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Logistics Brief

India: Data Drives Forecasting in Haryana and Jharkhand



Rajesh Kumar manages stock inventory at a health facility in Haryana

“This is the first time we’ve had data driven forecast. Real numbers, real amount of commodities—based on reality. Not last year’s numbers plus 10 percent like usual”

—Jharkhand State Health Mission Director Ashish Singhmar

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Forecasting demand and coordinating activities to meet that demand are critical functions. Forecasting informs supply chain decisions on program need, product selection, funding gaps, procurement, and delivery. Forecasting exercises help program managers identify funding needs and determine timing for procurement, maximize the use of available resources, and advocate for additional resources to ensure a continuous supply of commodities. In India, the USAID | DELIVER PROJECT has introduced more rigorous forecast methodologies for supply chain needs in the public sector.

Qualitative and quantitative studies conducted by the USAID | DELIVER PROJECT in five states concluded that the lack of systematic forecasting contributed to inconsistent commodity availability. In most cases, funding availability—rather than projected medicine consumption per standard treatment guidelines (STGs)—was driving procurement decisions for essential medicines including those for reproductive, maternal, newborn, child, and adolescent health (RMNCH+A) commodities at the state and district levels. The annual estimation of quantities required was based on the previous year’s expenditures, plus (typically) 10 percent. The lack of standardized recordkeeping and reporting at the facility level also compromised accurate forecasts and resulted in stockouts and an inability to meet client demand.

The project helped develop a more precise forecasting methodology for RMNCH+A commodities and selected essential medicines in two states, Haryana and Jharkhand, that made use of available data, program clinical recommendations, and STGs.

Understanding Existing Data for Forecasting

Three types of data can inform forecasts:

- **Logistics/consumption data** capture quantities of products dispensed directly to clients in the health facilities.

- **Morbidity/health management information system (HMIS) data** consider the number of services or cases treated and reported prevalence of health conditions.
- **Demographic data** consider the size of population cohorts and their trends and distribution by various socio-demographic characteristics.

Generally, logistics data-based forecasts are preferred because they most closely reflect end-user consumption and actual health facility dispensing history and require no conversion from patient or population figures to the number of products consumed. When using logistics data, the reported dispensing data must be complete and of good quality. This type of data is not generally feasible for new program forecasting because they have no historical consumption dispensing data. However, this forecasting approach was possible in Haryana, where logistics data were already available from the Haryana Online Drug Inventory and Supply Chain Management System (ODISCMS).

Morbidity data-based forecasting focuses on service delivery information, usually collected from HMIS. As with logistics data, morbidity data must be complete and of good quality (i.e., following STGs ensures more predictable product demand and results in more accurate forecasts). Morbidity assumptions may include the expectation that past trends will continue, or may overestimate commodity needs when data is extrapolated to estimate incidence for a program or population. This type of data was used for forecasting exercises in Haryana and Jharkhand.

Demographic data-based forecasting is best for new programs because its program targets are easy to factor, but it is collected at infrequent intervals and can quickly become outdated. Demographic data relies on many assumptions, and the more the assumptions, the weaker the forecast. Demographic data were used in both states to create a point of comparison for the forecasting exercise.

Developing the Data Collection Template

Data collection templates in accordance with each of the three types of data were developed. A logistics data collection template was designed to collect essential logistics data for each commodity included in the forecast. The morbidity data collection template helped collect HMIS data to determine the number of potential clients within each program category. A demographic data collection template based on standard data points was developed to determine the target size of each RMNCH+A program category included in the forecast. The templates were combined into a spreadsheet accounting for health conditions and STGs to determine the quantity of each commodity in the forecast.

Jharkhand

Jharkhand is centralizing its procurement and supply chain operations. One of their three priorities for 2014-2015 was to initiate a centralized procurement for approximately 71 fast-moving essential medicines. The challenge to achieving this goal was limited access to logistics data because procurement was previously decentralized and districts were making small purchases with very little or no reporting of data to the state.

Step 1: Initiation

The Jharkhand state medicine advisory group (SMAG) opted for a model in which each district prepares a forecast and all district forecasts are combined at the state level. Without supply chain-dedicated technical resources at the state level, it was thought that this model, while more time intensive, would use the district-level experience of decision makers, such as chief pharmacists and chief medical officers, to build statewide consensus. At the same time, the model would serve the district needs in case state-level procurement was not organized.

Step 2: Introducing the concepts of forecasting – Bokaro District tool

Initially, Jharkhand requested forecasting of 71 essential medicines, including a subset of RMNCH+A commodities, to prepare for a quick tendering process. Because there were no state-level resources to collect data, project staff in Delhi helped develop and populate a basic Excel forecasting tool using combined demographic and HMIS data with treatment protocols from various program guidelines and a national formulary that was used as an example in Bokaro District. The exercise was heavily desk-based and required a lot of time to gather data. The other main weakness was the lack of field-level information on the use of STGs and the low level of engagement of district counterparts. After a first draft was presented to state decision makers, it became apparent that it would take another three to four months to validate the assumptions for Bokaro District and expand the forecast to include the remaining 23 districts. With another estimated six months of procurement lead-time, the state health mission (SHM) decided to release funding to continue the district-based procurement for at least another year.

Step 3: Developing forecasting tool for RMNCH+A commodities–Gumla and Lohardaga

Meanwhile, the SMAG gained time to review the data used in the initial Bokaro District forecast and decide how to extend it to other districts with the project's support. The SHM recognized the need for a comprehensive and well-documented process using state- and district-based data and resources to validate and extend the forecast to all districts and the full state and prepare for future state-level procurement. At the end of 2014, the project began to develop a more robust and better informed tool for forecasting approximately 30 RMNCH+A commodities. By focusing on a smaller number of commodities, the state was able to proceed with its procurement much faster. Once the process and tool for RMNCH+A commodities was developed, it was decided that it could be extended to other essential medicines.

Project staff facilitated a two-day workshop with stakeholders from Gumla and Lohardaga Districts to review the collected data and validate key assumptions for the forecasts. Although all data types have strengths and weaknesses, logistics data were found to be the weakest, and participants agreed that there was likely over- and under-reporting of both HMIS and logistics data. As a result, the project worked with the SHM to prepare an RMNCH+A Excel-based district forecasting methodology and tool using only demographic and HMIS data for forecasts and supply plans for each districts. The process of district-level data collection, validation of data and assumptions, and preparation of two districts forecasts took approximately 10 weeks. Gumla and Lohardaga forecasts were submitted to SMAG for review and approval, and the RMNCH+A forecasting methodology and tool will be extended to other districts.

Step 4: Extending the forecasting methodology to 100+ essential medicines

As SMAG debated how to move forward with the RMNCH+A forecasting for the remaining districts, the newly elected government in Jharkhand ordered the SHM to forecast its needs immediately and begin procurement of approximately 100 essential medicines. The political deadline set by the Jharkhand Secretary of Health was two weeks. The SHM, in consultation with the project, decided to use the two forecasting tools previously drafted for Bokaro, Gumla, and Lohardaga Districts to respond to this urgent request. The initial 71 essential medicines forecasting for Bokaro District, although recognized as not the most accurate, was extended to the state level using the total population as a weighting algorithm. The 30+ RMNCH+A commodities in the forecasting tool designed for Gumla and Lohardaga Districts was used to develop a statewide forecast. Finally, the two forecasts were reconciled, and the best was used to inform the technical bidding specifications required for procurement. This process took a bit over two weeks and the SHM was able to launch the procurement. In August 2015, the evaluation of proposals concluded and the state was conducting inspections at the production sites of short-listed vendors. At the end of the process, they will finalize the rate contracts.

Because the process in Jharkhand required extensive time and project resources, often without appropriate data or state-level staff, a framework had to be defined and assumptions developed and analyzed. This included an important capacity-building component for selected SHM staff at the state and in two districts.

As a result, the SHM established an advisory committee to select and validate additional commodities to be forecasted and included in future procurement processes, and to identify data sources for future forecasting (e.g., STGs, HMIS).

Haryana

Unlike Jharkhand, Haryana had data available but did not use it for forecasting. The project determined with the SHM that logistics data from the state's ODISCMS would be used to develop a centralized state-level forecast. A forecasting workshop was held and 40 SHM and Haryana Medical Services Corporation Limited (HMSCL) participants defined a standardized set of data and forecasting assumptions to be discussed and analyzed. Using the reviewed data and the validated assumptions, the participants went through a demographic-based forecast for various categories including contraceptives and maternal, newborn, child, and adolescent health. Where data was available, forecasts were developed using the ODISCMS issues data as a proxy for consumption.



Folic acid is one of the most important supplements for pregnant women.

HMSCL took forecasting one step further than Jharkhand by creating a supply plan and utilizing PipeLine software, developed by the project for USAID, to facilitate procurement planning and monitoring for supply planning of commodities not considered cross-cutting with other health programs (e.g., vitamin A syrup, iron folic acid). Default PipeLine supplier lead times and minimum/maximum months of stock levels were used. Funds for procurement were estimated using commodity price information from the ODISCMS and compared with provided individual commodity budgets. A funding gap analysis for cross-cutting products was conducted only for quantities required for planned 2015 campaigns by respective programs. With pre-existing data and dedicated human resources, the forecasting process was less time- and resource-intensive in Haryana than Jharkhand. In total, the Haryana forecast covered about 30 RMNCH+A commodities.

Results

In both states, the project strengthened SHM and HMSCL's capacity to use existing data for the improved management of supply chain operations. Following the year-long forecasting exercises in Jharkhand and after looking at various data and taking the best from each, more reliable numbers were available and state officials were able to sign a procurement bid with greater confidence in the specifications than ever before. This is an important step in Jharkhand's quest to centralize procurement and supply operations. When Jharkhand implements a web-based electronic logistics management information system, it will use the project-developed forecasting processes and tools to tailor the planning module to state needs and district requirements.

Jharkhand State Health Mission Director Ashish Singhmar emphasized the need to scale up improved forecasting beyond the two districts selected. "This is the first time we've had data driven forecast. Real numbers, real amount of commodities—based on reality. Not last year's numbers plus 10 percent like usual."

In Haryana, the forecasting exercise will be used by program managers to calculate the quantities of the commodities for various priority health care programs. It will also help the HMSCL and the Director General of Health Services assess the availability of financial resources to meet the demand for medicines.

A good forecast leads to better relationships with suppliers and accordingly, better pricing, but forecasts are only as good as the data that goes into them. By looking at 2016 consumption data and comparing it to the 2015 forecast used, Haryana and Jharkhand states will have a better understand of the quality of their forecasts and will be able to improve future forecasts. At the same time, efforts to improve logistics record-keeping will continue to improve the quality of data and future forecasts in India.

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