Use of data visualization tool, *RMNCH+A Dashboards*, for strengthening Review and planning mechanism of state and District level public health administration, evidence from 25 high priority districts of Uttar Pradesh, India

**Background**

The major challenges in reviewing the performance of the health program has been collation, analysis and presentation of demographic data using administrative & other sources to identify gaps for problem solving. Generally, in a set up like Uttar Pradesh, program reviews are done based on inaccurate or poor quality data administrative data such Health Management Information System (HMIS) and Mother Child Tracking System (MCTS). Many a time review platforms are used as data collection platform where new formats are introduced which further adds duplication of data collection efforts and data quality issues. In such platform, rather than identifying the root cause or bottlenecks, administrative directions such as orders, punishments etc are used which are demotivating rather than solving. There is a need for a tool which helps program managers striving to perform systematically.

In addition, there is no system for reviewer to understand the pathways of change; the complex relations between the input, process, output, outcome and impact. To sum up, the review system tries to solve the problem without knowing the cause.

In order to alter this situation, Uttar Pradesh Technical Support Unit, Uttar Pradesh, India has devised a RMNCH+A (Reproductive, maternal, new born, child and adolescent health), with funding support from Bill and Melinda Gates foundation, dashboard tool which provides a comprehensive “pathway of change frame work” linking different data sources which helps the reviewer to conduct relational analysis in the frame work of input-output-outcome-impact, to ask relevant questions and to drill down to find out the source of the problem. The pilot is implemented in 25 districts and review meetings of Chief Medical officers and District magistrate are targeted for this innovation.

**Objective**

The specific objective of the pilot is to assess the performance of the review meetings in terms of identification of critical gaps and relevant decisions taken using the dashboard.

**Dashboard Framework**

The dashboard supports the program managers at the state, district levels to track and gauge critical RMNCH+A performance indicators adown to health communities and facilities level. It includes the actionable indicators for

- **Planning** program activities and strategies
- **Monitoring** program activities and implementation gaps to make informed decisions and initiate corrective action quickly; and
- **Reviewing** program performance – create feedback loop to guide future planning

There are 5 master dashboard interface, specifically focusing on reproductive, maternal and newborn health, child health and adolescent health. Each dashboard interface has four coordinates- the first coordinate (upper left) is for choosing the outcome level indicators that has
direct relations with outcomes, based on established relation through scientific research, the second coordinate (right upper) focuses on service utilization related indicators which are direct result of improved FLW's and facility workers performance. The third coordinate links the availability of trained human resources and its capacity in terms of knowledge, skill and practices, and fourth coordinate focuses on physical and financial investment that are used by trained staff to deliver quality services such as infrastructure, equipment, drugs and supplies. Each interface is further sub-divided into different interfaces focusing critical outcomes.

Figure 1: Conceptual frame of Dashboard, example maternal health

The first coordinate is represented with the help of a map with different colors depicting the performance of an indicator with a capability of drilling down to district, sub-district and facility level. This is also an index map, which has capability to drill down to lower geographic boundaries and change other coordinates accordingly. The dashboard is interactive in the sense that it prompts to ask relevant questions to identify bottlenecks such as what is the gap/bottleneck. Why did the gap/bottleneck occur? And how can we resolve this gap/bottleneck. The dashboards offers initial explanations to these questions.

Data sources
The data used for dashboards includes both the service provider data routinely collected by the Government as well as concurrent monitoring data collected/summarized by the TSU. The routine data sources include the existing ones such as HMIS, MCTS, and AHS/DLHS, as well as it has capability of including new data sources in the future such as the LMIS and HRIS. The provision of adding new data point is included during the design of dashboard. The concurrent monitoring data will include the rolling community and facility surveys, summaries of facility case sheets and Village Health Index Registers, etc. The following table summarizes the data used in the dashboard.

<table>
<thead>
<tr>
<th>Sl#</th>
<th>Data source name</th>
<th>Data source type</th>
<th>Description of data source</th>
<th>Unit of analysis</th>
<th>Periodicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Health Management Information system, MoHFW, GoI</td>
<td>Administrative</td>
<td>Monthly (21st to 20th of every month) facility wise service utilization data elements are uploaded in the GOI web-portal. Different registers are used for computing data elements. Available for all 75 districts.</td>
<td>Facility</td>
<td>Monthly, Quarterly and Annually</td>
</tr>
<tr>
<td>2</td>
<td>Supportive Supervision visit data, GoI</td>
<td>Third party audit (Administrative)</td>
<td>The joint visit by Govt and different development partners to assess the facility level gaps in infrastructure, equipment, drugs and supplies in facilities conducting delivery in 25 high priority districts</td>
<td>Facility</td>
<td>Different periodicity depending upon type of facility</td>
</tr>
<tr>
<td>3</td>
<td>Facility Mapping, TSU</td>
<td>Census enumeration</td>
<td>One time during 2013 conducted by TSU, all government and private facilities in 25 high priority districts are requested to participate and the response rate was (%). To be repeated by GoUP</td>
<td>Facility</td>
<td>Annual</td>
</tr>
<tr>
<td>4</td>
<td>Annual Health household survey</td>
<td>District level</td>
<td>The survey is conducted by RGI of India provides three round of estimates of critical fertility,</td>
<td>Individual respondents</td>
<td>Annual</td>
</tr>
<tr>
<td>Sl#</td>
<td>Data source name</td>
<td>Data source type</td>
<td>Description of data source</td>
<td>Unit of analysis</td>
<td>Periodicity</td>
</tr>
<tr>
<td>-----</td>
<td>------------------</td>
<td>------------------</td>
<td>----------------------------</td>
<td>------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>1</td>
<td>Survey, GoI</td>
<td>Data source</td>
<td>mortality and other critical outcome level indicators. The data is available for 2011-12, 2012-13 and 2013-14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Community Behavior Tracking Survey, TSU</td>
<td>Sub-district level household survey</td>
<td>The objective of the survey is to provide block level estimates of 50 critical output and outcome level indicators focusing on interactions between frontline workers &amp; beneficiaries and behavior change. The five groups of respondents included in the survey are of women who has delivered a live birth, still birth or abortion in last 2 months prior to the survey, mothers with child in the age group 3-5 months, 6-11 months, 12-24 months. The total sample size is 2.5 lac. New target groups will be included in the subsequent rounds. The survey is conducted by TSU.</td>
<td>Individual respondents</td>
<td>Semi-annual</td>
</tr>
<tr>
<td>3</td>
<td>Rolling facility, TSU survey</td>
<td>Provider survey (100 blocks of 25 districts)</td>
<td>The objective of the survey to track indicators related to providers knowledge, skill and practice in providing RMNCH+A services. The survey is conducted by TSU.</td>
<td>Providers in the Govt. facilities</td>
<td>Semi-annual</td>
</tr>
<tr>
<td>4</td>
<td>VHIR/ Asha diary summary</td>
<td>Program monitoring</td>
<td>The ASHA diary (an individual tracking system of GoUp) is summarized by the TSU staff (CRPs) and critical indicators are summarized at village level. This is a job aid which helps CRPs to prioritize ASHAs that need support.</td>
<td>ASHA area</td>
<td>Monthly</td>
</tr>
<tr>
<td>5</td>
<td>Case sheet summary</td>
<td>Program monitoring</td>
<td>Case sheet is a job aid (check list) introduce by the TSU which help Staff nurse to provide quality services. The TSU nurse mentors at the block consolidate case sheet to monitor performance of the providers and plan support accordingly</td>
<td>Women visiting facilities with complication of for delivery</td>
<td>Monthly</td>
</tr>
</tbody>
</table>

**Steps towards making dashboard**

The steps followed for arriving at the current stage of dashboard and the next steps to integrate the tool in health departments review mechanism can be classified in to following different steps

- **a) Assessment of existing initiatives**
  During the assessment of other initiatives of dashboard it is observed that the focus is given on populating a list of indicators. It is felt that there is a need for conceptual framework that can capture complete pathway of change.

- **b) Designing a conceptual framework**
  The pathway of change for each dashboard is conceptualized based on the existing literature or program experience that can capture input-output-outcome-impact (figure 1).

- **c) Selection of indicators**
  To complete the pathway of change critical indicators are selected from a master list of indicator. The available indicators and their source, periodicity, method of data collection is documented

- **d) Assessment of quality of data**
  Quality of data is critical in effective programme management. Currently, different data sources related to health are located at different places and have varying reliability and accuracy. Hence, it is also decided to give a comparisons of data quality whenever require.
e) Field testing in two districts (Hardoi and Sitapur)
The 1st version of the dashboard is piloted in two districts. The district CMO and MOICs (Block Level medical officer) are oriented on the use of dashboard and they are asked to use the same for a week time. After one week time feedback is collected in which both district CMOs and MOICs found this tool very useful for program review with few suggestions like the dashboard needs to have real time data and there is a need for including a user guide which can help them asking relevant questions during navigation.

f) Dissemination to state level officials
Both Directorate of Family welfare and NHM officials are oriented on the dashboard and relevant suggestions are incorporated.

g) Implementation approach
The district M&E specialist and district CMO will jointly review the dashboard before monthly MOICs meeting and list down major actionable points. This actionable points will be shared with the MOIC and they will be directed to take necessary corrective action.

Dashboard tool
There are many dashboard tool available including different excel based tool. After comparing existing tool it is found that tableau is a tool which has features that can make the dashboard more interactive. Moreover, it has better data visualization capabilities. In addition to graphs and charts it can also conduct geo-special analysis. The tool has capabilities of drilling down to the district, block and facility levels. Following is a snapshot of the dashboard on institutional deliveries:

Figure 2: Example of dashboard, Institutional delivery
Key findings
It has been observed that there within 3 months of intervention almost all 25 districts Chief Medical Officers and 6 district magistrate have started using dashboard in their review meetings and decisions are taken based on the data visualization tool, dashboard.

The decision are primarily related to increase in the availability of staff nurse and other positions, strengthening existing facilities for institutional deliveries, increase in supplies of essentials drugs and equipment at the lowest level of service delivery platform at community level (Village Health and Nutrition day), sending request to state government to supply essential drugs and also local purchase of drugs, capacity building plan for staff on critical lifesaving intervention through leveraging support from development partners. Setting up system to improve data quality such as district and block level data validation committee. Directions to ensure timely data entry in the HMIS web portal.

It has been clearly observed that with the increase in data use the decision makers are also focusing on ensuring reliable data.

Limitation
The major challenge at this stage with dashboard is availability of real time data, more particularly data related to human resource, infrastructure, equipment, drugs and supply. At present, the state does not have HRIS or LMIS system which can provide this data. The GoI supportive supervision provides some critical information at an interval of more than a quarter. As a result, it might be difficult to track the changes based on the actions taken during monthly review meetings.