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Jharkhand, India: Reproductive, Maternal, Newborn, Child, and Adolescent Health (RMNCH+A) Logistics Indicator Assessment Report

JULY 2015

This publication was produced for review by the U.S. Agency for International Development. It was prepared by the USAID | DELIVER PROJECT, Task Order 4.



PEPFAR
U.S. President's Emergency Plan for AIDS Relief

Jharkhand, India: Reproductive, Maternal, Newborn, Child, and Adolescent Health (RMNCH+A) Logistics Indicator Assessment Report

USAID | DELIVER PROJECT, Task Order 4

The USAID | DELIVER PROJECT, Task Order 4, is funded by the U.S. Agency for International Development under contract no. GPO-I-00-06-00007-00, order no. AID-OAA-TO-10-00064, beginning September 30, 2010. HIV-related activities of the initiative are supported by the President's Emergency Plan for AIDS Relief. Task Order 4 is implemented by John Snow, Inc., in collaboration with PATH; Crown Agents Consultancy, Inc.; Eastern and Southern African Management Institute; FHI; Futures Institute for Development, LLC; Llamasoft, Inc.; The Manoff Group, Inc.; Pharmaceutical Healthcare Distributors (PHD); PRISMA; and VillageReach. The project improves essential health commodity supply chains by strengthening logistics management information systems, streamlining distribution systems, identifying financial resources for procurement and supply chain operation, and enhancing forecasting and procurement planning. The project encourages policymakers and donors to support logistics as a critical factor in the overall success of their healthcare mandates.

Recommended Citation

USAID | DELIVER PROJECT, Task Order 4. 2014. Jharkhand, India: Reproductive, Maternal, Newborn, Child, and Adolescent Health (RMNCH + A) Logistics Indicator Assessment Report. July 2015. Arlington, Va.: USAID | DELIVER PROJECT, Task Order 4.

Abstract

In May 2014, the USAID | DELIVER PROJECT, with support from the Ministry of Health and Family Welfare (MOHFW), the National Health Mission (NHM), and the Jharkhand Department of Health & Family Welfare and Health Mission, conducted an assessment on the availability of reproductive, maternal, newborn, child, and adolescent health and HIV and AIDS commodities as well as the performance of the logistics management and supply chain systems in Jharkhand. This report presents the findings of the assessment, as well as recommendations to strengthen the logistics systems.

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Acronyms

AIDS	acquired immune deficiency syndrome
ANM	auxiliary nurse midwife
ART	antiretroviral therapy
ARV	antiretroviral
ASHA	Accredited Social Health Activists
BCG	Bacillus Calmette–Guérin
CHC	community health center
DAC	Department of AIDS Control
DH	district hospital
DPT	diphtheria, pertussis, tetanus
EC	emergency contraceptive
EDL	essential drug list
FEFO	first-to-expire, first-out
FY	financial year
GH	general hospital
GMSD	government medical supply depot
GOI	Government of India
HMIS	health management information system
HSC	health subcenter
ICTC	integrated counseling and testing center
IFA	iron folic acid
ILR	ice-lined refrigerator
IUCD	intrauterine contraceptive device
JSI	John Snow, Inc.
LIAT	Logistics Indicators Assessment Tool
LMIS	logistics management information system
MDG	Millennium Development Goal

MOHFW	Ministry of Health and Family Welfare
NHM	National Health Mission
NRHM	National Rural Health Mission (prior name of NHM, name changed in 2013)
OCP	oral contraceptive pill
OI	opportunistic infection
OPV	oral polio vaccine
ORS	oral rehydration salts
PHC	primary health center
ProMIS	Procurement Management Information System (for family planning)
RMNCH+A	reproductive, maternal, newborn, child, and adolescent health
RTI	reproductive tract infection
SACS	State AIDS Control Societies
SDP	service delivery point
SHM	State Health Mission
SOH	stock on hand
SOP	standard operating procedure
STI	sexually transmitted infection
UIP	universal immunization program
USAID	U.S. Agency for International Development
VVM	vaccine vial monitor
WIF	walk-in-freezer

Acknowledgments

We would like to thank the personnel at the Ministry of Health and Family Welfare (MOHFW) and the National Health Mission in Delhi for their support of this assessment, especially Dr. Ajay Khera, Deputy Commissioner, Child Health and Immunization, MOHFW.

We are grateful for the support of Jharkhand Department of Health and Family Welfare and State Health Mission, especially Mr. Ashish Singhmar I.A.S, Mission Director; and Dr. Sumant Mishra, Director in Chief Health Services. We are also thankful to Maternal and Child Health Integrated Program (MCHIP) staff and the State Reproductive, Maternal, Newborn, Child, and Adolescent Health (RMNCH+A) Unit for their roles in coordinating with the various Jharkhand stakeholders. They provided helpful contextual information for the design and implementation of the survey.

Many thanks to the IMS Health Information & Consulting Services India Pvt. Ltd. staff, especially Nilesh Maheshwari, Deepak Batra, Apoorva Jain, and Indrani Sharma, for all their time before, during, and after the assessment. We also thank their team of field collectors and supervisors, without whom this study could not have occurred.

We are grateful to all the staff at the warehouses, district stores, and health facilities (hospitals, community health centers, primary health centers, and subcenters) from Kodarma, Deoghar, Dhanbad, Dumka, Garhwa, Gumla, Hazaribagh, Latehar, Pakur, Ramgarh, Sahibganj, and Saraikela, who took time to provide valuable feedback with the field teams.

Thanks also to all the stakeholders for their valuable information, opinions, and perspectives that went into informing the assessment, and for showing us around their facilities.

Finally, we extend special thanks to the U.S Agency for International Development (USAID), whose assistance was instrumental in the implementation of this activity. We are grateful to James Browder and Vijay Paulraj from USAID/India for their continuous support.

We hope this report will contribute to improving the access to and availability of the essential priority medicines included in the RMNCH+A Strategy.

Executive Summary

Over the past two decades, India has seen impressive economic growth and prosperity, becoming the world's largest democracy and fourth largest economy. However, these high rates of economic growth and geopolitical diversity have not been equitable. India still ranks 136 out of 186 countries on the 2013 Human Development Index; approximately 60 percent of its population continues to live on less than \$2 per day. The country still faces a wide range of development challenges and health disparities, especially among those living in rural areas, the poor, and women and children. Despite recent progress toward achieving Millennium Development Goals (MDGs) 4 and 5, maternal, infant, and child mortality rates continue to be high across India.

The Government of India (GOI) has confirmed its commitment to reducing maternal and child mortality. It acknowledged that scaling up life-saving commodities is vital to achieve MDGs 4 and 5. In 2013, the GOI launched the Reproductive, Maternal, Newborn, Child and Adolescent Health (RMNCH+A) strategy, which outlined interventions that would have a positive effect on child survival and maternal health. One of the interventions the government outlined and reiterated as a top priority is the strengthening of drug procurement and logistics management systems of RMNCH+A commodities.

Given this context and as part of ongoing support to the implementation of the RMNCH+A strategy, the Ministry of Health and Family Welfare (MOHFW) requested that the U.S. Agency for International Development (USAID) provide technical assistance in supply chain management of essential RMNCH+A commodities, including condoms and sexually transmitted infection (STI) and opportunistic infection (OI) drugs. To further the goal of providing comprehensive and integrated health services to mothers, newborns, children, and adolescents, the USAID | DELIVER PROJECT is working at the national level and in six priority states (Delhi, Haryana, Himachal Pradesh, Jharkhand, Punjab, and Uttarakhand) to strengthen the supply chain management systems of RMNCH+A commodities. USAID is the lead development partner in the six priority states under India's Call to Action for Child Survival and Development.

As part of this activity, the project conducted a comprehensive survey in two priority states (Haryana and Jharkhand) to document commodity availability and management at various levels within the four supply chains influencing the RMNCH+A strategy. The four supply chains are essential medicines, family planning, vaccines, and reproductive tract infection (RTI)/STI and HIV and AIDS. The study used an adapted version of the Logistics Indicators Assessment Tool (LIAT). The goal of this study was to provide information on the availability of 42 products that the project, in close consultation with the State Health Mission (SHM) and USAID, identified as key tracer commodities at service delivery points (SDPs) and regional warehouses and district stores. The survey was conducted at four warehouses (essential medicines, family planning, vaccines, and HIV and AIDS), 24 district stores, 24 hospitals, and 312 SDPs within 12 selected districts in Jharkhand. It captures health commodity systems performance and availability at all levels of facilities in the public health system. The report provides stakeholders with up-to-date information on operating systems for commodity management related to the RMNCH+A strategy. It assessed product availability and specific logistics activities, including reporting, ordering, inventory control, issuing, transportation,

training, supervision, and maintaining storage conditions. Data were collected through direct observation (e.g., storage areas and available records and reports) and a physical inventory. The facility-level officers in charge and facility-level personnel responsible for managing and storing commodities were also interviewed. Data were collected using Lenovo Idea Tab a1000 Android tablets and the Magpi mobile application, which Datadyne designed. Magpi facilitates the transfer of data through forms on phones and transmits data from the phones directly to the Internet.

Key Findings

In Jharkhand, as in other states, the commodities listed in the RMNCH+A 5x5 matrix fall within four independent supply chains: essential medicines, family planning, vaccines, and HIV and AIDS (Figure 1).¹ A different controlling body within the MOHFW and National Health Mission manages and operates each of the four supply chains. Therefore, each system has separate policies and practices.

Stock Assessment and Stock-keeping Practices by Supply Chain

Essential Medicines

Based on the national essential medicine list (counterparts refer to it as the ‘essential drug list’ [EDL]), guidelines, and input from the GOI and technical advisors from USAID development partners, hospitals in Jharkhand are required to manage 24 essential medicines assessed in the survey; community health centers (CHCs) are required to manage 23; primary health centers (PHCs) 21, and health subcenters (HSCs) are required to manage 13. The survey found that overall, facilities were not managing the number of required products and the proportion of products managed according to guidelines varied across levels, from 53 percent (hospitals) to 36 percent (PHCs). Health subcenters were managing approximately 46 percent of commodities recommended by guidelines (Table 5).

Regarding product availability on the day of visit, facilities also dropped far below the EDL-required guidelines, averaging just over seven products per facility. The lowest (HSCs) averaged two products—far below the 13 product minimum required by EDL guidelines (Table 5).

Albendazole and oral rehydration salts (ORS) were the two most commonly managed of the essential medicines commodities, but this was not universal in facilities. Few facilities (4.6 percent) managed methyldopa, while only 60.9 percent of hospitals, 69.5 percent of CHCs, and 59.1 percent of PHCs managed oxytocin, a key maternal life-saving medicine (Table 6).

The survey found that stockouts of essential medicines were frequent across all levels of the system and varied among products. Of those facilities that had managed the product in the previous 12 months, 76.9 percent were stocked out of vitamin A, 67.2 percent of methyldopa, 63.6 percent of magnesium sulfate, and 57.8 percent of misoprostol on the day of visit. The products with the lowest stockout rates on the day of visit were zinc sulfate (6.3 percent), ORS (9.6 percent), vitamin K (12.2 percent), iron folic acid (IFA) (Red) (17.2 percent), and oxytocin (26.9 percent) (Table 7). Stockout rates in the previous three months were also relatively frequent across all facility levels. The highest stockout rates from the previous three months were vitamin A (100 percent); IFA (Blue) (63.1 percent); ceftriaxone (45.5 percent); ORS (39 percent); and IFA (Red) (33 percent).

¹Unless otherwise noted, the term “HIV and AIDS,” which is used throughout the report, also includes the RTI/STI treatment kits, as the RTI/STI treatment kits are distributed through the HIV and AIDS supply chain run by DAC.

Methyldopa (0.0 percent); vitamin K (3.5 percent); co-trimoxazole (3.7 percent); and IFA syrup (6.5 percent) had the lowest stockout rates of the essential medicines (Table 8). Stockouts most frequently occurred at the lower-level facilities (CHCs, PHCs, and HSCs) compared with hospitals, and depending on the product, lasted up to three months (Tables 9 and 10). It is important to note that recordkeeping was limited; overall, 25 percent of facilities had updated records for the products they managed (Table 28). As such, the extent of stockouts in the previous three months may be overestimated or underestimated.

Of the facilities with updated stockcards for essential medicines, approximately 70 percent of the balances listed were within ± 10 percent of the physical count on the day of visit. When considering the entire sample, this means that only 18 percent of facilities visited had accurate stockcards for the products they were managing. Interestingly, while maintaining on average an overall similar percentage of updated stockcards (25 percent), accuracy rates of CHCs and PHCs (60 percent and 74 percent, respectively) were higher compared with hospitals (59 percent) (Table 29).

Family Planning

Five family planning products were included in this assessment: condoms, emergency contraceptives (EC), Copper T 380A intrauterine contraceptive device (IUCD), oral contraceptive pills (OCP), and pregnancy test kits. According to national guidelines, facilities at all levels of the supply chain should manage each of these five products. The survey found that the average number of products managed across all facility levels was 4.2, below guideline requirements. For product availability on the day of visit, the state average fell well below the five product minimum, at only 3.1 products. As the data indicate, fewer products were available at the lower levels of the system. Only 38 percent of facilities maintained all five products, while 21 percent of facilities did not manage any products (Table 17). Male condoms were the most consistently managed product, at 70.4 percent, across all facility levels. The other family planning products were managed far less consistently, and EC was managed the least, at fewer than half of all facilities (Table 18).

Stockouts of family planning commodities on the day of visit varied widely among family planning products, with rates from 11.8 percent for IUCDs to 49.3 percent for condoms. Additionally, rates varied by level, with 13.2 percent of CHCs stocked out of pregnancy test kits compared to 42.9 percent of hospitals on the day of visit. Overall, district stores were stocked out of products at a higher level compared with SDPs. Interestingly, while stockouts occurred further down the system, all five products were available at the family planning state warehouse in Ranchi on the day of visit (Table 19).

Stockouts of family planning commodities within the last three months were lower compared with stockouts on the day of visit for all products, except for pregnancy test kits. Rates varied across the different product types and all levels, from 5.5 percent for IUCDs to 21.6 percent for pregnancy test kits (Table 20). Interestingly, stockout rates for EC and condoms were much lower within the last three months (5.6 percent and 9.6 percent, respectively) than they were on the day of visit (41.8 and 49.3 percent, respectively). This indicates a recent problem with the family planning supply chain or quality of recordkeeping. Average frequency of stockouts for family planning commodities ranged from 1.3 to 2.6; EC reported the lowest average stockout duration (49.3 days). All other commodities (condoms, IUCDs, OCP, and pregnancy test kits) were stocked out for an average of more than 72 days across the supply chain levels (Tables 21 and 22).

At all facility levels, stockcards were available 88.4 percent or more of the time. However, the percentage of facilities with updated stockcards per product decreased significantly for condoms,

IUCDs, OCP, and pregnancy test kits (Table 32). More than two-thirds of facilities maintained accurate or near-accurate balances (+/- 10 percent) between the physical inventory and stockcard balances for condoms, IUCDs, OCP, and pregnancy tests. Although stockcards for EC were the most available and most updated (100 and 99.8 percent, respectively), they also were the most inaccurate (except at the warehouse level [100 percent]), with 11 percent or less of all facilities maintaining accurate or near-accurate balances (+/- 10 percent) between the physical inventory and the stockcard (Table 33).

Vaccines

According to national guidelines, facilities at all levels of the supply chain, except for HSCs, are supposed to manage all five products included in this report (i.e., bacillus Calmette–Guérin [BCG], diphtheria, pertussis, tetanus [DPT]; hepatitis B; measles; and oral polio vaccine [OPV]). However, because of the lack of reliable power throughout the state, some CHCs and PHCs do not have the capacity to maintain the cold chain. The survey found that, of the facilities that intend to manage the products, the average number across all facility levels fell only slightly below guideline requirements, with most levels managing all five products (Table 11). Regarding product availability on the day of visit, the state average of 4.5 vaccines also fell below the five product minimum. However, availability varied among products at different levels of the system (from 1.2 in hospitals to 4.5 in CHCs).

Overall, stockouts of vaccines on the day of visit were relatively low compared to products in the survey. Eighty percent of facilities managing vaccines had at least three vaccines available on day of visit. Stockout rates of vaccines increased by level but varied significantly by product. For example, nearly 17 percent of facilities were stocked out of OPV, including 75 percent of PHCs; 4.8 percent of PHCs and 3.4 percent of CHCs were stocked out of measles vaccine on day of visit (Table 13). Stockout rates for the previous three months appeared to have similar rates as day of visit. All PHCs reported having stock in the previous three months; however, they were largely stocked out on the day of visit (41.9 percent, BCG; 35.7 percent, DPT; 37.2 percent, hepatitis B; 4.8 percent, measles; and 75 percent, OPV) (Tables 13 and 14).

Stockout of vaccines occurred between one and three times in the three months before the survey. Hepatitis B and measles vaccines were stocked out for the least-average number of days (3 and 3.77 days, respectively). BCG, DPT, and OPV were all stocked out for more than an average of 25 days within the last three months (Tables 15 and 16).

Stockcards were available at about 93 percent of facilities for all vaccines except hepatitis B (35.6 percent only). Excluding hepatitis B, stockcards were updated only 31 to 38 percent of the time (Table 30). While only 35.6 percent of facilities had stockcards for hepatitis B, all were up-to-date (see indicator definition at page 30.)

For facilities managing vaccines, accurate or near accurate balances (+/- 10 percent) between the physical inventory and stockcard balances on the day of visit ranged from 66.9 percent (DPT) to 81.2 percent (hepatitis B) (Table 31).

HIV and AIDS

Eight HIV and AIDS commodities were included in this assessment, including drugs for RTI/STI treatment, antiretrovirals, and HIV test kits. The national guidelines for HIV and AIDS commodities management vary by facility type. According to guidelines, facilities at all levels of the supply chain are required to manage between three and eight products, depending on facility type

and level. The survey found that the average number of HIV and AIDS commodities managed in facilities across all levels of the system fell far below national requirements. Community health centers and PHCs managed an average of 1 product, while hospitals managed an average of 3.4 (Table 24). The survey found that few facilities in Jharkhand managed any of the eight commodities; and where they had been managed in the previous 12 months, overall availability was limited. Nevirapine was on average, managed the most from the warehouse down to the CHC. Most commonly, RTI/STI treatment kits and TL and ZLN combos were managed at hospitals in Jharkhand. Only two PHCs managed RTI/STI Treatment Kit 1 and HIV test kits in the previous 12 months (Table 25).

Stockouts for HIV and AIDS commodities at the time of visit ranged from 20 to 77 percent; however, these percentages were based on a small number of sites (n=28) (Table 26). While multiple stockouts were found on the day of visit (with the exception of the HIV test kit), based on record reviews, few occurred over the last three months (Table 27).

Availability of updated stocks was rather limited, with approximately only one-third of facilities managing the HIV and AIDS products having updated stockcards for their products (Table 34). The updated stockcards, however, appear to be predominately accurate (within +/- 10 percent), with the exception of the whole finger blood test managed at CHCs (Table 35).

Cross-Cutting Findings across Supply Chains

Reporting

Across all commodity types, the stock and issues register was the most commonly used inventory logistics form. Other forms included the National Rural Health Mission's Health Department Monthly Format, health management information system, and Procurement Management Information System (Figure 4). Some variation regarding reporting frequency exists between supply chains. For example, most managers reported data monthly, but almost 20 percent of essential medicines commodities managers reported never submitting an inventory report to a higher level (Figure 8).

Inventory Management

Results indicated that despite differences in who manages the overall system, the ordering processes across supply chain systems in Jharkhand function similarly and are largely decentralized.

Respondents reported that the majority of facilities were responsible for determining their order quantities and type; however, a little over 30 percent of essential medicines and family planning managers reported the supervisory facility as being responsible for this (Figure 9).

Facilities across all supply chains determined the quantities for their orders by using past consumption data (Figure 10). Most facilities reported that the indent frequency for each commodity was monthly or quarterly with the exception of HIV and AIDS commodities, which was made quarterly (70 percent). This arrangement was confirmed by the data on when an indent or report was actually last sent (Figures 11 and 12). Most respondents reported receiving their products, on average, fewer than two weeks after an indent was placed (Figure 13); most orders were filled between 75 and 100 percent of the time (Figure 14).

According to respondents, few emergency orders were placed or unplanned procurements made for family planning and HIV and AIDS products. About 50 percent of essential medicines commodities managers and 22 percent of vaccines managers reported making one or more emergency/unplanned local purchase order (Figure 15). Respondents also reported that the district store was the source of

supply for most facilities across all supply chains (Figure 16). However, as found earlier with stock assessment, district stores do not manage or store most of the tracer products. This indicates some confusion among commodity managers surrounding the source of their supplies. This could be connected to the stockout levels since commodities managers could be expecting the district stores to resupply them with products when in fact local procurement is necessary.

In Jharkhand, the 42 tracer products were found to be stored at the facilities in one of the following ways: all products stored in a single area; all products stored individually by their commodity type (i.e., in four separate locations), with four people supervising the locations; or essential medicines and RTI/STI and HIV and AIDS commodities stored in separate locations, while the same people store and supervise family planning products and vaccines. Based on observations, fewer than half of the products throughout all facilities were stored in acceptable or excellent conditions (Figure 18). The most challenging conditions across all levels included cartons and products being in poor condition; lack of space and organization; products not being stored according to first-to-expire, first-out (FEFO); and damaged or expired products not being separated from usable products and removed from inventory. The most-practiced conditions included products being protected from direct sunlight; cartons and products being protected from water and humidity; storage area being visually free from garbage/clutter, harmful insects, and rodents; and storage area being secured with a lock and key.

Transportation

According to respondents, the facility was responsible for transporting products to the facility. This was certainly the case for HIV and AIDS commodities. For essential medicines, family planning, and vaccines, the transportation method was slightly more diverse, with higher levels delivering approximately 26 to 36 percent of the time (Figure 19). Most facilities also used their vehicles for collecting their commodities. Within levels, some diversity appeared to exist. For example, for essential medicines, hospitals used the facility vehicle (43.5 percent), public transportation (26.1 percent), or delivery by foot (13 percent); at the PHCs, commodities managers reported an almost equal split between use of the facility vehicle, private vehicle, and public transportation to obtain commodities (Figure 20; Appendix A, Table A11).

Human Resources, Training, and Supervision

According to facility managers at the PHC level, availability of treatment guidelines for opportunistic infections (OIs) or STIs was more limited than at higher levels; just over half of facility managers reported having standard treatment guidelines for OI or STIs. Even fewer data collectors could produce and verify guidelines (Figure 21). According to respondent hospitals, CHCs, PHCs, and the auxiliary nurse midwife at the HSC, the RMNCH+A 5x5 matrix was most often available at the CHC (Figure 23). More than half (56.4 percent) of commodities managers at all facilities, from the warehouse to the PHC, reported that they had inventory guidelines (Figure 24).

Training and supportive supervision are important functions that ensure staff members are equipped with necessary skills to do their jobs. Across all supply chains, more than two-thirds of managers had received on-the-job training to complete forms/records (Figure 25). Most facilities had received a supervision visit within the last month or last three months. However, 8.8 percent of managers at hospitals and 7.4 percent of managers at CHCs reported never receiving any supervisory visit (Figure 26).

Recommendations

Based on the findings from the project's management information systems review, landscape analysis, and this survey, the following recommendations are provided to expand the capacity of the supply chains operating within Jharkhand. Due to funding and time constraints, the project prioritized recommendations that could be implemented during the lifecycle of the project by strategically coordinating with the SHM to develop state-level work plans.

General Recommendations

- Coordinate supply chain operations through the establishment of a formal supply chain management unit or supply chain coordination group at the state level.
- Develop and institute standard operating procedures (SOPs) to—
 - improve operations, such as the distribution of inventory through the documentation and adherence to SOPs and improved stock data management
 - build personnel capacity.
- Design a paper-based logistics management information system (LMIS) to ensure data are gathered uniformly across systems and capture key data points.
- Advocate for SHM and MOHFW to operate the Jharkhand Medical Corporation and conduct the initial procurement.
- The Jharkhand Medical Corporation should develop a supply chain strategic plan to help mitigate current ad-hoc requests and decisions. This would include development of procurement policies, revision of bidding documentation, and human resources rules and regulations.

Strategic Planning and Oversight and Human Resources Recommendations

- Develop terms of reference for staff members who have supply chain tasks.
- Provide systematic, formal logistics training workshops at all levels, using the designed LMIS and documented SOPs. Project support would be focused on training SHM staff and roll-out of SOPs in pilot districts. It would also assist SHM for roll-out to additional districts and staff members who have supply chain responsibilities.
- Use a training-of-trainers approach for SHM to deliver workshops.
- Develop a three- to five-year supply chain strategic plan, including goals, objectives, performance indicators, and necessary resources.

Forecasting and Procurement Recommendations

- Review and improve procurement processes and SOPs.
- Develop a systemic approach for forecasting and supply planning.

- Develop, test, and institute forecasting methodology (including financial gap analysis) for a subset of RMNCH+A/essential medicines commodities by using population- and morbidity-based data available at the district level.

Inventory Management Recommendations

- For all facilities storing products, develop SOPs for an inventory control system to manage essential medicines.
 - Document and, as appropriate, review and update inventory management SOPs (e.g., confirm rules for inventory control levels and standardize minimum/maximum inventory management; inventory cycle counts; and order frequency).
- Support the use of SOPs across all districts and service delivery levels.
- Review storage conditions and warehousing capacities at the district level.
- Support adherence to GOI- and World Health Organization-recommended storage guidelines at all facility levels, with emphasis at the district level.
- Invest in warehouse infrastructure improvements.
- Model warehousing and distribution network.

LMIS Recommendations

- Propose improvements to forms to better support data collection and management for decisionmaking and feedback/improvements between district and SDP levels (e.g., standardize forms and adapt indent and consumption forms to be tabular).
- Standardize paper-based LMIS (e.g., standardize forms at the lowest level and stockkeeping records in the warehouse).
- Explore comprehensive electronic LMIS (eLMIS) options adopted in other states and develop a roadmap for eLMIS implementation.
- Build consensus on eLMIS functional and technical requirements and identify information technology infrastructure support to roll out e-LMIS.
- Support introduction of an eLMIS and gradually phase out paper-based entry from district level upward.

Background

As outlined in “A Strategic Approach to Reproductive, Maternal, Newborn, Child, and Adolescent Health (RMNCH+A) in India,” improving maternal and child health and survival is central to the goals of the National Health Mission (NHM) and Millennium Development Goals 4 and 5. Reproductive, maternal, newborn, child, and adolescent health should not be addressed as isolated goals but instead through a “continuum of care” approach. This holistic approach takes into account the various stages of the lifecycle, as well as the places where care is provided.

Health outcomes are linked to various stages of the lifecycle; for example, the problems of low birthweight of infants and premature delivery, high under-5 mortality (20 percent of the world’s total), poor nutritional status of women and adolescent girls, and unmet need for contraception (27 percent among married adolescents and low condom use among adolescents in general) are interconnected. Efforts to improve these health outcomes at various stages of the lifecycle must occur at all levels of the health system.

India’s strong community-based program (including 8.7 lakh-accredited social health activists [ASHA] workers), a three-tiered health system, provides a strong platform for delivery of services across the continuum of care, which ranges from community to primary health care, and first referral-level care to higher referrals and levels of care.

Given this context and as part of ongoing support to the implementation of the RMNCH+A strategy, the Government of India’s (GOI’s) Ministry of Health and Family Welfare (MOHFW) requested that the U.S. Agency for International Development (USAID) provide technical assistance in supply chain management of essential RMNCH+A commodities. USAID has engaged the USAID | DELIVER PROJECT, which John Snow, Inc. (JSI) implements, to provide technical support to the GOI on supply chain management of RMNCH+A commodities, including condoms, and sexually transmitted infection (STI) and opportunistic infection (OI) drugs. To further the goal of providing comprehensive and integrated health services to mothers, newborns, children, and adolescents, the project works at the national level and in six states (Uttarakhand, Jharkhand, Himachal Pradesh, Haryana, Punjab, and Delhi) to strengthen the supply chain management systems of RMNCH+A commodities. USAID is the lead development partner in the six states under India’s Call to Action for Child Survival and Development.

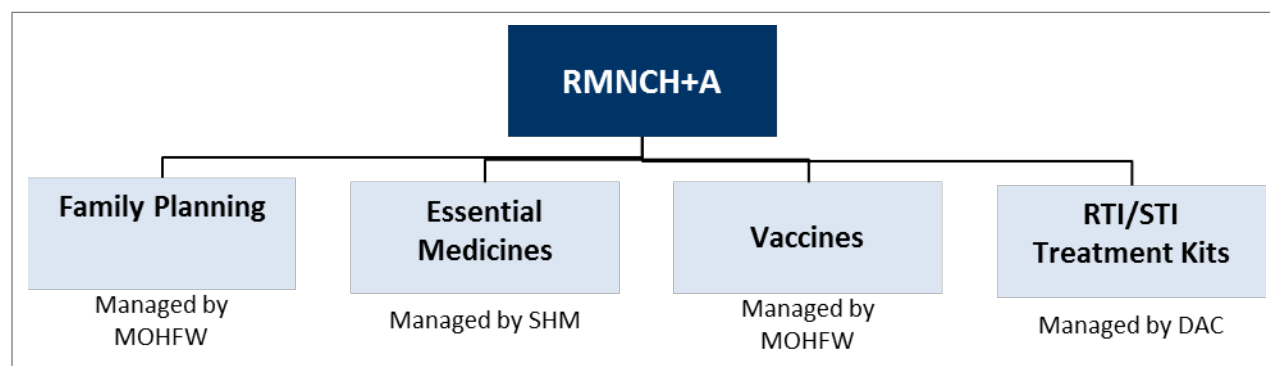
The NHM and the Department of AIDS Control (DAC) manage RMNCH+A supplies at the national level and through their respective state institutions—State Health Mission (SHM) and State AIDS Control Societies (SACS). The NHM and the DAC annual monitoring reports indicate improvements within key supply chain functions, including information recording and reporting and storage and distribution systems. However, there is anecdotal evidence of an increased proportion of facilities (and clients) signaling the shortage of essential medical supplies. Therefore, with support from the MOHFW, the project conducted a comprehensive survey in two priority states—Haryana and Jharkhand—to document the issues pertaining to commodity availability and management at various levels within the four supply chains—essential medicines, family planning, vaccines, and reproductive tract infection (RTI)/STI and HIV and AIDS—that impact the RMNCH+A strategy.

This survey is part of a series of three activities (under the direction of the MOHFW and Jharkhand's SHM) that the project deployed to build a real-time picture of how each supply chain function is working. Together, these activities provide a comprehensive understanding of how supply chains are operating. They can also inform recommendations for the SHM and project partnership. The survey is also intended to provide baseline data for project interventions.

Overview of Jharkhand Supply Chains

In Jharkhand, as in other states, products the RMNCH+A strategy highlights and the ones listed in the RMNCH+A 5x5 matrix currently fall within four independent supply chains: essential medicines, family planning, vaccines, and HIV and AIDS.² As illustrated in Figure 1 below, a different controlling body within the MOHFW (specifically the NHM and DAC) manages and operates each supply chain. Therefore, each system has separate policies and practices for forecasting and supply planning, product selection and procurement, warehousing and inventory control, transportation, logistics management information systems (LMIS), strategic planning and oversight, and human resources.

Figure 1. Supply Chains Supporting the RMNCH+A Commodities³



Essential Medicines

The SHM manages essential medicines. Jharkhand uses the 2011 National Essential Medicines List, which stakeholders often refer to as the essential drug list (EDL). The EDL specifies which medicines should be available at the primary (i.e., primary health centers [PHCs] and health subcenters [HSCs]); secondary (i.e., community health centers [CHCs]); and tertiary facilities (i.e., district and general hospitals).⁴

Currently, each district primarily manages procurement, although the state will soon do so through the recently established Jharkhand Medical Corporation. The state government provides funding to the districts for procurement of essential medicines based on their needs; districts procure the majority of the essential medicines from vendors approved through a tendering process. The state procures some of the drugs and equipment, which flow directly from vendors to the state warehouse

² Unless otherwise noted, the term “HIV and AIDS,” which is used throughout the report, also includes the RTI/STI treatment kits, as the RTI/STI treatment kits are distributed through the HIV and AIDS supply chain run by DAC.

³ While included as tracer commodities in this survey, HIV test kits and ARVs are not specified in the RMNCH+A 5x5 matrix, only the RTI/STI treatment kits.

⁴ District and general hospitals are collectively referred to in this report as “hospitals.”

in Ranchi. The drugs and equipment are then distributed to one regional warehouse (that serves seven districts) and the rest of district stores. These stores, along with the district-procured medicines, supply the products to hospitals and CHC facilities. CHCs supply PHCs, which supply HSCs. HSCs supply sahiyas (known as ASHAs in other states).

Information flows through a paper-based system from the sahiyas to HSCs, which aggregate information and send it to the PHCs. PHCs, CHCs, and DHs/GHs send their information through informal Microsoft Excel®-based reports directly to the district, which then reports to the state.

Family Planning

Family planning is a centrally funded program that the GOI manages through the MOHFW. Since its inception in 1952, the world's first family planning program's emphasis has evolved from reducing birth rates to promoting reproductive health and reducing maternal and infant mortality and morbidity. It aims to promote family planning on the basis of voluntary and informed choice for short- and long-term methods. The GOI launched the National Family Planning Policy 2000 to demonstrate its commitment to providing family planning and related services. The policy promotes informed choice and availability of reproductive health services.

According to GOI policy all public health facilities should be able to offer all spacing methods, including condoms, emergency contraceptives (EC), intrauterine contraceptive devices (IUCDs), and oral contraceptive pills (OCPs). Sahiyas are also supposed to carry condoms, OCPs, and EC, as well as pregnancy test kits, within villages.⁵

The MOHFW is responsible for placing annual orders with preselected manufacturers based on quantity requirements that each state sends to the national program. Vendors send family planning orders directly to Jharkhand's family planning warehouse in Ranchi. The products are then delivered to district stores and a regional warehouse that supports seven district stores. The district stores supply hospitals and CHC-level facilities. CHCs supply PHCs, which provide commodities to the HSCs. Sahiyas pick up their products at HSCs.

Logistics data for family planning products are submitted as part of the MOHFW health management information system (HMIS) and through the Procurement Management Information System (ProMIS). ProMIS is used to monitor nationally procured commodity stock balances at the state and district levels. Sahiyas submit paper reports to HSCs, which aggregate data from all sahiyas associated with the HSC. HSCs then send aggregated data to the PHCs through their own monthly paper-based reports. PHCs, CHCs, and DHs/GHs send data independently to the person in charge of the family planning program at the district office. Once the district aggregates all lower-level reports, a consolidated district report is sent to the state. Similarly, the state completes a monthly state report, consolidating all district-level data into one report and submitting it to the national level.

Vaccines

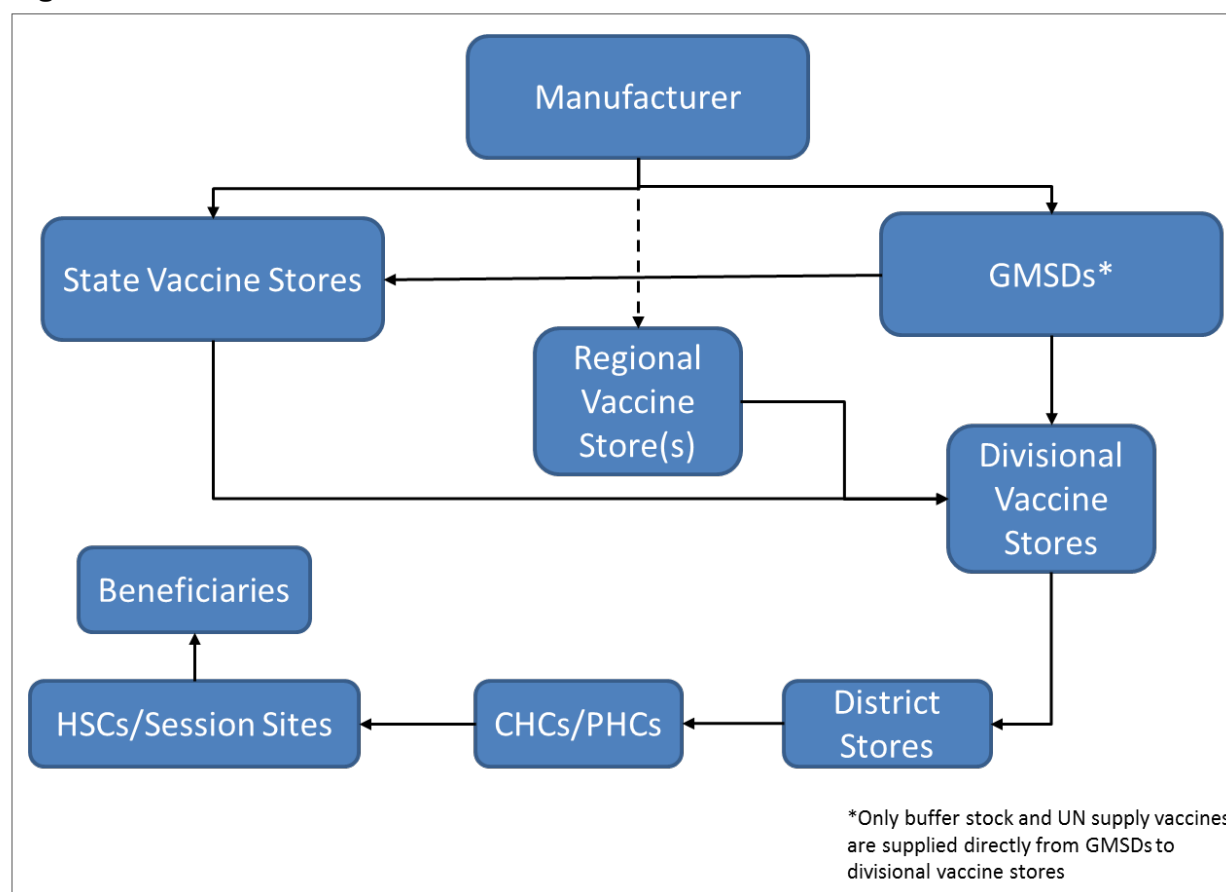
India has one of the largest universal immunization programs (UIPs) in the world. Under the UIP, all children in India are supposed to be inoculated against six deadly vaccine-preventable diseases: tuberculosis, diphtheria, tetanus, pertussis, polio, and measles. Recently, hepatitis B and Japanese encephalitis vaccines have been introduced in selected districts, cities, and states/union territories.

⁵ <http://nrhm.gov.in/nrhm-components/rmnch-a/family-planning/background.html>

Cold chain is a system of storing and transporting vaccines at the recommended temperature from the point of manufacture to point of use. A vast cold chain infrastructure is required to provide potent and effective vaccines to beneficiaries. At all levels (i.e. from the national level to the states and finally reaching the outreach vaccine sessions), there should be a network of vaccine stores, walk-in-coolers, walk-in-freezers (WIFs), deep freezers, ice-lined refrigerators (ILRs), refrigerated trucks, vaccine vans, cold boxes, vaccine carriers, and icepacks. All vials have a vaccine vial monitor (VVM) on their labels that provides a visual indication of whether the vaccine has been kept at the correct temperature.

Since the inception of the UIP, a wide network of cold chain warehouses and stores consisting of government medical supply depots (GMSDs), state/regional/divisional/district vaccine stores, and district and PHC/CHC vaccine storage points, has been created. Vaccines typically arrive at one of four GMSDs located throughout the country (Karnal, Chennai, Mumbai, and Kolkata), where stock is maintained for a maximum of three months. Vaccines are transported to state vaccine stores and then move through divisional and district vaccine stores until they reach the last storage point at CHCs or PHCs. Per national guidelines, vaccines should not be stored at the HSCs. During immunization sessions, PHCs are responsible for distributing vaccines for use to HSCs and at outreach session sites. After the immunization session, unused and unopened vaccines are brought back to the PHC under cold chain on the same day to be kept in ILRs at the PHC (provided the VVM is in the usable stage). Figure 2 shows the flow of vaccines through the network.

Figure 2. Vaccine Production and Distribution in India



The MOHFW is responsible for placing annual orders with preselected manufacturers based on quantity requirements each state sends to the national program. Vaccines are delivered directly from the GMSD or manufacturer to Jharkhand's vaccine store in Ranchi. Once a month or once every two weeks, vaccines are delivered to district stores and CHCs and PHCs to ensure that the facility has approximately one month of stock at all times. The auxiliary nurse midwife (ANM) at the HSC submits logistics data for vaccines; data are collated at PHCs for all HSCs in the form of doses provided to beneficiaries as part of the HMIS reports. Likewise, logistics data are currently provided to the higher levels via monthly HMIS reporting.

HIV and AIDS

RTI/STI drug kits are centrally procured and supplied through the DAC under the MOHFW, along with other HIV- and AIDS-related products, including HIV test kits and antiretroviral therapy (ART). According to national guidelines, minimum RTI/STI services, including treatment, should be available at all PHCs, CHCs, and RTI/STI clinics in hospitals. To help maintain treatment standards, the DAC developed seven prepacked RTI/STI treatments kits. Kits are numbered and color-coded and are provided at subdistrict NHM-supported facilities (subdivisional hospitals, CHCs, and PHCs in the district). PHCs are also expected to provide HIV test kits; treatment for HIV and AIDS is provided at Link-ART Centers and ART clinics at designated CHCs and hospitals.

As with other centrally funded programs, the DAC procures all commodities annually. Commodities are directly supplied to district-level consignees under the RTI/STI prevention and control program. They are then distributed quarterly to hospitals, CHCs, and PHCs.

Individual centers (e.g., ART and RTI/STI clinics and integrated counseling and testing centers [ICTC]) submit logistics data for HIV and AIDS commodities in monthly reports to SACS.

Report Purpose and Objectives

The goal of this report is to provide information regarding the availability of key tracer commodities at service delivery points (SDPs) and regional/district warehouses. It also aims to measure other key indicators of systems performance at various levels of public sector health facilities that the MOHFW, NHM, or DAC manages. These facilities include hospitals, CHCs, PHCs, and HSCs. The information gathered in this report will help to design interventions to improve the functioning of the overall supply chain system.

The specific objectives of the assessment include—

- providing information on the ability of districts to manage supply chain functions including storage, maintenance of information systems (e.g., logistics records and reports), distribution to lower-level facilities, training and routine monitoring, and personnel logistics capacity
- assessing the availability of 42 selected RMNCH+A, OI, STI, and HIV and AIDS products, as well as duration and frequency of stockouts in the last three months
- determining a baseline for benchmarking current systems performance and measuring the success of upcoming project interventions
- identifying key points to strengthen the supply chain system and to help shape the next steps needed for supply chain improvements.

Assessment Methodology

The survey used an adapted version of the Logistics Indicators Assessment Tool (LIAT), a standardized tool the project developed. The LIAT has been applied in many countries around the world, including those in Southeast Asia. The tool was adapted and customized specifically for this study and the context within the states. It was further revised with input from data collectors during the training period and following a pilot test. The final instrument is available via email at askdeliver@jsi.com.

The assessment captured health commodity systems performance and commodity availability at all levels of facilities in the public health system, including SDPs (primary, secondary, and tertiary levels) and warehouses (district and state). The assessment provides stakeholders with up-to-date information on the current operating systems for commodities management related to the RMNCH+A strategy. The project identified 42 products as “tracer commodities” in close consultation with the SHM, USAID, other USAID-implemented projects, and key development partners. The complete list is included in Appendix E.

The project partnered with IMS Health, an internationally recognized organization with a strong presence in and knowledge of India’s health system, to conduct the survey.

The study assessed product availability and specific logistics activities, including reporting, ordering, inventory control, issuing, transportation, training, supervision, and maintaining storage conditions. Data were collected through direct observation of storage areas and available records and reports and a physical inventory. Data were also collected by interviewing the facility-level officers in charge and facility-level personnel responsible for managing and storing commodities. To ensure entrance into the facilities, a letter from the SHM that provided background information on the purpose and objectives of the assessment was circulated and followed by direct contact with the district program managers and medical officer in charge. Visits to facilities were also scheduled in advance.

Sampling Framework

The survey was designed as a cross-sectional quantitative study. The power of results was calculated at 90 percent confidence interval and 8 percent margin of error to ensure results were comparable at each level of the system.

In each state, a census of warehouses, district stores, and hospitals was conducted. A multistage cluster sampling was then used to select primary- and secondary-level facilities. The three stages of this sampling methodology were—

- districts selected through probability proportional to size
- randomized selection of CHCs and PHCs within chosen districts
- HSCs selected based on their affiliation with the CHCs/PHCs.

A set number of facilities at each level were selected for each district to ease logistics during data collection. Probability weights were calculated and applied during data analysis to provide representation at the state level.

The Maternal and Child Health Integrated Program (MCHIP) staff in Ranchi worked with the SHM to provide the facility list used for the sampling frame. Although it was based on facilities listed in Jharkhand's HMIS, the date of the list could not be confirmed. The list also did not include names of HSCs. It was cross-referenced with information found online, with limited success. Several attempts to obtain a more complete list were unsuccessful.

Through a sampling process, 12 districts across Jharkhand were selected for the survey (Figure 3). While not specifically part of the sampling frame, a mix of RMNCH+A priority and nonpriority districts were selected. The selected sample size included four warehouses (essential medicines, family planning, vaccines, and HIV and AIDS); 24 central/district stores; 24 general/district hospitals; and 313 SDPs within selected districts (Table 1).⁶

Figure 3. Map of Jharkhand and Selected Districts

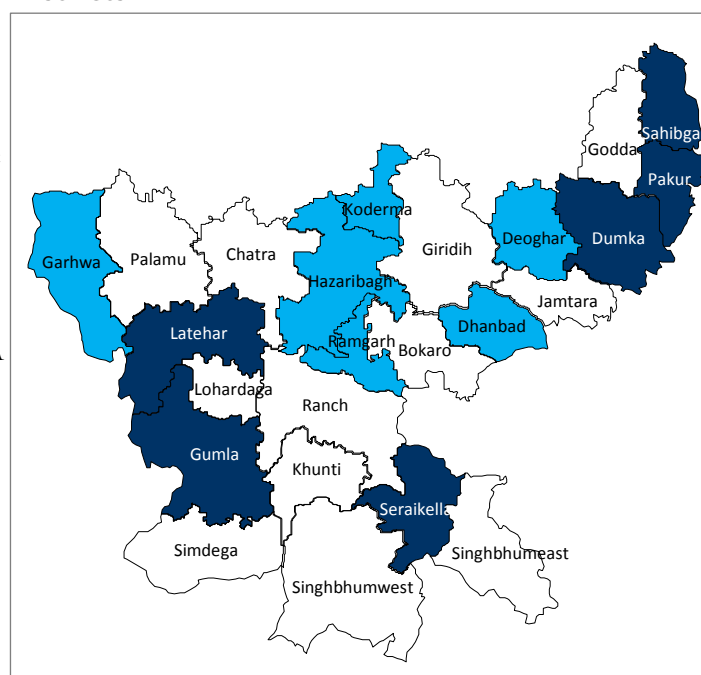


Table 1. Jharkhand Health Center Sampling Frame

Selected districts	CHC	PHC	HSC
Deoghar	7	4	5
Dhanbad	7	21	23
Dumka*	7	27	29
Garhwa	6	7	8
Gumla*	7	2	3
Hazaribagh	7	10	12
Koderma	6	6	7
Latehar*	6	5	6
Pakur*	7	7	8
Ramgarh	9	5	6
Sahibga*	6	9	11
Seraikela*	6	5	6
Total	81	108	124

*RMNCH+A priority districts

⁶ For this report's purposes, the term "hospital" refers to both district and general hospitals.

Higher-level facilities	Total
State warehouses	4
District stores	24 ⁷
Hospitals	24

Indicator Choice

A set of standard indicators was selected to provide stakeholders with comprehensive information about the current situation. Table 2 lists a selection of these indicators.

Table 2. List of Selected Indicators

Indicators	Data source(s)
Stock status	
Availability of products on the day of visit	Physical inventory
Percentage of facilities stocked out of products in the previous three months	Stock records
Average number of days a product was stocked out in the previous three months	Stock records
Average frequency of stockouts of a product in the previous three months	Stock records
LMIS	
Recordkeeping	
Percentage of facilities with stock records available by product	Presence of stock records
Percentage of stock records updated by product	Evidence of use of stock records in specified time period
Percentage of facilities with accurate stock balances on stock records by product	Comparison of stock record balance and physical inventory count
Reporting	
Percentage of stores that reported sending reports to higher level	Respondent
Ordering and inventory control	
Percentage of facilities that had to place an emergency order in the previous three months	Respondent
Human resources	
Percentage of facility personnel trained in recordkeeping	Respondent
Percentage of facilities with inventory	Respondent

⁷ One regional warehouse distributes family planning products to 6–7 districts and approximately 17 district stores.

Indicators	Data source(s)
guidelines	
Percentage of facilities with copy of RMNCH+A 5x5 matrix	Respondent
Transportation	
Responsibility for transportation of products	Respondent
Method of transportation used	Respondent
Storage	
Percentage of facilities that maintained acceptable storage conditions	Visual observation
Percentage of facilities that maintained the recommended storage condition, for each storage condition	Visual observation

Data Collection

Before the assessment began, a team of 25 data collectors and supervisors participated in a six-day training in Ranchi, Jharkhand, India. The training covered the use of the assessment tool and Magpi, the mobile application used for data collection. The orientation included a discussion of data collection guidelines to: 1) identify the types of information to be gathered, and; 2) standardize the data collection process to promote the comparability of results. Participants received a comprehensive set of guidelines on implementing field work, tips for data collection, instructions on how to use the tablets and global positioning system (GPS) devices for data collection, instructions for the LIAT forms, and additional job aids to use as reference guides while in the field.

Data were collected using Lenovo Idea Tab a1000 Android tablets and the Magpi mobile application, which Datadyne designed. Magpi facilitates the transfer of data through forms on phones and transmits data from the phones directly to the Internet. Data collectors also used a supplemental paper-based tool to record notes about the facilities.

During the training, input from the survey team members was integrated into the survey tool, which was pilot tested. All data collectors participated in a half-day pilot test in one of the five health facilities in Ranchi. Data collectors practiced applying the tool and identified additional modifications to the tool that would improve data collection. Changes that participants suggested during the pilot were incorporated into the final version of the tool.

Data collection took place over the course of four weeks (May 1–May 31, 2014).⁸ Twenty data collectors were assigned to 10 teams. The teams were dispatched to different districts to collect data from the selected health facilities.

Data Management and Analysis

Records were uploaded directly from Lenovo tablets to the web-based Magpi database. IMS Health staff inventoried, cleaned, and validated the records in the database throughout the data collection period.

⁸Additional data collection occurred in 10 facilities during the week of June 9–13.

The format of records received in Magpi allowed easy transferring of data to Excel. However, additional steps were required to format records for analysis in other packages such as SPSS software. Data cleaning and validation continued for two weeks following the completion of data collection. Problems encountered during this process included receipt of duplicate records, failure of transmission of some records due to poor connectivity, and data entry errors such as incorrect facility codes.

Analysis of the data was conducted in SPSS. For purposes of analysis, “not applicable,” “not specified,” and “missing” responses were removed from the denominators. Results were disaggregated by facility type (i.e., warehouse, district store, hospital, CHC, PHC, and HSC).

Quality Assurance

Several methods were used to ensure quality adherence throughout the assessment process. The data collection instrument was reviewed before the training to ensure it was adapted to the current situation. The instrument was reviewed and modified again following a pilot test during the training, with input from data collectors. The training also included a comprehensive review of the tool to ensure data collectors were fully versed in the questions and methodology before field data collection.

One supervisor oversaw four or five field researchers. The supervisor’s responsibility was to check on the execution and accuracy of data entry on the tablets by observing each field researcher. If the supervisor was not able to accompany the field researcher during the actual visit, the supervisor visited the facility to cross-check the work of the researcher. A supervisory team was also set up in Delhi to call respondents at facilities to check the consistency of answers against the encoded data. Supervisors also verified whether an interview and the stock review took place in the facility.

Several quality safeguards were incorporated into the data entry program, such as automatic skips where appropriate and range and coding checks. A validating team was set up to manually “edit” encoded data by checking consistency and completeness of answers. Those considered “re-asks” were returned to the field team for verification.

After data were entered into the SPSS database, quality checks and validation to ensure accuracy of the database were completed. Preliminary analyses and frequencies were run before a full data analysis to ensure consistency within the database was conducted.

Limitations

The following survey limitations should be considered at the time of results interpretation.

- **Non-response bias:** Survey findings are based on available data, so for questions based on facility records or reports, only facilities that had records or reports could be included in the results. Therefore, some results may not be representative of all facilities.
- **Interview bias:** Respondents self-reported actions related to ordering and reporting procedures, which were not confirmed by further document review.
- **Lack of universal facility list and access to facilities:** As mentioned earlier, the facility list used was incomplete. Private nongovernmental organizations (NGOs) or civic bodies managed several selected CHCs that did not fall under the SHM’s jurisdiction. Additionally, field staff members were advised to avoid certain subdistricts due to certain security concerns. Therefore, 10 facilities (5 PHCs, 5 CHCs) were replaced because the site was inaccessible (private facility,

security issues); and two facilities (one hospital, one CHC) were dropped, as no appropriate replacements were available in the area. Additionally, one district store refused access to field workers, so it was dropped from the sample.

- **Time period issues due to financial year (FY) overlap:** The timing of the survey overlapped with the end of FY 2013 (March 31) and the beginning of FY 2014 (April 1) in India. Many facilities follow the practice of starting new record books at the start of the FY. As a result, some FY 2013 records were packed or stored elsewhere. This meant that field workers could not capture historical product availability for the full period of the record review and likely underrepresented the actual situation.

Additionally, entries in the FY 2014 registers copied from old registers were made on or around April 1, which for purposes of data collection constituted “updated records.” Consequently, more records might have been considered “updated” and included in the analysis, possibly skewing these results.

- **Missing interviews with commodities managers:** While all attempts were made to interview relevant staff, including scheduling appointments in advance and paying repeated visits to facilities, some interviews were not conducted with commodities managers most familiar with ordering, procedures, or which sources for funding or supplies were being used for each of the product groups. In some cases, field workers were sent to interview a substitute who could not provide answers to the information being sought; in other cases, the interview was skipped.
- **Inaccessible storage locations:** Storage locations at eight facilities were inaccessible because the commodities managers were absent on the day of visit. These were dropped from the observations.
- **Security Concerns:** Security concerns within Jharkhand meant some districts were entirely excluded from selection during sampling of lower-level facilities. (The sample frame was adjusted slightly as two insecure districts had been selected.) In other districts, lower-level facilities in insecure subdistricts were replaced.

It should be noted that none of these limitations is unusual for a survey of this type.

Findings for Essential Medicines, Vaccines, Family Planning, and RTI/STI and HIV and AIDS Commodities

Description of Facilities

A total of 360 facilities were visited during the survey. As mentioned above, because of an incomplete list, 10 facilities were replaced with alternates and three were dropped entirely due to the lack of alternative site or refusal of entry. Table 3 below presents the final breakdown of warehouses, district stores, hospitals, CHCs, PHCs, and HSCs by district visited.

Table 3. Health Facilities Sampled by District and Type

	Warehouse	District store	Hospital	CHC	PHC	HSC	Total
Bokaro	--	|	|	--	--	--	2
Chatra	--	|	|	--	--	--	2
Deoghar	--	|	|	7	4	5	18
Dhanbad	--	|	--	8	21	23	53
Dumka	--	|	|	7	27	29	65
Garhwa	--	|	|	8	8	8	26
Giridih	--	|	|	--	--	--	2
Godda	--	|	|	--	--	--	2
Gumla	--	|	|	7	2	3	14
Hazaribagh	--	|	|	10	10	12	34
Jamtara	--	|	|	--	--	--	2
Khunti	--	|	|	--	--	--	2
Koderma	--	|	|	4	5	7	18
Latehar	--	|	|	6	5	6	19
Lohardaga	--	|	|	--	--	--	2
Pakur	--	|	|	5	7	8	22
Palamu	--	|	|	--	--	--	2
Pashchimi Singhbhum	--	|	|	--	--	--	2
Purbi Singhbhum	--	--	|	--	--	--	1

	Warehouse	District store	Hospital	CHC	PHC	HSC	Total
Ramgarh	--	1	1	3	5	6	16
Ranchi	4	1	1	--	--	--	6
Sahibganj	--	1	1	5	9	11	27
Saraikela Kharsawan	--	1	1	8	5	6	21
Simdega	--	1	1	--	--	--	2
Total	4	23	23	78	108	124	360

In addition to collecting data on commodity availability, the survey collected information to evaluate the supply chain performance. At each facility, interviews were conducted with the facility manager in charge. Interviews were also conducted with the person(s) responsible for managing the products to ascertain information on ordering and reporting procedures and which sources for funding or supplies were being used for each product group. Depending on the size and structure of the facility, the field staff may have interviewed one person who completed all necessary sections or five different people. In total, 236 interviews were conducted with facility officers in charge at hospitals, CHC, and PHCs; 124 interviews were conducted with ANMs at the HSC level. In addition, 290 interviews were conducted with commodities managers from 236 facilities. Two hundred and twenty-four people responded to questions regarding essential medicines; 181 responded to questions about family planning; 122 responded to vaccine questions; and 46 responded to questions about HIV and AIDS and RTI/STI testing and treatment commodities.

Stock Management and Availability

The following section discusses the availability of products at each level of the system in Jharkhand. Three key questions to determine how well facilities have been able to provide the necessary products to clients when needed are examined were asked—

1. Does the facility manage the product per national/state operating procedures and guidelines?
2. Is the facility able to provide the product on the day of visit?
3. Has the facility been able to provide the product within the previous three months?

As mentioned, 42 commodities were selected as tracer products. These products cover four supply chains: essential medicines, vaccines, family planning, and RTI/STI and HIV and AIDS. Field workers collected data for this section by physically counting products in storerooms and reviewing stockkeeping records.

Essential Medicines

The essential medicines and dosages included in this survey were selected using the RMNCH+A 5x5 matrix and the national EDL. They were also reviewed with colleagues from the SHM and other USAID development partners. Twenty-four essential medicines were included in this assessment (Table 4).

Table 4. Essential Medicines Commodities Included in the Assessment

Albendazole (400 mg, Tb)	IFA-(Red) (100 mg Fe/500 mcg FA, Tb)
Amoxicillin (250 mg, Cap)	IFA syrup (100 mg Fe/500 mcg FA/ 5 ml)
Ampicillin (500 mg, Vial)	Magnesium sulfate (500 mg/ml, Amp)
Azithromycin (500 mg, Tb)	Methyldopa (250 mg, Tb)
Cefixime (200 mg, Tb)	Metronidazole (200 mg, Tb)
Ceftriaxone (250 mg, Vial)	Misoprostol (200 mcg, Tb)
Co-trimoxazole (800 mg sulfamethoxazole/160 mg trimethoprim, Tb)	Oral rehydration salts (ORS) (Sachet)
Co-trimoxazole (100 mg sulfamethoxazole/20 mg Trimethoprim, Tb) (Co-trimoxazole ST)	Oxytocin (5 IU/ml, Bottle)
Dexamethasone (2ml, Amp)	Vitamin A (100,000 IU/ml, Bottle)
Doxycycline (100 mg, Cap)	Vitamin K (1 ml, Amp)
Gentamycin (40 mg/ml, Vial)	Zinc sulfate (20 mg, Tb)
Iron folic acid (IFA)-Blue (100 mg Fe + 500 mcg FA, Tb)	Tetanus toxoid (0.5 ml, Amp)

IFA=iron folic acid Fe=iron FA=folic acid ORS=oral rehydration salts Amp=ampoule Cap=capsule Tb=tablet

Note: To differentiate between the two formulations of co-trimoxazole, “co-trimoxazole 100 mg sulfamethoxazole/20 mg trimethoprim” will be referred to as “co-trimoxazole ST” in the report and subsequent tables. IFA (Blue) tablets are provided to adolescents through the Weekly Iron-Folic Acid Supplementation (WIFS) program, while IFA (Red) tablets are provided to pregnant women.

Based on the national EDL guidelines and input from the GOI and technical advisors from USAID development partners, hospitals in Jharkhand are required to manage 24 essential medicines assessed in the survey; CHCs should manage 23, PHCs 21, and HSCs 13. (See Appendix E for full list and breakdown by level.) As shown below in Table 5, facilities generally are not managing the number of required products according to guidelines and the proportion of products managed according to guidelines varies across levels.

Table 5. Average Number of Essential Medicines Managed and Available on Day of Visit

Facility level	# of products that are supposed to be managed per guidelines/EDL	# of products managed (mean)	# of products available day of visit (mean)
Warehouse (n=1)	24	1.0	1.0
District store (n=21)	24	10.6	4.6
Hospital (n=22)	24	12.7	8.2
CHC (n=76)	23	12.1	8.7
PHC (n=98)	21	7.6	5.7
HSC (n=119)	13	6.0	2.0
STATE AVERAGE (n=337)		6.6	4.7
STATE AVERAGE (excluding HSC) (n=218)		10.4	7.4

As shown below in Table 6, the essential medicines warehouse did not manage any of the essential medicines included in the survey in the previous 12 months; only some district stores managed certain products. Albendazole and oral rehydration salts (ORS) were found to be the two most commonly managed of the essential medicines commodities, but this was not universal in facilities. Few facilities (4.6 percent) managed methyldopa; 61 percent of hospitals; 70 percent of CHCs; and 59 percent of PHCs managed oxytocin, a key maternal life-saving medicine. However, it is interesting to note that many PHCs and HSCs were managing products that are specified in the EDL to only be available at the secondary and tertiary levels (see Appendix E).

Table 6. Percentage of Facilities that Managed Essential Medicines in Previous 12 Months by Facility Type

	Ware- house (%) (n=1)	District store (%) (n=21)	Hospital (%) (n=22)	CHC (%) (n=76)	PHC (%) (n=98)	HSC (%) (n=119)	Total (%) (n=337)	Total (%) excluding HSC (n=218)
Albendazole	0	82.6	78.3	87.5	75.1	87.4	86.7	82.4
Amoxicillin	0	34.8	69.6	62.1	56.1	38.1	41.1	59.2
Ampicillin	0	43.5	56.5	58.2	36.2	34.9	36.9	49.6
Azithromycin	0	21.7	47.8	28.1	18.6	10.1	12.2	25.1
Cefixime	0	26.1	26.1	26.5	20.2	12.9	14.5	24.2
Ceftriaxone	0	39.1	39.1	49.3	22.8	13.5	17.0	39.0
Co-trimoxazole	0	13.0	47.8	27.0	22.4	12.4	14.2	25.5
Co-trimoxazole ST	0	26.1	21.7	19.6	22.4	19.6	19.8	20.9
Dexamethasone	0	34.8	65.2	45.3	43.8	13.7	18.1	45.0
Doxycycline	0	39.1	73.9	52.9	47.6	28.4	31.5	51.1
Gentamycin	0	26.1	56.5	61.0	45.7	29.5	33.0	54.1
IFA (Blue)	0	73.9	52.2	39.2	20.8	14.1	16.9	34.1
IFA (Red)	0	60.9	78.3	70.1	68.9	68.0	68.2	69.5
IFA syrup	0	34.8	21.7	51.7	14.2	44.8	43.6	36.6
Magnesium sulfate	0	21.7	39.1	47.2	22.2	19.4	21.9	37.0
Methyldopa	0	17.4	30.4	22.2	9.6	2.5	4.6	17.7
Metronidazole	0	39.1	52.2	63.0	49.4	58.9	58.6	56.9
Misoprostol	0	39.1	52.2	54.5	40.2	55.0	54.1	48.7
ORS	0	65.2	78.3	82.9	80.5	83.0	82.8	81.2
Oxytocin	0	39.1	60.9	69.5	59.1	40.4	43.7	64.4
Tetanus toxoid	0	82.6	69.6	95.1	17.4	NA	NA	65.6
Vitamin A	0	26.1	17.4	22.8	10.0	13.6	14.3	18.1
Vitamin K	0	39.1	56.5	39.2	25.8	14.8	17.6	34.9
Zinc sulfate	0	43.5	21.7	58.3	8.0	39.6	39.4	38.3

Stock Availability

A physical count of commodities on the day of visit determined essential medicines availability in the facilities that reported managing the product. As shown in Table 7, the survey found that stockouts of essential medicines were frequent across all levels of the system and varied among products. Of those facilities that had managed the product in the previous 12 months, 76.9 percent were stocked out of vitamin A; 67.5 percent co-trimoxazole ST; 67.2 percent of methyldopa; 63.6 percent of magnesium sulfate; and 57.8 percent of misoprostol on the day of visit. The products with the lowest stockout rates on the day of visit were zinc sulfate (6.3 percent); ORS (9.6 percent); vitamin K (12.2 percent); IFA (Red) (17.2 percent); and oxytocin (26.9 percent).

Table 7. Percentage of Facilities Stocked Out of Essential Medicines on Day of Visit by Product and Facility Type

	District Store (%)	Hospital (%)	CHC (%)	PHC (%)	HSC (%)	Total (%)	Total (%) excluding HSC
Albendazole	36.8	22.2	20.1	20.3	45.6	42.3	20.8
Amoxicillin	62.5	43.8	40.6	36.4	31.2	32.9	39.7
Ampicillin	80	61.5	40	39.1	49	47.7	41.6
Azithromycin	60	36.4	67.3	35.4	32.8	39.6	56.5
Cefixime	83.3	66.7	66.4	17.6	40.7	43.4	52.4
Ceftriaxone	77.8	11.1	39	17.2	48.4	44.0	34.5
Co-trimoxazole	100	54.5	52.3	15.8	41.8	41.8	41.7
Co-trimoxazole ST	83.3	100	58.2	52.6	69.1	67.5	58.8
Dexamethasone	62.5	13.3	23	24.1	34.7	31.0	23.9
Doxycycline	66.7	5.9	35.7	19.8	42.4	39.5	29.6
Gentamycin	66.7	30.8	48.4	25.6	30.6	33.0	41.1
IFA (Blue)	52.9	66.7	51.6	32.1	45.1	45.9	48.3
IFA (Red)	64.3	66.7	9.2	16.5	17.5	17.2	15.5
IFA syrup	62.5	20	51.7	30.6	50.4	50.2	48.1
Magnesium sulfate	40	33.3	26.2	44.6	73.8	63.6	30.7
Methyldopa	75	71.4	35.6	66.7	93.5	67.2	44.8
Metronidazole	66.7	41.7	31.1	16.7	30.4	30.0	27.6
Misoprostol	66.7	50	7.7	28.2	63.8	57.8	16.6
ORS	46.7	5.6	6.9	13.7	9.5	9.6	10.3
Oxytocin	77.8	21.4	22.1	13.9	28.6	26.9	20.5
Tetanus toxoid	0	6.3	0	34.1	NA	NA	3.4
Vitamin A	50	75	58.7	69.2	80.4	76.9	60.9
Vitamin K	66.7	30.8	10.1	10.8	11.7	12.2	13.4
Zinc sulfate	50	0	16.2	25	4.5	6.3	17.8

As shown in Table 8, stockout rates in the previous three months were relatively frequent across all facility levels. The essential medicines with the highest stockout rates from the previous three months were vitamin A (100 percent); IFA (Blue) (63.1 percent); ceftriaxone (45.5 percent); ORS (39 percent); and IFA (Red) (33 percent). The essential medicines with the lowest stockout rates from the previous three months were methyldopa (0.0 percent); vitamin K (3.5 percent); co-trimoxazole (3.7 percent); and IFA syrup (6.5 percent).

It is important to note that recordkeeping was limited; less than 20 percent of facilities had updated records. As such, the magnitude of stockouts may be overestimated or underestimated, so the following tables presenting frequency and durations of stockout during the previous three months should be interpreted with caution.

Table 8. Percentage of Facilities Stocked Out of Essential Medicines within Last Three Months by Product and Facility Type

	District Store (%)	Hospital (%)	CHC (%)	PHC (%)	HSC (%)	Total (%)	Total (%) excluding HSC
Albendazole	42.9	20.0	19.2	6.3	11.5	12.2	14.8
Amoxicillin	50.0	0.0	25.1	28.9	16.3	19.3	26.6
Ampicillin	66.7	33.3	14.1	19.9	19.8	19.4	18.9
Azithromycin	0.0	0.0	58.1	24.4	13.2	18.7	32.3
Cefixime	0.0	0.0	42.5	0.0	0.0	10.1	36.7
Ceftriaxone	100.0	33.3	23.2	21.6	52.7	45.5	24.4
Co-trimoxazole	0.0	0.0	6.7	14.2	0.0	3.7	9.9
Co-trimoxazole ST	100.0	0.0	39.2	33.6	6.2	13.8	37.9
Dexamethasone	50.0	0.0	18.1	15.6	0.0	8.2	17.0
Doxycycline	100.0	0.0	5.8	15.9	11.9	12.1	12.5
Gentamycin	0.0	0.0	2.4	8.4	50.5	29.6	4.9
IFA (Blue)	57.1	50.0	23.0	50.0	78.0	63.1	31.9
IFA (Red)	50.0	20.0	8.1	6.4	39.8	33.0	9.3
IFA syrup	100.0	0.0	16.2	0.0	0.0	6.5	19.0
Magnesium sulfate	0.0	0.0	0.0	14.8	44.8	30.9	3.9
Methyldopa	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Metronidazole	0.0	0.0	24.6	8.4	16.2	16.6	17.6
Misoprostol	50.0	0.0	19.9	34.6	20.2	21.4	25.6
ORS	14.3	0.0	1.5	16.2	48.6	39.0	8.3
Oxytocin	100.0	0.0	5.3	10.2	31.8	24.5	10.4
Tetanus toxoid	6.7	16.7	0.0	0.0	NA	NA	1.2
Vitamin A	100.0	0.0	0.0	0.0	0.0	100.0	100.0
Vitamin K	100.0	0.0	12.6	0.0	0.0	3.5	11.7
Zinc sulfate	33.3	0.0	25.4	0.0	0.0	20.3	22.7

Tables 9 and 10 describe the frequency and duration of stockouts in the three months before the survey. Stockouts most frequently occurred at the lower-level facilities (i.e., CHCs, PHCs, and HSCs). Azithromycin stocked out an average of two times in the last three months (Table 9), and had the longest stockout time of any essential medicines commodity (90 days) (Table 10). IFA (Blue) was stocked out on average 2.3 times for an average of 87.9 days. ORS (average 1.6 times for average of 42.1 days); IFA (Red) (average 1.5 times for average of 48.5 days); vitamin A (average 2 times for average of 31 days); and magnesium sulfate (average 3 times for average of 86.8 days) were also frequently stocked out.

Table 9. Average Frequency of Stockouts of Essential Medicines within Last Three Months by Product and Facility Type

	District Store	Hospital	CHC	PHC	HSC	Total	Total excluding HSC
Albendazole	1.7	1.0	2.3	12.5	2.8	3.1	4.0
Amoxicillin	1.0	.	1.3	6.5	1.4	2.6	4.3
Ampicillin	1.0	1.0	1.0	9.8	2.3	3.6	5.1
Azithromycin	.	.	1.6	3.0	1.0	1.5	2.0
Cefixime	.	.	13.0	.	.	13.0	13.0
Ceftriaxone	1.0	1.0	3.6	2.1	5.0	4.7	3.0
Co-trimoxazole		.	1.0	3.0	.	2.0	2.0
Co-trimoxazole ST	1.0	.	2.0	3.0	3.0	2.6	2.3
Dexamethasone	1.0	.	1.4	2.1	.	1.6	1.6
Doxycycline	1.0	.	2.0	9.0	1.6	2.8	6.4
Gentamycin	0	.	1.0	18.4	3.0	3.8	13.9
IFA (Blue)	1.5	1.0	2.1	11.0	2.0	2.3	4.0
IFA (Red)	1.7	1.0	1.0	3.0	1.5	1.5	1.5
IFA syrup	1.0	.	1.0	.	.	1.0	1.0
Magnesium sulfate	.	.	0.0	2.0	3.0	3.0	2.0
Methyldopa	.	.	.	.	.	.	.
Metronidazole	0	.	1.4	3.0	1.7	1.7	1.7
Misoprostol	1.0	.	1.2	1.8	3.0	2.6	1.5
ORS	1.0	.	3.0	5.9	1.4	1.6	5.3
Oxytocin	1.5	.	1.0	2.3	1.2	1.3	1.7
Tetanus toxoid	1.0	1.0	0.0	.	.	1.0	1.0
Vitamin A	2.0	.	.	.	.	2.0	2.0
Vitamin K	1.5	.	1.0	.	.	1.1	1.1
Zinc sulfate	1.0	.	1.0	.	.	1.0	1.0

Table 10. Average Number of Days of Stockouts of Essential Medicines within Last Three Months by Product and Facility Type

	District Store	Hospital	CHC	PHC	HSC	Total	Total (%) excluding HSC
Albendazole	46.3	31.0	41.2	36.0	80.6	69.5	40.5
Amoxicillin	39.0	.	36.7	74.5	62.4	61.0	58.9
Ampicillin	64.5	31.0	75.1	47.3	90.0	76.1	58.5
Azithromycin	.	.	89.7	90.0	90.0	89.9	89.8
Cefixime	.	.	35.6	.	.	35.6	35.6
Ceftriaxone	46.0	58.0	67.3	28.3	50.0	51.1	56.4
Co-trimoxazole	0	.	30.0	29.0	0	29.5	29.5
Co-trimoxazole ST	39.0	.	100.0	52.5	90.0	82.6	78.2
Dexamethasone	39.0	.	51.2	64.3	0	53.8	53.8
Doxycycline	37.5	.	90.0	62.3	51.5	54.7	64.2
Gentamycin	0.0	.	17.0	61.4	90.0	87.0	49.8
IFA (Blue)	74.5	50.0	89.7	57.0	90.0	87.9	76.9
IFA (Red)	89.3	90.0	58.9	90.0	47.0	48.5	74.8
IFA syrup	90.0	.	62.8	0.0	0.0	70.6	70.6
Magnesium sulfate	.	.	0	15.0	90.0	86.8	15.0
Methyldopa	.	.	0	0	0	0	0
Metronidazole	.	.	43.6	73.5	61.4	58.4	49.7
Misoprostol	38.0	.	55.2	69.1	90.0	83.0	60.7
ORS	90.0	.	90.0	47.4	41.4	42.1	53.9
Oxytocin	62.5	.	22.4	64.6	42.9	44.4	53.4
Tetanus toxoid	4.0	5.0	.	.	.	4.5	4.5
Vitamin A	31.0	.	.	.	.	31.0	31.0
Vitamin K	35.0	.	53.0	.	.	47.8	47.8
Zinc sulfate	26.0	.	47.5	.	.	46.0	46.0

Vaccines

Five vaccines were included in this assessment: Bacillus Calmette–Guérin (BCG); diphtheria, pertussis, tetanus (DPT); hepatitis B; measles; and oral polio vaccine (OPV). As mentioned earlier, according to national guidelines, facilities at all levels of the supply chain (except for HSCs, which are excluded from the following analysis) are supposed to manage each of these five products. Due to the lack of reliable power throughout the state, some CHCs and PHCs do not have the capacity to maintain the cold chain.

The average number of products managed across all facility levels fell only slightly below guideline requirements, with most levels managing all five products (Table 11). However, a significant portion

of hospitals and PHCs did not manage any vaccines. Regarding product availability, the state average also fell only slightly below the five product minimum. However, availability varied among products at different levels of the system (from 1.2 to 4.7).

Table 11. Average Number of Vaccines Managed and Available on Day of Visit

Facility Level	# of products that are supposed to be managed per guidelines/EDL	# of products managed (mean)	# of products available day of visit (mean)
Warehouse (n=1)	5	5.0	4.0
District store (n=20)	5	4.9	4.5
Hospital (n=16)	5	4.9	1.2
CHC (n=72)	5	4.9	4.7
PHC (n=13)	5	4.8	2.6
STATE AVERAGE (excluding HSC) (n=122)		4.9	4.5

Table 12 provides further information on vaccine product management. As this table indicates, approximately 60 percent of facilities managed all five vaccines. This includes 65 percent of hospitals, 90 percent of CHCs, and 16 percent of PHCs.

Table 12. Percentage of Products Managed by Facility and Vaccine Type

	Warehouse (%) (n=1)	District Store (%) (n=21)	Hospital (%) (n=22)	CHC (%) (n=76)	PHC (%) (n=98)	Total* (%) (n=218)
BCG	100.0	87.0	69.6	96.0	16.5	66.1
DPT	100.0	87.0	65.2	95.2	16.5	65.5
Hepatitis B	100.0	87.0	69.6	96.0	15.7	65.8
Measles	100.0	82.6	65.2	94.9	16.5	65.2
OPV	100.0	78.3	69.6	89.9	17.4	62.7

*excluding HSC

Stock Availability

Overall, stockouts of vaccines on the day of visit were relatively low compared with other products in the survey. Eighty percent of facilities managing vaccines had at least four of them on the day of visit. Stockout rates of vaccines increased by level but varied significantly by product. For example, as shown below in Table 13, 17 percent of facilities were stocked out of OPV, including 75 percent of PHCs; 4.8 percent of PHCs and 3.4 percent of CHCs were stocked out of measles vaccine on the day of visit.

Table 13. Percentage of Facilities Stocked Out of Vaccines on Day of Visit by Product and Facility Type

	Warehouse (%) (n=1)	District Store (%) (n=20)	Hospital (%) (n=16)	CHC (%) (n=72)	PHC (%) (n=13)	Total (%)* (n=122)
BCG	0	15.0	12.5	8.8	41.9	12.2
DPT	0	0.0	6.7	1.0	35.7	4.5
Hepatitis B	0	0.0	6.3	0.0	37.2	3.6
Measles	0	5.3	13.3	3.4	4.8	3.9
OPV	0	11.1	6.3	10.2	75.0	16.7

*excluding HSC

Stockout rates for the previous three months appear to have similar rates as the day of visit (Table 14). All PHCs reported having stock in the previous three months; however, they were largely stocked out on the day of visit (41.9 percent, BCG; 35.7 percent, DPT; 37.2 percent, hepatitis B; 4.8 percent, measles; and 75 percent, OPV). This could be the result of a recent problem with vaccine supply chain or recordkeeping.

Table 14. Percentage of Facilities Stocked Out of Vaccines within Last Three Months by Product and Facility Type

	Warehouse (%)	District Store (%)	Hospital (%)	CHC (%)	PHC (%)	Total* (%)
BCG	100.0	6.3	50.0	10.5	0.0	11.4
DPT	0.0	0.0	20.0	1.0	0.0	1.4
Hepatitis B	0.0	0.0	40.0	0.0	0.0	1.2
Measles	0.0	7.1	40.0	4.8	0.0	5.8
OPV	100.0	15.4	60.0	12.0	0.0	13.9

*excluding HSC

As shown in Tables 15 and 16, stockouts of vaccines occurred between one and two times in the three months before the survey. Hepatitis B and measles vaccines were stocked out for the fewest average number of days (3 days and 3.8 days, respectively). BCG, DPT, and OPV were all stocked out for more than an average of 25 days within the last three months.

Table 15. Average Frequency of Stockouts of Vaccines within Last Three Months by Product and Facility Type

	Warehouse	District Store	Hospital	CHC	PHC	Total*
BCG	1.00	1.00	1.00	1.74	.	1.56
DPT	.	.	1.00	3.00	.	2.15
Hepatitis B	.	.	1.00	.	.	1.00
Measles	.	1.00	1.50	1.00	.	1.11
OPV	1.00	1.00	1.33	1.56	.	1.43

*excluding HSC

Table 16. Average Number of Days of Stockouts of Vaccines within Last Three Months by Product and Facility Type

	Warehouse (n=1)	District Store (n=20)	Hospital (n=16)	CHC (n=72)	PHC (n=13)	Total (n=122)
BCG	12.00	4.00	17.00	28.38	0	24.66
DPT	0	0	1.00	63.00	0	36.76
Hepatitis B	0	0	3.00	0	0	3.00
Measles	0	4.00	7.50	2.58	0	3.77
OPV	9.00	23.50	10.33	30.67	0	25.62

*excluding HSC

Family Planning

Five family planning products were included in this assessment: condoms, EC, Copper T 380A IUCD, OCP, and pregnancy test kits. According to national guidelines, facilities at all levels of the supply chain should manage all five products.

In Jharkhand, the average number of products managed across all facility levels fell below guideline requirements; most levels managed fewer than the five product minimum (Table 17). For product availability, the state average also fell well below the five product minimum, at only 2.9 products. As the data indicate, fewer products were available at the lower levels of the system.

Table 17. Average Number of Family Planning Products Managed and Available on Day of Visit

	# of products that are supposed to be managed per guidelines/EDL	# of products managed (mean)	# of products available day of visit (mean)
Warehouse (n=1)	5	3.0	3.0
District store (n=15)	5	4.7	3.1
Hospital (n=17)	5	4.4	3.2
CHC (n=65)	5	4.7	3.5
PHC (n=73)	5	3.2	2.5
HSC (n=95)	5	3.9	1.3
STATE AVERAGE (n=267)		3.9	2.9
STATE AVERAGE (excluding HSC) (n=172)		4.2	3.1

Only 38 percent of facilities maintained all five products; 21 percent of facilities did not manage any products. As Table 18 indicates, male condoms were the most consistently managed product, at

approximately 70 percent, across all facility levels. The other family planning products were managed far less consistently. EC was managed the least, at fewer than half of all facilities.

Table 18. Percentage of Products Managed in Previous 12 Months by Facility Level

	Warehouse (%) (n=1)	District Store (%) (n=21)	Hospital (%) (n=22)	CHC (%) (n=76)	PHC (%) (n=98)	HSC (%) (n=119)	Total (%) (n=337)	Total excluding HSC (%) (n=218)
Condoms	100.0	60.9	69.6	80.6	44.7	71.0	70.4	66.7
EC	100.0	56.5	56.5	77.8	37.5	47.1	49.2	61.9
IUCDs	100.0	65.2	65.2	84.3	53.4	64.8	65.8	71.9
OCP	100.0	60.9	69.6	78.8	46.9	61.7	62.4	66.4
Pregnancy test kits	100.0	60.9	60.9	79.1	57.0	60.4	61.7	70.0

Stock Availability

The survey found that stockouts of family planning commodities were frequent across all levels of the system and varied among products. Overall, district stores were stocked out of products at a higher level than SDPs. Additionally, while stockouts occurred further down the chain, all five products were available at the family planning warehouse in Ranchi.

As shown in Table 19, stockout rates varied widely among family planning products on the day of visit, with rates between 12 percent (IUCDs) and 49 percent (condoms). Additionally, rates varied by level, with 13 percent of CHCs stocked out of pregnancy test kits compared with 43 percent of hospitals on the day of visit.

Table 19. Percentage of Facilities Stocked Out of Family Planning Commodities on Day of Visit by Product and Facility Type

	Warehouse (n=1)	District Store (n=15)	Hospital (n=17)	CHC (n=65)	PHC (n=73)	HSC (n=95)	Total (n=267)	Total excluding HSC (n=172)
Condoms	0	35.7	18.8	39.1	23.7	51.5	49.3	34.6
EC	0	38.5	23.1	38.1	32.6	43.0	41.8	36.4
IUCDs	0	33.3	26.7	7.1	23.5	11.6	11.8	12.8
OCP	0	42.9	25.0	31.4	16.7	13.8	15.9	27.7
Pregnancy test kits	0	21.4	42.9	13.2	18.6	15.7	15.7	15.9

Stockouts of family planning commodities within the last three months were slightly lower compared to stockouts on the day of visit for all products, except for pregnancy test kits. However, similar to the previous table, stock rates varied across the different product types and all levels, excluding the warehouse where no stockouts occurred (Table 20). Stockout rates ranged from 5.5 percent for IUCDs to 21.6 percent for pregnancy test kits. Interestingly, stockout rates for EC and

condoms were much lower within the last three months (5.6 percent and 9.6 percent, respectively) than they were on the day of visit (41.8 percent and 49.3 percent, respectively). This indicates a recent problem with the family planning supply chain or quality of recordkeeping.

Table 20. Percentage of Facilities Stocked Out of Family Planning Commodities within Last Three Months by Product and Facility Type

	Warehouse (%)	District Store (%)	Hospital (%)	CHC (%)	PHC (%)	HSC (%)	Total (%)	Total (%) excluding HSC
Condoms	0	16.7	0.0	7.9	31.0	8.5	9.6	14.3
EC	0	8.3	0.0	3.7	4.6	6.0	5.6	3.9
IUCDs	0	16.7	50.0	5.3	20.8	3.4	5.5	11.8
OCP	0	20.0	0.0	7.5	6.7	17.2	15.2	7.7
Pregnancy test kits	0	33.3	0.0	26.0	4.1	24.0	21.6	16.5

Tables 21 and 22 describe the frequency and duration of stockouts in the three months before the survey. All family planning commodities were stocked out an average of 1.7 per product in the last quarter; EC reported the lowest average stockout duration (49.3 days). All other commodities (condoms, IUCDs, OCP, and pregnancy test kits) were stocked out for an average of more than 70 days across the supply chain levels.

Table 21. Average Frequency of Stockouts of Family Planning Commodities within Last Three Months by Product and Facility Type

	Warehouse	District Store	Hospital	CHC	PHC	HSC	Total	Total excluding HSC
Condoms	--	1.0	--	1.4	3.0	1.0	1.4	2.3
EC	--	1.0	--	1.0	2.0	1.7	1.6	1.3
IUCDs	--	1.0	1.0	1.0	3.0	3.0	2.6	2.2
OCP	--	1.0	--	1.0	3.0	1.8	1.8	1.6
Pregnancy test kits	--	1.0	--	1.3	1.0	1.4	1.3	1.3

Table 22. Average Number of Days of Stockouts of Family Planning Commodities within Last Three Months by Product and Facility Type

	Warehouse	District store	Hospital	CHC	PHC	HSC	Total	Total excluding HSC
Condoms	--	84.0	--	75.5	90.0	89.0	87.8	84.6
EC	--	84.0	--	72.9	90.0	45.3	49.3	77.9

	Warehouse	District store	Hospital	CHC	PHC	HSC	Total	Total excluding HSC
IUCDs	--	84.0	90.0	77.3	90.0	90.0	88.1	86.3
OCP	--	84.0	--	80.0	90.0	89.2	88.6	83.4
Pregnancy test kits	--	72.5	--	77.0	35.0	72.1	72.1	72.1

HIV and AIDS

Eight HIV and AIDS commodities were included in this assessment: RTI/STI treatment kits, antiretrovirals (ARVs), and HIV test kits. The national guidelines for HIV and AIDS commodities management vary by facility type. According to guidelines, facilities at all levels of the supply chain are required to manage between three and eight HIV and AIDS products, depending on facility type and level. The national guidelines require RTI/STI treatment kits to be available at PHCs, CHCs, and RTI/STI clinics in hospitals. Additionally, all PHCs are expected to provide HIV test kits, while CHCs and hospitals that provide HIV and AIDS treatment through Link-ART Centers and ART clinics are expected to provide ARVs.

Table 23. RTI/STI and HIV and AIDS Commodities Included in Assessment

<u>RTI/STI treatment</u> Kit 1 – Grey (Azithromycin 1g/Cefixime 400 mg, Tb) Kit 4 – Blue (Doxycycline 100 mg/Azithromycin 1g, Tb) Kit 6 – Yellow (Cefixime 400 mg/Metronidazole 400 mg/Doxycycline 100 mg, Tb) <u>HIV test kit</u> Whole Blood Finger Prick Test Kit Type I (any) Tb=Tablet	<u>ARVs</u> Efavirenz (600 mg, Tb) Nevirapine (10 mg/ml suspension) TL combo (Lamivudine (3TC) 300 mg/Tenofovir (TDF) 300 mg, Tb) ZLN combo (3TC 150 mg/Nevirapine 200 mg/Zidovudine (AZT) 300 mg, Tb)
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As shown below in Table 24, the average number of HIV and AIDS commodities managed in facilities across all levels of the system fell far below national requirements. CHCs and PHCs managed an average of 1 product, while hospitals managed an average of 3.4 commodities. The survey found that few facilities in Jharkhand were managing any of the eight HIV and AIDS commodities; overall availability of commodities was limited where they were managed in the previous 12 months.

HSCs are not meant to provide any services (or products) related to HIV and AIDS or RTIs/STIs. Therefore, HSCs have been removed from the following analysis and excluded from overall totals.

Table 24. Average Number of RTI/STI and HIV and AIDS Products Managed and Available on Day of Visit

	# of products that are supposed to be managed per guidelines	# of products managed (mean)	# of products available on day of visit (mean)
Warehouse (n=1)	8	8	6
District store (n=4)	4–8	1.5	1.3
Hospital (n=14)	4–8	3.4	2.4
CHC (n=12)	4	1.0	0.9
PHC (n=2)	4	1.0	0.1
STATE AVERAGE (excluding HSC) (n=28)		1.7	1.2

The Jharkhand state warehouse managed all the HIV and AIDS commodities in the last 12 months. On average, nevirapine was managed the most, from the warehouse down to the CHC level. RTI/STI treatment kits, TL combo, and ZLN combo were most commonly managed at hospitals. Only two PHCs managed RTI/STI Treatment Kit 1 and HIV test kits in the previous 12 months (Table 25).

Table 25. Percentage of Facilities that Managed RTI/STI and HIV and AIDS Products in Previous 12 Months

	Warehouse (n=1)	District store (n=21)	Hospital (n=22)	CHC (n=76)	PHC (n=98)	Total* (n=218)
Efavirenz	100.0	4.3	13.0	0.0	0.0	0.7
Nevirapine	100.0	13.0	47.8	13.6	0.0	9.9
RTI/STI Treatment Kit 1	100.0	8.7	52.2	2.2	5.2 (1)	5.3
RTI/STI Treatment Kit 4	100.0	0.0	17.4	0.0	0.0	0.7
RTI/STI Treatment Kit 6	100.0	0.0	26.1	0.0	0.0	1.0
TL combo	100.0	0.0	21.7	0.0	0.0	0.8
ZLN combo	100.0	0.0	26.1	0.0	0.0	1.0
HIV test kits	100.0	0.0	0.0	4.3	.9 (1)	2.9

*excluding HSC

Stock Availability

Stockouts for HIV and AIDS commodities at the time of visit ranged from 20 percent to 77 percent; however, it is important to note that these percentages are based on a small number of sites (n=28) (Table 26).

Table 26. Percentage of Facilities Stocked Out of RTI/STI and HIV and AIDS Commodities on Day of Visit by Product and Facility Type

	Warehouse	District store	Hospital	CHC	PHC	Total*
Efavirenz	0.0	100.0	0.0	--	--	20.0
Nevirapine	0.0	0.0	9.1	96.4	--	77.1
RTI/STI Treatment Kit 1	0.0	0.0	25.0	44.4	100.0	54.1
RTI/STI Treatment Kit 4	100.0	--	25.0	--	--	40.0
RTI/STI Treatment Kit 6	100.0	--	33.3	--	--	42.9
TL combo	0.0	--	80.0	--	--	66.7
ZLN combo	0.0	--	33.3	--	--	28.6
HIV test kits	0.0	--	--	0.0	0.0	0.0

*excluding HSC

While multiple stockouts were found on the day of visit (with the exception of the HIV test kits), very few occurred over the last three months based on the record reviews (see Table 27). (Again, note that only 28 facilities carried any of the HIV and AIDS commodities during the previous 12 months, so the results are not necessarily representative of stockout rates of ART clinics or Link-ART Centers.) Nevirapine and RTI/STI Treatment Kit 1 were the only commodities that records indicated had one or more stockouts in the last three months. Nevirapine was stocked out an average of 64.3 days. RTI/STI Treatment Kit 1 was stocked out an average of 57.1 days. (See Appendix D, Tables D1 and D2 for more details.)

Table 27. Stockouts of RTI/STI and HIV and AIDS Commodities within Last Three Months by Product and Facility Type

	Warehouse (n=1)	District store (n=4)	Hospital (n=14)	CHC (n=12)	PHC (n=2)	Total* (n=28)
Efavirenz	0.0	0.0	0.0	0.0	0.0	0.0
Nevirapine	100.0	0.0	0.0	100.0	0.0	43.1
RTI/STI Treatment Kit 1	100.0	0.0	50.0	73.5	0.0	71.0
RTI/STI Treatment Kit 4	0.0	0.0	0.0	0.0	0.0	0.0
RTI/STI Treatment Kit 6						
TL combo	0.0	0.0	0.0	0.0	0.0	0.0
ZLN combo	0.0	0.0	0.0	0.0	0.0	0.0
HIV test kits	0.0	0.0	0.0	0.0	0.0	0.0

*excluding HSC

LMIS

This section discusses how well the LMIS is functioning across supply chain systems for warehouses, district stores, hospitals, CHCs, and PHCs. Findings are under the following

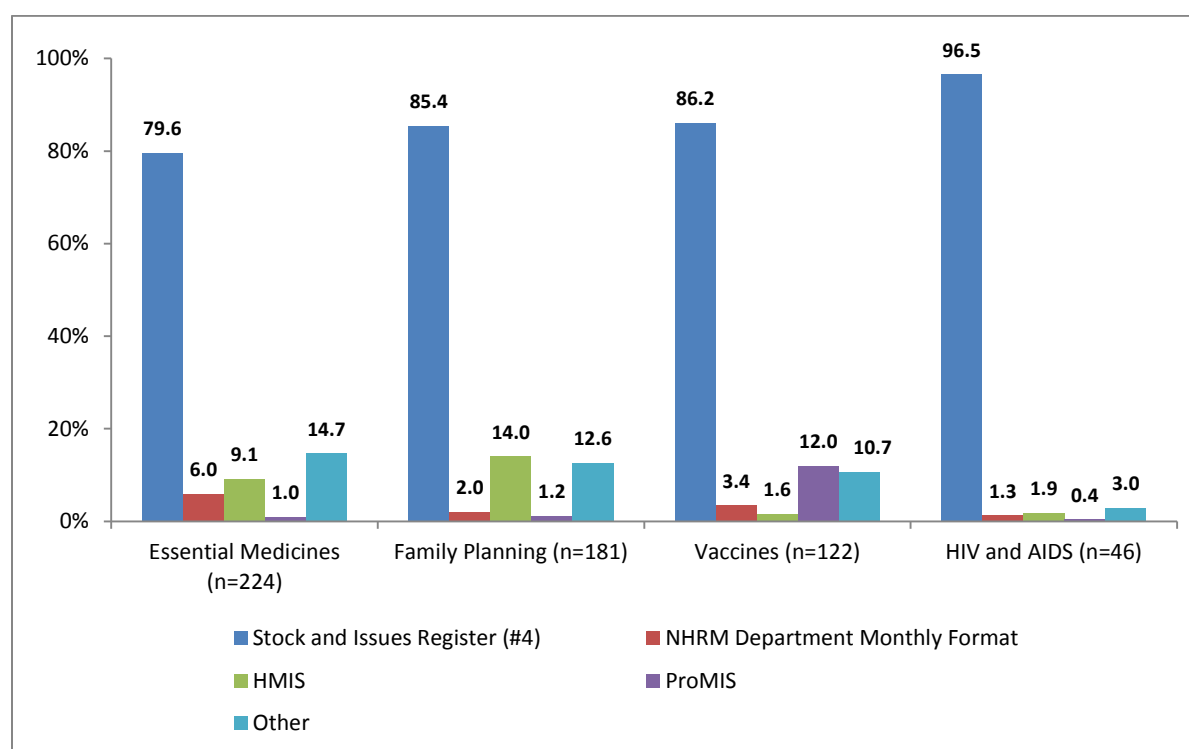
subheadings for each product group: recordkeeping and report forms. Data were collected through interviews with commodities managers for each supply chain. A record review of the 42 products included in the assessment and managed at the facility was also conducted.

Recordkeeping

Logistics personnel require tools such as stockcards/stock registries and daily activity registries to track and record key logistics data. These data include quantities received, dispensed, or issued, and quantity losses/adjustments. As shown in Figure 4, commodities managers across all supply chains most frequently reported using stockcards and stock registries for managing commodities.

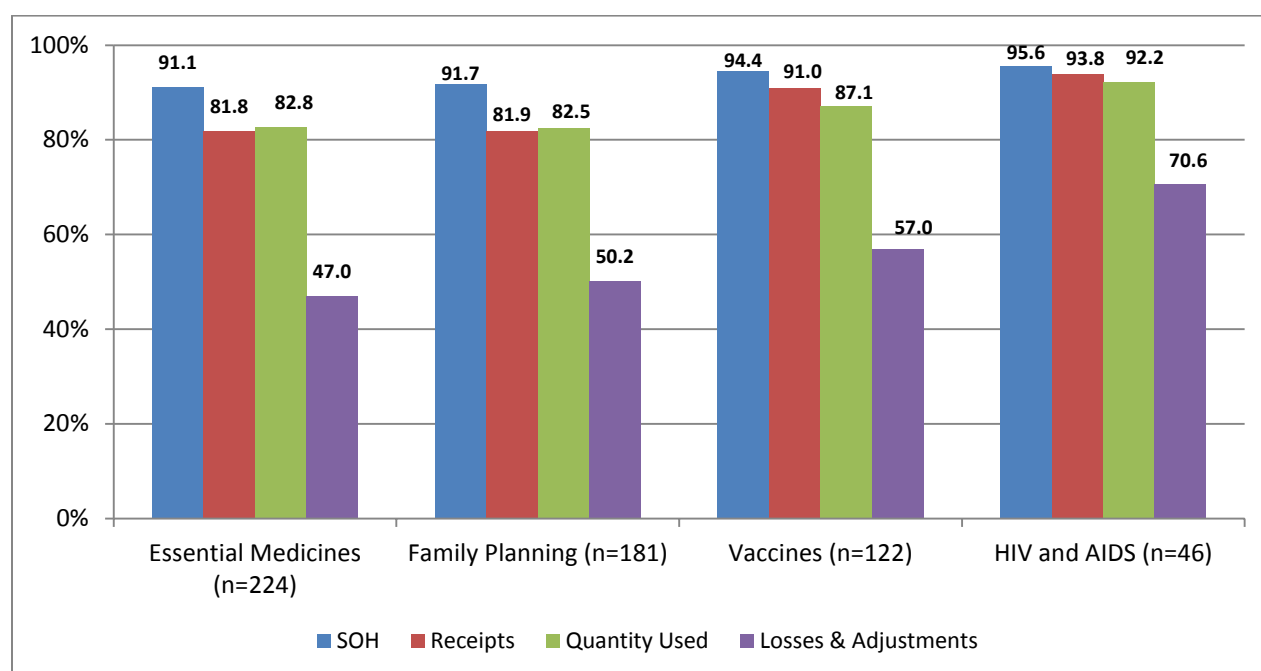
Across all supply chains, 80 percent or more commodities managers reported using the Stock and Issues Register for inventory logistics. Other forms include the National Rural Health Mission (NRHM) Department Monthly Format, HMIS, and ProMIS.

Figure 4. Types of Inventory Logistics Forms Commodities Managers Use to Manage Supply Chains



As shown below in Figure 5, inventory reports for all commodities routinely included stock on hand (SOH), receipts, and quantity, which were used at a rate of 80 percent or more. Losses and adjustments were also included between 50 percent and 71percent of the time.

Figure 5. Logistics Information Included in Completed Inventory Report



Unavailable or outdated stockcards represent gaps in the LMIS. These gaps are because the most current information is not available for stock management. Improved recordkeeping is therefore required to identify and respond to overall supply chain operational issues and inform decisionmaking. During supportive supervision visits, supervisors should work with facility personnel to ensure that they are using and updating stockcards regularly.

Tables 28–35 show the percentage of facilities with stockcards (by product), as well as the percentage of these stockcards that were updated (defined as having something noted on the record within the last 30 days). Facilities were also assessed on the accuracy of the balance entries on their stockcards. Accuracy was determined by comparing the balance of updated stockcards with the physical count for each product on the day of the assessment visit. Stockcards were considered accurate if the balance was within ± 10 percent of the physical count. The denominators used for these eight tables are based on whether the facility reported managing the product within the previous 12 months (i.e., results from Tables 6, 18, and 25).

Essential Medicines

As shown in Table 28, most facilities have stockcards for all essential medicines commodities at a rate of 85 percent or above (except co-trimoxazole ST, 75.2 percent). However, the percentage of facilities that had updated stockcards dropped significantly; on average 25 percent of facilities maintained updated stockcards. The state warehouse is not shown in the following tables, as it did not manage any essential medicines included in the survey during the previous 12 months or any stockcards.

Table 28. Percentage of Facilities with Available and Updated Stockcards of Essential Medicines⁹

	District Store		Hospital		CHC		PHC		Total*	
	% avail	% updated	% avail	% updated	% avail	% updated	% avail	% updated	% avail	% updated
Albendazole	100.0	36.8	83.3	27.8	91.4	23.8	83.1	36.2	88.7	28.4
Amoxicillin	87.5	25.0	87.5	25.0	95.6	15.1	89.1	35.9	92.9	22.8
Ampicillin	100.0	30.0	84.6	23.1	96.7	19.7	93.2	44.9	95.4	26.7
Azithromycin	100.0	20.0	90.9	36.4	98.3	8.0	91.0	18.9	96.0	13.0
Cefixime	100.0	0.0	83.3	16.7	92.8	36.8	78.3	10.0	88.3	26.7
Ceftriaxone	100.0	11.1	88.9	33.3	96.8	23.3	100.0	30.6	97.4	24.8
Co-trimoxazole	100.0	0.0	72.7	36.4	94.7	27.7	77.1	54.3	87.9	36.2
Co-trimoxazole ST	66.7	16.7	60.0	0.0	67.2	22.6	88.4	34.5	75.2	26.2
Dexamethasone	100.0	25.0	93.3	26.7	93.6	29.2	87.3	34.6	91.5	30.9
Doxycycline	100.0	22.2	88.2	23.5	96.6	21.9	85.4	45.5	92.5	29.9
Gentamycin	83.3	16.7	92.3	30.8	94.3	22.8	91.0	39.3	93.0	28.0
IFA (Blue)	94.1	41.2	91.7	16.7	98.1	26.6	87.5	16.6	95.2	25.0
IFA (Red)	92.9	42.9	94.4	27.8	87.8	25.4	85.6	39.4	87.4	31.0
IFA syrup	100.0	25.0	100.0	0.0	96.3	14.6	77.6	11.2	93.9	14.2
Magnesium sulfate	100.0	20.0	100.0	11.1	96.9	20.8	96.1	26.2	96.9	21.6
Methyldopa	100.0	25.0	85.7	0.0	100.0	4.2	100.0	27.1	99.2	9.1
Metronidazole	100.0	22.2	83.3	25.0	95.6	32.2	88.8	41.6	93.2	34.7
Misoprostol	100.0	22.2	91.7	25.0	93.8	19.6	93.6	29.5	93.8	22.8
ORS	93.3	46.7	88.9	27.8	89.9	27.6	84.2	38.9	87.9	32.2
Oxytocin	100.0	44.4	92.9	21.4	84.5	22.4	89.5	39.2	86.7	28.4
Tetanus toxoid	100.0	78.9	81.3	37.5	96.8	35.4	65.2	25.8	93.4	36.4
Vitamin A	83.3	16.7	100.0	0.0	100.0	0.0	82.8	0.0	95.8	0.8
Vitamin K	100.0	22.2	92.3	7.7	89.4	25.0	90.0	26.1	90.1	24.3
Zinc sulfate	100.0	30.0	100.0	20.0	91.1	22.2	78.4	32.4	90.6	23.2
<i>Average of all products</i>	<i>95.9</i>	<i>26.7</i>	<i>88.6</i>	<i>20.8</i>	<i>93.3</i>	<i>22.0</i>	<i>86.8</i>	<i>30.8</i>	91.8	24.9

*excluding HSC

Of all the facilities with updated stockcards for essential medicines, on average 67 percent of the balances listed were within +/-10 percent of the physical count on the day of visit (Table 29). When considering the entire sample, this means that only 18 percent of facilities visited had accurate

⁹ Updated stockcard is defined as having something noted on the record within the last 30 days. The denominators used for “updated” are the same as “available”— whether the facility reported managing the product within the previous 12 months.

stockcards for the products they were managing. Interestingly, while the overall percentage of updated stockcards was 25 percent (Table 28), CHCs' and PHCs' accuracy rates (60 percent and 74 percent, respectively) were higher compared with hospitals (59 percent) (Table 29).

Table 29. Percentage of Facilities with Accurate or Near Accurate Balances (+/- 10) between Physical Inventory and Stockcard Balances on Day of Visit for Essential Medicines by Facility Type¹⁰

	District Store (%)	Hospital (%)	CHC (%)	PHC (%)	Total* (%)
Albendazole	57.1	57.1	72.6	83.3	76.7
Amoxicillin	50.0	50.0	41.7	67.9	58.4
Ampicillin	33.3	33.3	58.7	70.8	62.4
Azithromycin	100.0	100.0	0.0	38.9	32.6
Cefixime	0.0	0.0	28.6	100.0	38.2
Ceftriaxone	100.0	100.0	61.4	100.0	72.2
Co-trimoxazole	0.0	0.0	73.0	75.1	75.7
Co-trimoxazole ST	0.0	0.0	45.6	77.6	60.7
Dexamethasone	50.0	50.0	83.7	74.4	78.0
Doxycycline	50.0	50.0	53.7	77.1	67.3
Gentamycin	100.0	100.0	57.6	77.2	66.1
IFA (Blue)	28.6	28.6	55.6	100.0	57.1
IFA (Red)	50.0	50.0	73.9	73.0	72.1
IFA syrup	0.0	0.0	63.8	100.0	64.3
Magnesium sulfate	100.0	100.0	87.4	100.0	91.2
Methyldopa	0.0	0.0	100.0	100.0	91.2
Metronidazole	100.0	100.0	55.5	79.0	65.9
Misoprostol	0.0	0.0	68.7	59.9	63.5
ORS	71.4	71.4	65.0	59.8	62.9
Oxytocin	25.0	25.0	77.6	74.9	74.5
Tetanus toxoid	93.3	93.3	81.0	100.0	83.5
Vitamin A	100.0	100.0	0.0	0.0	100.0
Vitamin K	50.0	50.0	75.0	74.4	74.4
Zinc sulfate	66.7	66.7	66.2	66.7	65.2
<i>Average of all products</i>	<i>53.2</i>	<i>58.6</i>	<i>59.6</i>	<i>73.5</i>	<i>67.0</i>

*excluding HSC

¹⁰ Stockcards were considered accurate if the balance of the updated stockcard was within +/- 10 percent of the physical count. The denominators used for calculations are based on whether the facility reported managing the product within the previous 12 months.

Vaccines

As shown below in Table 30, stockcards were available at about 93 percent of facilities for all vaccines, except for hepatitis B (35.6%). Excluding hepatitis B, stockcards were updated only 31 percent to 38 percent of the time. With hepatitis B, while only 35.6 percent of facilities had stockcards, all of them were up-to-date (see indicator definition at page 30).

Table 30. Percentage of Facilities with Available and Updated Stockcards for Vaccines¹¹

	Warehouse		District Store		Hospital		CHC		PHC		Total*	
	% avail	% updated	% avail	% updated	% avail	% updated	% avail	% updated	% avail	% updated	% avail	% updated
BCG	100.0	100.0	100.0	80.0	93.8	37.5	95.7	37.2	58.3	21.9	92.5	37.8
DPT	100.0	100.0	100.0	75.0	100.0	33.3	95.9	35.4	63.4	21.9	93.3	35.9
Hepatitis B	100.0	100.0	70.0	70.0	31.3	31.3	35.1	35.1	23.1	23.1	35.6	35.6
Measles	100.0	100.0	100.0	73.7	93.3	33.3	96.1	34.8	63.4	21.9	93.2	35.3
OPV	100.0	100.0	100.0	72.2	93.8	31.3	95.8	30.3	65.2	20.8	92.9	31.2

*excluding HSC

As shown below in Table 31, in facilities managing vaccines, accurate or near-accurate balances (+/- 10 percent) between the physical inventory and stockcard balances on the day of visit ranged from 67 percent to 81 percent.

Table 31. Percentage of Facilities with Accurate or Near Accurate Balances (+/- 10) between Physical Inventory and Stockcard Balances on Day of Visit for Vaccines by Facility Type¹²

	Warehouse	District Store	Hospital	CHC	PHC	Total*
BCG	100.0	75.0	75.0	67.5	76.1	68.8
DPT	100.0	86.7	86.7	67.0	23.9	66.9
Hepatitis B	100.0	86.7	86.7	79.3	100.0	81.2
Measles	0.0	42.9	80.0	77.6	100.0	75.5
OPV	0.0	69.2	69.2	68.4	100.0	70.5

*excluding HSC

Family Planning

At all facility levels, stockcards were available 88 percent or more (see Table 32). However, the percentage of facilities with updated stockcards per product decreased significantly for condoms, IUCDs, OCP, and pregnancy test kits.

¹¹ "Updated" stockcard is defined as having something noted on the record within the last 30 days. The denominators used for "updated" are the same as "available"— whether the facility reported managing the product within the previous 12 months.

¹² Stockcards were considered accurate if the balance of the updated stockcard was within +/- 10 percent of the physical count. The denominators used for calculations are based on whether the facility reported managing the product within the previous 12 months.

Table 32. Percentage of Facilities where Stockcards are Available and Updated for Family Planning Commodities¹³

	Warehouse		District Store		Hospital		CHC		PHC		Total*	
	% avail	% updated	% avail	% updated	% avail	% updated	% avail	% updated	% avail	% updated	% avail	% updated
Condoms	100.0	100.0	92.9	42.9	81.3	25.0	93.7	18.8	82.1	23.3	90.5	21.0
EC	100.0	100.0	100.0	92.3	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8
IUCDs	100.0	100.0	93.3	40.0	93.3	13.3	90.5	24.4	89.8	36.9	90.5	28.0
OCP	100.0	100.0	92.9	35.7	75.0	12.5	91.5	18.3	81.3	27.3	88.4	21.1
Pregnancy test kits	100.0	100.0	92.9	42.9	85.7	14.3	91.6	20.0	88.8	36.8	90.7	25.6

*excluding HSC

More than two-thirds of facilities maintained accurate or near-accurate balances (+/- 10 percent) between the physical inventory and stockcard balances for IUCDs, OCP, and pregnancy tests. As shown in Table 33, stockcards for EC were the most inaccurate (except at the warehouse level, at 100 percent); 11 percent or less of all facilities maintained balances (+/- 10 percent) between the physical inventory and the stockcard.

Table 33. Percentage of Facilities with Accurate or Near Accurate Balances (+/- 10) between Physical Inventory and Stockcard Balances on Day of Visit for Family Planning Commodities by Facility Type¹⁴

	Warehouse (%)	District Store (%)	Hospital (%)	CHC (%)	PHC (%)	Total*
Condoms	100.0	66.7	75.0	68.2	52.5	64.5
EC	100.0	8.3	7.7	11.5	9.2	11.0
IUCDs	100.0	66.7	0.0	69.9	67.2	68.1
OCP	100.0	40.0	50.0	63.3	74.7	66.0
Pregnancy test kits	100.0	66.7	100.0	61.2	71.2	66.6

*excluding HSC

HIV and AIDS

As noted earlier, management and availability of HIV and AIDS products were limited. Therefore, the following results are based on 5-10 cases per facility type. Results should be interpreted with caution.

¹³ "Updated" stockcard is defined as having something noted on the record within the last 30 days. The denominators used for "updated" are the same as "available"— whether the facility reported managing the product within the previous 12 months.

¹⁴ Stockcards were considered accurate if the balance of the updated stockcard was within +/- 10 percent of the physical count. The denominators used for calculations are based on whether the facility reported managing the product within the previous 12 months.

As shown below in Table 34, availability of updated stocks was rather limited. Approximately only one-third of facilities managing HIV and AIDS products had an updated stockcard for its product. The updated stockcards, however, appeared to be predominately accurate (within +/- 10 percent); the exception was the whole finger blood test, which is managed at CHCs (see Table 35).

Table 34. Percentage of Facilities with Available and Updated Stockcards for RTI/STI and HIV and AIDS Commodities¹⁵

	Warehouse		District Store		Hospital		CHC		PHC		Total*	
	% avail	% updated	% avail	% updated	% avail	% updated	% avail	% updated	% avail	% updated	% avail	% updated
Efavirenz	100.0	100.0	100.0	0.0	100.0	33.3	0.0	0.0	--	--	100.0	40.0
Nevirapine	100.0	100.0	100.0	66.7	90.9	18.2	100.0	3.7	--	--	98.6	10.0
RTI/STI Treatment Kit 1	100.0	100.0	100.0	0.0	75.0	16.7	100.0	57.6	100.0	0.0	91.9	21.9
RTI/STI Treatment Kit 4	100.0	0.0	0.0	0.0	75.0	25.0	0.0	0.0	0.0	0.0	80.0	20.0
RTI/STI Treatment Kit 6	100.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	57.1	0.0
TL combo	100.0	100.0	0.0	0.0	60.0	20.0	0.0	0.0	0.0	0.0	66.7	33.3
ZLN combo	100.0	100.0	0.0	0.0	66.7	16.7	0.0	0.0	0.0	0.0	71.4	28.6
HIV test kits	100.0	100.0	0.0	0.0	0.0	0.0	48.7	7.9	100.0	0.0	56.8	11.6

*excluding HSC

Table 35. Percentage of Facilities with Accurate or Near Accurate Balances (+/- 10) between Physical Inventory and Stockcard Balances on Day of Visit for RTI/STI and HIV and AIDS Commodities by Facility Type¹⁶

	Warehouse	District Store	Hospital	CHC	PHC	Total excluding HSC
Efavirenz	0.0	0.0	100.0	0.0	0.0	50.0
Nevirapine	0.0	100.0	100.0	0.0	0.0	56.9
RTI/STI Treatment Kit 1	0.0	0.0	100.0	100.0	0.0	87.7
RTI/STI Treatment Kit 4	0.0	0.0	100.0	0.0	0.0	100.0
RTI/STI Treatment Kit 6	--	--	--	--	--	--

¹⁵ "Updated" stockcard is defined as having something noted on the record within the last 30 days. The denominators used for "updated" are the same as "available"—whether the facility reported managing the product within the previous 12 months.

¹⁶ Stockcards were considered accurate if the balance of the updated stockcard was within +/- 10 percent of the physical count. The denominators used for calculations are based on whether the facility reported managing the product within the previous 12 months.

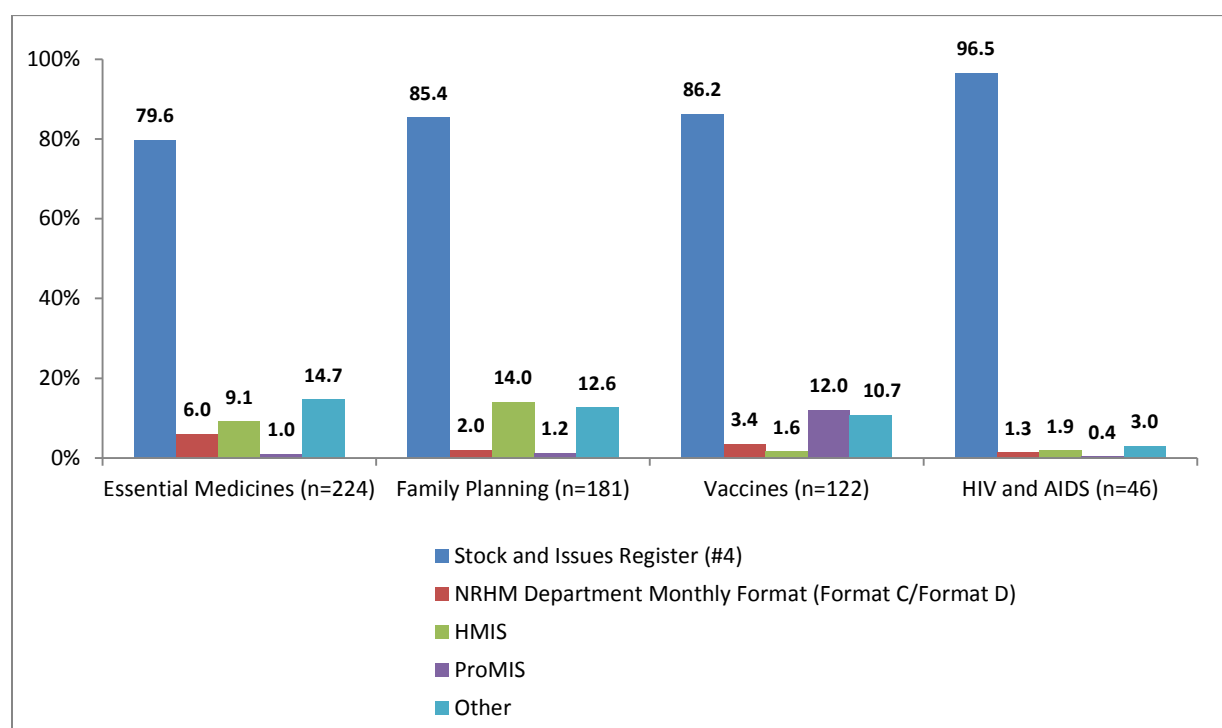
	Warehouse	District Store	Hospital	CHC	PHC	Total excluding HSC
TL combo	0.0	0.0	100.0	0.0	0.0	50.0
ZLN combo	0.0	0.0	100.0	0.0	0.0	50.0
HIV test kits	100.0	0.0	0.0	100.0	0.0	100.0

*excluding HSC

Reporting Forms

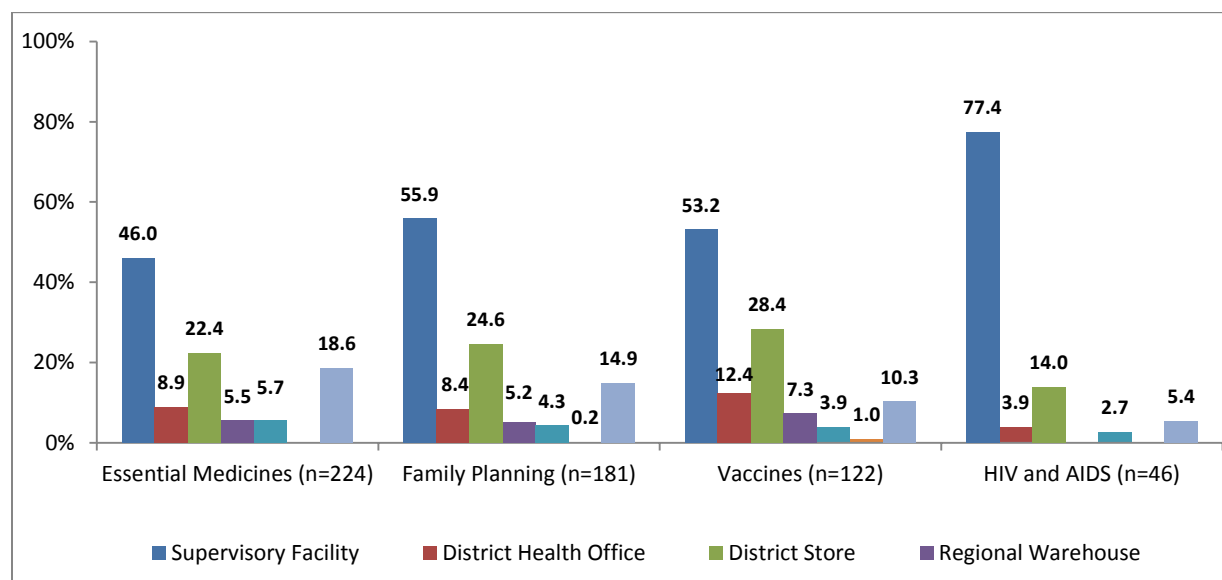
In addition to reliable recordkeeping at the facility level, information must be reported to higher levels for effective logistics decision making. To ensure this, the information sent in the reports must be complete and accurate. As indicated in Figure 6, stock and issues registers were the predominant forms used to report logistics information to higher levels.

Figure 6. Types of Forms Used for Reporting Inventory Information to the Higher Level by Supply Chain, According to Commodities Managers



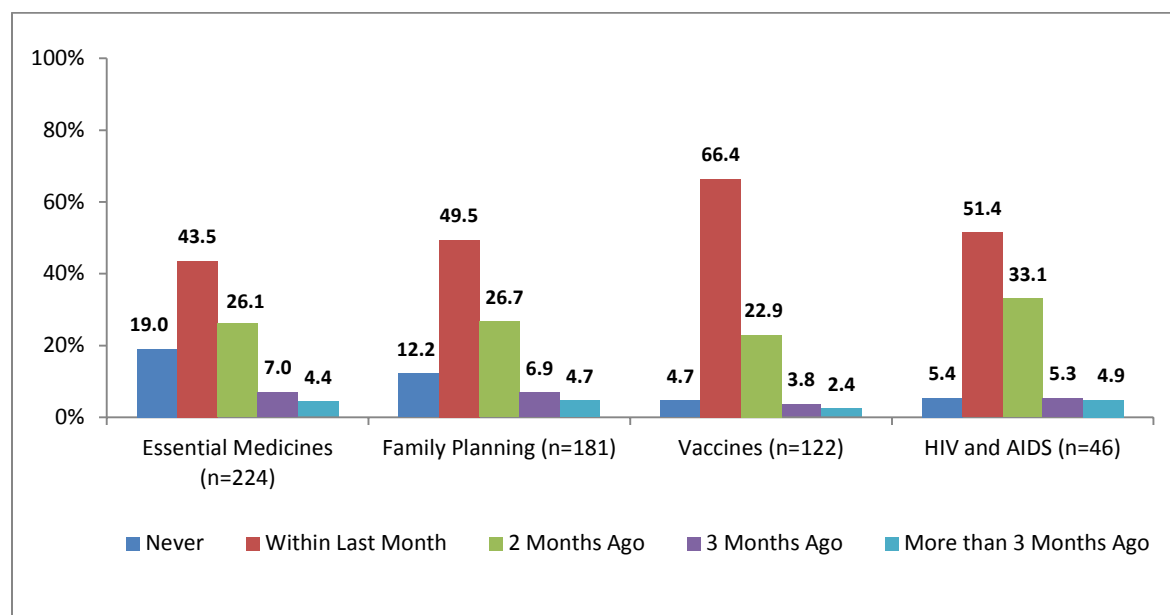
Commodities managers were asked where they sent their inventory reports. As shown in Figure 7, respondents reported submitting their reports to the supervisory facility or the district store.

Figure 7. Where Inventory Reports are Sent by Supply System, According to Commodities Managers



However, there is variation on the reporting of frequency between supply chains. As shown in Figure 8, monthly reporting was the most common response; however, almost 20 percent of essential medicines commodities managers reported never submitting an inventory report to a higher level. See Appendixes A–D for more details on frequency of inventory reporting.

Figure 8. Frequency of Inventory Reports Sent to Higher Level by Supply Chain



Inventory Management

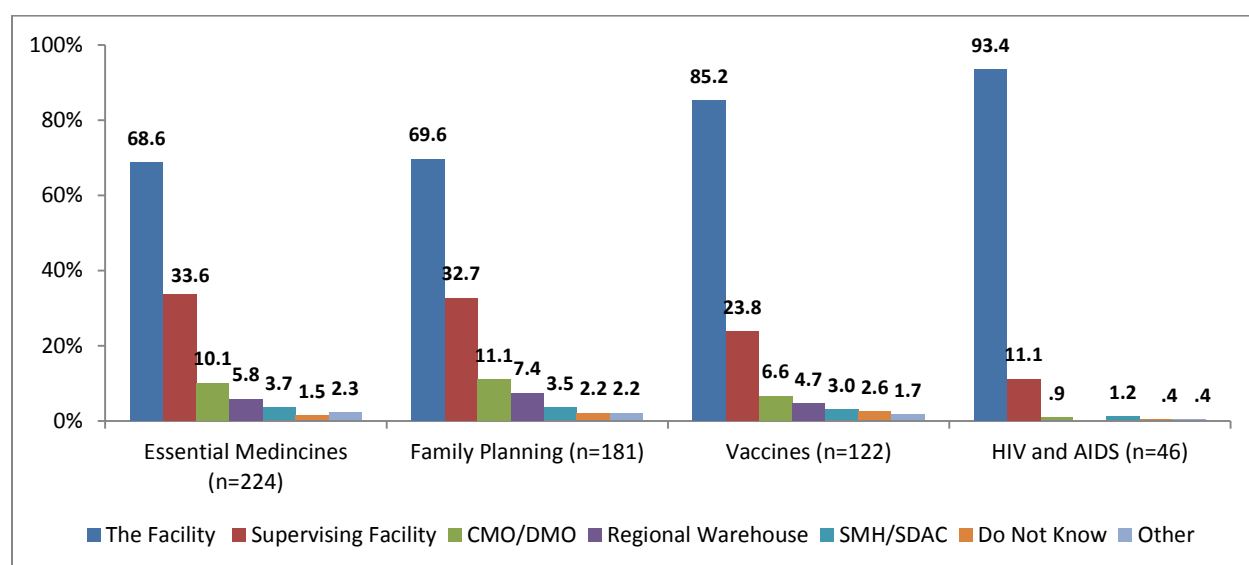
The following section discusses the key steps, processes, and tools needed to manage and store sufficient product. This includes the ordering process for additional commodities, source of supply,

as well as warehousing processes and storeroom conditions. Findings are based on interviews with commodities managers for each supply chain and field workers' observations of the facility storeroom(s). Results are provided to allow comparison across supply chains. Facility-level results can be found in Appendixes A–D.

Ordering Process

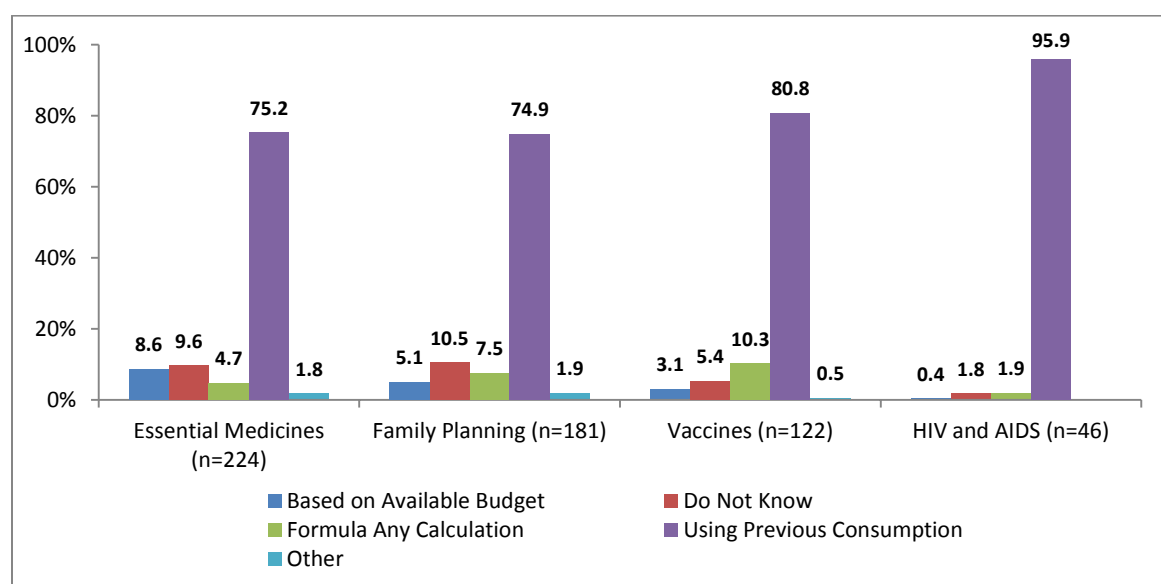
Commodities managers were asked about who was responsible for determining which medicines to order and the quantity. Results indicated that despite differences in who manages the overall system, the ordering processes across supply chain systems in Jharkhand functioned similarly and were largely decentralized. As Figure 9 shows, respondents reported that the majority of facilities were responsible for determining their order quantities and type; however, approximately 30 percent of essential medicines and family planning managers reported the supervisory facility as being responsible.

Figure 9. Person Responsible for Determining Which Medicines to Order by Supply Chain



As shown in Figure 10 below, the quantities ordered for each facility were predominantly based on previous consumption. It should be noted, however, that given the inconsistencies in recordkeeping and high stockout rates, consumption patterns are likely to be inaccurate.

Figure 10. How Quantities are Determined by Supply Chain



According to the guidelines and policy, and shown in Figures 11 and 12 below, most facilities reported that the frequency of indents for each commodity was monthly or quarterly. In Figure 11, HIV and AIDS commodities, quarterly indents were made more often (70 percent) than monthly ones (about 29 percent). This is also consistent with the data on when an indent or report was last sent (Figure 12).

Figure 11. Frequency of Indents Made by Facility According to Policy by Supply Chain

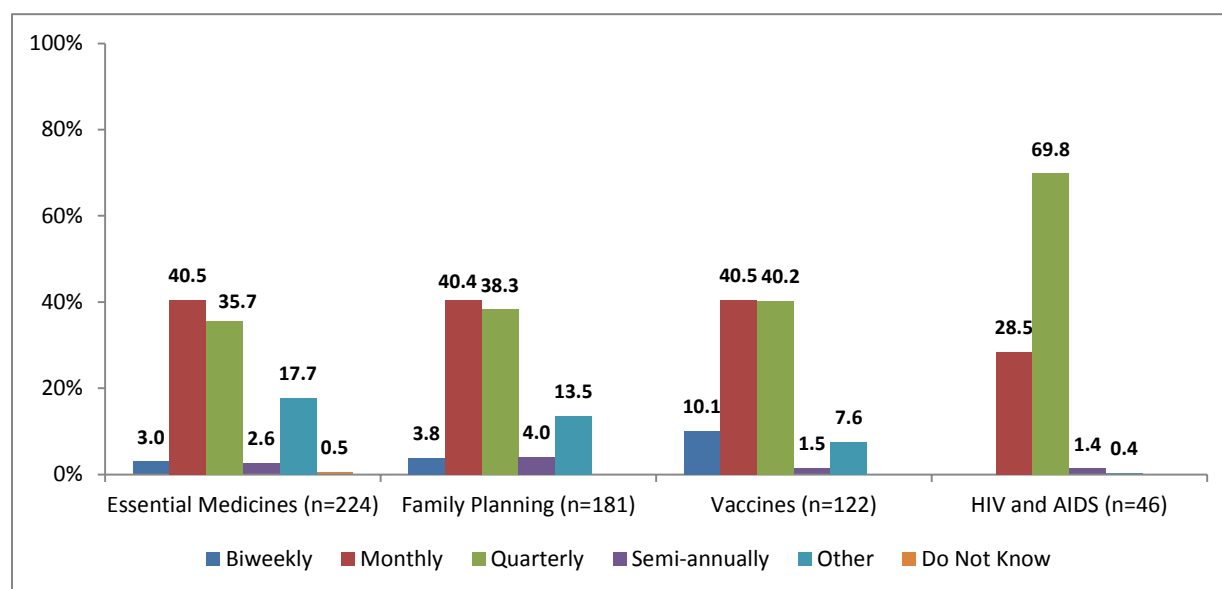


Figure 12. Last Time an Indent/Report was Sent by Supply Chain

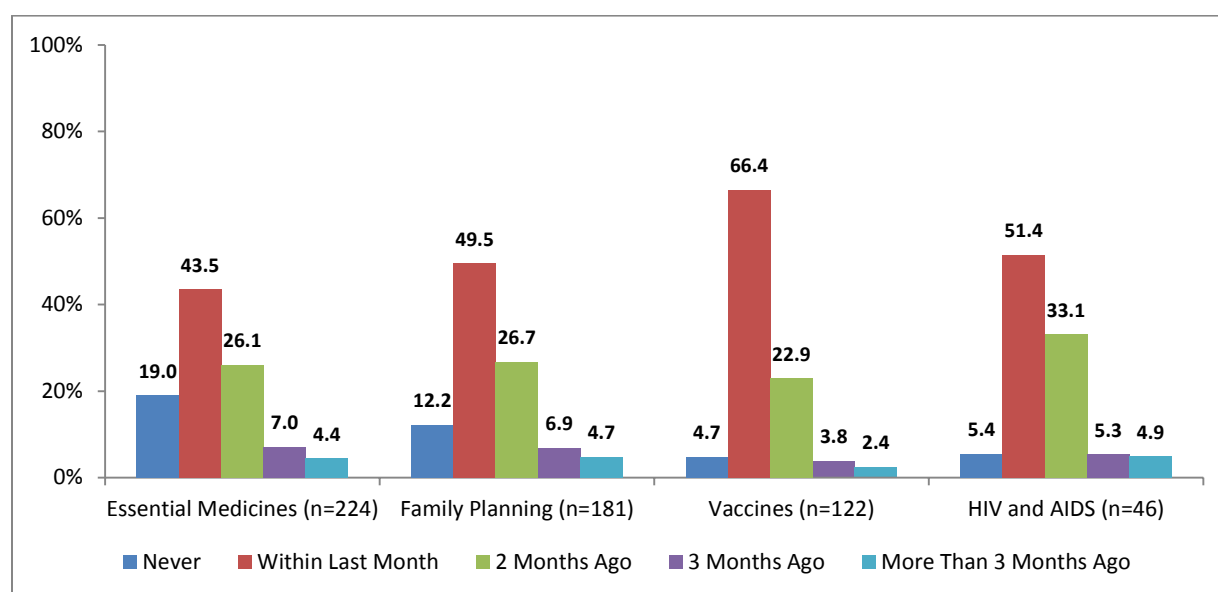


Figure 13 below shows the length of time between indenting and receiving commodities, often referred to as lag time, by supply chain; each supply chain reported an average of fewer than two weeks. Approximately one-tenth to one-quarter of managers, varying by product type, responded that they received their order between two weeks and one month of placing the order. Regardless of when they ordered, most respondents reported that their orders were filled between 75 and 100 percent of the time; a small proportion was filled between 50 and 75 percent of the time (Figure 14).

Figure 13. Average Length of Time between Indenting and Receiving by Supply Chain

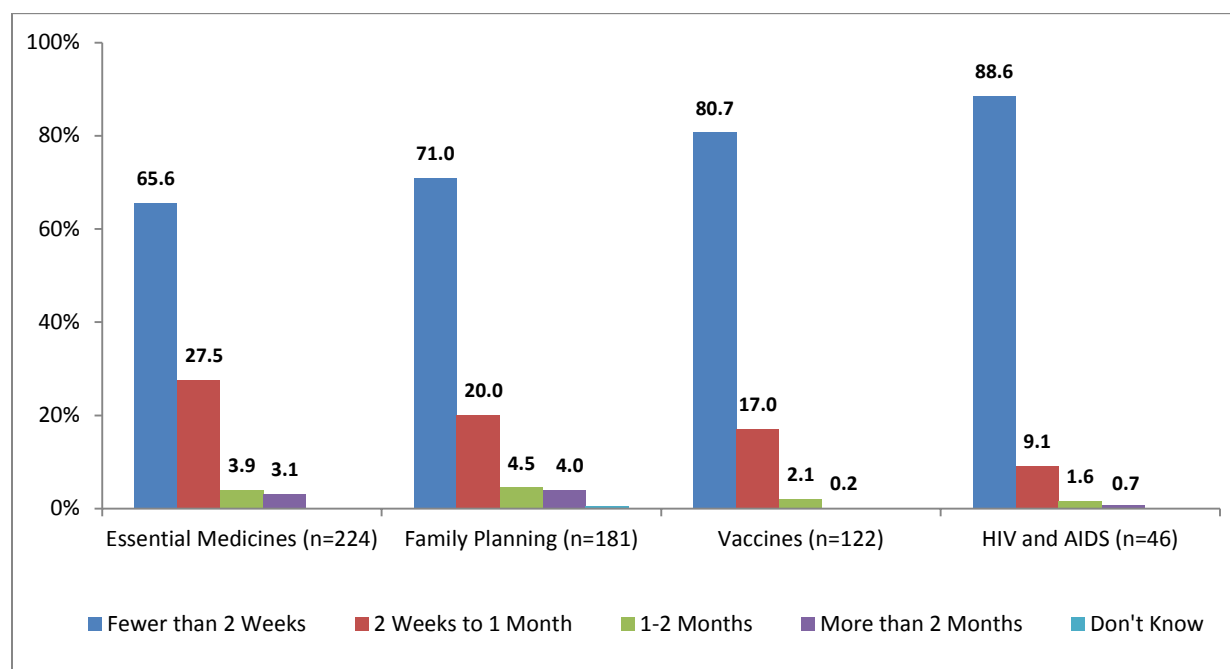


Figure 14. How Well Indents are Filled by Supply Chain

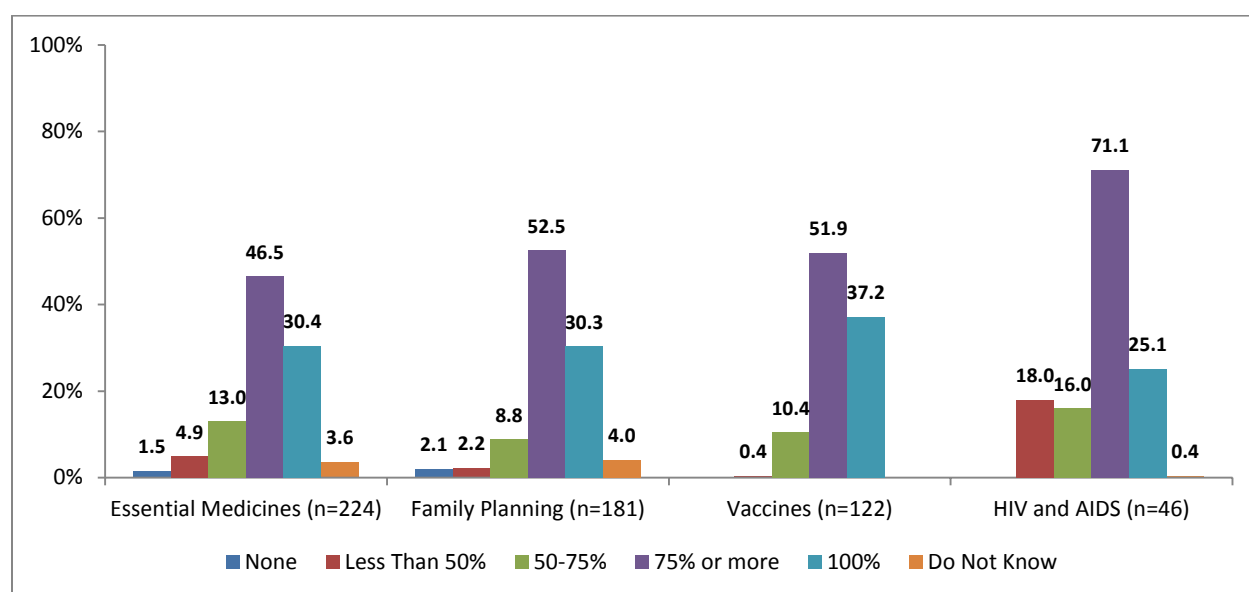
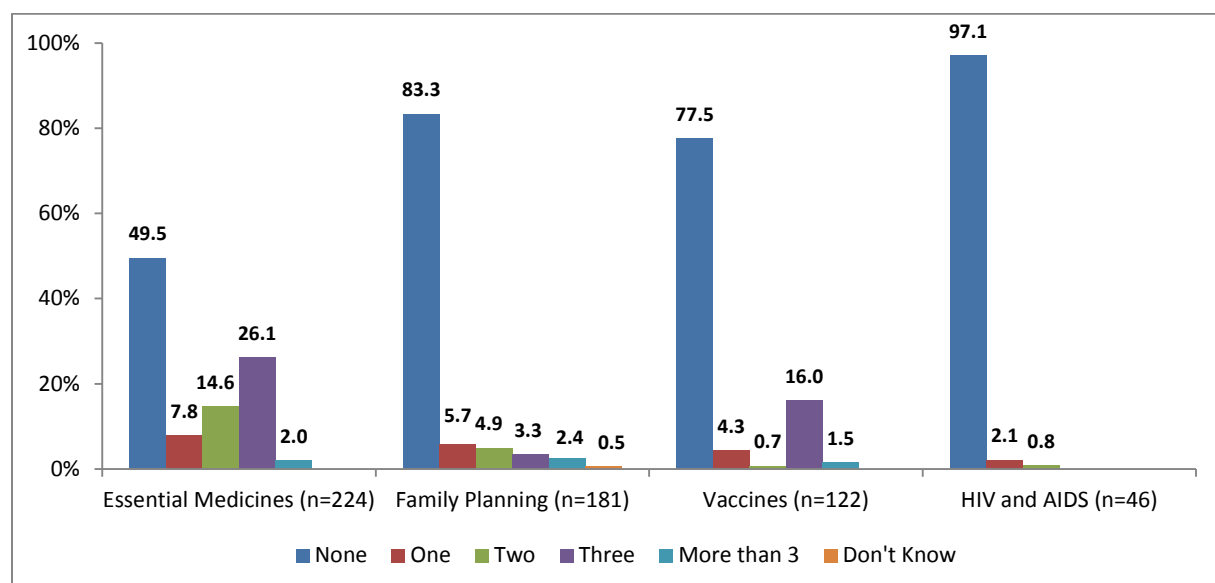


Figure 15 below shows the frequency of emergency orders and unplanned local purchases in the previous three months. According to respondents, few emergency orders were placed and few unplanned procurements were made for family planning and HIV and AIDS products. However, about 50 percent of essential medicines commodities managers reported making one or more emergency/unplanned local purchase order.

Figure 15. Frequency of Emergency Orders/Unplanned Local Purchases in Previous Three Months by Supply Chain

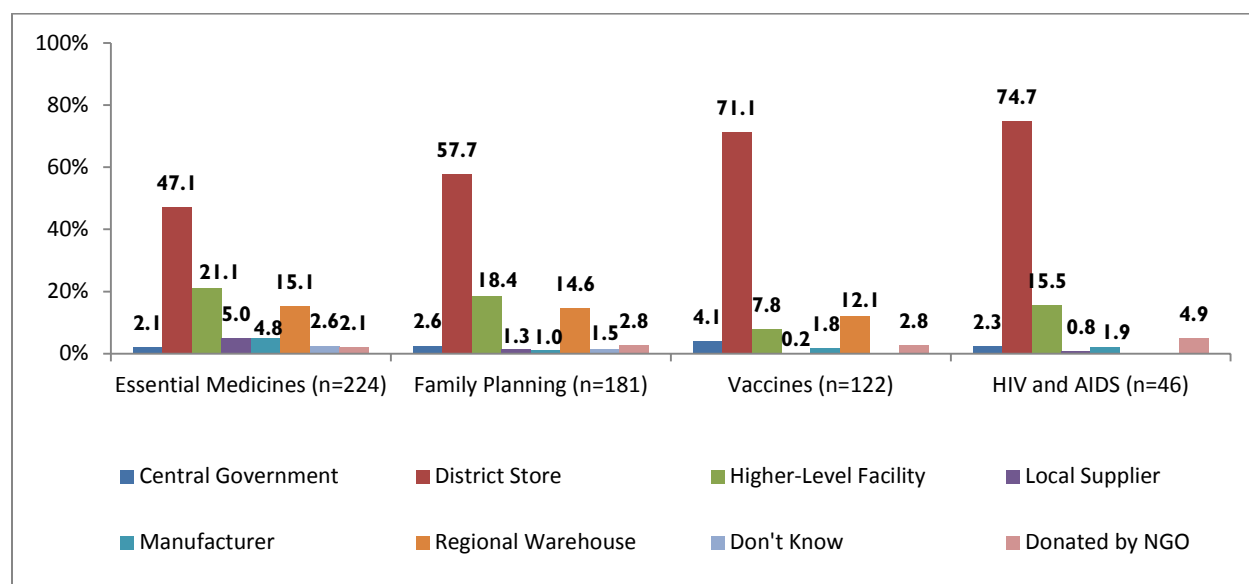


It is important to note that despite indications that facilities reported monthly, there is a gap in supply chain management of ordering. This is evident in the high stockout rates of products found at the facilities across supply chains. It appears that facilities are not ordering enough products when

the monthly indents are being made, and emergency orders are not being placed. This gap could be because facilities are responsible for managing their orders and don't have a centralized system.

Additionally, as Figure 16 shows, respondents reported that the district store was the source of supply for most facilities across all supply chains. However, as found earlier with stock assessment, district stores did not manage or store most of the tracer products. This indicates some confusion among commodities managers about where their supplies come from. This could be affecting stockout levels since commodities managers could be expecting the district stores to resupply products when in fact local procurement is necessary.

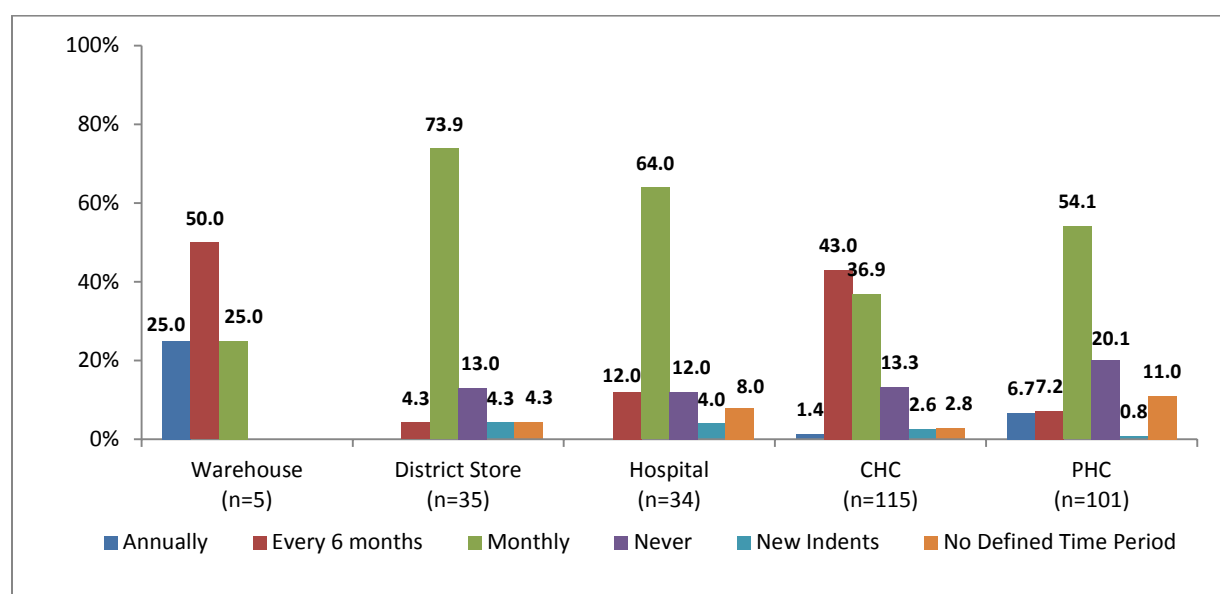
Figure 16. Most Frequent Source of Supply in Previous Six Months by Supply Chain



Storeroom Conditions

Storeroom managers were asked how frequently they conducted physical inventories. As shown in Figure 17, managers at district stores, hospitals, and PHCs reported conducting monthly physical inventories. At CHCs, inventory was conducted monthly or every six months. The majority of warehouses (50 percent) responded that physical inventory was conducted every six months; the rest responded that inventory was counted monthly or after new indents (25 percent each).

Figure 17. Frequency of Physical Inventory Conducted by Facility Type



Proper storage helps ensure that products do not become damaged, unnecessarily expired, or lost. Proper storage practices promote the ready availability and accessibility of products. In assessing facilities, data collectors evaluated each facility using proper storage criteria. Facilities that met more than 90 percent of the storage criteria were considered to have excellent storage conditions; those that met between 71 percent and 90 percent were considered acceptable, and those that met 70 percent or less were considered unacceptable. The criteria are based on World Health Organization-recommended guidelines, listed below.

- Products that are ready for distribution have visible identification labels and expiry or manufacturing dates.
- Products are stored and organized in a manner accessible for FEFO counting and general management.
- Cartons and products are in good condition and not crushed due to mishandling. If cartons are open, products are dry and not cracked from heat/radiation.
- The facility separates damaged or expired products from good products and removes them from inventory.
- Products are protected from direct sunlight on the day of the visit.
- Cartons and products are protected from water and humidity on the day of the visit.
- The storage area is visually free from harmful insects and rodents.
- The storage area is secured with a lock and key but is accessible during normal working hours. Access is limited to authorized personnel.
- Products are stored at the appropriate temperature according to product specifications.
- The storage facility roof is in good condition to avoid sunlight and water penetration.

- The storeroom is in good condition (i.e., clean, all trash removed, sturdy shelves, and organized boxes).
- The current space and organization are sufficient for existing products and reasonable expansion (i.e., for receipt of expected product deliveries in the foreseeable future).
- Appropriate fire safety equipment is available and accessible.
- Medicine is stored separately from insecticides and chemicals.

Facilities with stacked boxes—i.e., larger facilities—were also assessed on the following storage conditions (although not factored into the index)—

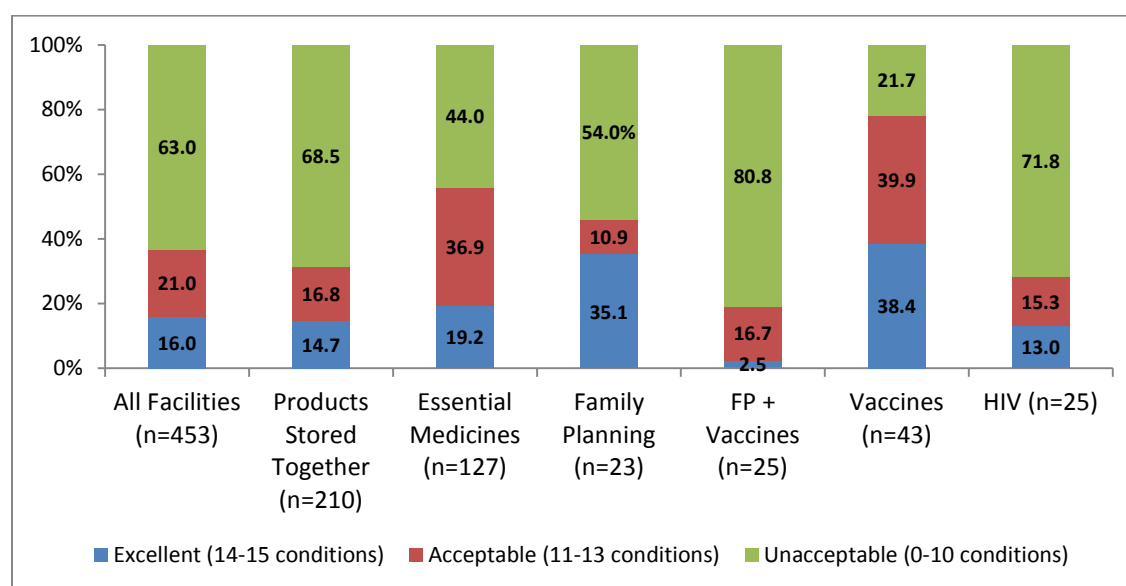
- Products are stacked at least 10 cm off the floor.
- Products are stacked at least 30 cm away from the wall and other stacks.
- Products are stacked no more than 2.5m high.

In Jharkhand, the 42 tracer products were found to be stored at the facilities in one of the following ways:

- all products stored in a single area
- all products stored individually by type (i.e., in four separate locations) and supervised by four people
- essential medicines, HIV and AIDS commodities stored in separate locations
- family planning and vaccines were stored and supervised by the same person.

As shown below in Figure 18, fewer than half of the products throughout all facilities were stored in acceptable or excellent conditions. The most challenging conditions across all levels included cartons and products in poor condition; lack of space and organization; products not being stored according to FEFO; and damaged or expired products not being separated from usable products and removed from inventory. The most-practiced conditions included products being protected from direct sunlight; cartons and products being protected from water and humidity; storage area being visually free from garbage/clutter, harmful insects, and rodents; and storage area being secured with a lock and key. Results for individual components can be found in Appendix F.

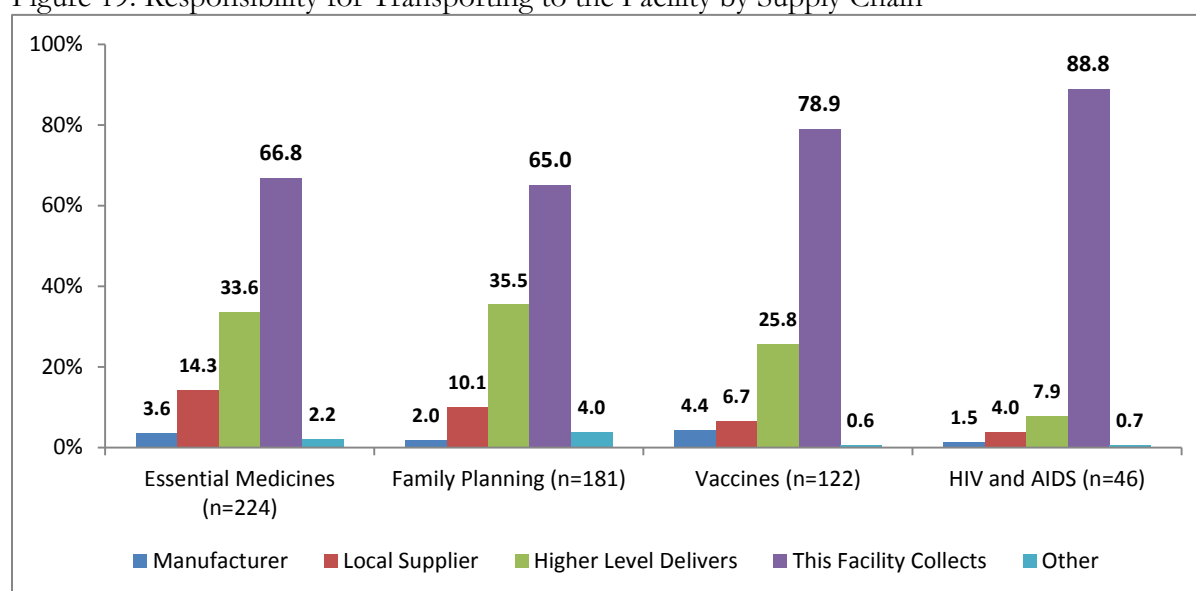
Figure 18. Composite of Storage Conditions at All Facilities



Transportation

Efficient transportation is a vital to a well-functioning logistics system. It enables commodities to be moved in a timely fashion where they are required. It also ensures continuous availability of commodities at facilities. As Figure 19 indicates, in most cases, the facility was responsible for transporting products to the facility. This was particularly the case for HIV and AIDS commodities. The transportation method for essential medicines, family planning, and vaccines was slightly more diverse: higher levels delivered about 26 percent to 36 percent of the time.

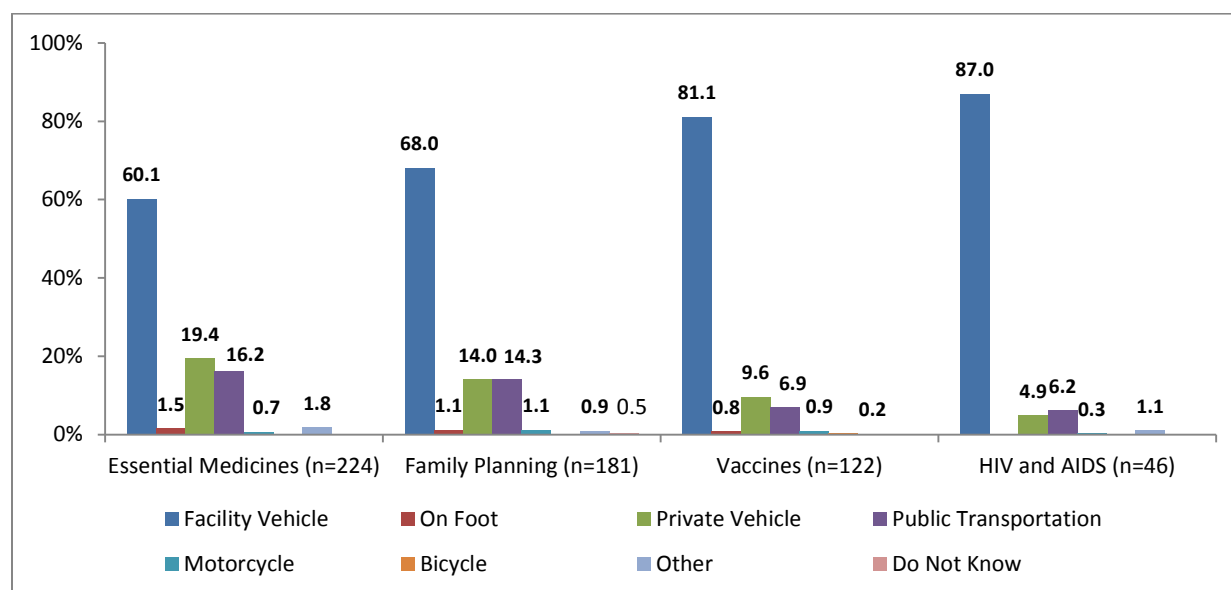
Figure 19. Responsibility for Transporting to the Facility by Supply Chain



As shown in Figure 20, most facilities in Jharkhand used their vehicle for collecting commodities and managing their transport. Within levels, there appears to be some diversity. For example, for

essential medicines, hospitals used a facility vehicle (43.5 percent); public transportation (26.1 percent); or delivery by foot (13 percent). PHC commodities managers reported an almost equal split between use of the facility vehicle, private vehicle, and public transportation to obtain commodities (Appendix A, Table A11).

Figure 20. Type of Transportation Most Often Used by Supply Chain



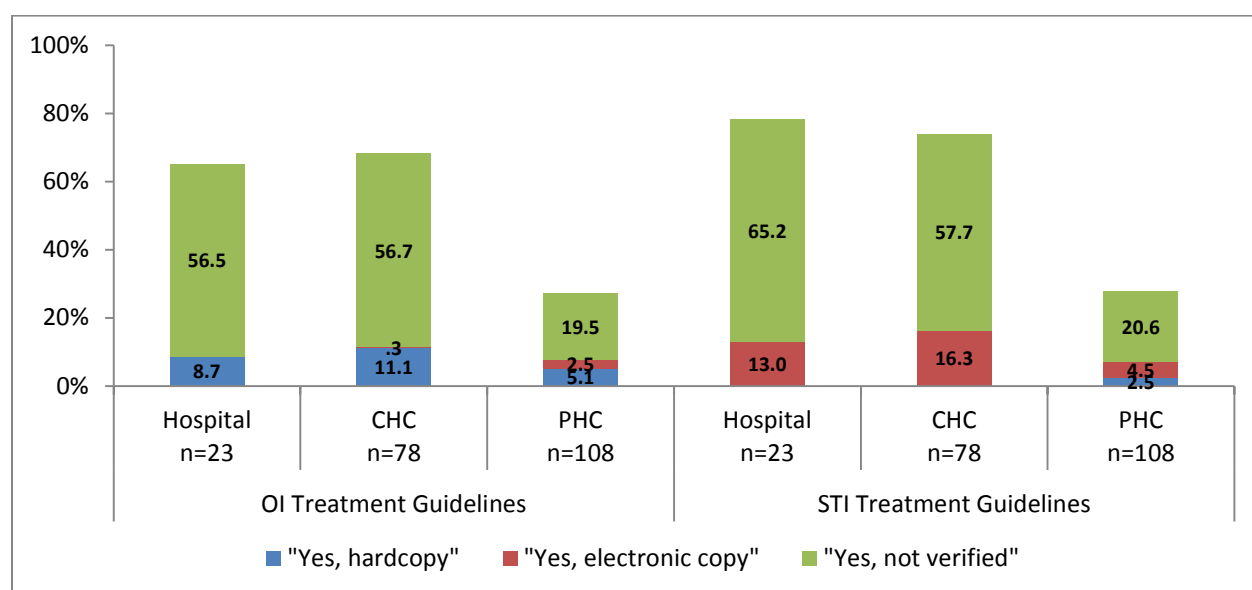
Human Resources

Supply chains require motivated, trained, and skilled staff who are competent in various essential logistics functions. They also must be empowered to make decisions that positively influence health supplies and supply chains. They need guidelines, training, and supervision to fulfil their responsibilities. The following section presents results connected to human resources and strengthening personnel development, based on data collected through interviews with facility and commodities managers.

Availability of Guidelines

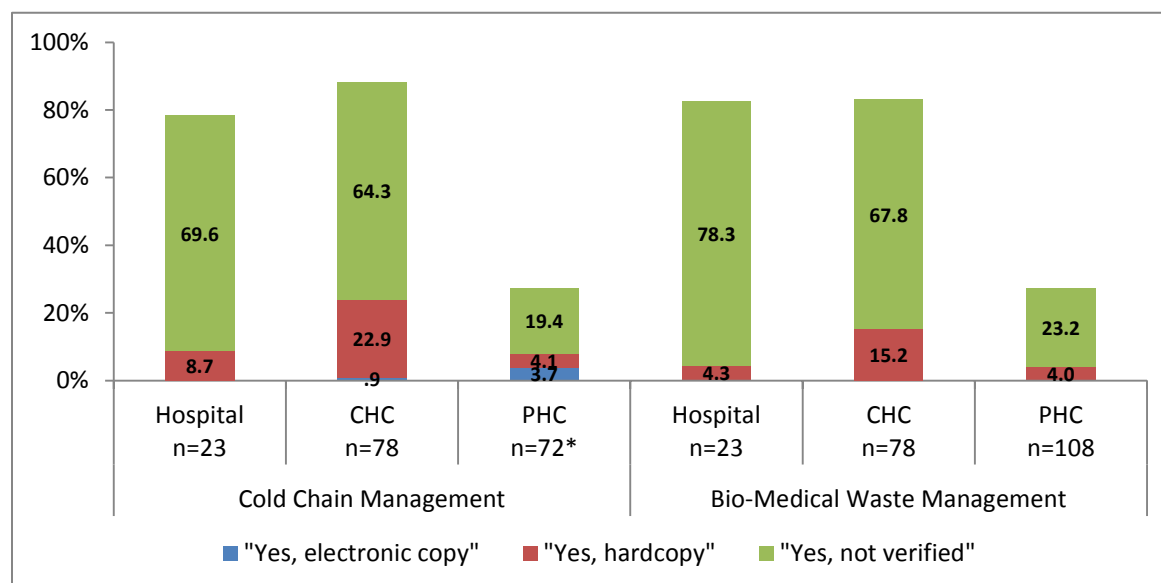
Treatment guidelines help health workers diagnosis patients and prescribe appropriate drugs. From a supply chain perspective, treatment guidelines are important because they provide direction for products that need to be managed at the facilities. According to facility managers at the PHC level, availability of treatment guidelines for OIs or STIs was more limited than at higher levels. As shown below in Figure 21, just over half of facility managers at hospitals and CHCs reported having standard treatment guidelines for OIs or STIs. Few respondents could produce the guidelines for the data collectors to verify.

Figure 21. Availability of Standard Treatment Guidelines for OIs or STIs



The availability of written guidelines/standard operating procedures (SOPs) for cold chain or biomedical waste management is shown in Figure 22. Over two thirds of facility managers in hospitals and CHCs reported having these SOPs, but few could produce them when asked for verification. As with the OI and STI treatment guidelines, PHC-level managers were the least likely to have guidelines for cold chain or biomedical waste management.

Figure 22. Availability of Written Guidelines/SOPs for Cold Chain Management or Bio-medical Waste Management*

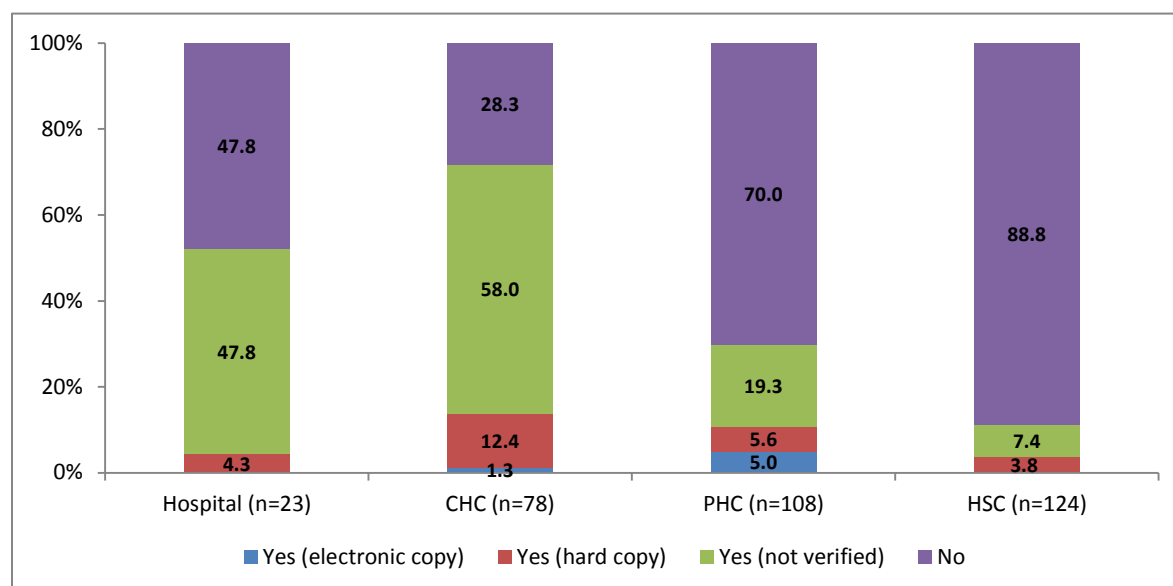


*36 PHCs reported not having cold chain capacity and were excluded from calculations.

The RMNCH+A 5x5 matrix provides policy objectives and lists the minimum number of medicines and commodities that are required to improve maternal, newborn, child, and adolescent health

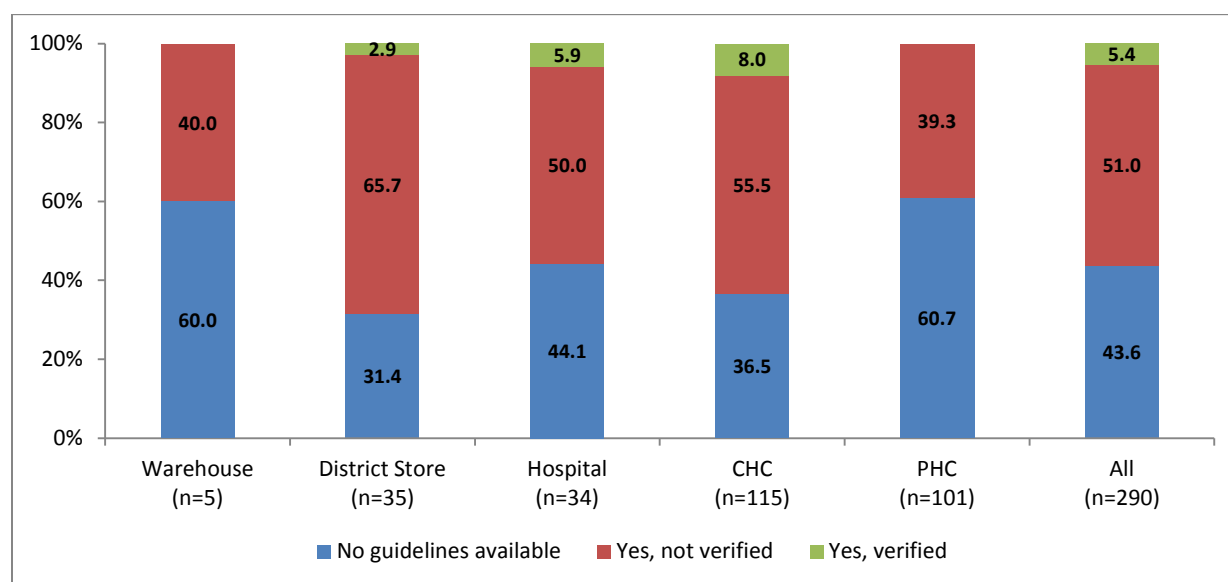
outcomes; these have been widely distributed. Based on responses of Jharkhand facility managers at hospitals, CHCs, and PHCs and the ANM at the HSC, the RMNCH+A 5x5 matrix was most often available at the CHC. As shown in Figure 23, more than 70 percent of CHCs reported having the matrix; but most of those “Yes” responses were not verified. The HSCs were least likely to have the matrix; only about 10 percent surveyed gave “Yes” responses.

Figure 23. Availability of RMNCH+A 5x5 Matrix, According to Facility Managers



Commodities managers were also asked about the availability of inventory guidelines. Inventory guidelines provide managers with standards and steps for ordering, receiving, and storing products. In general, more than half (56.4 percent) of commodities managers at all facilities said they had inventory guidelines (Figure 24).

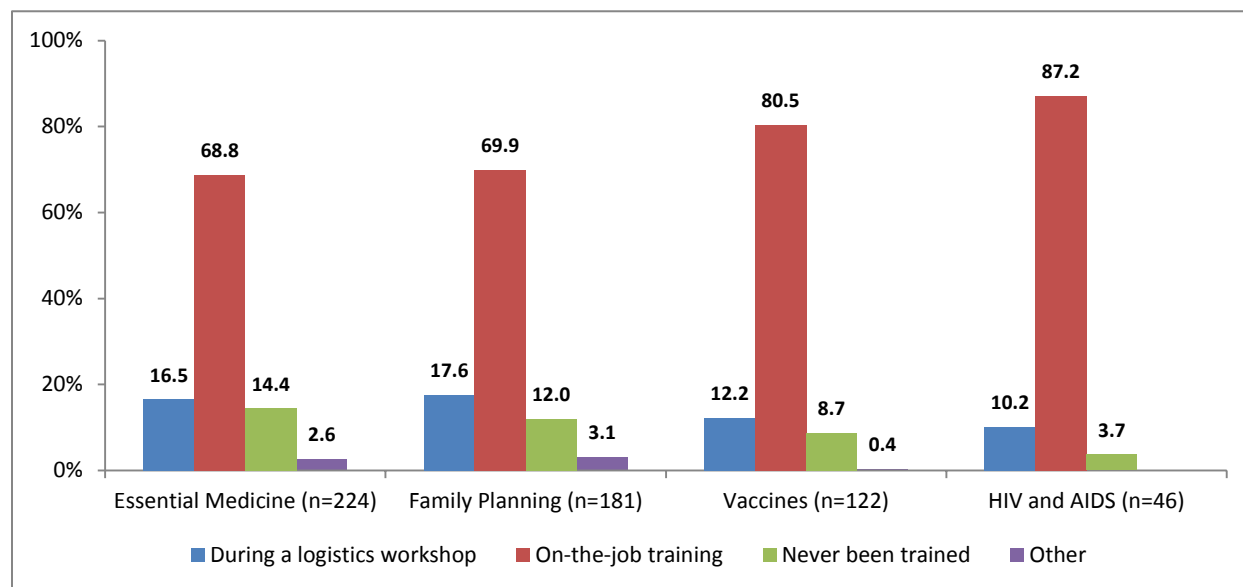
Figure 24. Availability of Inventory Guidelines by Level



Training

As mentioned above, training is important for ensuring that staff members have the necessary skills to do their jobs. Figure 25 below provides the response to questions about how facilities learned to complete logistics forms and records. Across all supply chains, most managers had received on-the-job training to complete forms/records.

Figure 25. Percentage of Respondents Trained in Recordkeeping by Supply Chain

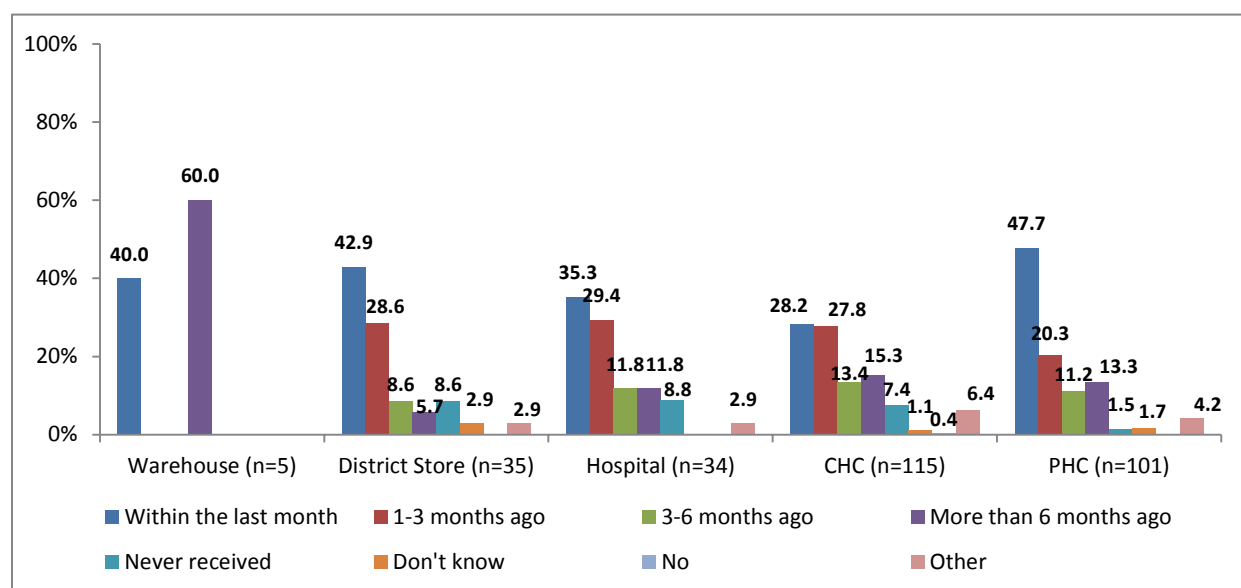


Supervision

Regular supportive supervision of logistics practices (using standardized checklists and providing timely feedback to supervised personnel) is an important way to reinforce training and promote adherence to procedures that increase the availability of commodities.

As the data in Figure 26 indicate, most facilities received a supervision visit within the last month or last three months. However, 8.8 percent of managers at hospitals and 7.4 percent of managers at CHCs reported never receiving a supervision visit.

Figure 26. Last Time Commodities Manager Received Supervision Visit



Logistics Management at the HSC

The findings in this section indicate the level of logistics management and performance of essential medicines and family planning supply chains at the HSC level. The supply chain operates differently at this level than at higher-level facilities, and many functions do not apply. Therefore, a separate interview questionnaire was created specifically for interviewing ANMs at this level. Additionally, as mentioned earlier, vaccines and HIV and AIDS were not included because HSCs do not manage these commodities.

Stock Management and Availability

Unavailable or outdated stockcards represented a gap in the system; because of this the most current information is not available for key decisionmakers to make programmatic or supply decisions. Table 36 shows the level of availability of stockcards for essential medicines at HSCs, as well as how many of these cards were updated, by commodity. Essential medicines stockcards were available at the HSC on average 79 percent of the time but were updated only 27 percent of the time. It should be noted that not all essential medicines included in this assessment were managed at the HSC level.

Table 36. Percentage of HSCs with Available and Updated Stockcards for Essential Medicines

	Percent Available	Percent Updated
Albendazole	69.6	14.7
Amoxicillin	72.5	13.8
Ampicillin	80.7	7.5
Azithromycin	93.1	12.9
Cefixime	63.2	21.5
Ceftriaxone	83.2	34.2
Co-trimoxazole	60.4	20.4
Co-trimoxazole ST	88.6	14.2
Dexamethasone	74.1	17.7
Doxycycline	86.9	27.5
Gentamycin	66.6	9.9
IFA (Blue)	71.0	20.6
IFA (Red)	80.3	18.0
IFA syrup	83.1	3.7
Magnesium sulfate	81.7	13.0
Methyldopa	90.6	0.0
Metronidazole	80.4	15.2
Misoprostol	80.2	11.7
ORS	77.5	16.3
Oxytocin	76.5	14.3
Tetanus toxoid	83.4	5.1
Vitamin A	74.5	0.0
Vitamin K	88.2	21.8
Zinc sulfate	82.7	0.4

Family planning stockcards were available at HSCs on average 87 percent of the time. However, with the exception of EC, only one-third of the facilities had updated stockcards for family planning commodities (Table 37).

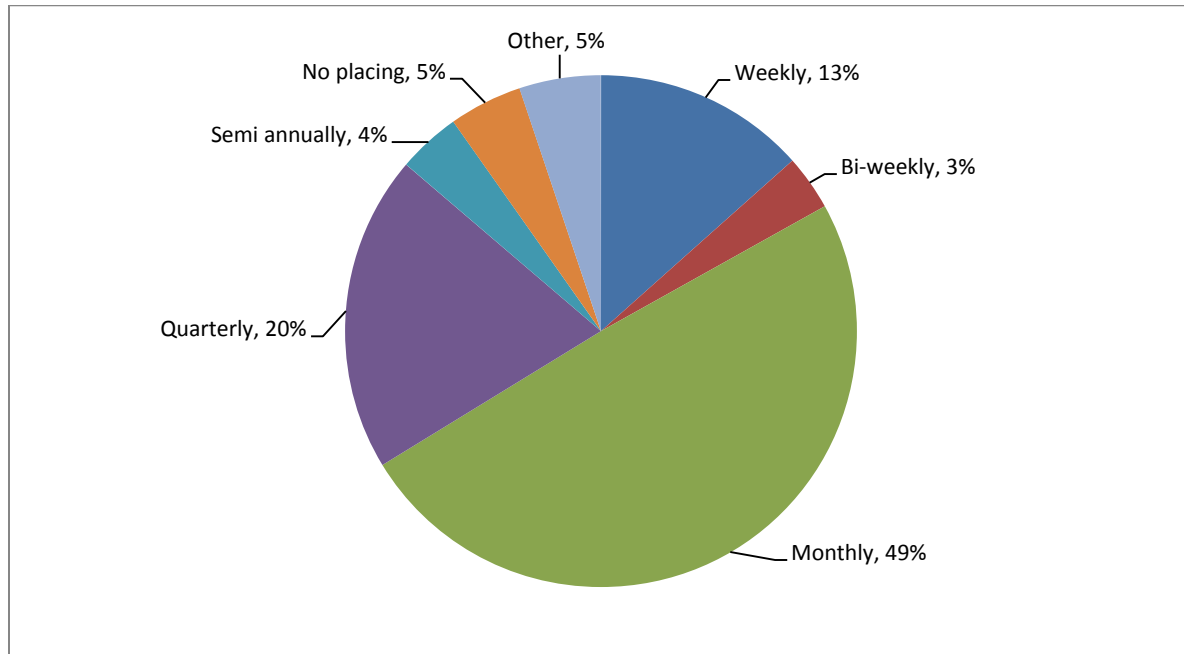
Table 37. Percentage of HSCs with Available and Updated Stockcards for Family Planning

	Percent Available	Percent Updated
Condoms	83.6	14.6
EC	98.5	98.5
IUCDs	85.7	15.6
OCP	83.6	13.7
Pregnancy test kits	84.6	10.0

Inventory Management

As Figure 27 indicates, most HSCs reported receiving monthly resupplies (49.4 percent); an additional 20 percent reported quarterly resupplies. Some HSCs (13.4 percent) reported that they received resupplies as often as every week.

Figure 27. Frequency of Resupply for HSCs



Transportation

As shown in Figure 28, the majority of HSCs collected their commodities (81.6 percent); about 33 percent reported that the supervisory facility was responsible for delivering commodities. Public transportation was the most common form of transport used to collect commodities (49.1 percent). Private vehicles and motorcycles were also used (28 percent and 15.1 percent, respectively) (Figure 29).

Figure 28. Responsibility for Transporting Commodities to HSCs

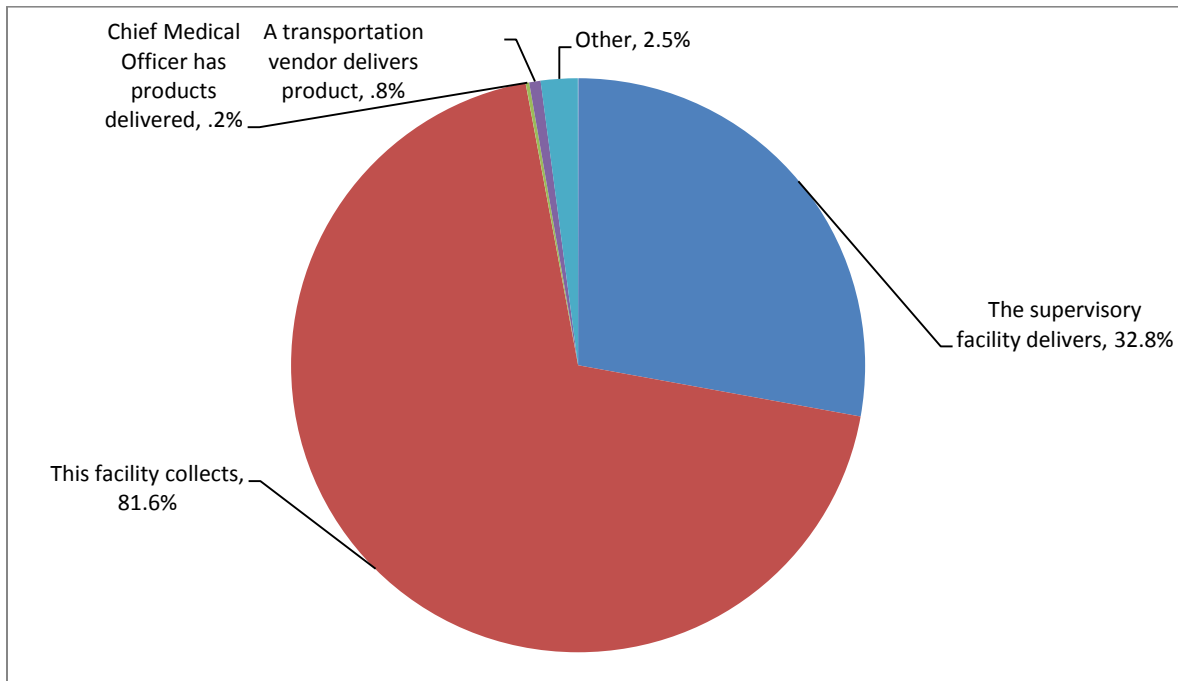
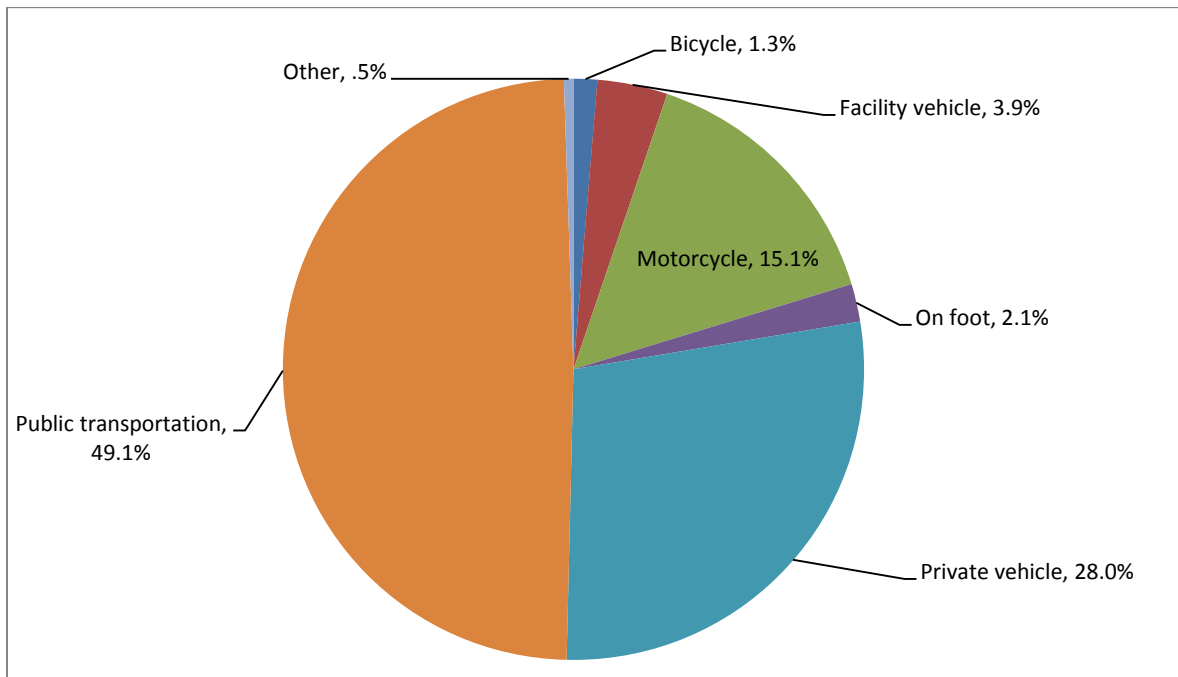


Figure 29. Type of Transportation for Commodities Most Often Used at HSCs

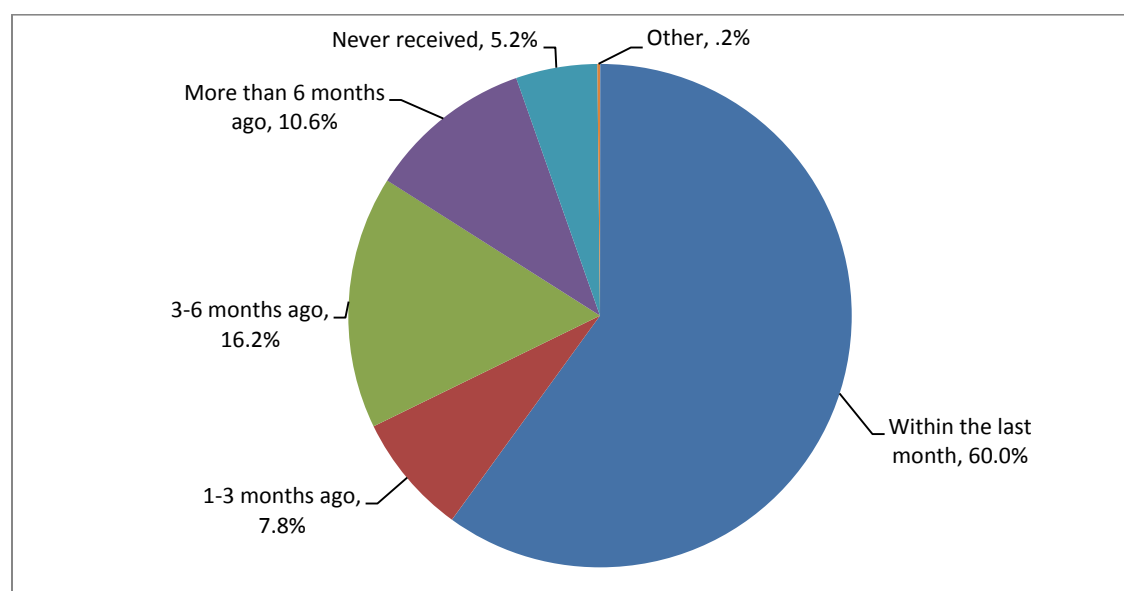


Human Resources

Sixty percent of HSCs received a supervision visit within the last month (Figure 30). The other HSCs reported receiving a supervision visit one to three months ago (7.8 percent); three to six

months ago (16.2 percent); or more than six months ago (10.6 percent). 5.2 percent reported never receiving a supervision visit.

Figure 30. Last Received Supervision Visit at HSCs



The most common activities were inspecting infrastructure (68 percent) and equipment (61 percent); checking patient registers (49 percent); and reviewing stock management (stockcards, reports, and storage conditions checked, and expired stock removed [47 percent]).

Training

Almost 68 percent of auxiliary nurse midwives (ANMs) reported learning to manage product records/complete forms through on-the-job training; 19.5 percent reported learning during a logistics workshop; and 15.6 percent reported that they had never been trained to complete the forms and records (Figure 31).

Figure 31. Learning Method to Complete Forms/Records for Managing Medicines at HSCs



Recommendations

Based on the findings from the project's management information systems review, landscape analysis, and this survey, the following recommendations are provided to expand the capacity of the supply chains operating within Jharkhand. Due to funding and time constraints, the project prioritized recommendations that could be implemented during the lifecycle of the project by strategically coordinating with the SHM to develop state-level work plans.

General Recommendations

- Coordinate supply chain operations through the establishment of a formal supply chain management unit or supply chain coordination group at the state level.
- Develop and institute standard operating procedures (SOPs) to—
 - improve operations, such as the distribution of inventory through the documentation and adherence to SOPs and improved stock data management
 - build personnel capacity.
- Design a paper-based logistics management information system (LMIS) to ensure data are gathered uniformly across systems and capture key data points.
- Advocate for SHM and MOHFW to operate the Jharkhand Medical Corporation and conduct the initial procurement.
- The Jharkhand Medical Corporation should develop a supply chain strategic plan to help mitigate current ad-hoc requests and decisions. This would include development of procurement policies, revision of bidding documentation, and human resources rules and regulations.

Strategic Planning and Oversight and Human Resources Recommendations

- Develop terms of reference for staff members who have supply chain tasks.
- Provide systematic, formal logistics training workshops at all levels, using the designed LMIS and documented SOPs. Project support would be focused on training SHM staff and roll-out of SOPs in pilot districts. It would also assist SHM for roll-out to additional districts and staff members who have supply chain responsibilities.
- Use a training-of-trainers approach for SHM to deliver workshops.
- Develop a three- to five-year supply chain strategic plan, including goals, objectives, performance indicators, and necessary resources.

Forecasting and Procurement Recommendations

- Review and improve procurement processes and SOPs.

- Develop a systemic approach for forecasting and supply planning.
 - Develop, test, and institute forecasting methodology (including financial gap analysis) for a subset of RMNCH+A/essential medicines commodities by using population- and morbidity-based data available at the district level.

Inventory Management Recommendations

- For all facilities storing products, develop SOPs for an inventory control system to manage essential medicines.
 - Document and, as appropriate, review and update inventory management SOPs (e.g., confirm rules for inventory control levels and standardize minimum/maximum inventory management; inventory cycle counts; and order frequency).
- Support the use of SOPs across all districts and service delivery levels.
- Review storage conditions and warehousing capacities at the district level.
- Support adherence to GOI- and World Health Organization-recommended storage guidelines at all facility levels, with emphasis at the district level.
- Invest in warehouse infrastructure improvements.
- Model warehousing and distribution network.

LMIS Recommendations

- Propose improvements to forms to better support data collection and management for decisionmaking and feedback/improvements between district and SDP levels (e.g., standardize forms and adapt indent and consumption forms to be tabular).
- Standardize paper-based LMIS (e.g., standardize forms at the lowest level and stockkeeping records in the warehouse).
- Explore comprehensive electronic LMIS (eLMIS) options adopted in other states and develop a roadmap for eLMIS implementation.
- Build consensus on eLMIS functional and technical requirements and identify information technology infrastructure support to roll out e-LMIS.
- Support introduction of an eLMIS and gradually phase out paper-based entry from district level upward.

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Appendix A

Additional Essential Medicines Tables

Table A1. Types of Inventory Logistics Forms Used to Manage Essential Medicines

	Warehouse (n=7)	District Store (n=8)	Hospital (n=20)	CHC (n=72)	PHC (n=140)	Total (n=247)
Stockcard /bin card/inventory control card	100.0%	56.5%	60.9%	71.4%	50.5%	63.4%
Stock ledger	100.0%	100.0%	82.6%	94.2%	88.6%	92.1%
Electronic records (Excel/Access)	66.7%	17.4%	8.7%	2.7%	2.8%	3.7%
ProMIS	66.7%	13.0%	0.0%	1.0%	0.0%	1.3%
Other	0.0%	0.0%	4.3%	3.3%	3.1%	3.1%

Table A2. Types of Forms Used for Reporting Inventory Information to the Higher Level for Essential Medicines

	Warehouse (n=7)	District Store (n=8)	Hospital (n=20)	CHC (n=72)	PHC (n=140)	Total (n=247)
Stock and Issues Register (#4)	66.7%	73.9%	91.3%	81.7%	76.0%	79.7%
NRHM Department Monthly Format for Sub-Center and Equivalent Institution (Format C/Format D)	0.0%	26.1%	4.3%	4.1%	7.5%	6.0%
HMIS	0.0%	8.7%	0.0%	4.2%	18.2%	9.1%
ProMIS	0.0%	13.0%	4.3%	.7%	0.0%	1.0%
Other	33.3%	21.7%	8.7%	16.2%	11.9%	14.7%

Table A3. Percentage of Facilities with Accurate or Near Accurate Balances (+/- 10) between SOH from Inventory Forms and Stockcards for Essential Medicines by Facility Type

	Warehouse	District Store	Hospital	CHC	PHC	Total excluding HSC
Albendazole	0.0	0.0	0.0	33.1	100.0	50.0
Ampicillin	0.0	0.0	0.0	100.0	100.0	100.0
Amoxicillin	0.0	0.0	0.0	0.0	0.0	0.0
Azithromycin	0.0					
Cefixime	0.0	0.0	0.0	0.0	0.0	0.0
Ceftriaxone	0.0	0.0	0.0	0.0	100.0	100.0
Co-trimoxazole ST	0.0	0.0	0.0	0.0	50.0	50.0
Co-trimoxazole	0.0	0.0	0.0	59.4	100.0	79.4
Dexamethasone	0.0	0.0	0.0	100.0	100.0	100.0
Doxycycline	0.0	0.0	0.0	40.0	0.0	40.0
Gentamycin	0.0	0.0	0.0	0.0	23.9	23.9
IFA (Blue)	0.0	0.0	100.0	0.0	19.3	20.3
IFA (Red)	0.0	100.0	0.0	0.0	46.6	50.4
IFA syrup	0.0	0.0	0.0	0.0	0.0	
Magnesium sulfate	0.0	0.0	0.0	100.0	100.0	100.0
Methyldopa	0.0					
Metronidazole	0.0	0.0	0.0	0.0	0.0	0.0
Misoprostol	0.0	0.0	0.0	0.0	0.0	0.0
ORS	0.0	0.0	0.0	33.7	41.2	38.6
Oxytocin	0.0	0.0	0.0	28.6	100.0	62.4
Vitamin A	0.0	0.0	0.0	0.0	0.0	0.0
Vitamin K	0.0	0.0	0.0	40.0	0.0	40.0
Zinc sulfate	0.0	0.0	0.0	0.0	100.0	100.0
Tetanus toxoid	0.0	80.0	20.0	77.4	0.0	67.6

Table A4. Types of Data Included in Inventory Reports for Essential Medicines

	Warehouse (n=7)	District Store (n=8)	Hospital (n=20)	CHC (n=72)	PHC (n=140)	Total (n=247)
SOH	66.7%	91.3%	82.6%	94.4%	86.9%	91.1%
Receipts	66.7%	100.0%	87.0%	85.6%	73.7%	81.8%
Quantities used	100.0%	91.3%	87.0%	86.0%	76.0%	82.8%
Losses and adjustments	66.7%	52.2%	39.1%	53.6%	36.1%	47.0%

Table A5. Logistics Information Included in Completed Inventory Report for Essential Medicines

	Warehouse (n=7)	District Store (n=8)	Hospital (n=20)	CHC (n=72)	PHC (n=140)	Total (n=247)
SOH	66.7%	69.6%	60.9%	69.4%	74.8%	71.0%
Quantities used	66.7%	69.6%	60.9%	71.3%	67.9%	69.7%
Losses and adjustments	66.7%	60.9%	47.8%	61.0%	43.6%	54.5%
Completed report not available	33.3%	34.8%	47.8%	28.5%	38.1%	32.7%

Table A6. Where Inventory Reports for Essential Medicines are Sent

	Warehouse (n=7)	District Store (n=8)	Hospital (n=20)	CHC (n=72)	PHC (n=140)	Total (n=247)
Supervisory facility	0.0%	30.4%	39.1%	44.5%	51.1%	46.0%
District health office	0.0%	17.4%	8.7%	13.3%	.9%	8.9%
District store	0.0%	4.3%	17.4%	32.3%	8.4%	22.4%
Regional warehouse	0.0%	8.7%	0.0%	0.0%	14.8%	5.5%
SHM	0.0%	26.1%	8.7%	.5%	12.2%	5.7%
Central (Delhi) health mission	33.3%	0.0%	0.0%	0.0%	0.0%	.1%
Do not know	66.7%	21.7%	34.8%	18.0%	17.1%	18.6%

Table A7. Frequency of Inventory Reports for Essential Medicines Sent to Higher Level

	Warehouse (n=7)	District Store (n=8)	Hospital (n=20)	CHC (n=72)	PHC (n=140)	Total (n=247)
Weekly	0.0%	8.7%	13.0%	2.3%	1.8%	2.7%
Monthly	33.3%	52.2%	34.8%	29.7%	53.6%	39.0%
Quarterly	0.0%	8.7%	21.7%	41.8%	8.9%	28.4%
Semi-annually	0.0%	4.3%	0.0%	1.7%	2.5%	2.0%
Annually	33.3%	8.7%	0.0%	2.0%	9.4%	4.8%
Other	33.3%	30.4%	34.8%	24.4%	24.8%	25.1%

Table A8. How Manager Learned to Complete Forms/Records for Managing Essential Medicines

	Warehouse (n=7)	District Store (n=8)	Hospital (n=20)	CHC (n=72)	PHC (n=140)	Total (n=247)
During a logistics workshop	0.0%	30.4%	34.8%	12.4%	20.6%	16.5%
On-the-job training	66.7%	52.2%	52.2%	69.8%	70.2%	68.8%
Never been trained	0.0%	17.4%	13.0%	16.6%	10.7%	14.4%
Other	33.3%	8.7%	0.0%	3.2%	.9%	2.6%

Table A9. Responsibility for Determining Which Essential Medicines to Order and the Quantity

	Warehouse (n=7)	District Store (n=8)	Hospital (n=20)	CHC (n=72)	PHC (n=140)	Total (n=247)
The facility itself	33.3%	65.2%	60.9%	77.0%	56.3%	68.6%
The supervising facility	0.0%	30.4%	17.4%	31.2%	39.8%	33.6%
District chief pharmacist/civil surgeon	33.3%	30.4%	43.5%	9.7%	5.3%	10.1%
Regional warehouse	33.3%	8.7%	0.0%	5.2%	6.9%	5.8%
SHM	66.7%	4.3%	0.0%	1.0%	7.6%	3.7%
Do not know	33.3%	0.0%	0.0%	.9%	2.5%	1.5%
Other	0.0%	13.0%	0.0%	0.0%	5.3%	2.3%

Table A10. Responsibility for Transporting Essential Medicines to the Facility

	Warehouse (n=7)	District Store (n=8)	Hospital (n=20)	CHC (n=72)	PHC (n=140)	Total (n=247)
Drug manufacturer delivers	33.3%	4.3%	8.7%	4.8%	.7%	3.6%
Local supplier delivers	33.3%	39.1%	30.4%	12.9%	12.4%	14.3%
Higher level delivers	33.3%	39.1%	34.8%	31.5%	36.6%	33.7%
This facility collects	0.0%	43.5%	56.5%	75.6%	55.8%	66.7%
Other	33.3%	8.7%	0.0%	.9%	3.6%	2.2%

Table A11 Types of Transportation Used for Essential Medicines

	Warehouse (n=7)	District Store (n=8)	Hospital (n=20)	CHC (n=72)	PHC (n=140)	Total (n=247)
Bicycle	0.0%	0.0%	0.0%	0.0%	.9%	.3%
Facility vehicle	100.0%	65.2%	43.5%	75.8%	34.7%	60.1%
Motorcycle	0.0%	0.0%	0.0%	.7%	.9%	.7%
On foot	0.0%	0.0%	13.0%	1.4%	.7%	1.5%
Private vehicle	0.0%	8.7%	8.7%	14.2%	30.2%	19.4%
Public transportation	0.0%	13.0%	26.1%	6.6%	31.7%	16.2%
Other	0.0%	13.0%	8.7%	1.4%	.9%	1.8%

Table A12. Other Sources of Supply for Essential Medicines Used in Previous Six Months

	Warehouse (n=7)	District Store (n=8)	Hospital (n=20)	CHC (n=72)	PHC (n=140)	Total (n=247)
Central government	0.0%	0.0%	0.0%	5.0%	4.7%	4.6%
Drug manufacturer	33.3%	8.7%	17.4%	5.7%	1.6%	4.9%
Regional warehouse	33.3%	8.7%	4.3%	6.7%	32.6%	15.8%
District warehouse/ central store	0.0%	8.7%	39.1%	65.2%	19.6%	46.3%
Higher-level facility warehouse	0.0%	47.8%	26.1%	10.2%	23.4%	16.5%
Donated by NGO	0.0%	0.0%	0.0%	1.4%	6.9%	3.3%
Local/private supplier	0.0%	13.0%	21.7%	10.6%	4.4%	8.8%
None	0.0%	17.4%	13.0%	11.2%	11.1%	11.3%

Table A13. Steps Taken Before Storing Essential Medicines once Products Are Received at Facility

	Warehouse (n=7)	District Store (n=8)	Hospital (n=20)	CHC (n=72)	PHC (n=140)	Total (n=247)
Verify product against packing slip	66.7%	91.3%	100.0%	96.9%	99.1%	97.5%
Count product to verify quantity	66.7%	91.3%	100.0%	97.4%	84.9%	92.8%
Add quantity to stockcard/bin card/stock registry	66.7%	78.3%	91.3%	87.8%	61.7%	78.4%
Add quantity to computer system	33.3%	30.4%	8.7%	.7%	2.8%	2.8%
Do not know	33.3%	8.7%	0.0%	0.0%	0.0%	.4%

Appendix B

Additional Family Planning Tables

Table B1. Types of Inventory Logistics Forms Used to Manage Family Planning Products

	District Store (n=15)	Hospital (n=12)	CHC (n=66)	PHC (n=115)	Total (n=208)
Stockcard/bin card/inventory control card	61.1%	64.7%	74.2%	55.1%	67.6%
Stock ledger	88.9%	94.1%	92.7%	88.1%	91.2%
Electronic records (Excel/Access/other software)	38.9%	17.6%	1.6%	0.0%	2.8%
Other	0.0%	0.0%	3.1%	1.8%	2.5%

Table B2. Types of Forms Used for Reporting Inventory Information to the Higher Level for Family Planning Products

	District Store (n=15)	Hospital (n=12)	CHC (n=66)	PHC (n=115)	Total (n=208)
Stock and Issues Register (#4)	77.8%	94.1%	85.0%	86.1%	85.4%
NRHM Department Monthly Format for Sub-Center and Equivalent Institution (Format C/Format D)	22.2%	0.0%	1.5%	1.1%	2.0%
HMIS	11.1%	11.8%	8.1%	26.1%	14.0%
ProMIS	22.2%	5.9%	.4%	0.0%	1.2%
Other	11.1%	5.9%	14.5%	9.7%	12.6%

Table B3. Percentage of Facilities with Accurate or Near Accurate Balances (+/- 10) between SOH from Inventory Forms and Stockcards for Family Planning Products by Facility Type

	District Store	Hospital	CHC	PHC	Total
Condoms	50.0	100.0	100.0	0.0	91.2
Emergency Contraceptives	50.0	100.0	60.0	0.0	61.9
IUCDs	66.7	100.0	66.7	100.0	80.1
OCP	50.0	100.0	100.0	0.0	88.7
Pregnancy Test Kits	100.0	0.0	100.0	0.0	100.0

Table B4. Types of Data Included in Inventory Reports for Family Planning Products

	District Store (n=15)	Hospital (n=12)	CHC (n=66)	PHC (n=115)	Total (n=208)
SOH	94.4%	82.4%	94.9%	86.1%	91.8%
Receipts	94.4%	82.4%	84.7%	75.1%	81.9%
Quantities used	88.9%	94.1%	84.7%	76.7%	82.5%
Losses and adjustments	44.4%	52.9%	58.1%	34.5%	50.2%

Table B5. Logistics Information Included in Completed Inventory Report for Family Planning Products

	District Store (n=15)	Hospital (n=12)	CHC (n=66)	PHC (n=115)	Total (n=208)
SOH	83.3%	82.4%	73.5%	73.5%	74.1%
Quantities used	83.3%	88.2%	66.1%	66.4%	67.4%
Losses and adjustments	72.2%	64.7%	57.3%	38.6%	52.1%
Completed report not available	11.1%	17.6%	31.4%	36.8%	32.1%

Table B6. Where Inventory Reports for Family Planning Products are Sent

	District Store (n=15)	Hospital (n=12)	CHC (n=66)	PHC (n=115)	Total (n=208)
Supervisory facility	38.9%	52.9%	61.7%	46.5%	55.9%
District health office	0.0%	5.9%	9.8%	6.5%	8.4%
District store	0.0%	23.5%	32.8%	10.9%	24.6%
Regional warehouse	33.3%	0.0%	.5%	12.2%	5.2%
SHM	38.9%	5.9%	1.0%	7.4%	4.3%
Central (Delhi) health mission	0.0%	0.0%	0.0%	0.0%	.2%
Do not know	11.1%	11.8%	11.6%	22.0%	14.9%

Table B7. Frequency Inventory Reports for Family Planning Products are sent to Higher Level

	District Store (n=15)	Hospital (n=12)	CHC (n=66)	PHC (n=115)	Total (n=208)
Weekly	16.7%	17.6%	.5%	2.2%	2.0%
Monthly	72.2%	58.8%	30.1%	53.8%	39.6%
Quarterly	11.1%	23.5%	45.3%	13.3%	33.5%
Semi-annually	5.6%	0.0%	3.9%	4.1%	3.9%
Annually	0.0%	0.0%	.7%	9.9%	3.6%
Other	11.1%	17.6%	21.1%	23.9%	21.7%

Table B8. How Managers Learned to Complete Forms/Records for Managing Family Planning Products

	District Store (n=15)	Hospital (n=12)	CHC (n=66)	PHC (n=115)	Total (n=208)
During a logistics workshop	33.3%	41.2%	13.5%	22.4%	17.6%
On-the-job training	61.1%	52.9%	70.2%	71.5%	69.9%
Never been trained	5.6%	5.9%	14.6%	8.2%	12.0%
Other	0.0%	0.0%	3.5%	3.1%	3.1%

Table B9. Responsibility for Determining Which Family Planning Products to Order and the Quantity

	District Store (n=15)	Hospital (n=12)	CHC (n=66)	PHC (n=115)	Total (n=208)
The facility	61.1%	70.6%	76.3%	56.9%	69.6%
The supervising facility	27.8%	35.3%	28.9%	40.6%	32.7%
District chief pharmacist/civil surgeon	33.3%	41.2%	10.0%	8.7%	11.1%
Regional warehouse	16.7%	11.8%	3.1%	14.7%	7.4%
SHM	22.2%	5.9%	1.1%	6.5%	3.5%
Do not know	0.0%	0.0%	1.8%	3.4%	2.2%
Other	5.6%	0.0%	2.6%	1.1%	2.2%

Table B10. Responsibility for Transporting Family Planning Products to the Facility

	District Store (n=15)	Hospital (n=12)	CHC (n=66)	PHC (n=115)	Total (n=208)
Drug manufacturer delivers	5.6%	0.0%	2.2%	.8%	2.0%
Local supplier delivers	5.6%	17.6%	7.9%	14.3%	10.1%
Higher level delivers	55.6%	35.3%	33.5%	38.3%	35.7%
This facility collects	55.6%	70.6%	74.3%	46.9%	64.8%
Others	0.0%	0.0%	1.8%	9.1%	4.0%

Table B11. Types of Transportation Used for Family Planning Products

	District Store (n=15)	Hospital (n=12)	CHC (n=66)	PHC (n=115)	Total (n=208)
Facility vehicle	100.0%	66.7%	52.9%	84.3%	37.5%
Motorcycle	0.0%	0.0%	0.0%	0.0%	3.4%
On foot	0.0%	0.0%	23.5%	.8%	0.0%
Private vehicle	0.0%	5.6%	5.9%	7.0%	29.4%
Public transportation	0.0%	16.7%	11.8%	7.1%	28.5%
Others	0.0%	5.6%	5.9%	.9%	0.0%
Do not know	0.0%	5.6%	0.0%	0.0%	1.1%

Table B12. Other Sources of Supply for Family Planning Products Used in Previous Six Months

	District Store (n=15)	Hospital (n=12)	CHC (n=66)	PHC (n=115)	Total (n=208)
Central government	0.0%	0.0%	4.7%	2.7%	3.8%
Drug manufacturer	11.8%	0.0%	0.0%	1.2%	.7%
Regional warehouse	35.3%	5.9%	7.0%	34.0%	16.2%
District warehouse/ central store	5.9%	58.8%	70.1%	14.2%	50.3%
Higher-level facility warehouse	35.3%	29.4%	5.9%	23.7%	13.0%
Local/private supplier	11.8%	5.9%	5.6%	2.3%	4.7%
Donated by NGO	0.0%	0.0%	.5%	7.8%	2.8%
None	17.6%	5.9%	17.8%	19.3%	18.1%

Table B13. Steps Taken Before Storing Family Planning Products Once Products Are Received at Facility

	District Store (n=15)	Hospital (n=12)	CHC (n=66)	PHC (n=115)	Total (n=208)
Verify product against packing slip	94.4%	100.0%	96.3%	97.7%	96.8%
Count product to verify quantity	94.4%	94.1%	98.7%	83.1%	93.5%
Add quantity to stockcard/bin card/stock registry	88.9%	94.1%	88.0%	56.5%	78.3%
Add quantity to computer system	27.8%	11.8%	1.5%	.8%	2.5%
Do not know	0.0%	0.0%	0.0%	1.1%	.4%

Appendix C

Additional Vaccine Tables

Table C1. Types of Inventory Logistics Forms Used to Manage Vaccines

	Warehouse (n=6)	District Store (n=8)	Hospital (n=15)	CHC (n=67)	PHC (n=121)	Total (n=217)
Stockcard/bin card/inventory control card	100.0%	73.7%	71.4%	77.7%	58.7%	74.5%
Stock ledger	100.0%	89.5%	85.7%	88.1%	97.0%	89.5%
Electronic records (Excel/Access/ other software)	100.0%	36.8%	7.1%	.9%	0.0%	2.6%
Other	0.0%	0.0%	0.0%	0.0%	3.0%	.5%

Table C2. Types of Forms Used for Reporting Inventory Information to the Higher Level for Vaccines

	Warehouse (n=6)	District Store (n=8)	Hospital (n=15)	CHC (n=67)	PHC (n=121)	Total (n=217)
Stock and Issues Register (#4)	100.0%	73.7%	85.7%	84.5%	97.7%	86.2%
NRHM Health Department Monthly Format for Sub-Center and Equivalent Institution (Format C/Format D)	100.0%	26.3%	0.0%	2.2%	3.0%	3.4%
ProMIS	0.0%	31.6%	0.0%	.4%	0.0%	1.6%
HMIS	0.0%	21.1%	14.3%	9.7%	20.3%	11.9%
Other	0.0%	5.3%	7.1%	12.8%	2.3%	10.7%

Table C3. Percentage of Facilities with Accurate or Near Accurate Balances (+/- 10) between SOH from Inventory Forms and Stockcards for Vaccines by Facility Type

	Warehouse	District Store	Hospital	CHC	PHC	Total excluding HSC
BCG	0.0	50.0	100.0	100.0	0.0	99.0
DPT	0.0	50.0	100.0	60.0	0.0	91.9
Hepatitis B	0.0	66.7	100.0	66.7	100.0	93.2
Measles	0.0	50.0	100.0	100.0	0.0	98.9
OPV	0.0	100.0	0.0	100.0	0.0	100.0

Table C4. Types of Data Included in Inventory Reports for Vaccines

	Warehouse (n=6)	District Store (n=8)	Hospital (n=15)	CHC (n=67)	PHC (n=121)	Total (n=217)
SOH	100.0%	94.7%	85.7%	94.1%	97.0%	94.4%
Receipts	100.0%	94.7%	78.6%	91.8%	88.7%	91.1%
Quantities used	100.0%	94.7%	78.6%	89.1%	76.7%	87.1%
Losses and adjustments	100.0%	42.1%	42.9%	60.7%	44.3%	57.0%

Table C5. Logistics Information Included in Completed Inventory Report for Vaccines

	Warehouse (n=6)	District Store (n=8)	Hospital (n=15)	CHC (n=67)	PHC (n=121)	Total (n=217)
SOH	100.0%	84.2%	85.7%	80.2%	94.0%	82.7%
Quantities used	100.0%	84.2%	85.7%	79.1%	80.4%	79.7%
Losses and adjustments	100.0%	73.7%	57.1%	67.2%	57.1%	65.7%
Completed report not available	0.0%	21.1%	7.1%	24.3%	9.0%	21.3%

Table C6. Where Inventory Reports for Vaccines Are Sent

	Warehouse (n=6)	District Store (n=8)	Hospital (n=15)	CHC (n=67)	PHC (n=121)	Total (n=217)
Supervisory facility	0.0%	31.6%	50.0%	56.8%	42.1%	53.2%
District health office	0.0%	15.8%	35.7%	11.4%	12.0%	12.4%
District store	0.0%	0.0%	21.4%	31.2%	23.3%	28.4%
Regional warehouse	0.0%	31.6%	0.0%	3.3%	22.6%	7.3%
SHM	0.0%	47.4%	0.0%	.8%	9.0%	3.9%
Central (Delhi) health mission	100.0%	0.0%	0.0%	1.0%	0.0%	1.0%
Do not know	0.0%	15.8%	14.3%	11.4%	3.0%	10.3%

Table C7. Frequency of Inventory Reports for Vaccines are Sent to Higher Level

	Warehouse (n=6)	District Store (n=8)	Hospital (n=15)	CHC (n=67)	PHC (n=121)	Total (n=217)
Weekly	0.0%	26.3%	7.1%	1.8%	20.3%	5.8%
Monthly	100.0%	78.9%	64.3%	35.7%	47.3%	40.2%
Quarterly	0.0%	0.0%	21.4%	43.7%	18.1%	37.3%
Semi-annually	0.0%	0.0%	0.0%	2.0%	0.0%	1.5%
Annually	0.0%	0.0%	0.0%	.9%	11.3%	2.4%
Other	0.0%	15.8%	14.3%	17.6%	3.0%	15.2%

Table C8. How Managers Learned to Complete Forms/Records for Managing Vaccines

	Warehouse (n=6)	District Store (n=8)	Hospital (n=15)	CHC (n=67)	PHC (n=121)	Total (n=217)
During a logistics workshop	100.0%	31.6%	42.9%	10.4%	9.0%	12.2%
On-the-job training	0.0%	68.4%	57.1%	80.0%	91.8%	80.5%
Never been trained	0.0%	10.5%	7.1%	9.9%	2.3%	8.7%
Other	0.0%	0.0%	0.0%	.6%	0.0%	.4%

Table C9. Responsibility for Determining Which Vaccines to Order and the Quantity

	Warehouse (n=6)	District Store (n=8)	Hospital (n=15)	CHC (n=67)	PHC (n=121)	Total (n=217)
The facility itself	0.0%	63.2%	85.7%	87.2%	81.9%	85.2%
The supervising facility	0.0%	15.8%	21.4%	25.0%	21.0%	23.8%
District chief pharmacist/civil surgeon	0.0%	15.8%	14.3%	7.2%	0.0%	6.6%
Regional warehouse	0.0%	26.3%	0.0%	1.9%	14.3%	4.7%
SHM	100.0%	26.3%	7.1%	.7%	6.0%	3.0%
Do not know	0.0%	5.3%	7.1%	2.8%	0.0%	2.6%
Other	0.0%	5.3%	0.0%	2.0%	0.0%	1.7%

Table C10. Responsibility for Transporting Vaccines to the Facility

	Warehouse (n=6)	District Store (n=8)	Hospital (n=15)	CHC (n=67)	PHC (n=121)	Total (n=217)
Drug manufacturer delivers	100.0%	5.3%	7.1%	4.4%	2.3%	4.4%
Local supplier delivers	0.0%	0.0%	7.1%	8.4%	0.0%	6.7%
Higher-level delivers	0.0%	52.6%	50.0%	24.9%	21.0%	26.1%
This facility collects	0.0%	57.9%	71.4%	79.9%	79.8%	78.6%
Other	0.0%	5.3%	0.0%	.5%	0.0%	.6%

Table C11. Types of Transportation Used for Vaccines

	Warehouse (n=6)	District Store (n=8)	Hospital (n=15)	CHC (n=67)	PHC (n=121)	Total (n=217)
Bicycle	0.0%	0.0%	0.0%	0.0%	3.0%	.5%
Facility vehicle	0.0%	84.2%	78.6%	91.6%	30.0%	81.2%
Motorcycle	0.0%	0.0%	0.0%	0.0%	6.0%	.9%
On foot	0.0%	0.0%	7.1%	.8%	0.0%	.8%
Private vehicle	100.0%	5.3%	7.1%	4.0%	37.6%	9.5%
Public Transportation	0.0%	5.3%	7.1%	3.6%	23.3%	6.8%
Other	0.0%	5.3%	0.0%	0.0%	0.0%	.2%

Table C12. Other Sources of Supply for Vaccines Used in Previous Six Months

	Warehouse (n=6)	District store (n=8)	Hospital (n=15)	CHC (n=67)	PHC (n=121)	Total (n=217)
Central government	100.0%	0.0%	7.1%	4.8%	3.0%	4.6%
Drug manufacturer	0.0%	0.0%	0.0%	2.1%	0.0%	1.6%
Regional warehouse	0.0%	36.8%	7.1%	4.5%	31.6%	10.0%
District warehouse/central store	0.0%	5.3%	50.0%	72.2%	29.3%	62.1%
Higher-level facility warehouse	0.0%	36.8%	28.6%	3.4%	18.1%	7.7%
Local/private supplier	0.0%	0.0%	7.1%	0.0%	0.0%	.2%
Donated by NGO	0.0%	0.0%	0.0%	0.0%	18.1%	2.8%
None	0.0%	26.3%	7.1%	19.3%	6.0%	17.2%

Table C13. Steps Taken Before Storing Immunization Vaccines Once Products Are Received at Facility

	Warehouse (n=6)	District Store (n=8)	Hospital (n=15)	CHC (n=67)	PHC (n=121)	Total (n=217)
Verify product against packing slip	100.0%	100.0%	100.0%	97.8%	100.0%	98.3%
Count product to verify quantity	100.0%	94.7%	85.7%	98.3%	83.4%	95.5%
Add quantity to stockcard/bin card/stock registry	100.0%	84.2%	78.6%	93.2%	56.4%	86.7%
Add quantity to computer system	100.0%	36.8%	14.3%	1.9%	0.0%	3.6%
Check VVM	0.0%	31.6%	0.0%	20.2%	0.0%	16.9%

Appendix D

Additional HIV and AIDS Tables

Table D3. Average Frequency of Stockouts of HIV and AIDS Commodities within Last Three Months by Product and Facility Type

	Warehouse (n=1)	District Store (n=4)	Hospital (n=14)	CHC (n=12)	PHC (n=2)	Total excluding HSC (n=28)
Efavirenz						
Nevirapine	2			3		2.67
RTI/STI Treatment Kit 1	1		1	1		1.00
RTI/STI Treatment Kit 4						
RTI/STI Treatment Kit 6						
TL combo						
ZLN combo						
HIV test kits						

Table D4. Average Number of Days of Stockouts of HIV and AIDS Commodities within Last Three Months by Product and Facility Type

	Warehouse (n=1)	District Store (n=4)	Hospital (n=14)	CHC (n=12)	PHC (n=2)	Total excluding HSC (n=28)
Efavirenz						
Nevirapine	12.00			90.00		64.27
RTI/STI Treatment Kit 1	5.00		68.00	68.00		57.09
RTI/STI Treatment Kit 4						
RTI/STI Treatment Kit 6						
TL combo						
ZLN combo						
HIV test kits						

Table D5. Percentage of Facilities with Accurate or Near Accurate Balances (+/- 10) between SOH from Inventory Forms and Stockcards for HIV and AIDS Commodities by Facility Type

	Warehouse (n=1)	District Store (n=4)	Hospital (n=14)	CHC (n=12)	PHC (n=2)	Total excluding HSC (n=28)
Efavirenz	0.0	0.0	100.0	0.0	0.0	100.0
Nevirapine	0.0	0.0	100.0	0.0	0.0	66.7
RTI/STI Treatment Kit 1	0.0	0.0	0.0	0.0	0.0	0.0
RTI/STI Treatment Kit 4						
RTI/STI Treatment Kit 6	0.0	0.0	0.0	0.0	0.0	
TL combo	0.0	0.0	100.0	0.0	0.0	100.0
ZLN combo	0.0	0.0	100.0	0.0	0.0	100.0
HIV test kits						

Table D6. Types of Inventory Logistics Forms Used to Manage HIV Test Kits and ARVs

	Hospital (n=14)	CHC (n=28)	PHC (n=26)	Total (n=70)
Stockcard/bin card/inventory control card	81.8%	92.4%	100.0%	93.2%
Stock ledger	63.6%	96.3%	88.2%	94.0%
Electronic records (Excel/Access/Other Software)	0.0%	0.0%	0.0%	.4%
Other	18.2%	0.0%	0.0%	.7%

Table D7. Types of Forms Used for Reporting Inventory Information to the Higher Level for HIV Test Kits and ARVs

	Hospital (n=14)	CHC (n=28)	PHC (n=26)	Total (n=70)
Stock and Issues Register (#4)	90.9%	96.1%	100.0%	96.5%
NRHM Health Department Monthly Format for Sub-Center and Equivalent Institution (Format C/Format D)	18.2%	.7%	0.0%	1.3%
HMIS	0.0%	1.3%	5.9%	1.9%
Other	9.1%	3.2%	0.0%	3.0%

Table D8. Types of Data Included in Inventory Reports for HIV Test Kits and ARVs

	Hospital (n=14)	CHC (n=28)	PHC (n=26)	Total (n=70)
SOH	90.9%	95.0%	100.0%	95.6%
Receipts	90.9%	94.7%	88.2%	93.8%
Quantities used	72.7%	94.7%	82.4%	92.2%
Losses and adjustments	54.5%	76.9%	76.5%	76.0%

Table D9. Logistics Information Included in Completed Inventory Report for HIV Test Kits and ARVs

	Hospital (n=14)	CHC (n=28)	PHC (n=26)	Total (n=70)
SOH	90.9%	93.1%	100.0%	94.1%
Quantities used	90.9%	91.0%	88.2%	90.8%
Losses and adjustments	63.6%	88.7%	82.4%	87.0%
Completed report not available	9.1%	10.4%	0.0%	8.7%

Table D10. Where Inventory Reports for HIV Test Kits and ARVs Are Sent

	Hospital (n=14)	CHC (n=28)	PHC (n=26)	Total (n=70)
Supervisory facility	54.5%	81.0%	64.7%	77.4%
District health office	0.0%	1.4%	17.6%	3.9%
District store	0.0%	11.4%	35.3%	14.0%
State NACO/DAC office	36.4%	0.0%	5.9%	2.7%
Do not know	9.1%	6.3%	0.0%	5.4%

Table D11. Frequency of Inventory Reports for HIV Test Kits and ARVs Are Sent to Higher Level

	Hospital (n=14)	CHC (n=28)	PHC (n=26)	Total (n=70)
Monthly	54.5%	18.9%	52.9%	26.5%
Quarterly	36.4%	73.1%	41.2%	65.9%
Semi-annually	0.0%	1.7%	0.0%	1.4%
Other	9.1%	6.3%	5.9%	6.2%

Table D12. How Managers Learned to Complete Forms/Records for Managing HIV Test Kits and ARVs

	Hospital (n=14)	CHC (n=28)	PHC (n=26)	Total (n=70)
During a logistics workshop	9.1%	8.3%	23.5%	10.2%
On-the-job training	100.0%	87.5%	82.4%	87.2%
Never been trained	0.0%	4.2%	0.0%	3.7%

Table D13. Responsibility for Determining Which HIV Test Kits and ARVs to Order and the Quantity

	Hospital (n=14)	CHC (n=28)	PHC (n=26)	Total (n=70)
The facility itself	72.7%	95.7%	88.2%	93.4%
The supervising facility	18.2%	10.0%	17.6%	11.1%
District chief pharmacist/civil surgeon	9.1%	.6%	0.0%	.9%
SHM	9.1%	.6%	0.0%	1.2%
Central (Delhi) health mission	9.1%	0.0%	0.0%	.4%
Other	9.1%	0.0%	0.0%	.4%

Table D14. Responsibility for Transporting HIV Test Kits and ARVs to the Facility

	Hospital (n=14)	CHC (n=28)	PHC (n=26)	Total (n=70)
Drug manufacturer	0.0%	1.4%	0.0%	1.5%
Local supplier delivers	0.0%	3.0%	11.8%	4.0%
Higher level delivers	36.4%	4.2%	11.8%	7.9%
This facility collects	72.7%	91.5%	76.5%	88.8%
Other	18.2%	0.0%	0.0%	.7%

Table D15. Types of Transport Used for HIV Test Kits and ARVs

	Hospital (n=14)	CHC (n=28)	PHC (n=26)	Total (n=70)
Facility vehicle	81.8%	96.3%	35.3%	87.0%
Motorcycle	0.0%	0.0%	5.9%	.8%
Private vehicle	0.0%	2.0%	23.5%	4.9%
Public transportation	18.2%	.7%	35.3%	6.2%
Other	0.0%	.9%	0.0%	1.1%

Table D16. Other Sources of Supply for HIV Test Kits and ARVs Used in Previous Six Months

	Warehouse	District Store	Hospital (n=14)	CHC (n=28)	PHC (n=26)	Total (n=70)
Central government	--	--	9.1%	0.0%	5.9%	1.6%
Drug manufacturer	--	--	0.0%	.7%	5.9%	1.4%
Regional warehouse	--	--	0.0%	3.2%	0.0%	2.6%
District warehouse/ central store	--	--	36.4%	88.8%	5.9%	73.2%
Higher level facility warehouse	--	--	27.3%	7.0%	41.2%	13.9%
Local/private supplier	--	--	9.1%	0.0%	0.0%	.4%
Donated by NGO	--	--	9.1%	0.0%	35.3%	5.3%
None	--	--	18.2%	3.5%	11.8%	5.5%

Table D17. Steps Taken Before Storing HIV Test Kits and ARVs Once Products Are Received at Facility

	Warehouse	District Store	Hospital (n=14)	CHC (n=28)	PHC (n=26)	Total (n=70)
Verify product against packing slip	--	--	90.9%	99.4%	100.0%	99.1%
Count product to verify quantity	--	--	90.9%	100.0%	94.1%	98.8%
Add quantity to stockcard/bin card/stock registry	--	--	90.9%	97.3%	88.2%	95.9%
Add quantity to computer system	--	--	0.0%	.6%	0.0%	.9%
Do not know	--	--	9.1%	0.0%	0.0%	.4%

Appendix E

Commodities Included in the Assessment

	Medicines/ Products	Formulation	Type of Supply Chain				Required Availability by Level of Care (According to National ELM 2011, Adjusted with Experts' Review)				RMNCH +A Matrix
			SHM	Vaccines	Family Planning	HIV and AIDS	Hospital	CHC	PHC	HSC	
1	Albendazole	400 mg	X				x	x	x	x	x
2	Ampicillin	Injection powder 500 mg	X				x	x	x	x	x
3	Amoxicillin	Capsules 250 mg	X				x	x	x		x
4	Azithromycin	500 mg	X				x	x	x		
5	Cefixime	200 mg	X				x	x	x		
6	Ceftriaxone	Injection powder 250 mg	X				x				x
7	Co-trimoxazole (sulfamethoxazole- Trimethoprim)	100 mg sulfamethoxazole + 20 mg trimethoprim	X				x	x	x		x
8	Co-trimoxazole	800 mg sulfamethoxazole + 160 mg trimethoprim	X				x	x			x

	Medicines/ Products	Formulation	Type of Supply Chain				Required Availability by Level of Care (According to National ELM 2011, Adjusted with Experts' Review)				RMNCH +A Matrix
			SHM	Vaccines	Family Planning	HIV and AIDS	Hospital	CHC	PHC	HSC	
9	Dexamethasone	Injection	X				x	x			x
10	Doxycycline	100 mg	X				x	x	x	x	
11	Gentamycin	40 mg/ml (injection)	X				x	x	x	x	x
12	Iron folic acid (IFA) tablets (Blue) (IFA- WIFs)	100 mg iron + 500 mcg folic acid	X				x	x	x	x	x
13	Iron folic acid (IFA) tablets (Red)	100 mg iron + 500 mcg folic acid	X				x	x	x	x	x
14	Iron folic acid (IFA) syrup	100 mg iron + 500 mcg folic acid / 5 ml	X				x	x	x	x	x
15	Magnesium sulfate	500 mg/ml, 1 ml ampoule	X				x	x	x		x
16	Methyldopa	Tablet 250 mg	X				x	x	x	x	x
17	Metronidazole	Tablets 200 mg	X				x	x	x	x	x
18	Misoprostol	Tablet 200 mcg	X				x	x	x		x
19	ORS	Packets	X				x	x	x	x	x
20	Oxytocin	Injection (5 IU 1 ml ampoule)	X				x	x	x		x
21	Vitamin A syrup	Suspension 100,000 IU/ml	X				x	x	x	x	x
22	Vitamin K	Injection (1 ml)	X				x	x	x	x	x
23	Zinc sulfate	Tablets 20 mg	X				x	x	x	x	x

	Medicines/ Products	Formulation	Type of Supply Chain				Required Availability by Level of Care (According to National ELM 2011, Adjusted with Experts' Review)				RMNCH +A Matrix
			SHM	Vaccines	Family Planning	HIV and AIDS	Hospital	CHC	PHC	HSC	
24	BCG	Injection		x			x	x	x		x
25	DPT	Injection		X			x	x	x		x
26	Hepatitis B (vaccine)	Injection		X			x	x	x		x
27	Measles (vaccine)	Injection		X			x	x	x		x
28	Oral polio (OPV)	Oral vials		X			x	x	x		x
29	Tetanus toxoid (TT)	Injection	X				x	x	x		x
30	Condoms	Any (1 or pack of 3)			X		x	x	x	x	x
31	Emergency contraceptives	Any			X		x	x	x	x	x
32	IUCDs	Copper T 380A			X		x	x	x	x	x
33	Oral contraceptive pills	Any			X		x	x	x	x	x
34	Pregnancy test kits	Any			X		x	x	x	x	x
35	Efavirenz	600 mg tablets				x	x				
36	Nevirapine	Oral suspension (10 mg/ml)				x	x				
37	RTI/STI Treatment Kit 1 (Grey)	Tb. azithromycin 1g/Cefixime 400 mg.				x	x	x	x		x
38	RTI/STI Treatment Kit 4 (Blue)	Tb. doxycycline 100 mg and azithromycin 1g				x	x	x	x		x

	Medicines/ Products	Formulation	Type of Supply Chain				Required Availability by Level of Care (According to National ELM 2011, Adjusted with Experts' Review)				RMNCH +A Matrix
			SHM	Vaccines	Family Planning	HIV and AIDS	Hospital	CHC	PHC	HSC	
39	RTI/STI Treatment Kit 6 (Yellow)	Tb. Cefixime 400 mg/ Metronidazole 400 mg/ doxycycline 100 mg				x	x	x	x		x
40	TL combo	Tb, Lamivudine (3TC) 300 mg+ Tenofovir (TDF) 300 mg (disoproxil fumarate)				x	x				
41	ZLN combo	Lamivudine (3TC) 150 mg+ Nevirapine (NVP) 200 mg. + Zidovudine (AZT) 300 mg				x	x				
42	HIV test kit	Whole Blood Finger Prick Test Kit Type I				x	x	x	x		

Appendix F

Individual Storage Conditions

	All Products Stored Together	Essential Medicines	Family Planning	Family Planning Plus Vaccines	HIV and AIDS and RTIs/STIs	Vaccines
Products that are ready for distribution are arranged so that identification labels and expiry dates and/or manufacturing dates are visible.	41.3	64.1	44.8	36.7	28.9	78.5
Products are stored and organized in a manner accessible for first-to-expire, first-out (FEFO) counting and general management.	36.5	66.4	37.1	22.3	13.6	73.3
Cartons and products are in good condition, not crushed due to mishandling.	35.4	51.5	37.6	33.8	13.6	65.7
The facility separates damaged and/or expired products from usable products and removes them from inventory.	48.3	64.9	64.5	33.3	13.6	78.9
Products are protected from direct sunlight.	90.2	73.5	89.1	72.0	100.0	89.9
Cartons and products are protected from water and humidity.	87.4	78.8	89.8	66.1	100.0	100.0
Storage area is visually free from garbage/clutter, harmful insects, and rodents.	83.8	75.6	100.0	68.9	99.4	97.8
Storage area is secured with a lock and key.	87.5	91.4	100.0	72.0	100.0	99.3
High-value commodities or control substances are in a separate location that remains locked at all times unless dispensing.	80.1	83.8	97.5	55.0	100.0	97.4
Products are stored at product temperature specifications.	37.7	57.2	58.5	47.2	97.0	90.7

	All Products Stored Together	Essential Medicines	Family Planning	Family Planning Plus Vaccines	HIV and AIDS and RTIs/STIs	Vaccines
Roof is maintained in good condition to avoid sunlight and water penetration.	83.6	79.3	95.8	98.9	99.4	95.0
Storeroom is maintained in good condition.	71.3	61.8	60.4	66.4	84.1	86.8
The current space and organization is sufficient for existing products and reasonable expansion.	67.7	44.1	63.8	22.7	47.7	64.7
Fire safety equipment is available and accessible.	6.1	6.3	5.5	2.1	6.9	17.1
Products are stored separately from insecticides and chemicals.	77.7	84.9	94.0	51.6	100.0	94.8
Products stacked at least 10 cm off the floor.	81.6	79.5	26.1	90.7	100.0	96.9
Products stacked at least 30 cm away from the walls and other stacks.	78.0	70.5	42.9	90.7	97.3	96.9

For more information, please visit deliver.jsi.com.

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