. Comment/Suggestion

There are separate Checklists for DWH, DMH and CHC/BCHC/BPHC are being used.

Methodology of Supportive Supervision visits:

- Day 0 - Identification of Poor Performing Facility
- Day 0 to 1 - Meeting with district officials to orient about the concept and method
- Day 1-3 - Visit to Facility for Supportive Supervision
- Day 4 - Feedback meeting with all district and block officials

Identification of poor performing facility:

- The poor performing block facilities is identified based on following data quality indicators selected for UPHMIS campaign
 - % of non-blank data element
 - % of non-zero data element
 - 4 block facilities are selected from each of the 75 districts
 - 1 DWH is selected by default from each of the district (Combined hospital if DWH is not available)
 - This exercise has already completed by state and the list is shared.

Supportive Supervision to facility:

1. Pre visit
2. During visit
3. Post visit

Pre Visit Preparation:

- Understand every data element of tool
- Fill the prefill section of SS tool (value as per UPHMIS) as per data given in soft copy and facility identifier
- Meet with district officials to conduct joint visit
- The data for the month of Aug 17 to be considered for SS
- Pre inform the block about SS

During Visit:

- Spend full day at facility for SS (5~6 hour)
- Meet and explain status of data quality and purpose of visit to MO I/c, BPM, BARO
- Start SS process with BPM and BARO in a separate room
- Go through each of the element of tool and request the concern staff to join with register
- Validate the data element with source register/observation with the help of concern person
- Identify the reason for any discrepancy between reported data and actual status
- Share the discrepancy with concern person and provide the suggestive method of correction
- Discuss the identified issues with BPM/ BARO on data element requires correction
- Correct identified gap on portal and record on tool
- Share the findings with MO I/c and discuss the plan for SS to lower facility by BPM/ BARO

Post Visit:

- Check the completeness of the tool
- Collect the SS tool from government officials
- Confirm timing and participation of feedback meeting with district officials
- Prepare summary slide (table of not matching for critical data element, status and improvement in zero/blank, major challenges and suggestive solution for feedback meeting and to share with DM
- Meet with DM and share the findings

Some other important message to communicate during meeting:

- Proper Format distribution- It has been observed that some of the blocks have not properly distribute the UPHMIS facility format to facilities. It is to inform that each of SC level format is printed in double copy- one for ANM and one for submission at block. So three such formats in double copy must be given to SC
- Use of UPHMIS raw data for HMIS Bulletin- We have again started the preparation of HMIS bulletin from the month of Aug 17. The data for HMIS bulletin will be download from UPHMIS raw data. So it is essential to import all the corrected HMIS excel file in UPHMIS to avoid any discrepancy
- Update DP- Many of facilities have not entered their DP status (Yes/No). So ensure to update DP status as per the KPI list and do not make any change till the official inclusion or exclusion of DP.

2.6 MFR Supportive Supervision Details:

During the Phase-I, UPTSU has designed and implemented an internal MIS system (monthly facility report/MFR) to track important facility level outcomes which are critical for improving

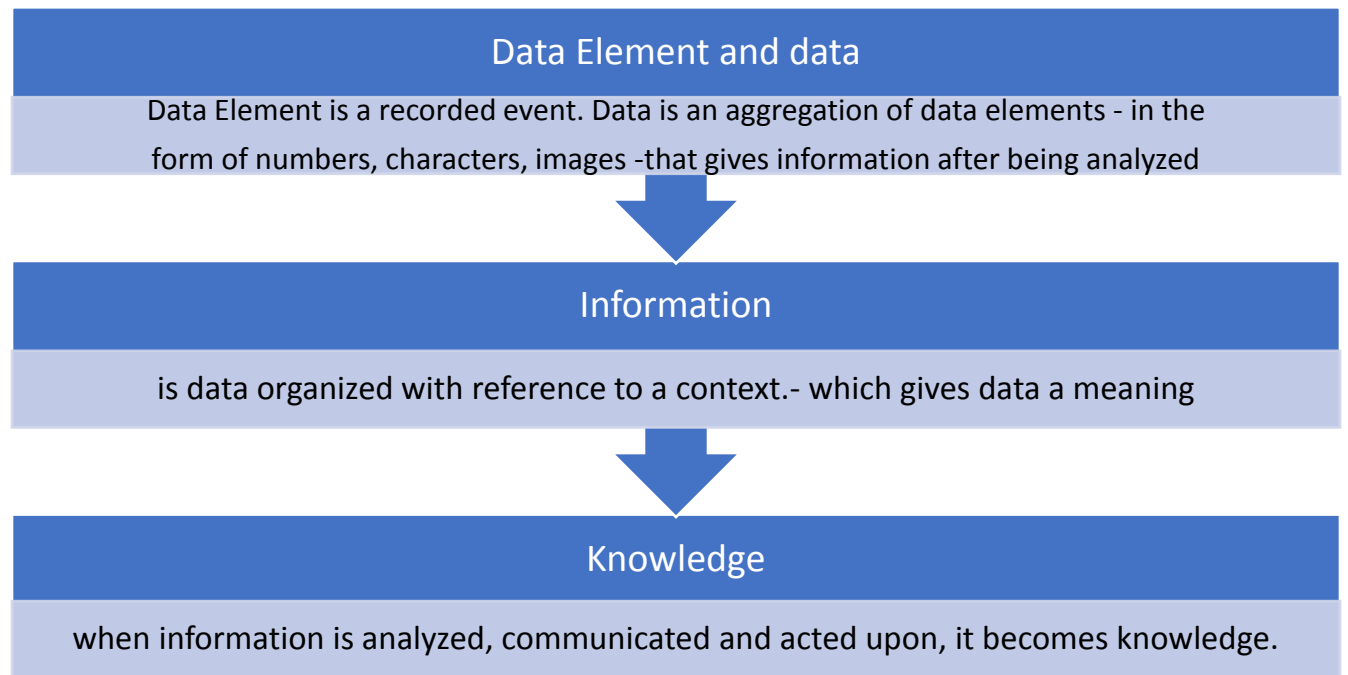
for RMCNH+A results. Apart from several mechanisms that would be established under UPTSU, one of the core strategies is the “Strengthening capacities for data collection, assessment and review for evidence based planning, monitoring and supervision and also data usage”. As a step in this direction, the UPTSU has established “Uttar Pradesh Health Management Information System” (UPHMIS) portal for all Uttar Pradesh Public Health related information and which is not available in the HMIS system of the state (or country). This UPHMIS portal captures data to be collected as per the UPHMIS formats on a web-based system at the Block level so that primary data can be easily aggregated and the information/reports flow quickly to the districts and higher levels. The system also enables information to be entered for each facility so that MIS reporting can be of a better quality as well as help in assessing facility-wise services and performance.

The web portal, apart from various user friendly features, gives authorized users a provision for logging on to the portal and getting/generating reports through section wise based on provisional data as well. The web portal has “Dashboard” section which contains analysis of important data elements with different indicators wise of RMNCH+A which can use for Monitoring and Evaluation as well as other activities. The HMIS data for the National Health Programmes has merged with the UPHMIS portal interface. This will facilitate the district users in having a single point of data availability for all the programmes and for generating their reports. It has intended a broad roadmap for an integrated MIS in near future with use of information communication technology as a tool and creating an environment of e-governance in its working system.

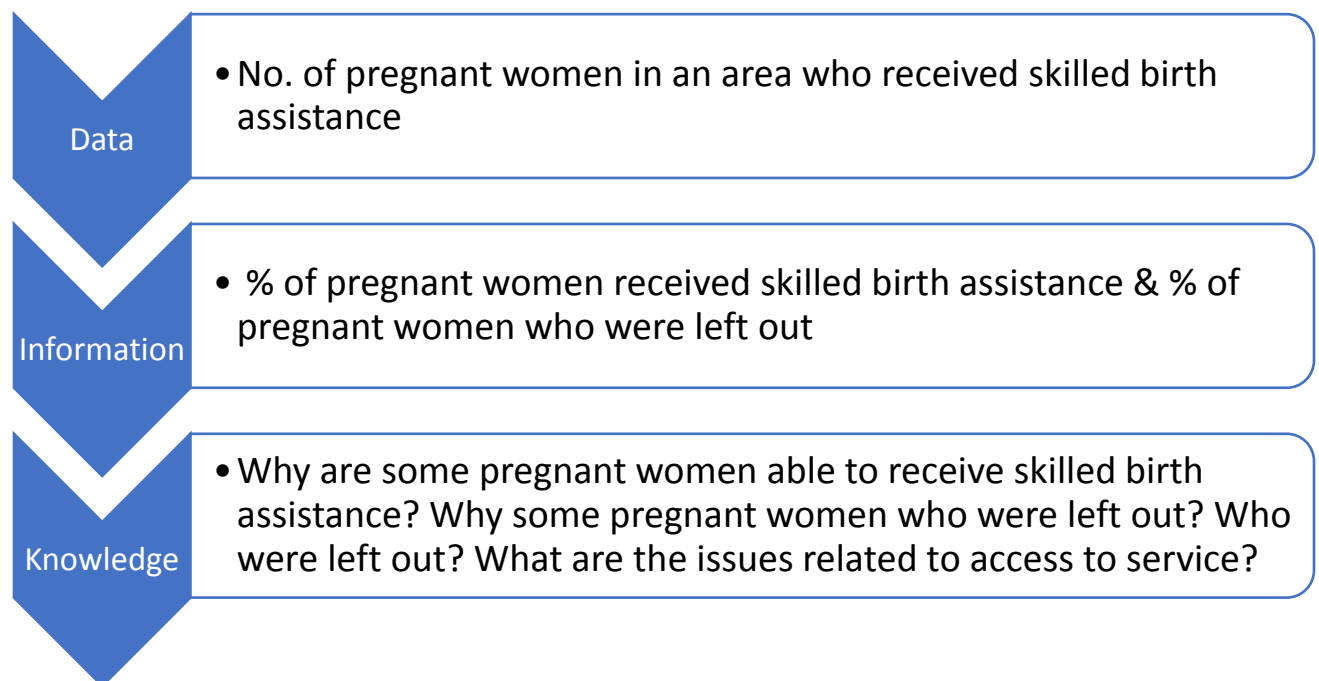
3. Basic Concepts in HMIS

HMIS is a data collection system which is designed to support, planning, management, and decision making in health facilities and organizations. It is a tool which helps in gathering, aggregating, analysing and using information for taking actions to improve performance of

health systems. The basic concept as follows: -



This is to be illustrated with example as –



3.1. Indicator

Indicators help us assess our performance/progress across time and across places. An indicator is a data element placed in a given context so that it becomes information that can be used for

program monitoring, management, and action. It involves numerator, denominator and multiplied by a constant factor.

The indicator can be classified as

- Input indicators (no. of doctors/1,00,000 population)
- Process indicators (% of ANM trained in SBA)
- Output indicators (% of Children received full immunization)
- Impact indicators (Maternal Mortality Ratio, Infant mortality ratio etc.)

3.2.Data Element

A data element is a record of health event or health related event which is as the name of a particular event or factor that must be counted or measured.

Example: Number of pregnant woman who received an antenatal check-up etc.

3.3.Transforming Data elements into Indicators

Data element: Total number of children in the 12 to 23month age group who have been given Measles vaccine=360

-Numerator: Total number of children given measles=360

-Denominator: Total number of children in the age group 12 to 23 months=450

-Multiplying factor: 100

-Calculation: $360/450 \times 100 = 80\%$

-Indicator: Percentage of children in the 12 to 23month age group given Measles vaccine=80%.

3.4. Transforming data into Information/Knowledge

As an example we take communicable disease data related to prevention and control-

- No of fever cases this month for whom blood smear examination (SME) done= 12
- Blood smear malaria positive cases= 8

Indicators	Numerators	Denominators	Multiplying factor	Values
Percentage of fever cases positive for malaria	Blood smear malaria positive cases=74	No. of fever cases for the month which blood smear tested=100	x100	74.00%

Data Flow Information from lower to higher level

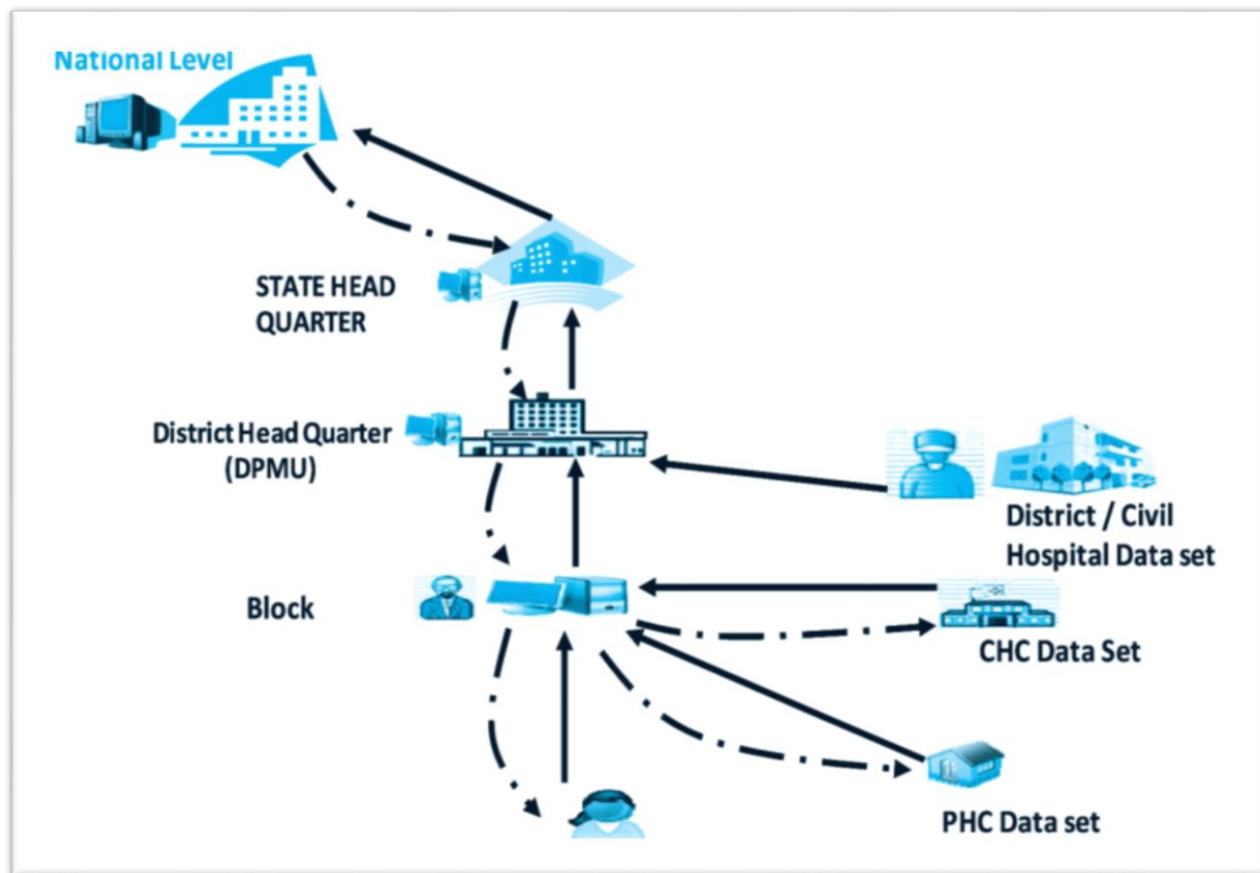


FIGURE- 1

In the figure-1, straight lines denote upward flow of information and the dotted lines denotes downward flow of information (feedback report). Private facilities report either at Block level or directly to the District Headquarter.

The levels of reporting in computerized HMIS can be Districts and Blocks. Each level of reporting has its own benefits but it is always better to have facility-wise data entry and reporting. Facility-wise data entry helps in:

- Assessing performance of each facility with respect to other facilities in a District.
- Identifying which facility has low or high coverage and this is very useful to identify underserved population in a community.
- Assessing how many facilities are reporting data on time (not possible in consolidated reporting such as Block or District).
- To ensure continuous and seamless data flow and reporting, these guidelines on data reporting, entry and aggregation should be followed.

3.5. Data Reporting & Entry

All facilities including health sub-Centre, PHC & CHC, will report their data to Block in the format prescribed for their facility. At the Block level, Block will consolidate these data to prepare the 'Block Consolidated Report'. Block Consolidated Report will be sent to the District Programme Management Unit (DPMU). There, DPMU will consolidate all Block data and include stock details of Districts to make the 'District Monthly Consolidated Report', which will be then uploaded on Web Portal by 5th of every month.

3.6. Data Quality

Data quality refers to the extent to which data measures what they intend to measure. It is not enough to collect and report data, data should be checked for quality to minimize errors so that they can be used for decision making. Data use is known to improve data quality. Parameters of data quality are:

1. Completeness
2. Accuracy
3. Timeliness

Completeness-

Reports are a reflection of services provision and utilization thus an incomplete report will indicate partial service delivery/utilization.

Data completeness is assessed for the following:

- Number of facilities reported against total facilities
- Number of data elements reported against total data elements in a reporting form.

Assessment of data/reporting completeness: While assessing data/reporting completeness, remember that zero and blanks need to be examined carefully. Generate data completeness status report by including as well as excluding zero values to see the difference.

Timeliness-

Timeliness is very important component of HMIS. Timely processing and reporting of data facilitates timely availability of data for decision making.

Example: During monthly meetings in the health department previous month's performance are evaluated and strategic decisions are taken to address the problems. If out of 10 sub- Centers 5 do not submit report on time it will be difficult for the MOIC to assess the performance and

develop a plan for CHC/PHC in particular and of sub-Centers in general. While analysing data, remember to leave out the most recent month for analysis, if timeliness of reports of some units is known to be poor.

Accuracy-

Accuracy refers to the correctness of data collected in terms of actual number of services provided or health events organized. Inaccurate data will yield incorrect conclusions during analyses and interpretation. Small errors at facility level will cumulate into bigger mistakes since data from various providers/facilities are aggregated.

Poor data accuracy could be due to following four factors:

1. Gaps in understanding of data definitions and data collection methods
2. Data recording and data entry errors
3. Systemic errors- logical errors embedded in the system due to which these errors remain unless underlying systemic issues are corrected
4. Misreporting

Data entry errors-

Data entry errors could be due to: -

1. Typing errors: wrong numbers typed in computer
2. Wrong box entry: data entered in wrong box e.g., 'ANC registration' data entered in 'Registration in first trimester'.
3. Calculation errors: during data entry basic computation happens if formulae are incorrect then errors can happen.

The data entry errors can be correct through as below: -

- visual scanning,
- performing validation checks,
- Identification of statistical outliers

4. Rationale:

Good health information system is very important for addressing health issues and improving of health care delivery. In India the health information system is generated from the grassroots level (Sub-Centres) up to the higher level of Healthcare Institution. In Uttar Pradesh state of India, MoU with Uttar Pradesh Technical support unit / India health action trust (UPTSU/IHAT) works to improve public health in UP. It has one of the unit- Monitoring and Evaluation has planned to improve the data quality by transfer skills and knowledge to partners by offering techno-managerial support and building knowledge translation platforms. One of the strategy was developed to strengthening quality of data of all ENM blocks of 25 HPDs is data audit, feedback and facility level action planning which is unique in our Country India. There are so many studies have previously conducted to study various aspects for data quality issues and challenges, this topic is far from being studied in the research area. This study is conduct in the area of data quality to analyse the impacts of the innovative approach that had been taken.

5. Research Objective, Question and Methods.

<u>Research Objective</u>	<u>Research Question</u>	<u>Research Method</u>	<u>Indicator for Analysis</u>
To assess the effectiveness of Supportive Supervision audit for the data quality improvement in MNCH.	1. What is the effects of Supportive Supervision data audit towards the improvement of data quality in Rampur District?	The HMIS Supportive supervision data , generated by IHAT, is used for analyzing the level of discrepancies between facility record and HMIS reported data.	1. Arrival and admission 2. Outcome among arrival Pregnant woman 3. Delivery Details 4. Outcome among Newborn 5. Maternal Complication 6. Newborn Complication

			7. Blood bank service
To assess the factors of good quality reporting and poor quality reporting of selected indicators among block/DWH in Districts.	1. What are the possible factors/challenges- good and poor performing Blocks? 2. What are facilitators or barriers for a SN/BPM to generate and report good quality data?	Based on the analysis a qualitative in depth interview is conduct in selected poor and good performing blocks. The systemic challenges and opportunities to improve the data quality is also captured through an interview with the SN/BPM/ MOIC	1. Attitude and Understanding of critical data elements. 2. Availability and use of format across facility. 3. The data is accurately filled or not. 4. The data is completely filled on time. 5. Training and Knowledge on format and good quality reporting.

6. Data source and Methodology:

6.1.Data Source-Uttar Pradesh Health Management Information System(UPHMIS) generated data through Supportive Supervision.

6.2.Type of Study&Research Design-A Descriptive study. The research used a facility-based descriptive study design i.e. study participants have been selected at a particular Blocks to assess the level of information utilization and data quality and associated factors. The purpose of this two phase, explanatory mixed method study will be obtaining statistical, quantitative results from the 1 HPDs sample and then follow up with a few individuals to explore those result in more depth. In the first step, quantitative research question or hypothesis will have addressed the variation of reporting status of Blocks across 25 HPDs on selected indicators with BPMs. In the next step observations will be used to problem significant of data not matching with facility records, valid source document not available etc. by exploring aspects of the HMIS/UPHMIS data quality with SNs and BPMs at Block facilities.

6.3.Quantitative data analysis - The UPHMIS of 2017-2018 financial year & HMIS-Supportive Supervision 2017-2018 (OCTOBER to JANUARY) data collect from the Organization(IHAT) and it will analysis to check the improvement of 1 High Priority Districts(HPDs) of 25 HPDs with the help of SATA-13 version in critical MNCH data elements from MFR. The analysis was conducted in HMIS and UPHMIS Oct 2017-January-2018 data of 25 HPDs then block wise tabulated forms. In UPHMIS SS data Four Criteria has been taken Remained High, Improved, Remained Low and Deteriorated. The categories divide by <50% is Poor and Between 51% to 75% is Moderate and >75% is Good. In STATA command, drop the Zone facilities if the 'Zone is Not Bareilly' given. The facility code was sorted for list the facilities according to month. The code given to the respective facility if "DWH/DCH" = 1 and "BCHC/BPHC/CHC/PHC" = 2 for reporting by the facilities. Then replace the all facility code to "." If the facility is not DH/Block and drop. Sum of all the maximum data elements in facilities then sum of the all each Block data elements for matching. It means how many data elements matched each blocks are not reported according to source

register. The alternative is who is reported data elements matched each blocks are not reported according to source register in all Block. HMIS Supportive Supervision data generated by IHAT is used for analyzed the level of discrepancies with HMIS portal data of selected indicators by “matched”, “not-matched”, status with facilities register data. If Facility data matched with supervision data is called “Matched”, that the valid source document is available to provide the data at time of supervision happened. The valid source document is the document provide by Government of India(GoI) like, RCH, MCTS, DELIVERY, etc. The “Not matched” criteria have been taken as valid source document is available but data didn’t match with facility record. If the data is matched with facility records but the valid source document not available at the time of supervision. After that estimate the matching status as 7 domains available- Arrival & admission, Outcome among Pregnant woman, Delivery details, Outcome among newborn, Maternal Complication, New born complication, Blood bank services.

6.4.Study Setting and Conceptual framework-Uttar Pradesh state, with a population of 200 million, has been divided into 75 districts. The IHAT is monitoring the 25 HPDs with 5 zone of the district. The public health system is 3 tier of facilities. The Block who are provided services with record registers, through which they maintain information on reproductive health, child health, and basic preventive and curative health care services delivered at facility. Every Blocks submits report on number of beneficiaries who received those services from 20th to 21st of a calendar month to the Block. Conceptually, there are two points in the chain at which quality of data can be influenced in HMIS/UPHMIS data. The first point is the entry of beneficiary information and provision of services in registers at Blocks level. The second point is challenges happened at the time of collating of HMIS format. This means that differences may be observed between the entry and collating the information being recorded registers. Both these aspects need to be taken into account for making a comprehensive statement on the HMIS/UPHMIS data quality issues. For this purpose, information of critical indicators needs to be collected from UPHMIS supportive supervision data generated by IHAT.

6.5.Sampling-There are five zone categorize under UPTSU for 25 HPDs. In Bareilly zone there are five districts, as a random sampling process District Rampur is selected. In

Rampur District out of six blocks in Rampur, four blocks have been selected, as in these four blocks technical support to the NRHM is provided by the Uttar Pradesh Technical Support Unit/Indian health action trust(UPTSU/IHAT).

6.6.Sample Area / Coverage: Out of 122 enhance nurse mentoring (ENM) facilities and 26 district hospitals selected for MFR Data Audit. This respective study will be conducted in Four Technical support unit Blocks (Bilaspur, Milak, Swar, Tanda) and DH (District Women Hospital) of District Rampur, Uttar Pradesh. These block have been selected as in these four blocks Indian health action trust is providing technical support, on the basis of delivery case load, two blocks are high case delivery load blocks and other two blocks are low case delivery load.

6.7.Data Collection- Through Supportive Supervision Audit tool interview with SN, BPM & MOIC using the semi-structured questionnaire with close-ended question will use to collect primary data among 4 ENM Blocks and 1 DH.

6.8.Data Collection Procedure: State provided us supportive supervision format and we have to visit the CHC/BCHC/BPHC. And we inform the MOI/c regarding audit and ask the Staff nurse, Pharmacist, Lab technician, BCPM, BARO to bring source register and data have to match with the source document to check the quality.

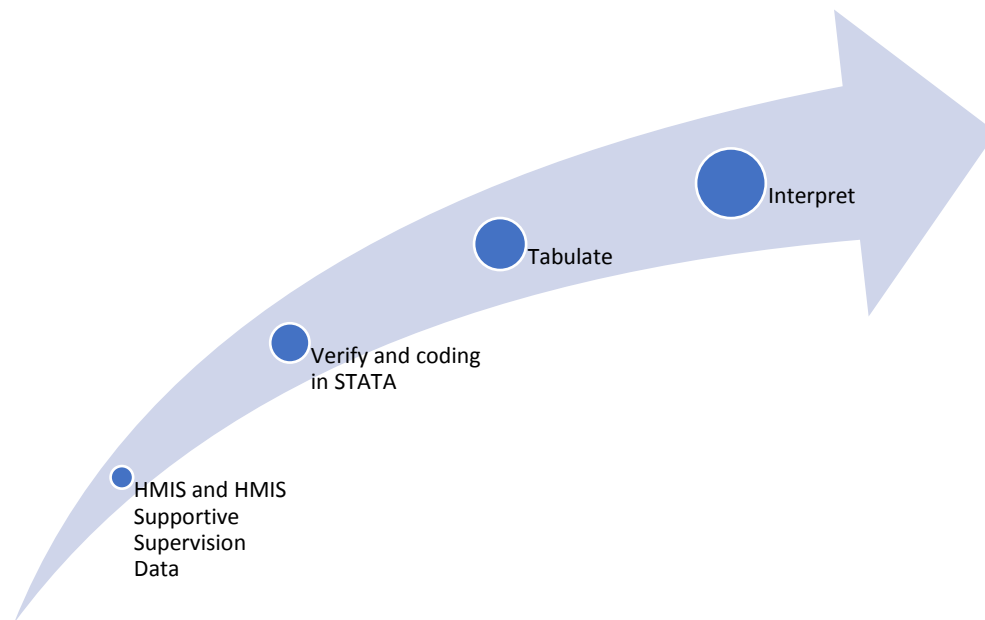
6.9.Description of Indicator will be used for quantitative analysis: Information which is

- A. **Arrival and admission**-Number of pregnant women who arrived as well as admitted in the facility (labour, not labour), Case sheet filled for deliveries
- B. **Outcome among arrival Pregnant woman-** Number of pregnant women who were referred to higher facility, sent home healthy and deaths at facility
- C. **Delivery Details-** Total number of delivery conducted, Total number of C-section deliveries performed, Total number live births and Still births (Fresh, Macerated)

- D. **Outcome among Newborn-** Number of newborn who were referred to higher facility, sent home healthy and deaths at facility
- E. **Maternal Complication-** Number of pregnant women whose complication outcomes (sent home healthy, Left Against Medical Advise (LAMA), died at facility, referred and survived, referred and died, referred status unknown) from major 9 complications(Prolonged labour, Obstructed labour, Pregnancy induced hypertension, Mild-severe pre-eclampsia, Eclampsia, Antepartum Hemorrhage (APH), Infection/Sepsis, Postpartum Hemorrhage (PPH), Anemia)
- F. **Newborn Complication-** Number of pregnant women whose complication outcomes (sent home healthy, Left Against Medical Advise (LAMA), died at facility, referred and survived, referred and died, referred status unknown) from; pre-term births, low birth weight, asphyxia, birth anomalies
- G. **Blood bank service-** Availability status of functional blood bank units, functional blood storage unit, Number of complicated pregnancy treated with blood transfusion

6.10.Study duration&Data collection tools: 3 months. Used Checklist-MFR Supportive Supervision

6.11.Secondary Data Analysis Process-



7. Results and Discussion

Fig.1- PERCENTAGE OF ALL DATA ELEMENTS MATCHED ACROSS FACILITY IN DISTRICT OF RAMPUR DISTRICT

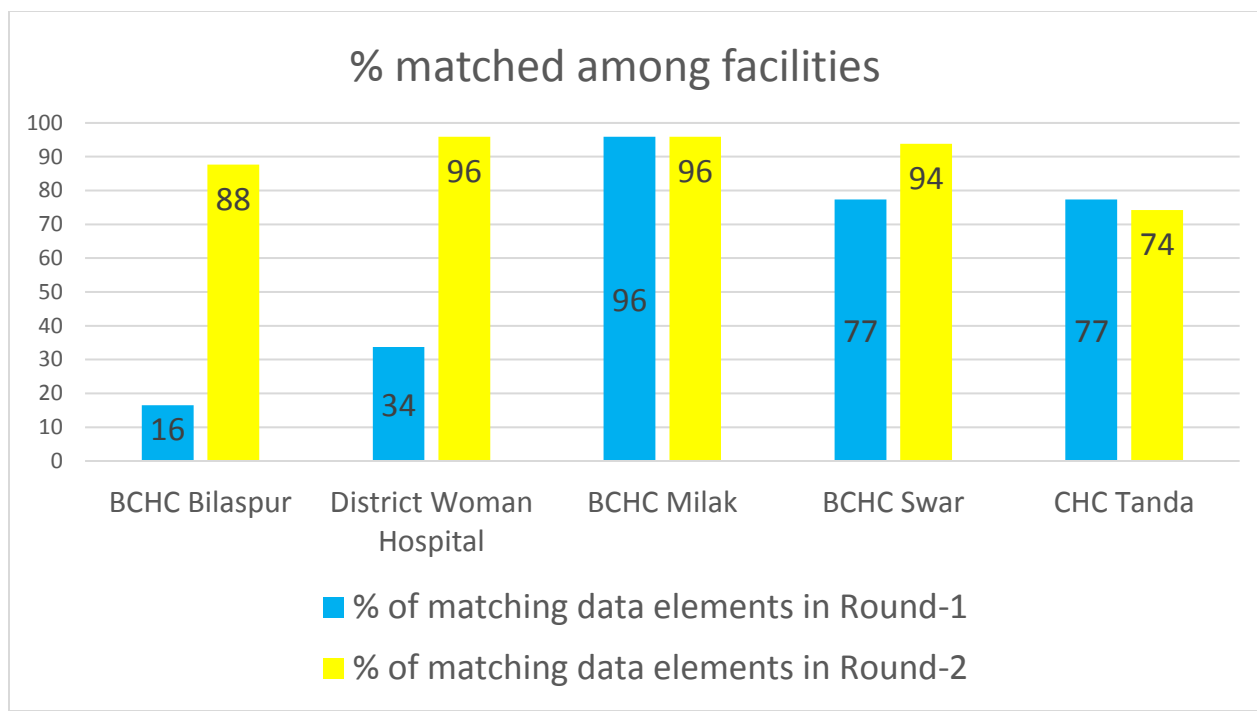


Fig.2. PERCENTAGE MATCHED DATA ELEMENT IN BILASPUR BLOCK IN TWO ROUNDS OF RAMPUR DISTRICT

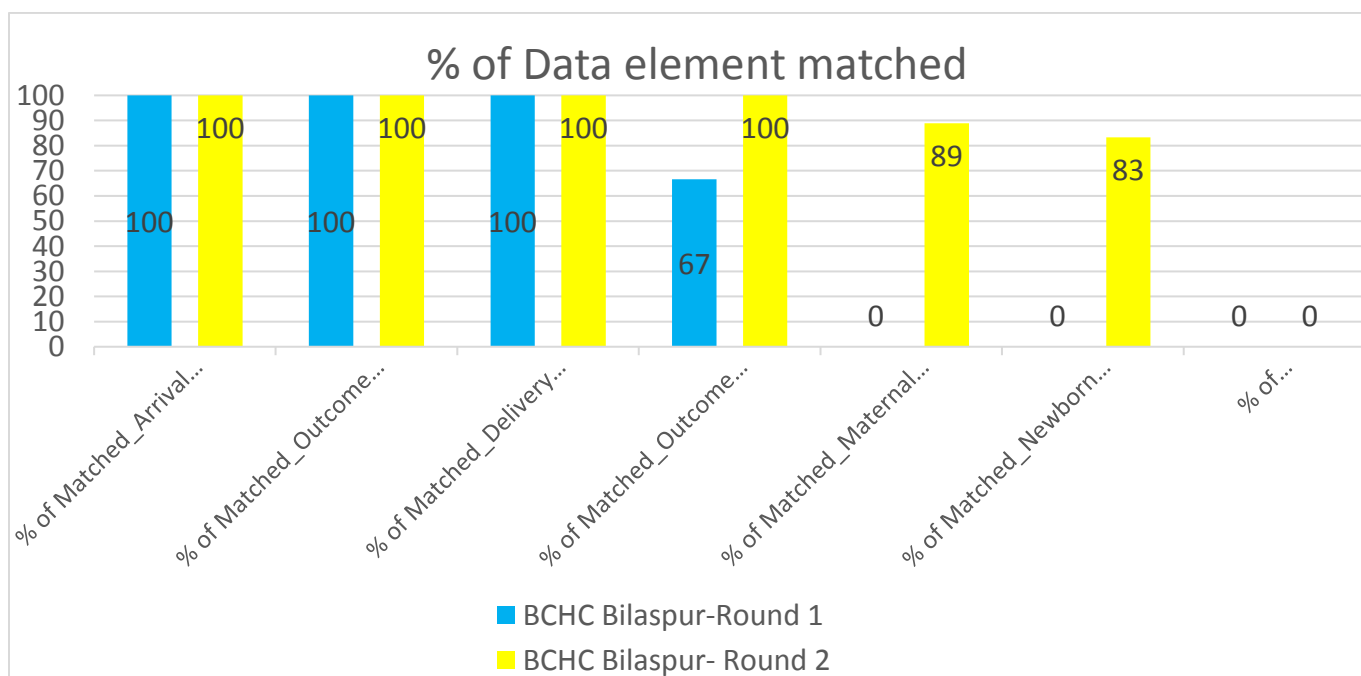


Fig.3. PERCENTAGE MATCHED DATA ELEMENT IN D.W.H IN TWO ROUNDS OF RAMPUR DISTRICT

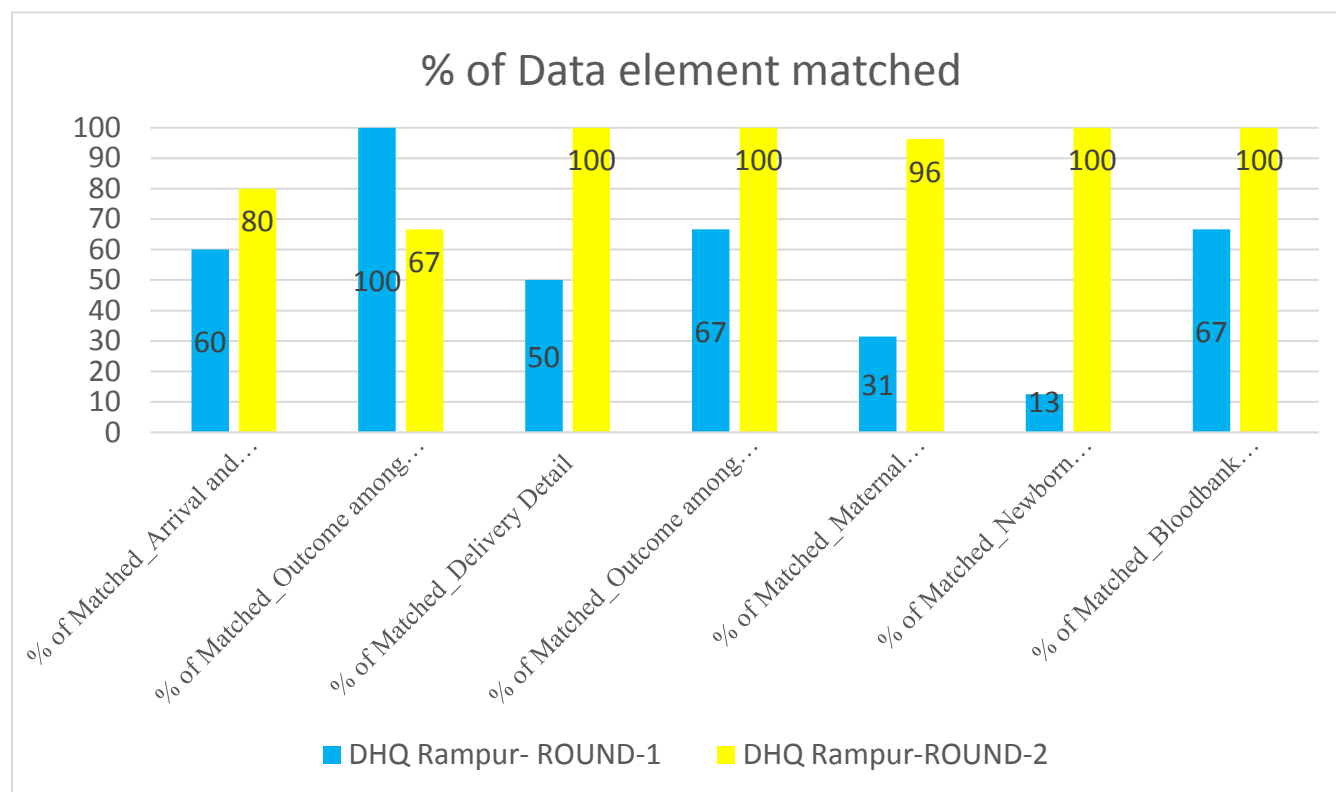


Fig.4. PERCENTAGE MATCHED DATA ELEMENT IN MILAK BLOCK OF TWO ROUNDS OF RAMPUR DISTRICT

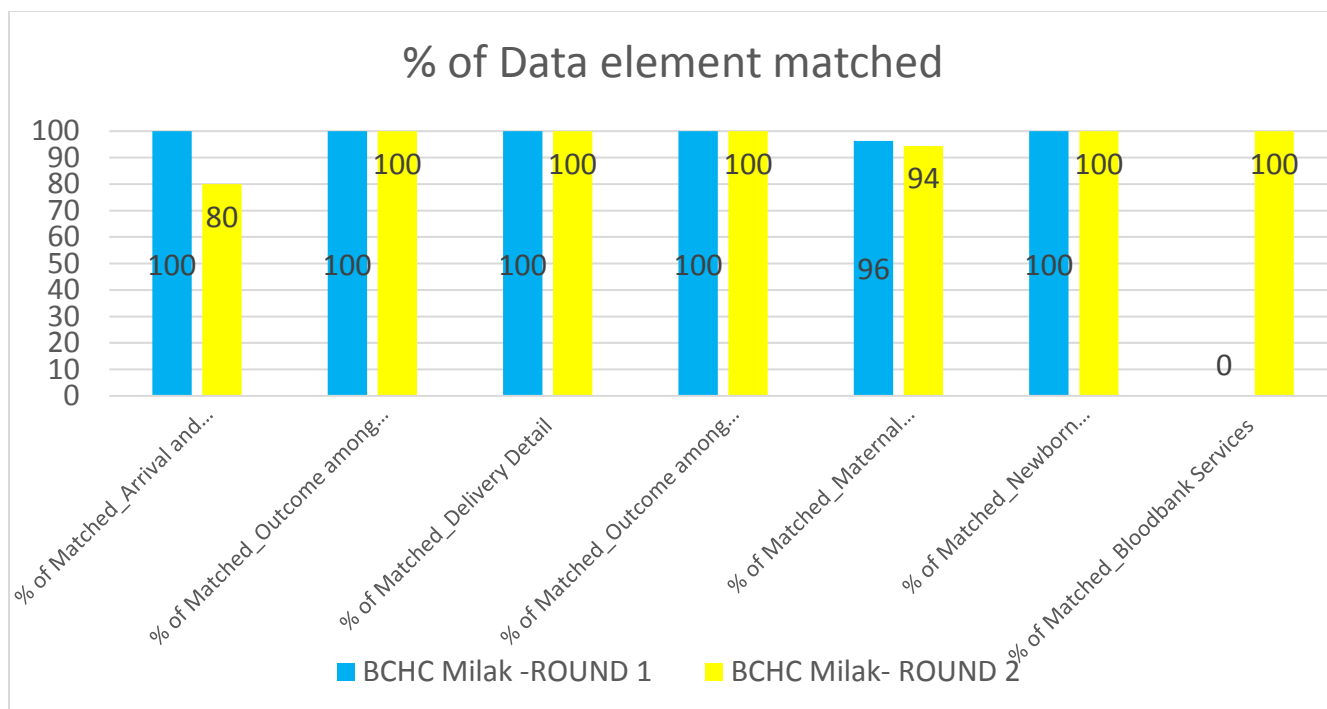


Fig.5.PERCENTAGE MATCHED DATA ELEMENT IN SWAR BLOCK OF TWO ROUNDS OF RAMPUR DISTRICT

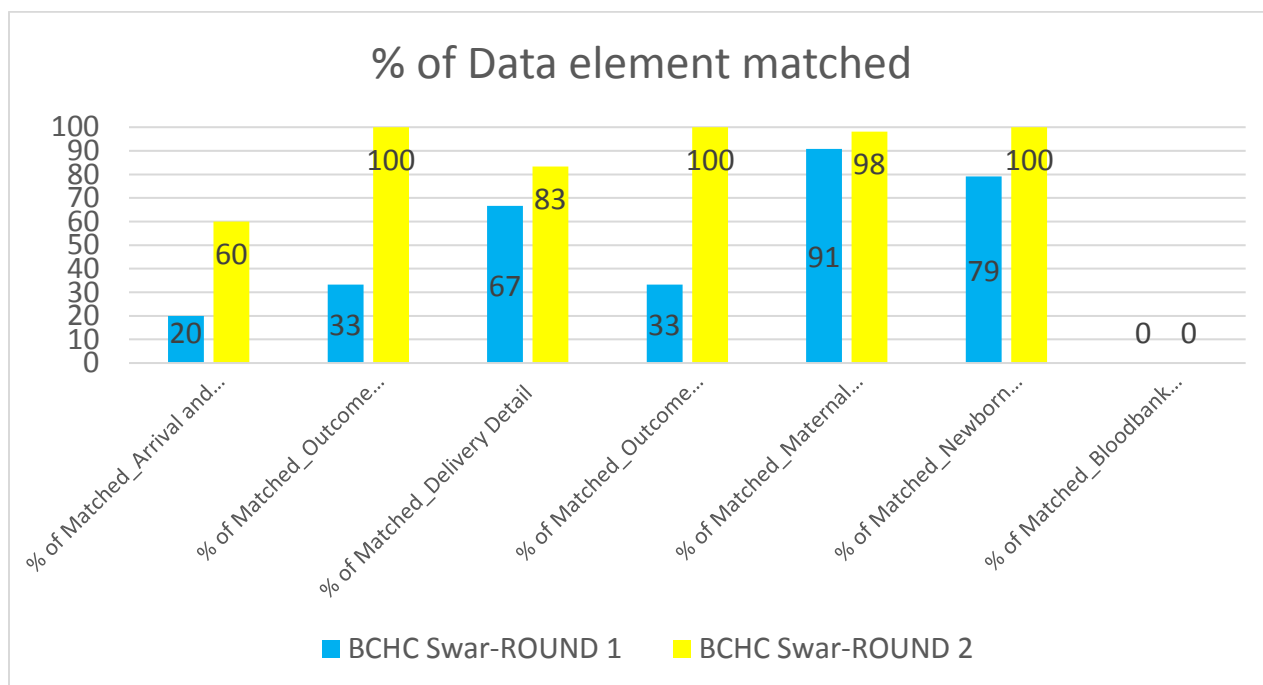


Fig.6. MATCHED DATA ELEMENT IN SWAR BLOCK CHC OF TWO ROUNDS OF RAMPUR DISTRICT

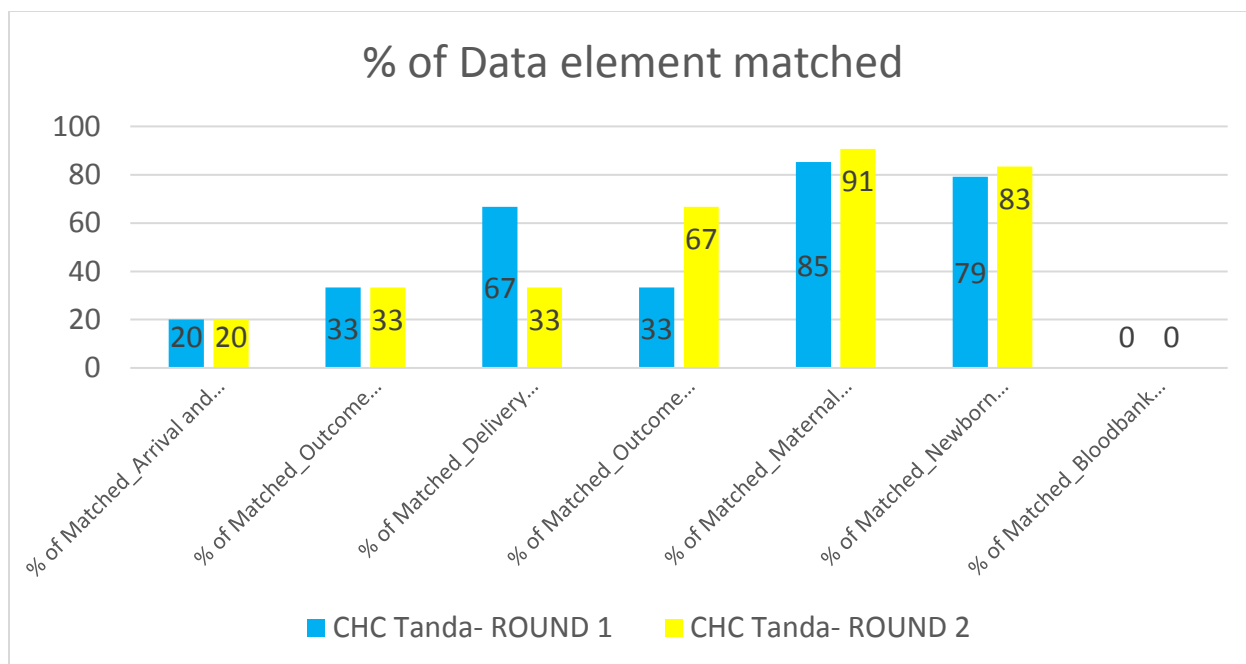
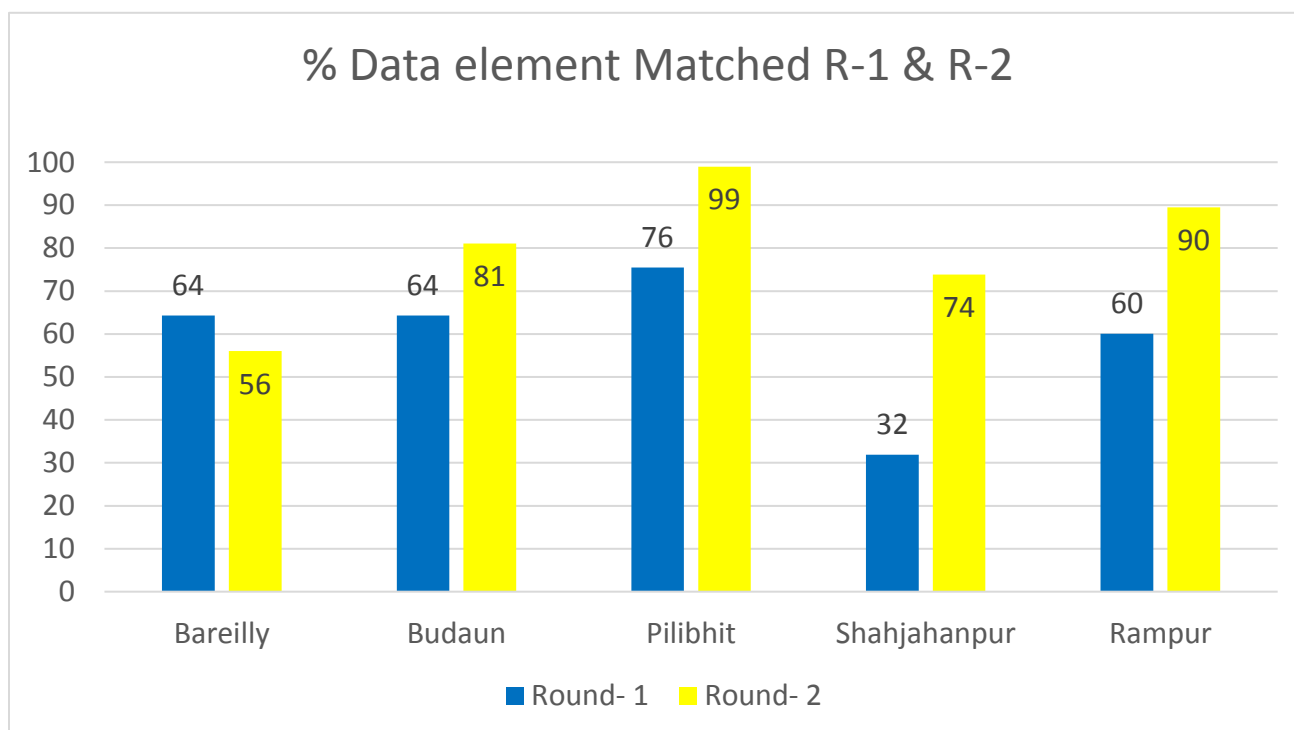


Fig.7. MATCHED DATA ELEMENT IN SWAR BLOCK CHC OF TWO ROUNDS OF RAMPUR DISTRICT



Substantial improvement is also visible across the districts except Bareilly in proportion of data elements that are matched with respective source document in Bareilly Zone

Fig.8.Data elementmatching status across facilities categories wise (1/2)

Category	Indicator	Remained High (2)	Improved (2)	Deteriorated (1)	Total (5)
		Mean	Mean	Mean	Mean
Arrival and Admission (5)	% of Matched_Arrival and Admission(R1)	50	80	20	56
	% of Matched_Arrival and Admission(R2)	80	90	20	72
	Mean Difference(R1-R2)	30	10	0	16
Outcome among Arrival Pregnant Women (3)	% of Matched_Outcome among Pregnant Women(R1)	67	100	33	73
	% of Matched_Outcome among Pregnant Women(R2)	100	83	33	80
	Mean Difference(R1-R2)	33	-17	0	7
Delivery Information (6)	% of Matched_Delivery Detail(R1)	83	75	33	70
	% of Matched_Delivery Detail(R2)	92	100	67	90
	Mean Difference(R1-R2)	8	25	33	20
Outcome among Newborn (3)	% of Matched_Outcome among Newborn(R1)	67	67	67	67
	% of Matched_Outcome among Newborn(R2)	100	100	33	87
	Mean Difference(R1-R2)	33	33	-33	20
Maternal Complication (54)	% of Matched_Maternal Complications(R1)	93	16	91	61
	% of Matched_Maternal Complications(R2)	97	93	85	93
	Mean Difference(R1-R2)	5	77	-6	31
Newborn Complications (24)	% of Matched_Newborn Complication(R1)	90	6	83	55
	% of Matched_Newborn Complication(R2)	100	92	79	93
	Mean Difference(R1-R2)	10	85	-4	38
Blood bank Services (3)	% of Matched_Bloodbank Services(R1)	50	33	0	33
	% of Matched_Bloodbank Services(R2)	0	50	0	20
	Mean Difference(R1-R2)	-50	17	0	-13

- In 4 blocks and 1 DWH Matching was poor but percentage increased in 2nd round due to availability of source documents and maintaining them by the staff nurse and staffs have taken responsibility to fill the format.
- MOI/c are concerned after the meeting with district team and have taken major steps to improve the quality of data which we can see in round 2.
- After round 2 also in DWH, register not available at facilities and action has been taken against it to improve the data.

8. Determinants of data Quality Issues-

Based on the observation using the semi-structured questions, this study assessed the Facilitators/Issues of the UPHMIS data quality at health facilities and identified possible determinants of Understanding, Training, Organizational, and Motivation factors for HMIS data quality. We also enquired about the Systemic Challenges in relation to the UPHMIS data quality and opportunities to improve the data quality by ARO/BPMs at block level.

Facilitators/barriers for Blocks-

- **Understanding-** During audit, the SNs are not using the valid formats for critical data elements while all the registers were available in the study health facilities whereas facilities majority used the page/personal diary for monthly reporting. It is also confirmed that such occurrences are common in most of the SCs also.
- **Training-** The training provide for UPHMIS elements and reporting purpose to the SNs, ANMs is very effective from TSU it was observed from BPMs and ANMs.
- **Motivation-** There is no verbal appreciation and recognition given for SNs performance.

Systemic Challenges-

- I. **Understanding-** The data elements training are provided from TSU was effective for educated ANMs. The elderly and low educated SNs are understand the elements at time of training but after, retention from training is a challenge for those ANMs.
- II. **Supervision-** Lack of effective supervision for the using of valid format using for reporting.
- III. **System Level-** The HMIS format change/added elements and provide with English language is a challenge for Block level.
- IV. **Motivation-** The less motivation has been seen from MOIC to BPMs for UPHMIS data quality. Data validation meeting should motivate the staff against the quality of data in critical elements.
- V. **Feedback-** Effective feedback not given from MOIC level for misreporting to some SNs for improve the data quality.
- VI. **Submission of data-** Completely and Timely data sometimes not provide by SNs. Complete data issues mostly for elderly staff posted at labor room

9. Discussion-

We asked question to SNs about data reporting process, understanding of elements, support given from block level, training provide, and motivation. The challenges prompted in our observation indicate that some these are related to common understanding, education level, concern person not provide the effective feedback, and not provide training with the assessment of their performance.

- A good produces complete, accurate, and timely information for DME to use as a basis for making appropriate decisions that contribute to the quality, expansion and sustainability of their programs and organizations. For information to influence management in an optimal way. it has to be used by decision makers at each point of the management spiral.
- Unavailability of register and wrong entry of data in UPHMIS portal is major concern because due to this quality of data has been decrease.
- Taking responsibility for reporting is a challenging part because understanding the meaning of data elements and entering into wright column is a challenge.
- After data collected should be verified by the MOI/c/ BPM/ ARO/ HEO, so that error and fluctuation of data be reduced.

10. Conclusion-

The level of data reporting and matching status in the District Rampur as increased the standard percentage. The challenges are regularly not maintaining the formats, lack of decision based on supervision and lack of feedback. To improving the data quality at the all facility level should needs trained data operators at block level for UPHMIS. In addition, following points need to be considered: -

- Use the local language HMIS(Hindi) format to avoid misunderstanding.
- Continuous training or support should be providing as per Minutes and observation takes from MOIC for data quality issues and others responsible employee for HMIS reporting if needed and more focus to the issues faced by elderly with low educated ANMs and provide training accordingly.
- Encourage/give advice to the all data provider individual. And should be increase the level of supervision for the use of valid register.
- To overcome from our weakness all the Staff Nurse, Pharmacist, Lab technician should make good coordination with other members Issues and problems of each working members should reach to MOI/c. and S/he should conduct a meeting with all members and discuss the SOPs of HMIS and UPHMIS format, and solve the problem of

identification of cases and data entry and most imported one person should be appointed from each department to collect the data from source register.

- Quality of data can't increase until they will take the responsibility and will make summaries of all outcome after every 20th of every month in their source register and this should be checked by the MOI/c.
- Before importing data to the portal MOI/c must conduct a validating committee and check the quality of the data i.e. numerator should meet the denominator. And discuss why outliers and data are fluctuating. And already District have validation committee, just they need to strengthen and take strong decision on fluctuation of data. They should inspect whether data is and verified strict action should be taken after conducting Supportive supervision by government official.
- Hard copies of HMIS and UPHMIS format should be present in every facilities and minutes of meeting as this shows data is validated by the MOI/c

11. Limitation

- Primary data is only from 4 blocks of Rampur district and The sequential explanatory study identified some barrier and challenges associated with the matching quality of data in UPHMIS. The methods could be reproducible on a larger scale and could aid in development for data quality improvement. We believe bigger studies with large samples could unfold these issues in details.
- Only Critical Data elements are covered under supportive supervision visits.
- There could be an other factor like review meeting, feedback mechanism which is not adjusted in this study.

12. Ethical consideration: Institutional ethical consideration was taken.

Written Informed consent will be taken prior to administration of any data collection securing their confidentiality and confirming that this study is not for official purpose but only for academic purpose.

13. Reference-

1. Bodavala R., "Evaluation of Health Management Information System in India". Available online from <https://cdn1.sph.harvard.edu/wp-content/uploads/sites/114/2012/10/rp176.pdf>. P17.
2. Singh, Mahender & Goel, Manish & Kumar Behera, Binod & S Punia, J & Labani, Satyanarayana. (2016). "Health Management Information System Data Quality under NRHM in District Sonipat, Haryana Scientist G Institution of Cytology & Preventive Oncology", Sector 39, NOIDA. International Journal of Health Sciences and Research.
3. Mishra, A., Vasisht, I., Kauser, A., Thiagarajan, S. and Mairembam, D. S. (2012), "Determinants of Health Management Information Systems performance: lessons from a district level assessment," *BMC Proceedings*, Vol. 6 (5): 17.
4. Sharma A, Rana K S; Prinja S; and Kumar R. (2016), "Quality of Health Management Information System for Maternal & Child Health Care in Haryana State, India," *PLoS One*. 2016; 11(2):e0148449.
5. Teklegiorgis, K., Tadesse, K., Mirutse, G., Terefe, W., "Level of data quality from Health Management Information Systems in a resource-limited setting and its associated factors, eastern Ethiopia", *South African Journal of Information Management* 17(1), a612.
6. Anderson, C., "Presenting & Evaluating Qualitative Research", *American Journal of Pharmaceutical Education*. 2010 Oct 11; 74(8): 141.
7. Samal, J., and Dehury, K, R., "Perspective & Challenges of HMIS officials in the Implementation of Health Management Information System (HMIS) with Reference to Maternal Health Services in Assam", *Journal of Clinical & Diagnostic Research* 2016 Jun; 10(6): LC07-LC09.
8. Innocent, K., Onzima DDM R A., Peter-S K., Philip G., "Quality and Use of Routine Healthcare Data in Selected Districts of Eastern Province Of Rwanda". *International Journal of Public Health Research* Vol. 4, No. 2, 2016, pp-5-13.
9. Ledikwe, JH., Grignon, J., Lebelonyane R., Ludick S., Matshediso, E., Sento, BW., Sharma A., Semo BW., "Improving the quality of Health Information: a qualitative assessment of data management and reporting systems in Botswana". *BMC Med*. 2014, 1: 10.1186/1478-4505-12-7.