Baseline Findings from the Ananya Evaluation

Final Report

November 19, 2013

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Finally, we would like to thank the households and health workers who participated in this study. Their patience with us as we administered the surveys, and their willingness to share their experiences, are what finally made this study possible.

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EXECUTIVE SUMMARY

The Ananya program (*ananya* is a Sanskrit word meaning "unique" or "unlike others") was created by the Bill & Melinda Gates Foundation (the foundation) to address some of the important family health challenges in Bihar, one of India's most populous and poorest states. Ananya started as a five-year program (2011–2015) with the long-term goals of reducing maternal, newborn, and child mortality; fertility; and undernutrition rates in Bihar. To achieve these goals, the foundation is funding a synergistic set of complementary grants focused on improving the reach, coverage, and quality of family health services in two main areas: (1) essential reproductive, maternal, newborn, and child health services and (2) diagnosis and treatment of infectious diseases, including pneumonia, diarrhea, tuberculosis, and visceral leishmaniasis. Since its inception, the program has also expanded to include additional interventions that focus on improving sanitation in Bihar and on strengthening the system for health payments, including health-related incentives for households and incentives and payments for frontline health workers. Together, these grants address a range of barriers to improving family health outcomes through interventions at the household, community, and health facility and provider levels (see Table 1). Many of these interventions were implemented initially in eight focus districts during the first two years of the program (2011–2012), and some interventions will be scaled up to the remaining 30 districts in Bihar during the remaining years (2013–2016 or 2017).[1]

Table 1. Summary of the Current Portfolio of Ananya Implementing Grants

Grant	Lead Partner	Duration	Main Objective
Integrated Family Health Initiative (IFHI)	CARE	November 2010–October 2015	Increase the availability, quality, and coverage of key cost-effective family health interventions
Shaping Demand and Practices (SDP)	BBC Media Action	December 2010–December 2015	Use media and communication to generate demand for health services and strengthen health-seeking behaviors.
Engaging Private Providers to Manage Infectious Diseases	World Health Partners (WHP)	October 2010–September 2015	Create and support a network of private providers to improve the diagnosis and treatment of infectious diseases
Community Mobilization and Social Accountability Grant	Project Concern International (PCI)	November 2011–October 2016	Create or strengthen community organizations to increase demand for better health services
Government-to-Person Health Payments (G2P)	International Finance Corporation (IFC)	November 2011–February 2015	Improve the efficiency and transparency of payments to public health workers and health incentive program participants
Supporting Sustainable Sanitation Improvements (3SI)	Population Services International (PSI)	July 2012–June 2017	Establish a sustainable market-based supply chain for sanitation products and services

Source: www.ananya.org.in. Accessed June 12, 2013.

The foundation has contracted with Mathematica Policy Research to lead the measurement, learning, and evaluation (MLE) component of the Ananya program, in close cooperation with its

[1] The eight focus districts are Purba Champaran, Paschim Champaran, Gopalganj, Patna, Samastipur, Begusarai, Saharsa, and Khagaria.

Indian evaluation partners, the Public Health Foundation of India (PHFI) and Sambodhi Research & Communications Pvt. Ltd. (Sambodhi).[2] One of the key questions that the MLE effort seeks to address is whether, in combination, the Ananya interventions were effective in improving family health outcomes in Bihar. To answer this question, we will examine the effects of the overall package of interventions at two junctures in the five-year program cycle: (1) at the end of 2013, to examine program effects in the eight focus districts; and (2) end of 2015, to assess whether targeted changes in key state-wide indicators have been achieved over the 5-year program period. A comparison group design will be used to estimate impacts in the eight focus districts, and a pre-post design will be used to assess changes across the state at the end of 2015.

This report summarizes findings from the baseline data that were collected as part of the Ananya MLE effort to inform the responses to questions about the effects of the program. Overall, the baseline data collection effort was designed keeping in mind three main goals:

- Establish a baseline for the evaluation of the effects of the Ananya program in the eight focus districts and across the state, which will require estimating changes over time between baseline and midline or between baseline and endline, respectively.
- Inform the selection of comparison districts for the evaluation of program effects in the eight focus districts, by enabling us to identify districts that are similar to the eight focus districts at baseline in key program indicators and associated characteristics.
- Provide updated benchmarks for target setting and decision making by the grantees and the Government of Bihar (GoB) against which progress can be measured and success assessed.

Below we briefly describe the baseline data collection and summarize key descriptive information obtained from these data.

A. Data Collection and Sample Sizes

The broad scope of the Ananya program, which is designed to improve a range of outcomes across multiple family health domains, necessitated a similarly broad-based data collection effort. To this end, we collected baseline data from several sources: (1) households, (2) frontline health workers (FLWs), and (3) public sector health facilities and providers. The household and FLW surveys were conducted between January and April 2012, and the facility and provider surveys were conducted between March and May 2012.[3] Below we describe the target populations, sampling approach, and sample sizes for each of our surveys.

Household survey. We focused our data collection for the household survey on women who had given birth within the past 12 months. This was motivated by the fact that *most* of the

[2] The Mathematica-led MLE component focuses primarily on the core interventions implemented under the early set of Ananya grants, which target a broad range of family health services and outcomes. Some of the Ananya grants that have a more specific focus—including infectious diseases, sanitation, and health payments—are largely being evaluated separately from this overall MLE effort.

[3] Although the Ananya program began in 2011, many of the initial activities involved developing the interventions and preparing for implementation. Most of the activities would, therefore, not have substantially affected the targeted populations at the time of our survey in early 2012.

interventions on which this MLE effort focuses aim to improve outcomes between the last trimester of pregnancy and the child reaching one year of age, including coverage of key health services and neonatal mortality.

We therefore selected a representative sample of women who had a live birth in the previous 12 months across all 38 districts of Bihar. To do this, we first drew a representative sample of communities across all districts in Bihar using a multistage sampling approach (starting with a random selection of blocks in each district, and then selecting communities within each block).[4] We then conducted a listing survey in the sampled communities to identify all women in these communities who had a live birth in the previous 12 months. The listing survey attempted to capture all birth events that took place in each household in the past 12 months, whether the outcome was a live birth, and whether (and, if so, when) the child subsequently died. It also attempted to capture pregnancies that ended in stillbirths or abortions. Information collected from the listing survey was used to estimate the neonatal mortality rate (NMR) and other mortality rates (such as the stillbirth rate and perinatal mortality rate).[5] In total, we listed 110,094 households in the 1,017 sampled communities (a 94.3 percent response rate) and successfully interviewed 13,069 eligible women in these communities for the household survey (an 88.9 percent response rate). The household survey captured more detailed information on the background and socioeconomic characteristics, pregnancy and delivery-related experiences, and infant feeding and immunization outcomes, as well as reproductive health practices of women in our sample.

FLW surveys. Pregnant women and young mothers are typically served by three cadres of FLWs working in their communities. Living in the same communities are accredited social health activists (ASHAs) and anganwadi workers (AWWs). AWWs run an Anganwadi Center, in which they provide certain basic family health services to the community, including supplementary nutrition for young children and pregnant and lactating women, in addition to providing nonformal preschool education. Rural communities also have ASHAs, whose main role is to create awareness of and facilitate access to maternal, newborn, and child health care in the community. These community-based FLWs work with the auxiliary nurse midwives (ANMs), who are located in health centers ("subcenters") that typically cover five or six communities, to ensure that the children in the communities receive the requisite immunization services. The ANMs also provide antenatal care (ANC) services as well as other family health counseling and services. We interviewed the AWW and ASHA (in rural communities only) in each of the sampled communities. Because communities were selected randomly, this approach provided a representative sample of FLWs across the state. In total, we interviewed 667 ASHAs (90.7 percent response rate) and 892 AWWs (91.2 percent response rate). We also interviewed the ANMs working in the sampled communities and conducted interviews with about 589 ANMs (a 59.2 percent response rate). FLWs were asked about the types of training received in the past year as well as the extent and content of their interactions with households and their knowledge of appropriate health practices.

Facility and provider surveys. The facility and provider surveys focused on block primary health centers (PHCs), which are public facilities serving a population of approximately 100,000 in a

[4] In the administrative structure of Bihar, each district is divided into many blocks, ranging from 5 to 27 blocks per district.

[5] A stillbirth is defined as a dead birth of at least seven months gestation, whereas perinatal mortality includes stillbirths as well as deaths within the first seven days of life.

block. We focused on block PHCs because they are the main public health facilities where deliveries are conducted and are the focus of the facility-based Ananya interventions. For the facility survey, we interviewed the PHC administrators (including the medical officer in charge [MOIC] and the block health manager, when available) in the sampled block to collect information on the conditions of the facility and the services offered. For the provider survey, we selected a staff/grade A nurse or ANM responsible for conducting deliveries at each facility. This approach yielded a representative sample of block PHCs and providers conducting deliveries at the state level. In total we interviewed 335 facility administrators (a 98.0 percent response rate) and 324 nurses or ANMs (a 94.7 percent response rate), 286 of whom conduct deliveries.

B. Results from the Household Survey

The household survey was designed to measure family health indicators of greatest relevance to the Ananya program. These included indicators of key practices in a number of domains, such as ANC, delivery, newborn care, nutrition, immunization, and reproductive health. We also sought to capture interactions between women and FLWs—an important area of focus for many of the Ananya interventions. In addition, we used the detailed information about the timing of birth events from the accompanying household listing survey to estimate the NMR, which is one of the key ultimate target outcomes for Ananya. Overall, we find that our data show continued improved trends in some health coverage indicators as compared with the NFHS (2005-06), DLHS (2007-08) and AHS (2010-11), particularly for institutional deliveries and child immunizations, which is consistent with the start of the incentive programs as well as increased health service messaging. Despite these improvements, however, we continue to see large gaps in health coverage in many areas, and few home visits by FLWs. Below, we describe our key findings.

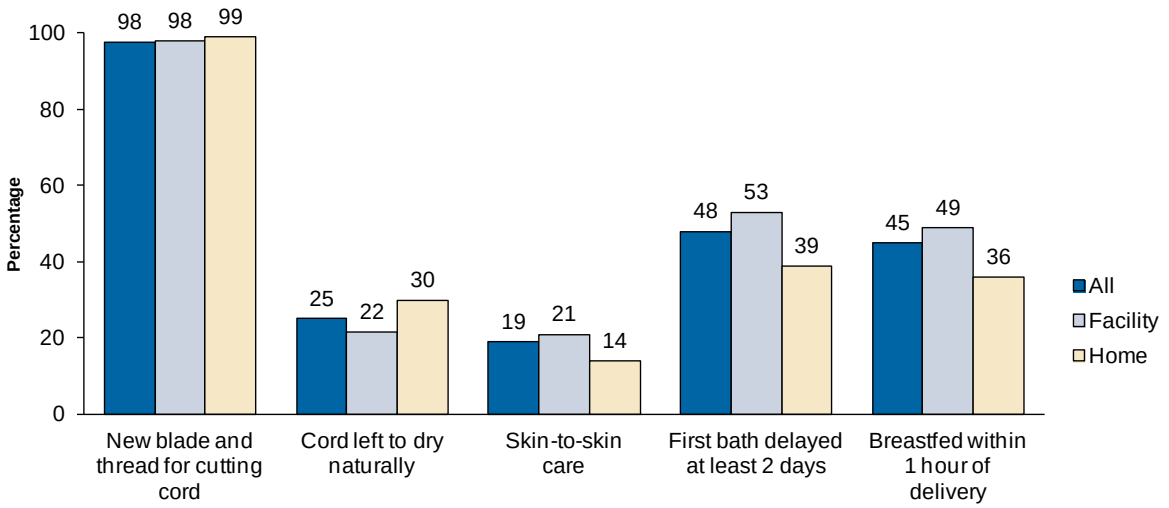
The statewide NMR is 32 per 1,000 live births, and shows a continued downward trend

Using our listing survey data, we estimated that the baseline NMR—defined as deaths within the first 28 days of life—in Bihar is 32 per 1,000 live births. The 95 percent confidence interval for NMR ranges from 28 per 1,000 live births to 37 per 1,000 live births. The rates reflect a continuation of the decrease in NMR observed in other health surveys in Bihar over time. For example, the NMR decreased from 40 per 1,000 in the 2005–2006 NFHS to 35 per 1,000 in the 2010–2011 AHS. We also computed two other mortality rates relevant to the Ananya program, the stillbirth rate and the perinatal mortality rate (PNMR). We estimated that the rate of stillbirths is 20 per 1,000 pregnancies of seven months or longer, and the PNMR is 46 per 1,000 pregnancies of seven months or longer.

There are important gaps in key preventative practices and the level and quality of care received

Only 28 percent of women reported receiving the recommended three ANC visits during pregnancy. Further, only 12 percent of women reported having consumed the recommended dose of iron folic acid (IFA) tablets. In terms of care during delivery, quality was limited even for the 62 percent of women who delivered at a facility. Specifically, only about one-third reported that the baby or mother was checked before discharge, and only one-tenth received advice on family planning prior to discharge. Almost half of the women who delivered at a facility left the facility within eight hours of delivery. We also observed important gaps in recommended newborn care practices, including cord care, thermal care, and early breastfeeding. For example, only about one-fifth of women engaged in skin-to-skin care, fewer than half delayed the newborn's first bath by at least two days, and fewer than half initiated breastfeeding within an hour of delivery (Figure 1).

Figure 1. Newborn Care Practices



Source: Baseline Household Survey (2012).

Note: N=13,069 (all); N=8,150 (facility); N=4,919 (home).

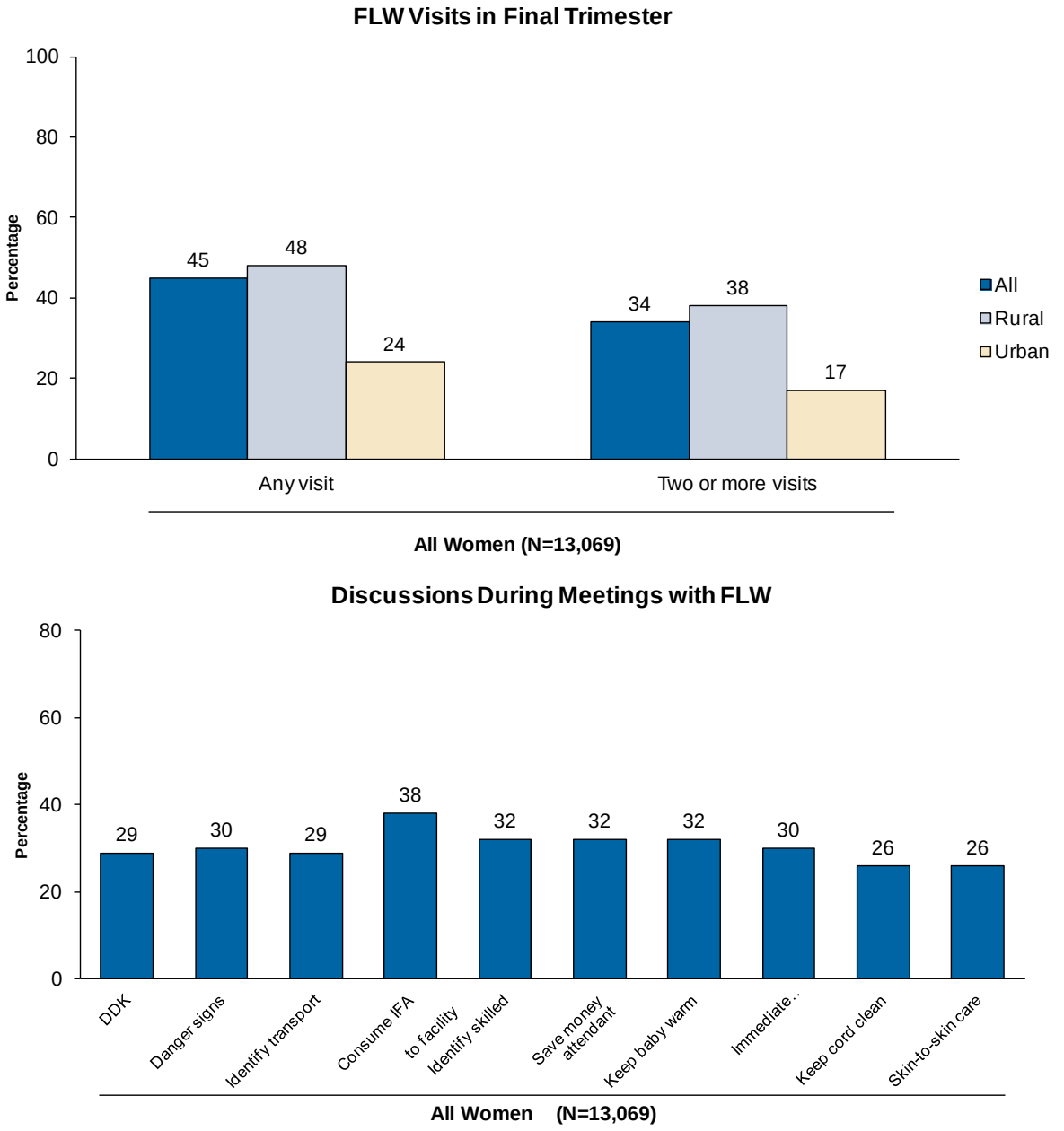
The quantity and content of interactions between women and FLWs are limited

Fewer than half of the women surveyed reported that they were visited at home by an FLW in th e final trimester of pregnancy—an especially critical period of pregnancy because it can influence whether women make appropriate preparations for safe delivery and whether delivery-related risk factors are detected (Figure 2). Only about one third of all women received advice on key pregnancy and delivery topics, such as preparation for delivery or immediate newborn care during home visits by FLWs during their pregnancy (either in the final trimester or earlier) (Figure 2). Postpartum home visits are also infrequent, with only 20 percent of women reporting having received a postpartum home visit from an FLW (and only 13 percent having received a visit in the critical first week after delivery). Further, not all women who were visited by an FLW during the postpartum period received advice on relevant newborn care topics, and only about 10 percent of households reported discussing newborn care topics such as danger signs and thermal care.

There are gaps in appropriate feeding practices, and high levels of undernutrition

Only about 43 percent of mothers of children over 6 months of age reported having exclusively breastfed their child (without supplementing breast milk with water) for the first 6 months of the child's life—the recommended practice (Figure 3). We also asked all mothers what liquids or solids they had fed their child the previous day, and used this to compute an alternative measure of exclusive breastfeeding recommended by the World Health Organization (WHO) (2010), namely the fraction of children under 6 months who were not given any liquids other than breast milk the

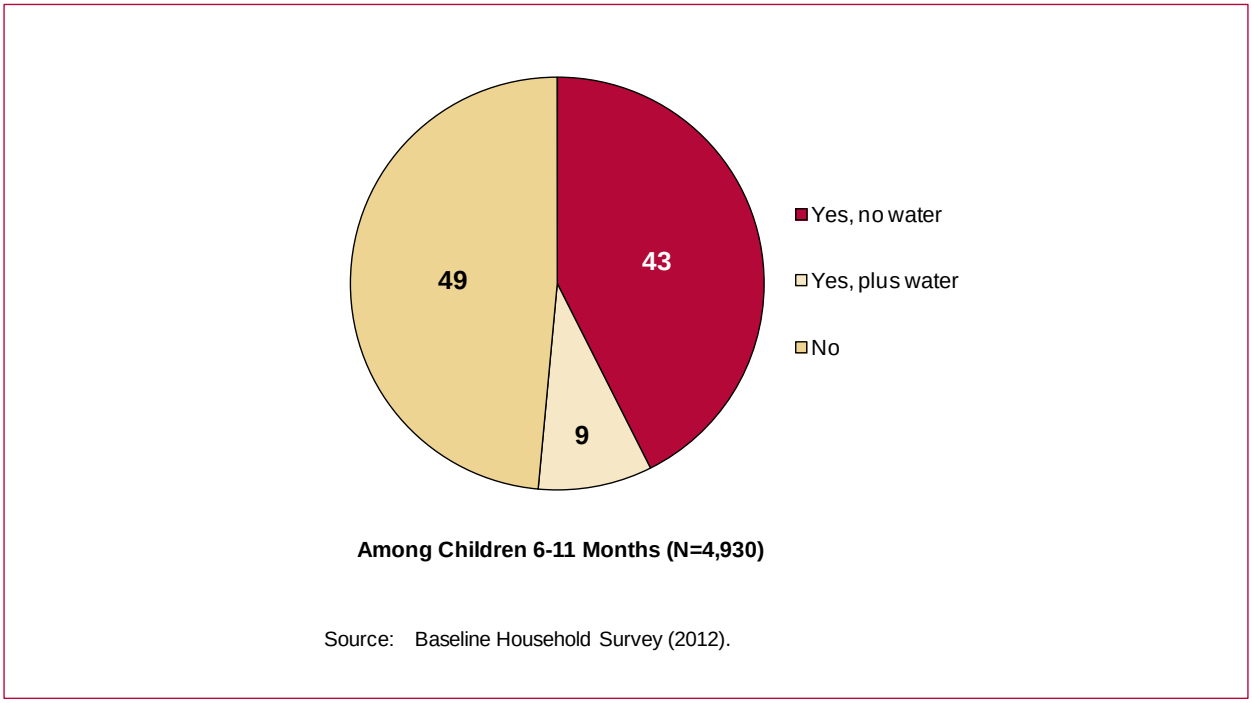
Figure 2. FLW Interactions During Pregnancy



Source: Baseline Household Survey (2012).

Notes: FLW is frontline health worker. DDK is disposable delivery kit. IFA is iron folic acid. Questions on danger signs and transportation advice did not ask about specific items. Questions on keeping the cord clean did not mention other aspects of cord care.

Figure 3. Self-Reported Exclusive Breastfeeding for 6 Months



previous day.[6] We found that about 60 percent of children under 6 months in our sample were exclusively breastfed using this definition. This rate was far higher for younger children: 77 percent of children age 3 months or younger were exclusively breastfed, compared to 47 percent of children between 4 and 6 months of age.

In addition, although appropriate complementary feeding is recommended for children beginning at age 6 months, only 65 percent of infants ages 6 to 11 months received solid or semisolid food the previous day according to mothers' reports. Anthropometric indicators of undernutrition suggest that about one in three children ages 6 to 11 months in our sample are undernourished. Specifically, about 27 percent of children were stunted (low length-for-age), about 35 percent were underweight (low weight-for-age), and about 32 percent were wasted (low weight-for-length).

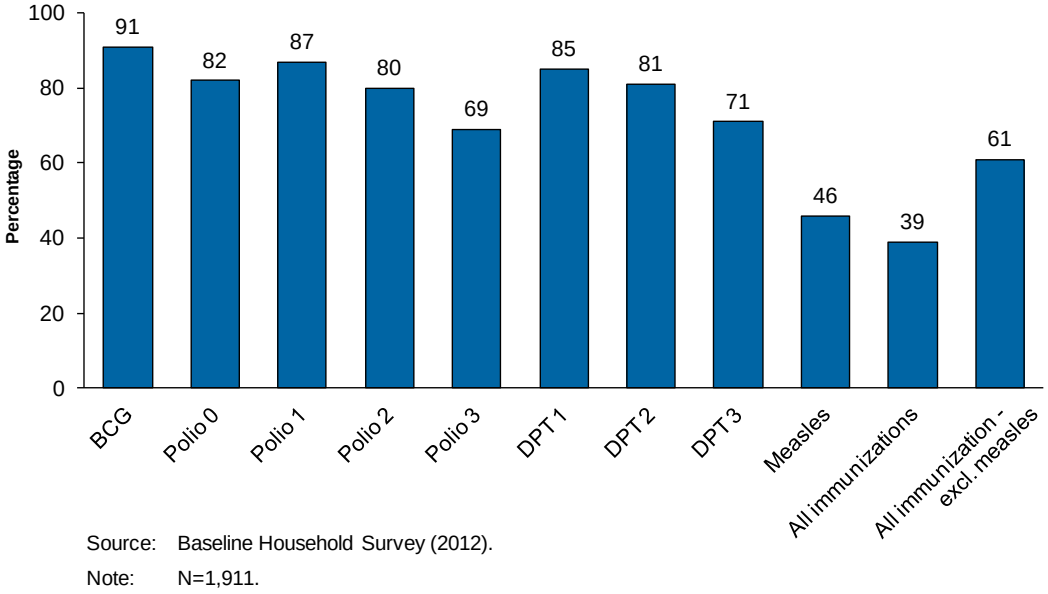
Early immunization rates for children in our sample are high, but later immunizations rates tend to drop off

We examined immunizations received by children in our sample who are over 9 months of age (most of whom are under 12 months of age). Although all the immunizations up to DPT3 should

[6] Asking mothers of older children to self-report the duration of exclusive breastfeeding may be subject to error. In addition to the potential for recall error, about 16 percent of mothers who reported that they were *currently* exclusively breastfeeding also reported that they gave their child some other liquid (excluding water) the previous day—an inconsistent response. The WHO indicator of exclusive breastfeeding, which relies only on 24-hour recall of specific liquids and solids given to the child, avoids many of these errors although it only reflects the current exclusive breastfeeding status of young children and not the duration of exclusive breastfeeding.

ideally be received at ages younger than 9 months,[7] we restricted this analysis to this age range to allow for some possible delays in these immunizations. We found that about 90 percent of our sample of children over 9 months of age received the basic set of early immunizations, including BCG, polio 1, and DPT 1 (Figure 4). However, immunization rates tend to decrease for subsequent immunizations, dropping to about 70 percent for polio 3 and DPT 3. Overall, about 61 percent of children over 9 months of age in our sample received all required routine immunizations (not including the one for measles, which is often given at older ages).

Figure 4. Routine Immunizations Among Children over Nine Months of Age



Source: Baseline Household Survey (2012).

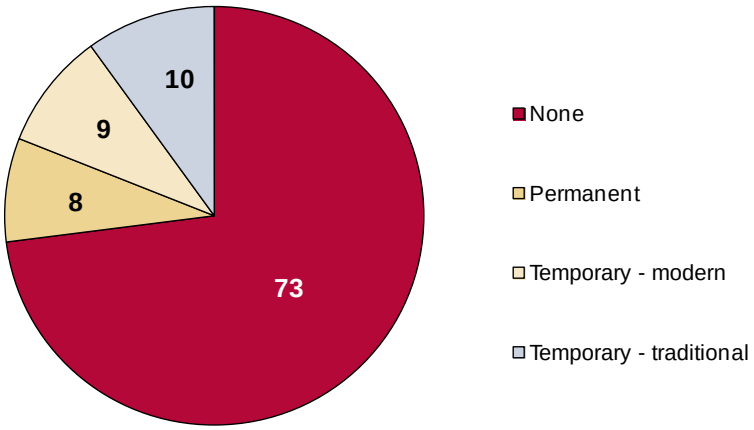
Note: N=1,911.

Knowledge of contraceptive methods is high, but contraceptive use is low and discussions with health workers about contraception are limited

Awareness of modern contraceptive methods was high, especially for permanent methods. Almost all women surveyed were aware of female sterilization, and over 90 percent were aware of male sterilization. Knowledge of nonpermanent modern methods such as the pill, intrauterine devices (IUDs), condoms, and injectables varied but was relatively high overall (between 62 and 92 percent). However, only 27 percent of women in our sample who were not pregnant and gave birth between 6 and 12 months ago were currently using any form of contraception. Among those using contraception, roughly equal numbers were using permanent methods, other modern methods, and traditional methods such as the rhythm method or withdrawal (Figure 5). In addition, few women appear to have received adequate information about contraception and family planning. Only 10 percent of women who delivered at a facility reported discussing family planning before leaving the facility, and only 12 percent of women reported discussing contraception with an FLW during pregnancy or after giving birth.

[7] The full set of routine immunizations includes BCG and polio 0 at birth, OPV 1 (polio 1) and DPT 1 at age 6 weeks, OPV2 (polio 2) and DPT 2 at age 10 weeks, OPV 3 (polio 3) and DPT 3 at age 14 weeks, and measles at age 9 months.

Figure 5. Use of Contraceptive Methods Among Women Who Were Not Pregnant and Had a Child over 6 Months Old



Source: Baseline Household Survey (2012).

Note: N=5,458.

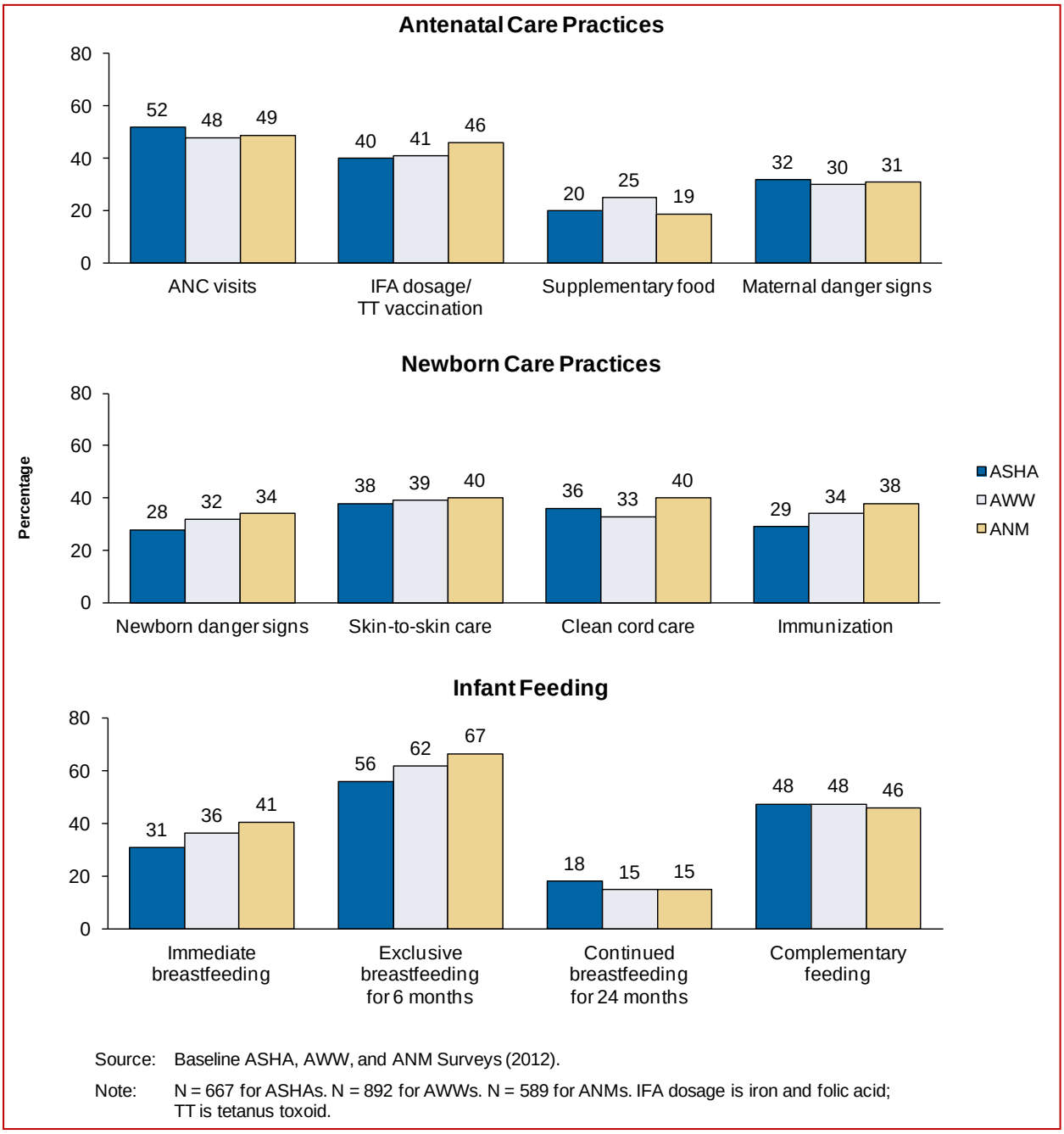
C. Results from the FLW Surveys

Many of the Ananya interventions focus on improving the quantity and quality of interactions between households and FLWs throughout the continuum of care from pregnancy through the first year of life. The FLW surveys were designed to capture these interactions from the FLW's perspective, as well as to provide an understanding of the knowledge of these workers and the services they provide. However, these are self-reports by the FLWs and we see a trend to overreport on socially desirable response: for example, we see considerable gaps between FLW reports of home visits versus household reports of home visits. Nonetheless, the FLW surveys provide insight into barriers to and use of existing family health services at the community level. Below, we describe our key findings.

FLWs have limited training, especially on several key maternal and child health topics

Many FLWs reported having received some form of training in the 12 months prior to the survey: around 51 percent of ASHAs, 63 percent of AWWs, and 67 percent of ANMs reported this. However, the training that FLWs received shows critical gaps in key areas of ANC, newborn care, and infant and child nutrition. While about half reported receiving information on ANC visits and IFA tablets, only about one in three reported receiving information on recognizing maternal danger signs (Figure 6). Similarly, only about one-third reported having received training on most newborn care topics such as skin-to-skin care, clean cord care, and immunization. Although nearly two-thirds of FLWs reported receiving information on exclusive breastfeeding for six months, training related to other infant feeding topics, such as immediate breastfeeding and continued breastfeeding for 24 months, was also relatively low (Figure 6). A larger fraction of FLWs reported receiving training related to family planning. About two-thirds (between 59 and 71 percent across the three types of FLWs) reported receiving information on permanent and temporary birth control methods,

Figure 6. Training on Antenatal Care, Newborn Care, and Infant Feeding



Source: Baseline ASHA, AWW, and ANM Surveys (2012).

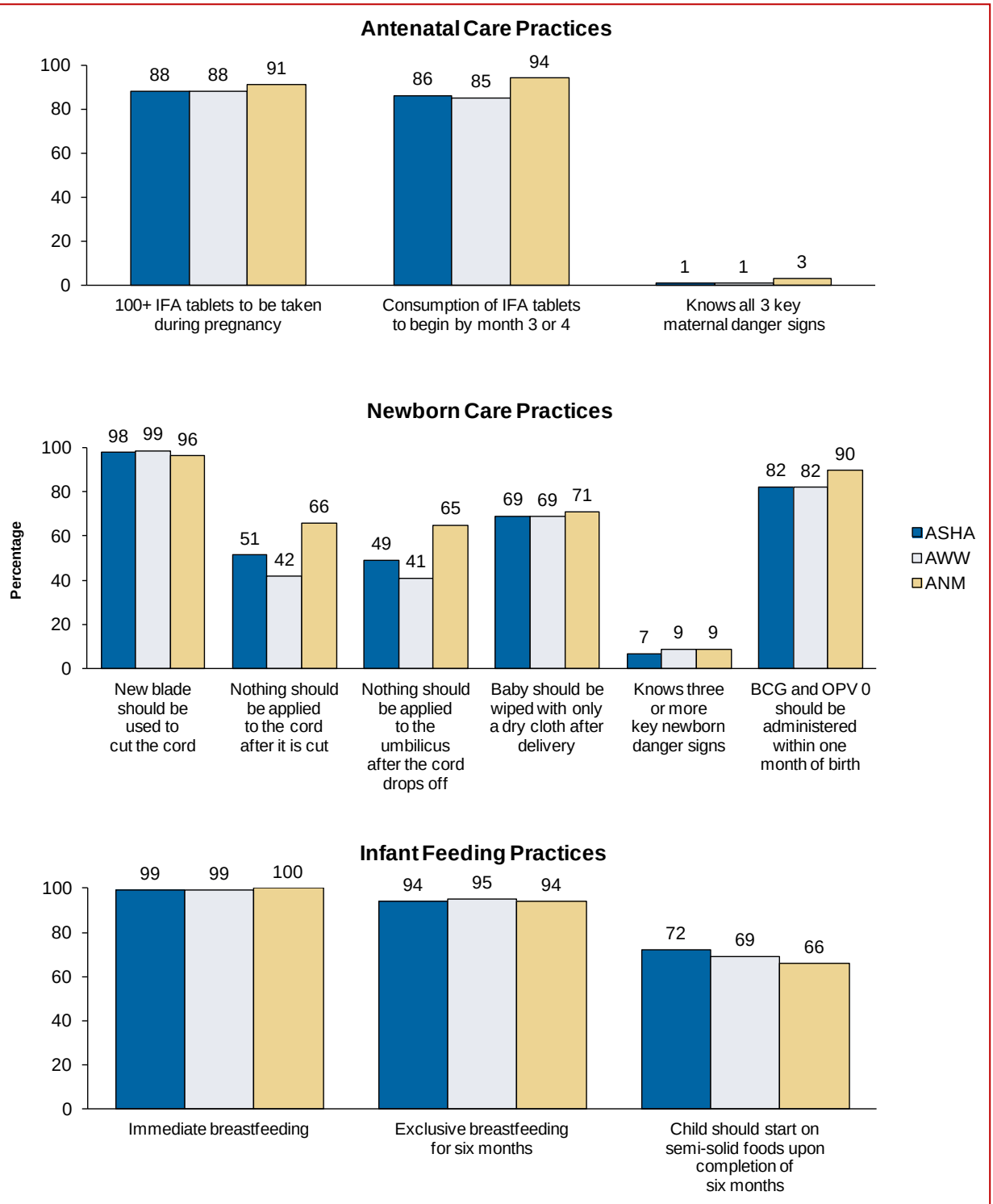
Note: N = 667 for ASHAs. N = 892 for AWWs. N = 589 for ANMs. IFA dosage is iron and folic acid; TT is tetanus toxoid.

although only about one-quarter (between 18 and 27 percent) reported receiving information on birth spacing.

FLW knowledge is high in some areas, but low in others

We asked FLWs questions to assess their knowledge of critical practices across the family health continuum of care, including ANC, newborn care, and infant and child nutrition. Although the vast majority of respondents knew certain preventive ANC practices, such as the correct dosage and timing of consumption of IFA tablets, very few could spontaneously identify the key maternal danger signs being emphasized by the Ananya program (convulsions; swelling of the hands, body or face; and excessive vaginal bleeding) (Figure 7).

Figure 7. FLW Knowledge of Key Antenatal and Newborn Care Practices



Source: Baseline ASHA, AWW, and ANM Surveys (2012).

Note: N = 667 for ASHAs. N = 892 for AWWs. N = 589 for ANMs. Key maternal danger signs include swelling in the hands, body, or face; convulsions; and excessive vaginal bleeding. Key newborn danger signs include difficult or rapid breathing, drowsiness or lethargy, poor sucking, low birth weight or lack of weight gain, and when the baby's body is cold to the touch.

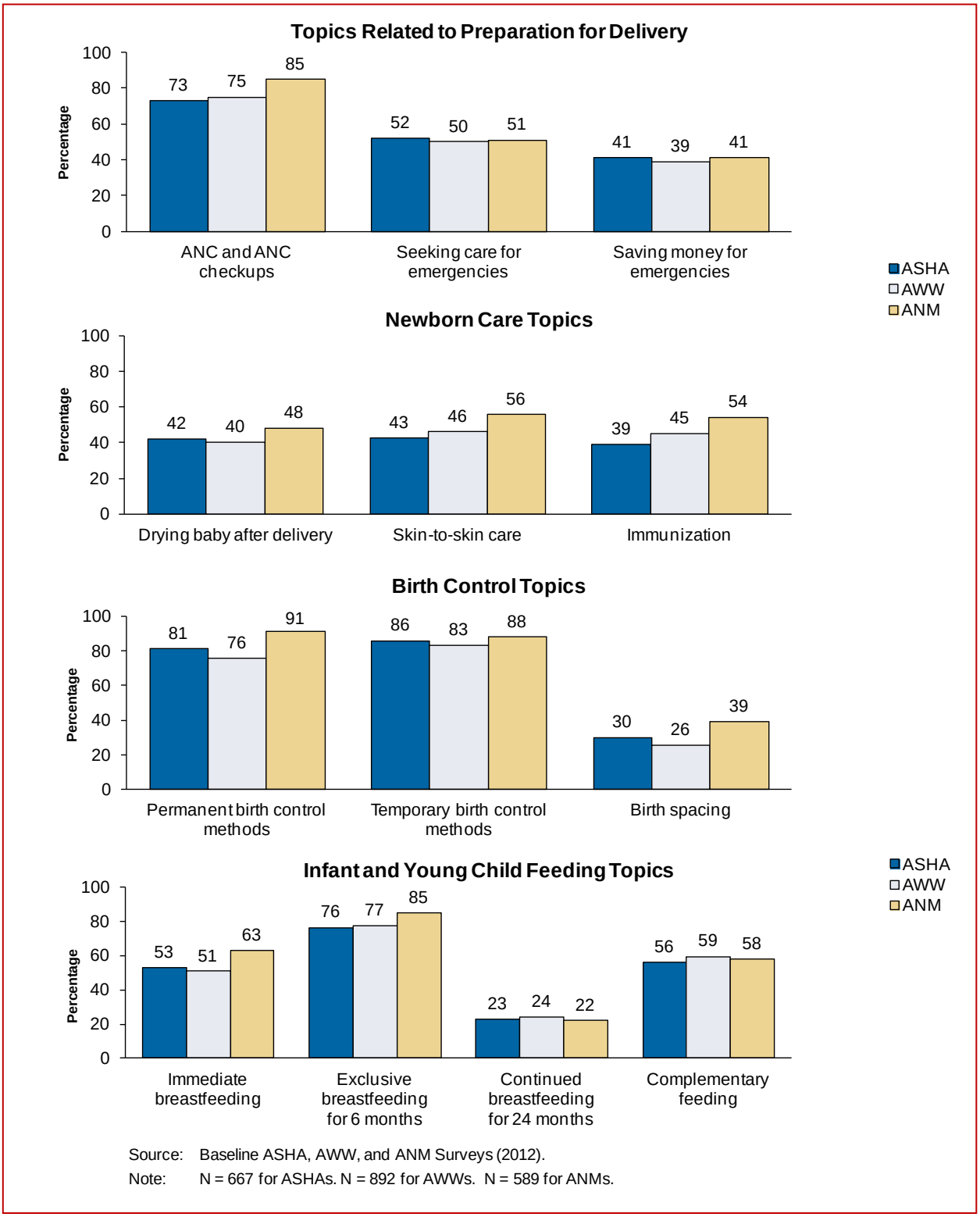
Similarly, knowledge of some elements of newborn care varies. For example, over 80 percent of FLWs knew that BCG and OPV 0 vaccinations should be administered within one month of birth, and nearly all respondents also reported knowing that a new blade should be used to cut the umbilical cord (Figure 7). However, only about 40 to 60 percent reported that nothing should be applied to the cord after it is cut or to the umbilicus after the cord drops off. Much like the low level of training on maternal danger signs, knowledge of newborn danger signs is also low. When asked to name some of the common danger signs that can appear for the baby after birth, less than 10 percent of the respondents spontaneously mentioned three or more critical danger signs emphasized by the program (difficult or rapid breathing, poor sucking, low birth weight or lack of weight gain, and a body that is cold to the touch).

Finally, knowledge of breastfeeding and infant feeding practices is generally high: over 95 percent of FLWs were familiar with immediate and exclusive breastfeeding, and about three-quarters said the child should start eating semisolid foods six months after birth (Figure 7).

FLWs provide limited advice during home visits, although they report home visits more commonly than households

Overall, more than two-thirds of the FLWs reported having discussed ANC and ANC checkups with any of the women they served in the previous 30 days (Figure 8). However, there was less focus on providing advice on what to do to prepare for delivery. About half (or fewer) of the FLWs self-reported that they counseled women on seeking care when emergencies or complications arise during pregnancy, on saving money for emergency care during pregnancy or delivery, and on identifying a facility for delivery. Advice given to women in the postpartum period is also limited, and about one third of FLWs self-report conducting postpartum home visits to all deliveries in their areas. These numbers are again considerably higher than those reported by the household survey respondents, and could reflect over reporting by FLWs, recall error on the part of the households, or different perceptions among the two groups of what a home visit entails. Fewer than half of all FLWs reported having discussed key newborn care topics, such as how to dry the baby after delivery, skin-to-skin care, and immunization during these visits (Figure 8). About three-quarters of the FLWs reported discussing family planning, in particular, having discussed permanent and temporary birth control methods. However, only 26 to 39 percent discussed birth spacing (Figure 8). Finally, many, but not all, FLWs reported discussing breastfeeding and complementary feeding topics (over half of FLWs reported discussing most of these topics) (Figure 8).

Figure.8. FLW Self-Reports of Maternal, Newborn, and Child Health Topics Discussed with Women Served in the Previous 30 Days



Source: Baseline ASHA, AWW, and ANM Surveys (2012).

Note: N = 667 for ASHAs. N = 892 for AWWs. N = 589 for ANMs.

D. Results from the Facility and Provider Surveys

The primary objective of the facility and provider surveys that we conducted at block PHCs was to capture data that can be used to measure the effects of Ananya's facility-based activities—especially interventions focusing on improving the quality of delivery care, newborn care, and family planning services offered at these facilities. These data will also provide additional context for the interpretation of findings on the effects of the Ananya program. In addition to gathering information about the facilities, we also surveyed providers responsible for deliveries at these facilities to capture delivery practices. As in the case of frontline workers, we note below that these are self-reports of providers, and may be prone to overreporting of socially desirable response. As noted, record-keeping practices are very poor, so verifying information reported is challenging. Below, we describe our key findings from the facility and provider surveys.

Most facilities offer basic maternity services; however, there are important areas for improvement

Eighty-seven percent of the PHCs that we surveyed had a dedicated delivery room and 76 percent contained a nursery or designated area for newborns (a newborn corner). However, there were gaps in some essential medicines and equipment in the delivery room (Table 2). For example, 56 percent of the delivery rooms had oxytocin available; other injections, such as methergine (72 percent) and antibiotics (91 percent) were more commonly available, but not universal. While most facilities had functioning blood pressure machines or radiant warmers, only 54 percent had a phototherapy unit and only 31 percent had a spotlight. Facility staff also reported that they had limited ability to handle delivery or newborn complications such as prolonged labor, sepsis, preterm labor, and anemia—only around 10 percent of facilities were able to handle these complications (Figure 9). Systematic tracking of complications and referrals is also limited, with only 6 percent of facilities tracking complications and only 16 percent tracking referrals (with the information on referrals sometimes quite sparse). Finally, almost all of the PHCs surveyed provided women with a range of reproductive health services, including IUDs (97 percent) and tubal ligation (89 percent). However, these services were rarely used in the immediate postpartum period.

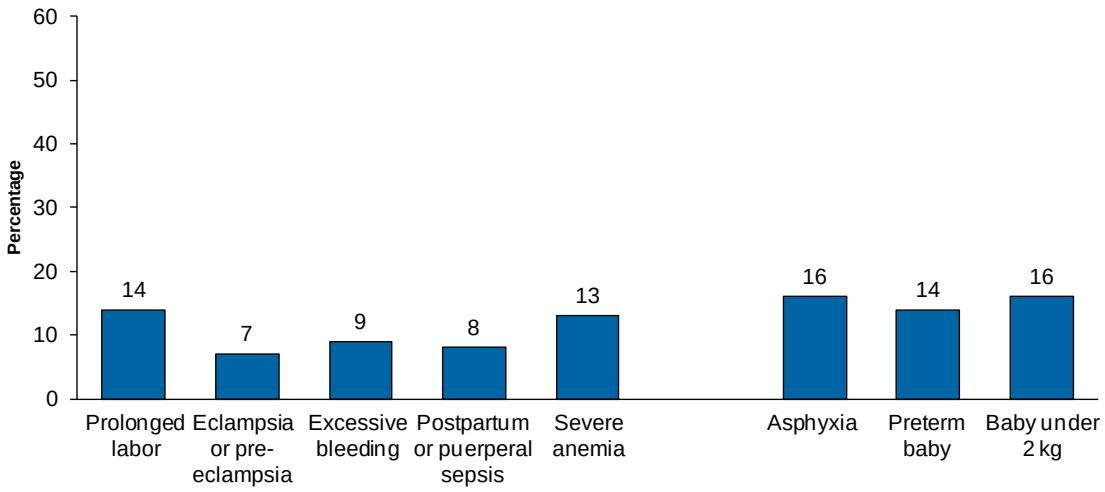
Table 2. Delivery Room Medicines and Equipment

	Percentage Reporting or Observed
Medicines and Compounds	
Oxytocin	56
Misoprostol	62
Methergine injection	72
Magsulf injection	32
Injectable antibiotic	91
Saline	89
Ringer's lactate	83
Functioning Equipment	
Blood pressure machine	92
Heat source/radiant warmer	87
Baby scale	80
Phototherapy unit	54
Spotlight	31

Source: Baseline Facility Survey.

Note: N = 286 facilities providing delivery services. Oxytocin is used to induce labor or placenta delivery; methargine is used to treat uterine bleeding; misoprostol is used to induce labor or terminate an early pregnancy; magsulf (magnesium sulfate) is used to delay labor and treat eclampsia; Ringer's lactate is used for fluid resuscitation after blood loss.

Figure 9. MOIC Reports of PHC Capacity—Handling Delivery and Newborn Complications



Source: Baseline Facility Survey (2012).

Note: N=286 facilities providing delivery services.

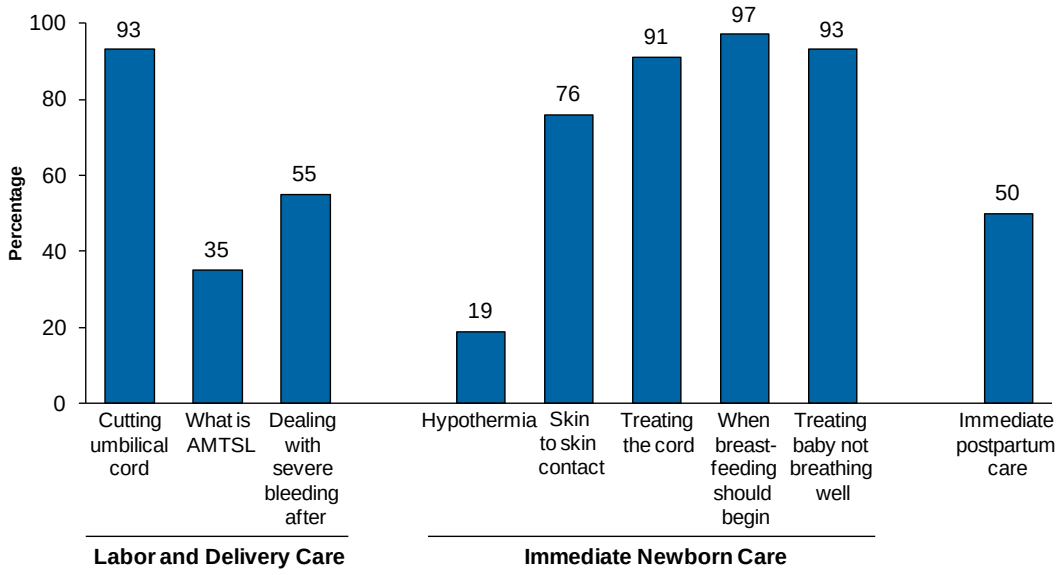
Facilities face several challenges in staffing and quality improvement

Altogether, 93 percent of facilities had some type of staff vacancy, with the average PHC reporting that 4.65 medical and positions were vacant. Key vacancies in medical positions included general duty doctors (35 percent of facilities), female ward assistants (32 percent of facilities), ANMs (19 percent of facilities), and nurses (7 percent of facilities). Many facilities also had vacancies for pharmacists (55 percent) and drivers (36 percent). In addition, many facilities reported gaps in quality improvement practices at their facilities. For instance, while about 41 percent of facilities reported performing a formal or informal self-assessment in the previous year to identify gaps in infrastructure, staffing, or equipment and supplies, only about half of these assessments had resulted in an action plan to address the gaps identified. Similarly, about 41 percent of facilities reported having a team in place that focused on quality improvement.

Nurses' medical knowledge and sanitation practices vary greatly

We asked nurses and ANMs responsible for deliveries at facilities some questions about best practices to use in certain scenarios related to delivery and the immediate postpartum period. These questions are intended to pick up their knowledge of best practices, and large gaps may exist between knowledge and action. Most nurses and ANMs correctly answered questions about delivery and newborn care topics such as proper cord care, breastfeeding, and how to treat a baby who is not breathing well (Figure 10). Fewer correctly answered questions about other topics such as active management of the third stage of labor (AMTSL), dealing with severe bleeding, identifying hypothermia in newborns, and providing immediate postpartum care for women who have just given birth. Self-reported hygienic practices used by nurses and ANMs in the delivery room were also limited. For example, 77 percent of these staff reported using clean gloves for each patient, but only 28 percent reported using proper scrubbing practices, and only 18 percent reported proper apron or gown use. Combined, these gaps in provider knowledge and sanitation practices may limit the quality of care at facilities.

Figure 10. Nurse/ANM Knowledge of Proper Practices



Source: Baseline Facility Survey (2012).

Notes: N=266 nurses/ANMs who performed delivery services. AMSTL is active management of third-stage labor.

There are important gaps in recordkeeping at facilities

We examined the recordkeeping at PHCs in two ways. First, interviewers asked nurses and ANMs to report the vital signs they tracked during the last delivery they conducted or participated in, and compared these reports to any available records associated with the delivery. Although 80 percent or more of nurses and ANMs reported tracking many vital signs during labor, very few (under 20 percent of the total) systematically recorded these vital signs in observed records (Table 3). Second, at the facility level, interviewers attempted to examine registers that tracked the number of births, stillbirths, and tubal ligation procedures, as well as the types of delivery complications and referrals provided by the facilities for complications. Although all facilities that conduct deliveries keep at least some record of these events, complications were only tracked in these records in 6 percent of facilities. In addition, few facilities systematically track and record referrals (16 percent) and even fewer track the specific reasons for referrals (8 percent).

Table 3. Delivery Monitoring Reported and Information Noted in Any Form for The Delivery

Vital Statistic	Reported Monitoring	Observations Recorded in Any Record
Cervical dilation	92	15
Uterine contraction	86	12
Fetal heart rate	80	13
Pulse	85	18
Blood pressure	79	18
Head station	77	12
Fetal position using palpation	48	8

Source: Baseline Nurse Survey.

Notes: N = 286 nurses and ANMs who provided delivery services.

E. Summary and Next Steps

Our baseline surveys of households, FLWs, and facilities and providers provide some important insights for the Ananya program and for the evaluation of these interventions. We describe these insights below.

Household surveys. Comparing the results from our household surveys to some of the earlier statewide household surveys such as the National Family Health Survey, District Level Health Survey and Annual Health Survey, we found continued improvements in the trends for NMR and several key coverage indicators, particularly institutional deliveries, immediate breastfeeding, feeding, and immunizations. These trends are consistent with the incentivization of some of these practices, as well as general improvements in health efforts in Bihar by the GoB and other development partners. However, despite these improvements, there are still large gaps in coverage across all the domains examined through the baseline surveys, including ANC, delivery, newborn care, nutrition, immunization, and family planning. Further, the quantity and quality of interactions between households and FLWs is relatively low—particularly in the immediate postnatal period.

FLW surveys. Although many FLWs report receiving training, the findings from the FLW surveys suggest that there are large gaps in knowledge—particularly related to newborn care and maternal and newborn danger signs. Further, even though FLW self-reports of conducting home visits for pregnant women (and, to a lesser extent, for women with newborns) are higher than those reported by households, the findings from the household survey suggest that many women do not recall being visited by FLWs or receiving information from them on important topics during these visits. This may suggest that FLWs are not effectively communicating important information to households—even in areas in which they are knowledgeable. One important element of the Ananya program is to improve FLW knowledge and communication; the evaluation will determine the extent to which these efforts are successful, and associated with improved household practices and coverage.

Facility and provider surveys. Although the household survey shows a continuing upward trend in institutional deliveries relative to earlier surveys in Bihar, data from the facility and provider surveys suggest that there is much room for improvement in the quality of care being delivered at the facility level. This includes physical and resource improvements—for example, in equipment and supplies available for labor and delivery—as well as improvements in the ability of the facility to handle delivery or newborn complications. Further, the ANMs who conduct most of the deliveries have large gaps in knowledge and in sanitation and hygiene practices, and recordkeeping for deliveries is inconsistent and incomplete. The evaluation of the Ananya program will assess the extent to which the facility-based interventions succeeded in improving the quality of services delivered at facilities and the skills of nurses.

Next steps. In late 2013 and early 2014, we will conduct the midline surveys. Data from these surveys will help us examine whether the Ananya interventions in the eight focus districts were effective in improving key indicators—including key coverage indicators for households—using a comparison group design. Before conducting the midline surveys, we will determine which set of districts would provide the most appropriate comparison group. We will also conduct additional analyses, comparing changes in the eight focus districts to changes in the rest of the state, as well as to changes in districts in which other development partners are directly engaged. These different comparison groups will provide some useful benchmarks related to the effectiveness of Ananya efforts in the eight focus districts relative to other districts. In addition, we will assess directly any improvements in coverage indicators that may have taken place from baseline to midline in the state as a whole, to assess progress toward program goals.

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I. INTRODUCTION

Bihar is one of India's most populous and poorest states, and its health and development indicators point to a reinforcing cycle of poverty and poor health. Despite recent improvements, Bihar's literacy rates are the lowest in the country (Census 2011), and its per-capita income is less than a third of the national average (Central Statistics Office 2011). The state also faces continuing public health challenges, with high rates of child and maternal mortality, fertility, and undernutrition.[1] Efforts to improve the health situation in Bihar are hampered by health system weaknesses, including gaps in infrastructure and human resources; related inadequacies in the coverage of essential family health interventions; and low levels of knowledge of and demand for appropriate reproductive, maternal, newborn, and child health services.

Under strong government leadership, the Government of Bihar (GoB) has made major strides in the past several years, improving the overall climate of development in the state and introducing new policies aimed at strengthening the health, transportation and physical infrastructure, and education sectors. Several international donors, such as the United Kingdom's Department for International Development (DFID) and the United Nations Children's Fund (UNICEF) have also made large health sector investments in Bihar in recent years, focusing primarily on improving the delivery of maternal and child health services. Despite these strides, the health status of the population of Bihar, particularly those residing in rural areas, still requires considerable improvement.

The Ananya program (*ananya* is a Sanskrit word meaning "unique" or "unlike others") was created by the Bill & Melinda Gates Foundation (the foundation) to address some of the outstanding family health challenges in Bihar.[2] Ananya is a five-year program that started in 2011 and represents a new approach to investing in global health, with the goal of yielding greater impact on health outcomes and mortality. In particular, Ananya takes a broad-based and integrated demand- and supply-side approach that intends to leverage resources and lessons learned from several of the foundation's strategies to achieve the desired changes in outcomes. These strategies target the areas of maternal, newborn, and child health; family planning; nutrition; vaccine delivery; tuberculosis; enteric and diarrheal diseases; pneumonia; neglected and other infectious diseases; and water, sanitation, and hygiene.

The long-term goal of the Ananya program is to reduce maternal, newborn, and child mortality, fertility rates, and undernutrition rates in Bihar by developing and implementing a set of innovative and integrated health interventions. These interventions are focusing primarily on improving the reach, coverage, and quality of family health services in two main areas: (1) essential reproductive, maternal, newborn, and child health services and (2) diagnosis and treatment of infectious diseases, including pneumonia, diarrhea, tuberculosis, and visceral leishmaniasis. The program also includes additional interventions that focus on improving sanitation in Bihar and on strengthening the system

[1] For example, Bihar had an infant mortality rate (IMR) of 48 per 1,000 live births, a maternal mortality rate (MMR) of 212 per 100,000 live births, and a total fertility rate (TFR) of 3.7 in 2010 (Sample Registration System 2011). While some key heath indicators (such as the IMR) are similar to the Indian average; others (such as the TFR) are among the highest in the country. However, all are high by international standards, compared to countries at a similar stage of development.

[2] The Ananya program was formerly known as the Family Health Initiative.

for health payments such as salaries and health-related incentives. To achieve its objectives, the foundation is implementing the Ananya program through a synergistic set of complementary grants (described in further detail in Section B) that address a range of barriers to improving family health outcomes through interventions at the household, community, and health facility levels.

The foundation has contracted with Mathematica Policy Research to lead the measurement, learning, and evaluation (MLE) component of the Ananya program. Mathematica is working closely with its lead India evaluation partner, the Public Health Foundation of India (PHFI), to design and execute the MLE plan. Mathematica is also partnering with Sambodhi, an Indian organization, which is leading the primary data collection effort and participating in various other evaluation activities. The Mathematica-led MLE component focuses primarily on the core supply- and demand-side interventions implemented under the early set of Ananya grants, which target a broad range of family health services and outcomes. Some of the Ananya grants that have a more specific focus are largely being evaluated separately from this overall MLE effort. In particular, the grant focusing on infectious diseases is being evaluated separately by another evaluation partner, COHESIVE-India, while some of the more recent grants (such as the grants focusing specifically on sanitation and health payments) will also be evaluated separately.

This report summarizes findings from baseline data collected as part of the overall MLE effort led by Mathematica and its evaluation partners. These data have been presented at various forums to the Foundation and other development partners, as well as to the state health department officials at the Government of Bihar. Before presenting these findings, we provide additional context for the baseline data collection effort by describing the public health system in Bihar, the Ananya program's grant portfolio, and the MLE design that motivated the collection of baseline data. We conclude this chapter with a road map for the rest of the report.

A. The Public Health System in Bihar

The Ananya program focuses primarily on improving access to and the quality of family health services delivered through the public sector. The program also engages with the private sector though its infectious diseases grant (and to a smaller extent through one of the supply-side grants); however, given the main focus of the program in improving coverage through the public sector, we focus our description of the health system in Bihar on the public sector.[3]

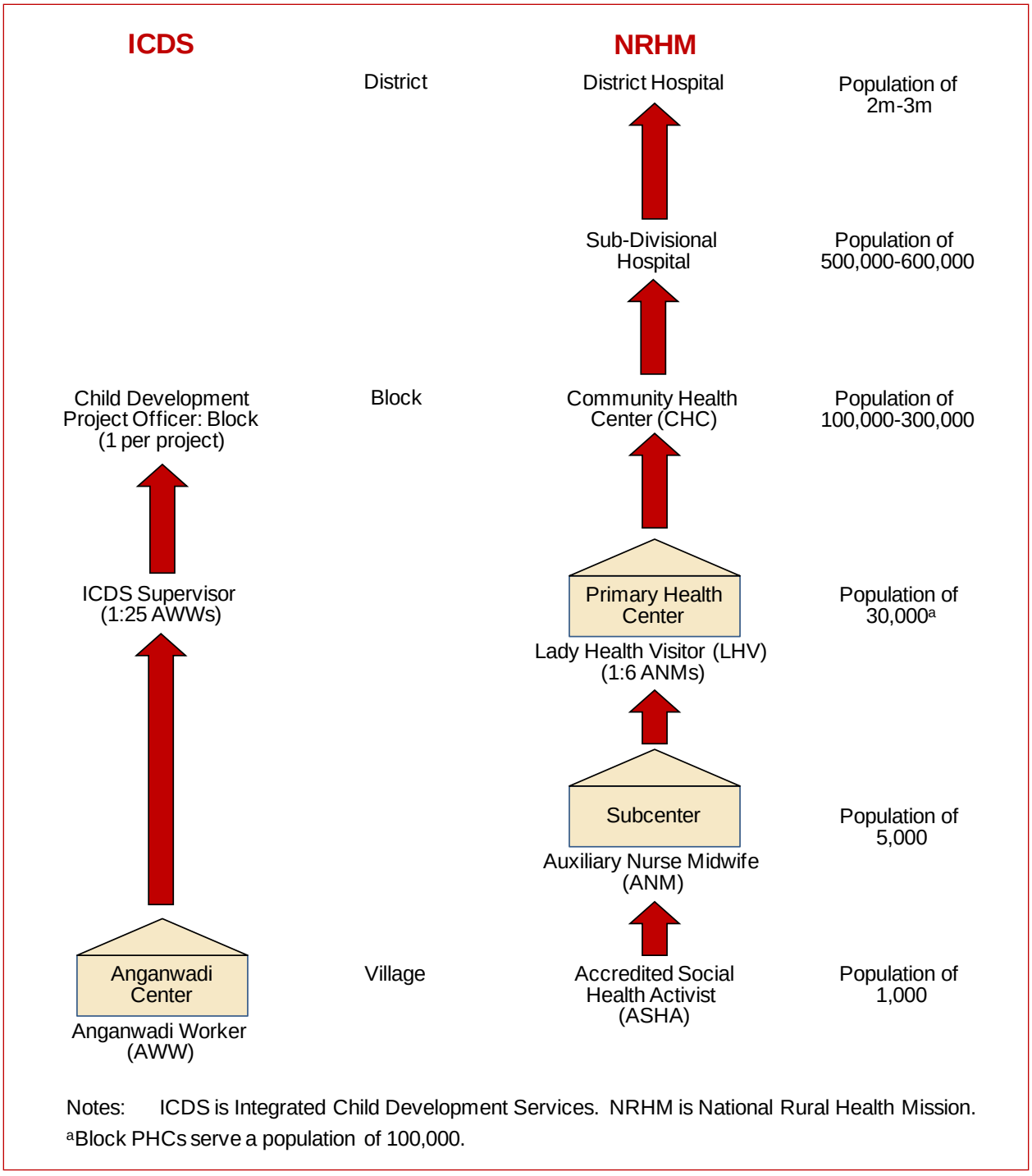
Public health services in Bihar are provided through a network of health facilities and frontline health workers (FLWs).[4] These services are managed by two separate entities: the Ministry of Health and Family Welfare and the Ministry of Women and Child Development. The Ministry of Health and Family Welfare—operating largely through the National Rural Health Mission or NRHM program—is responsible for public health facilities. As part of the NRHM, the ministry has also set

[3] The private sector consists of a large and diverse network of private health facilities and providers. Private facilities include hospitals and clinics, pharmacies, and diagnostic laboratories. Private providers include qualified doctors and nurses; Ayurveda, Yoga, Unani, Siddha, and Homeopathy (AYUSH) doctors (qualified alternative and traditional medicine practitioners, also found in the public sector); and unqualified providers (such as traditional healers and birth attendants). Because the private sector is largely unregulated, there is substantial variation in the price, nature, and quality of services. The quality of services may be a particularly concern in rural areas due to the large number of unqualified providers.

[4] The information in this section is drawn from the Indian Public Health Standards (IPHS) guidelines for subcenters 2006 and 2012 and other published sources.

up a network of village-level FLWs, referred to as accredited social health activists (ASHAs), in all rural areas. The Ministry of Women and Child Development operates the Integrated Child Development Services (ICDS) program, a separate community-based outreach program for women and children. The ICDS program has introduced a second cadre of village-level FLWs, known as anganwadi workers (AWWs) in both rural and urban communities. Below we describe the structure of the public health system in Bihar in greater detail, including the types of public health facilities and how they are organized, as well as the roles of the two cadres of village-level FLWs (ASHAs and AWWs) and their supervisory structure (see Figure I.1 for a visual summary).

Figure I.1. Structure of the Public Health System in Bihar



Notes: ICDS is Integrated Child Development Services. NRHM is National Rural Health Mission.

[a]Block PHCs serve a population of 100,000.

1. Public Health Facilities

Public health facilities in Bihar are organized on a multitiered system and are linked by a referral system. The lowest tier consists of subhealth centers (subcenters), which serve as the first point of contact between the community and the formal public health care system. Each subcenter typically serves several nearby villages with a combined population of approximately 5,000. Subcenters are intended to provide essential primary health care services, including immunizations, maternal and child health care (such as antenatal checkups and counseling on birth preparedness), family planning services, and drugs for minor ailments (such as fever, diarrhea, and intestinal worms). Each subcenter is staffed by a female health worker known as an auxiliary nurse midwife (ANM), a trained health care provider who conducts outreach and provides services to women and children in the community.[5] The ANM provides maternal and child health services and counseling in the subcenter and during community visits, supervises ASHAs in the communities served by the subcenter, and conducts immunizations in these communities during monthly village health and nutrition days (VHNDs).

The next tier of facilities consists of primary health centers (PHCs), which are the first point of contact between individuals and a qualified medical doctor. Individuals can report directly to a PHC for treatment or may be referred there by subcenter staff. Each PHC is linked to approximately 6 subcenters (a population of approximately 30,000) and is typically a single-doctor clinic with about 6 inpatient beds as well as facilities for delivery, family planning (including sterilizations), minor surgeries, and limited laboratory testing. There are also a limited number of larger PHCs at the block level, which provide similar services but serve a larger population (approximately 100,000).[6] Each PHC is typically staffed by a doctor; a nurse or ANM or both; and a lady health visitor (LHV), who supervises ANMs in the subcenters linked to the PHC.

PHCs may refer cases to higher tiers of facilities, which include community health centers (hospitals serving approximately 4 PHCs, or a population of 100,000 to 300,000), subdivisional hospitals (serving a population of 500,000 to 600,000), and district-level hospitals (serving a population of 2 to 3 million). These higher-tiered facilities typically provide some degree of specialist care in areas such as internal medicine, obstetrics and gynecology, general surgery, and pediatrics; the degree of specialization and range of services available is generally greater for facilities in progressively higher tiers.

2. Village-Level Frontline Workers

At the village level, households interact directly with two cadres of FLWs: ASHAs and AWWs. The ASHA is a trained female community health volunteer who is deployed by the NRHM in each village.[7] The ASHA's main role is to create awareness of and facilitate access to maternal, newborn, and child health care in the community (for example, raising awareness about safe delivery and

[5] ANMs are required to undergo a one-year diploma course and also receive additional trainings such as a 21-day skilled birth attendant (SBA) training.

[6] In the administrative structure of Bihar, each of the 38 districts is divided into blocks, and each block includes many villages.

[7] ASHAs are supposed to receive a 23-day induction training course focusing on basic knowledge and skills, which is conducted in five rounds over their first year as an ASHA.

appropriate newborn care, child immunizations, and hygiene and sanitation) and, in doing so, to link these communities to the formal public health system. ASHAs are not paid a salary or honorarium, but they are typically paid incentives for providing specific services such as accompanying pregnant women to health facilities for delivery, taking children for immunization, and accompanying eligible women to undergo sterilization. As mentioned earlier, ASHAs are supervised by the ANM in the subcenter to which they are linked.

The AWW is a trained female health worker deployed under the ICDS program.[8] The AWW renders certain basic family health services to the community at the village's anganwadi center (AWC), including supplementary nutrition, immunizations, basic health checkups, referral services, and health and nutrition education, in addition to providing nonformal preschool education. The AWCs also serve as the location for monthly VHNDs. During these VHNDs, food rations are distributed, women are given advice on family planning, and the ANM provides immunizations and antenatal care. AWWs are paid an honorarium and are also eligible for incentives for taking children for immunization. Because AWWs are deployed under a different program than AHSAs, they have a separate supervisory structure, which consists of ICDS supervisors (ideally one supervisor per 25 AWCs, but each supervisor typically covers more AWCs in practice) and child development project officers at the block level (one per ICDS project area).

B. The Ananya Grant Portfolio

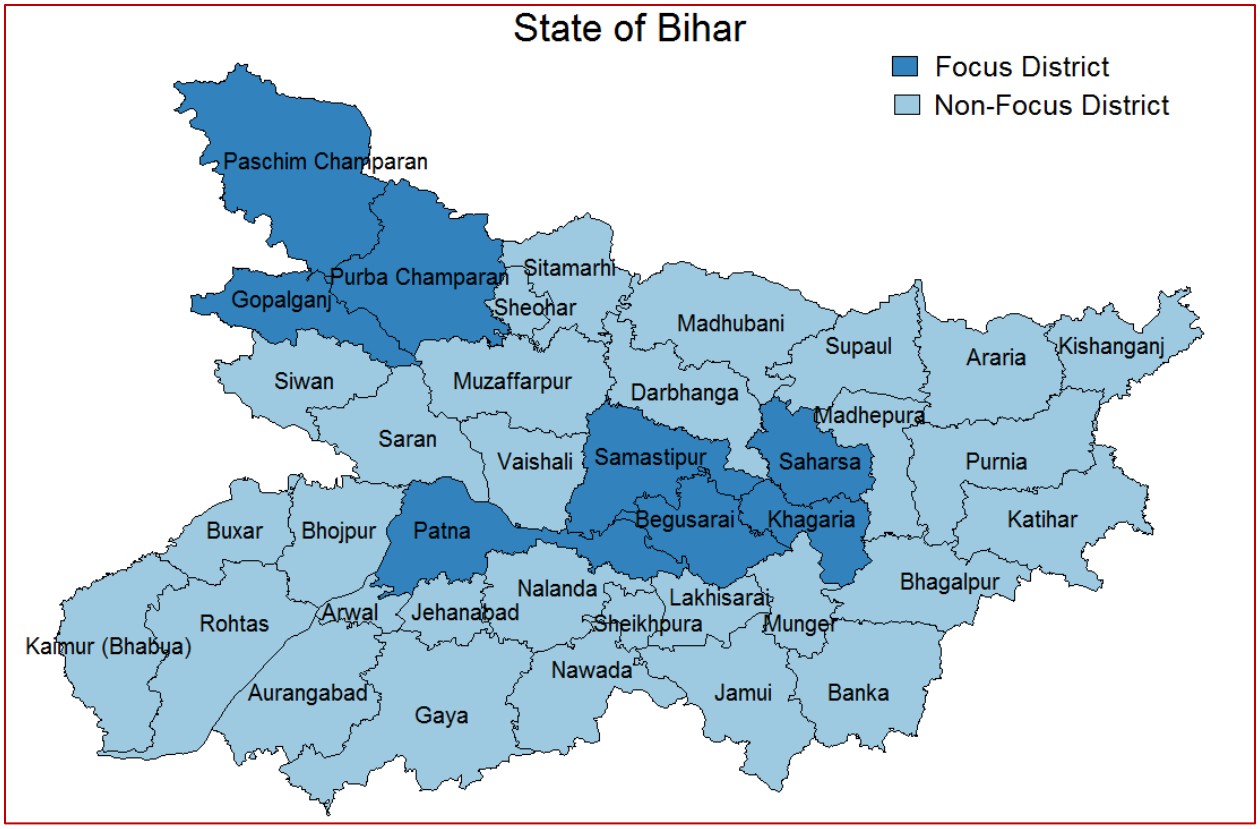
The Ananya program intends to improve family health outcomes through efforts to strengthen access to the health system, improve the quality of services provided, and mobilize communities to improve health practices. As mentioned earlier, these efforts will be implemented through a set of synergistic, complementary grants. Below we provide brief descriptions of the grants included in the current Ananya grant portfolio. Some of the grants or grant activities may change in response to evolving needs; these descriptions are intended to provide a high-level overview. More detailed descriptions are available at the Ananya website.[9]

A key component of Ananya is the identification and scaling up of successful approaches implemented by grantees. To this end, the Ananya program has been focusing on implementing an integrated package of demand- and supply-side approaches to improving family health outcomes in eight focus districts in the first two years of the program (2011–2012) (Figure I.2). Based on the lessons learned from the implementation of these integrated interventions, the program will promote and facilitate the replication and scale-up of successful strategies by the GoB and other development partners in the remaining 30 (of 38) districts in Bihar during the remaining three years of the program (2013–2015). Most grants are planning to follow a similar scale-up plan, but there is some variation in the timing of scale-up, the exact districts in which it is planned to occur, and the extent to which these plans have been determined (the latest scale-up plans for each grant are included in the grant descriptions below).

[8] AWWs are supposed to receive a 26-day training course, which includes classroom instruction, mock sessions, and supervised practice in the field. They are also supposed to receive a short refresher training course after one or two years, although this is often delayed.

[9] The Ananya website is available at http://www.ananya.org.in/.

Figure I.2. The Eight Focus Districts of Ananya



The current grant portfolio includes the following implementing grants (see Table I.1):

1. Integrated Family Health Initiative (IFHI) in Bihar

IFHI, led by CARE, is working closely with the GoB to scale up innovative supply-side approaches to improving the coverage, quality, and uptake of critical family health services in Bihar. Several key interventions are currently being implemented under IFHI:

- **Enumeration, mapping, and name-based tracking.** This component seeks to improve the ability of FLWs to identify their target population—pregnant women, infants, and children—and to deliver timely, appropriate, and high-quality services to households. It begins with encouraging more regular, systematic, and complete mapping and enumeration of households containing pregnant women and new mothers by AWWs in each catchment area by using an improved enumeration tool. All FLWs serving a particular catchment area are encouraged to discuss the results of the enumeration to ensure that any "left-out" households (those inadvertently overlooked) are identified and integrated into services. The enumeration information is then used to populate a name-based home visit planning tool, which identifies the number, timing, and appropriate content of visits that FLWs should provide to women from the time of each woman's initial enumeration as a pregnant woman until her child reaches age two. Additional planning tools are also used to track services provided to these women and their children, such as distributing iron tablets and providing child immunizations. In addition, job aids are provided to assist FLWs during their visits in the form of a job-aid kit that includes items that FLWs can show women (such as samples of iron tablets and

Table I.1. Summary of the Current Portfolio of Ananya Implementing Grants

Grant	Lead Partner	Duration	Primary Geographic Focus
Integrated Family Health Initiative (IFHI)	CARE	November 2010–October 2015	Initial implementation in 8 focus districts starting in 2011; statewide scale-up starting in 2013
Shaping Demand and Practices (SDP)	BBC Media Action	December 2010–December 2015	Initial implementation in 8 focus districts starting in 2011; statewide scale-up starting in 2013
Engaging Private Providers to Manage Infectious Diseases	World Health Partners (WHP)	October 2010–September 2015	Initial implementation in 12 districts starting in 2011 (including the 8 focus districts); scale-up to 25 districts starting in 2013
Community Mobilization and Social Accountability Grant	Project Concern International (PCI)	November 2011–October 2016	Initial implementation in 8 focus districts starting in late 2012
Government-to-Person Health Payments (G2P)	International Finance Corporation (IFC)	November 2011–February 2015	Piloting in 3 districts by mid-2013 (including 2 of the 8 focus districts); statewide scale-up starting in late 2013
Supporting Sustainable Sanitation Improvements (3SI)	Population Services International (PSI)	July 2012–June 2017	Initial implementation in 8 focus districts starting in mid-2013

Source: www.ananya.org.in. Accessed June 12, 2013.

a bowl and spoon to demonstrate complementary feeding) or that can make their job easier (such as a mat to sit on during visits and an umbrella to use while commuting).

- **Subcenter delivery platform.** This component is intended to strengthen the network and role of FLWs through regular meetings, held at the subcenter, of all FLWs linked to that subcenter. The objective of these meetings is to provide ongoing support and training to FLWs and to facilitate the provision of integrated and coordinated services across the continuum of care. Meetings are planned to involve training on enumeration and name-based tracking and how to reach left-out households; various maternal and child health topics; and how to communicate relevant information and advice to households, among other topics.

- **Improving the quality of care at facilities.** IFHI also aims to improve the quality of care at public health facilities—especially delivery care—primarily through two interventions at the PHC level. The first intervention involves a quality improvement process in each PHC that is driven by a set of self-assessment tools. These tools help PHC staff to identify gaps in equipment, infrastructure, supplies, and human resources in different departments of the PHC, including the labor room. Facilities are encouraged to form quality improvement teams that conduct regular meetings and work to address gaps identified through the assessments. The second intervention involves the use of mobile training teams to train nurses and ANMs in the facility on appropriate delivery and newborn care techniques and the establishment of mini skill labs with mannequins and other equipment so that nurses can practice the skills taught.

- **Working with private providers.** IFHI aims to increase the coverage and quality of comprehensive emergency obstetric neonatal care (CEmONC) and family planning services provided by selected private sector facilities. Interventions at these facilities will include a self-driven quality improvement process (similar to the one implemented in

public facilities) and trainings for medical staff. In addition, IFHI is promoting the uptake of injectable contraceptives through private providers.

- **Additional highly innovative approaches.** IFHI is also piloting seven highly innovative, value-added approaches to be implemented on top of the above core set of interventions. Two of these are being evaluated by Mathematica as part of the overall Ananya evaluation. The first is the continuum of care service, which is essentially a mobile phone–enabled version of the name-based planning tools described above for FLWs, with additional components such as text message reminders and family health information for beneficiaries. The second involves using nonmonetary team-based incentives to motivate the FLWs in each subcenter to work together to meet common coverage targets. The other innovative approaches include: umbilical cord cleansing with chlorohexadine solution; home use of multiple micronutrient powder for children over six months of age; a referral package for maternal and infant emergencies; community-based identification, referral, and management of neonatal sepsis; and incentives and training for birth spacing. These interventions will be evaluated separately by the IFHI team.

During the first two years of the program (2011 and 2012), IFHI has focused on developing and implementing the core set of supply-side interventions in 8 focus districts and testing the additional highly innovative approaches on a smaller scale in those focus districts. In years three through five of the program (2013–2015), IFHI will support the GoB to scale up successful family health approaches implemented under the project to the entire state of Bihar.

2. Shaping Demand and Practices to Improve Family Health in Bihar

The Shaping Demand and Practices (SDP) grant, being implemented by the BBC Media Action, aims to increase demand for key family health services and improve family health practices by increasing knowledge, changing attitudes, shaping social norms, and improving the quality of FLW-client interactions. It focuses on developing and testing innovative ways of providing information on key family health topics through various communication channels and is intended to align closely with the supply-side interventions being implemented under the IFHI grant. These interventions are part of a 360-degree approach, which intends to reinforce the same family health messages through different channels. Several key interventions are being implemented under the SDP grant:

- **Information and communication technology (ICT) job aids and tools for FLWs.** These components are intended to improve FLWs' content knowledge in maternal and child health and their skills in effectively communicating this information to households. The technical content of these tools is closely aligned with the IFHI interventions and, during the subcenter platform meetings, FLWs are encouraged to use some of these tools in their home visits. Examples of these tools include mobile kunji and mobile academy. Mobile kunji consists of a set of illustrated cards with messages on key family health practices. The cards have a number that FLWs can dial to play a prerecorded message from a fictional character (Dr. Anita), who explains to beneficiaries why these practices are important and how to implement them.
- **Mobile academy.** This is an audio-based training course for FLWs delivered by mobile phone that focuses on building communication and negotiation skills around family-health behaviors for the period from pregnancy until a child reaches age two.

Participating FLWs can take a quiz at the end of each chapter, and those who pass receive a certificate.

- **Mass-media interventions.** The mass-media interventions include television advertising campaigns (for example, the "Ek Teen Do [One Three Two]" campaign on birth spacing) as well as long-format radio programs on key family health topics.
- **Community mobilization.** The community mobilization component of the SDP grant will focus on creating radio listener groups at the community level to expose beneficiaries to the long-form radio program content in a community setting. Trained facilitators will initiate discussions about family health issues and behaviors in these listening groups, with the intention of changing attitudes and social norms to support improved family health behaviors.

Because it is closely integrated with the IFHI grant, the SDP grant has also been concentrating largely on the eight focus districts for the first two years of the program (2011–2012). The project aims to leverage and partner with the private sector and to build the capacity of GoB to sustain and scale up successful behavior-change communication approaches to the rest of the state in subsequent years (2013–2015).

3. Engaging Private Providers to Manage Infectious Diseases

This supply-side grant is being implemented by World Health Partners (WHP) and aims to improve the availability and quality of health care provided by the private sector, with a specific focus on four infectious diseases—tuberculosis, visceral leishmaniasis, childhood pneumonia, and child diarrhea. The grant aims to improve detection, diagnosis, and treatment of these diseases by establishing a multitiered, high-quality, branded, private-sector health service delivery network. Existing private rural health providers are trained and branded as SkyCare providers and form the lowest tier of the network, offering consultations, treatment, and referrals (including, but not limited to, the four infectious diseases). The second tier consists of branded SkyHealth centers, which connect patients with qualified medical staff in urban centers via videoconferencing. The third tier consists of franchised clinics providing surgery, inpatient, and outpatient care, which are supported by franchised diagnostic centers. In contrast to some of the other grants, this grant was initially concentrated on 12 districts and is currently being scaled up to 25 districts rather than to the entire state. Due to its specific focus on infectious diseases, this grant is largely outside of our evaluation, and is the focus of COHESIVE-India's evaluation efforts.

4. Community Mobilization and Social Accountability

The community mobilization and social accountability grant has been awarded to Project Concern International (PCI). PCI's Parivartan program aims to improve specific family health and sanitation behaviors in Bihar by catalyzing collective community action to promote shifts in social norms and behavior change—particularly in the most marginalized communities. To accomplish this, the program will create new community groups, strengthen existing groups, and provide structured inputs and training modules to these groups to facilitate mutual learning and collective action around the key targeted behaviors. In addition, the program will strengthen existing village health and sanitation committees (VHSCs) to enable them to prepare village health action plans, access available government funding, and work closely with community groups to advocate for greater access to and quality of family health and sanitation services. PCI is initially focusing on implementing the interventions in the 8 focus districts, and began implementation in late 2012.

5. Government-to-Person (G2P) Health Payments

The G2P grant, which is being implemented by the International Finance Corporation (IFC), will facilitate the payment of salaries, incentive payments, and fees to health care personnel, beneficiaries, and private providers through a web-based payments system known as the Health Operation Payments Engine (HOPE). Examples of payments to be processed through HOPE include salaries for hospital staff and incentive payments to FLWs and women for facility deliveries. The G2P grant aims to improve the reliability and timeliness of these payments, to reduce the excessive administrative burden of the current payment system, and to improve auditing and accounting oversight of the system. By strengthening the health payments system, the G2P grant intends to generate substantial cost savings and improve the motivation of various participants (for example, increasing the motivation of FLWs to provide incentivized services). The G2P system will be piloted in 3 districts in the first half of 2013, and will begin a phased roll-out throughout the state in late 2013. Due to its specific focus on health payments, this grant will largely be evaluated separately by the Population Council.

6. Support Sustainable Sanitation Improvements (3SI)

The foundation has recently made a grant related to water, sanitation, and hygiene to Population Services International (PSI), which will lead the Support Sustainable Sanitation Improvements (3SI) program. The grant aims to create a sustainable, market-based supply chain for sanitation products and services and to stimulate demand for these products and services. PSI and partners are currently conducting landscaping studies and situational assessments to understand household behaviors with respect to sanitation, map the market, identify prospective partners, define the value chain for sanitation, and study analogous business models. Based on these finding, PSI will develop the implementation design towards the middle of 2013 and is expected to focus initially on implementing in the 8 focus districts. Due to its specific focus on sanitation and relatively late timing, this grant will largely be evaluated separately.

Although each grant has a different focus, the grants as a whole are intended to be complementary. Through coordination and synergies across grants, the foundation aims to increase the coverage of critical and efficacious interventions and achieve its ultimate goals of reduced maternal and child mortality, fertility rates, and undernutrition rates. In the next section of this chapter, we provide an overview of the MLE design, which is intended to capture different aspects of the implementation and impact of these various activities.

C. Overview of Ananya MLE Design[10]

The Mathematica-led MLE component of the Ananya program is designed to address three key questions:

[10] As part of the development of the MLE plan, Mathematica produced the *MLE Framework*, an April 2011 report that included results frameworks (and logic models) for the overall program and the individual grants, preliminary information, and evaluation questions to be addressed as part of the evaluation (Rangarajan et al 2011). We also produced a design report in October 2011 that laid out the approaches to addressing the key study questions in far greater detail than the overview presented here (Smith et al 2011).

1. What family health approaches were implemented under Ananya? Did they achieve scale?
2. Did the implementation of these approaches at scale have impact? Were the highly innovative approaches implemented by grantees effective?
3. What was the cost of implementing the program? Were these costs effective?

Our investigation of these questions will involve a variety of analytic approaches and a mix of qualitative and quantitative methods. Specifically, the MLE design consists of three main evaluation components: (1) a process and scale-up analysis (question 1), (2) an impact analysis (question 2), and (3) a cost and cost-effectiveness analysis (question 3). We view these components as interrelated and expect that findings from one component will inform and aid in the interpretation of results from the other two components.

The process and scale-up analysis (question 1) aims to provide a comprehensive picture of what interventions are being implemented, how they are being implemented, and what factors affect implementation. The purpose of this component is to help understand implementation processes, successes, and failures that will inform program improvement; inform our interpretation of impact analysis findings; and guide replication of program innovations by GoB and other development partners. In addition, given the importance of achieving scale to Ananya's overall success, a key aspect of the MLE effort will be to measure the extent to which scale-up occurred, understand and document the scale-up process, and identify the factors that facilitated and inhibited scale-up.

The impact analysis (question 2) will focus on measuring changes in key family health outcomes over the course of the program life cycle and assessing the contribution of the program to these changes. This will help determine whether the program achieved its ultimate goals. Because of the extensive overlap in target populations, geographic coverage, and key outcomes across the implementing grants, we will measure the combined effects of the *package* of interventions or activities being implemented by the grantees. In particular, we will examine the effects of the package of interventions at two junctures in the five-year program cycle:

- **In 2013, after scale-up to the eight focus districts is complete.**[11] We will use a comparison-group design to assess the short-term effects of the program in the eight focus districts by comparing changes in outcomes between baseline (end 2011) and midline (end 2013) in these districts to the changes in outcomes in a set of similar comparison districts where the program was not implemented. A comparison group design will enable us to increase the *plausibility* of a causal effect of the program's efforts by offering a counterfactual representing what would have happened in the absence of the Ananya program.[12]
- **In 2015, after scale-up to the entire state.** The purpose of this second-stage impact analysis is primarily to assess whether, at the end of the program cycle, the Ananya program met its objectives in terms of targeted changes in key indicators (whether driven

[11] Our midline is planned for a year after planned scale-up to the focus districts to allow for the program to mature and for the effects of the interventions to manifest before conducting the assessment.

[12] However, given the usual limitations of a comparison group designs, we cannot attribute observed effects to the Ananya program with certainty, since we cannot directly test the validity of the counterfactual.

by the program itself or by adoption and replication of effective approaches by GoB and other development partners). Therefore, we will use a pre-post design that measures changes in key outcomes among target populations across the entire state between the baseline (end 2011) and endline (end 2015).

In addition to the broader package of demand- and supply-side interventions being implemented by grantees, some grantees will be piloting highly innovative solutions in select areas. Although the impact analysis component of the MLE effort is focused mainly on the effects of the broader package, we will also rigorously test the effectiveness of two of these value-added interventions. These two interventions, which are being implemented under the IFHI grant, are the information and communication technology (ICT) continuum of care service and team-based incentives (TBIs) for FLWs.

Finally, **the cost and cost effectiveness analysis (question 3)** component of our evaluation will aim to generate estimates of the cost of program components and of the program overall, key cost drivers, and replication costs. In addition, we will attempt to determine the cost-effectiveness of the program and the value-added solutions and to identify how cost-effectiveness may have evolved over the course of the Ananya program. Although evidence of effectiveness is critical for persuading development partners to adopt a new public health approach, the costs associated with replicating a program or approach and its impacts are also key factors in replication and scale-up decisions.

The baseline data collection described in this report was primarily conducted to inform the component of the second research question, which focuses on measuring the overall effects of the package of Ananya interventions. The baseline data will be used to implement both the comparison group design, which will estimate effects in the eight focus districts at midline, and the pre-post design, which will estimate effects across the entire state at endline. In addition, we will use the baseline data to help select appropriate comparison districts for the comparison group design. In particular, we will identify districts that are similar to the eight focus districts in demographic and socioeconomic characteristics as well as key health indicators prior to the implementation of the Ananya program and where no other major new health interventions have recently been initiated.[13]

D. Road Map for the Report

The remainder of this report is organized as follows. In Chapter II, we summarize the baseline data collection effort, including its goals, the sampling and fielding approach, and the content of the baseline surveys. Subsequent chapters describe the baseline results for different samples. We describe the results from household surveys in Chapter III, the results from FLW surveys in Chapter IV, and the results from facility and provider surveys in Chapter V. We conclude in Chapter VI and outline the next steps for the evaluation.

[13] We will document this selection prior to the start of the midline data collection and analysis.

II. OVERVIEW OF BASELINE DATA COLLECTION

As mentioned in Chapter I, the baseline data that we describe in this report are primarily intended to inform the key MLE question regarding the overall effects of the package of Ananya interventions. In this chapter, we provide an overview of the baseline data collection effort. We begin by discussing the goals of the data collection and then describe our sampling and fielding approach and the design and content of our baseline surveys.

A. Goals of the Baseline Data Collection

The baseline data collection effort was designed to achieve three main goals:

1. **Establish a baseline for the evaluation of the effects of the Ananya program in the eight focus districts and across the state.** As described in Chapter I, we intend to evaluate the effects of the package of Ananya interventions after scale-up to eight districts is complete (end 2013) and at the end of the program cycle (end 2015), using comparison group and pre-post designs, respectively. Both these designs require consistent data on relevant outcome domains before implementation of the Ananya program (at baseline) and at follow-up (2013 for the eight-district analysis and 2015 for the state-level analysis), so that the same outcomes can be compared between the two relevant points in time.[1]
2. **Inform the selection of comparison districts for the comparison group design.** The baseline data will help inform our selection of comparison districts for the midline comparison group design, enabling us to identify a set of districts that are similar to the focus districts in baseline outcomes and other characteristics related to outcomes (such as demographic and socioeconomic characteristics). Because we collected baseline data in all districts as part of the overall statewide evaluation (see Section B), we have the flexibility to use these data to select comparison districts from the full set of 30 non-focus districts in Bihar. We will apply statistical matching methods to identify comparison districts using our baseline data and will supplement this with qualitative information to assess the similarity of districts and to eliminate from consideration districts where other development partners are implementing other programs with a similar focus. Our approach will be to attempt to maximize the plausibility of the comparison group design, to allow for the highest degree of attribution possible to the impact of the program.
3. **Provide updated benchmarks for target setting and decision making.** The baseline data will help to reestablish benchmarks and targets as necessary. Given the dynamic situation in Bihar, with many key health indicators changing over time, it is particularly important to have an updated estimate of these indicators at baseline against which

[1] In the initial stages of the MLE effort we investigated whether we could rely on secondary data sources for the evaluation. However, we determined that the available existing data sources were too dated to provide an appropriate baseline, and that future survey data collection efforts in Bihar were too uncertain to ensure appropriate midline or endline data. Further, these secondary sources do not contain all the relevant measures for the evaluation. For these reasons, and based on extensive discussions with the foundation, we decided that primary data collection was required to ensure a credible and comprehensive evaluation.

progress can be measured and success assessed. The baseline data also enable us to provide district-level estimates of some outcomes (albeit with relatively low precision), which may help to inform grantees' decision making regarding the focus of their interventions. Finally, the GoB can use these data to help identify key gaps in service provision.

B. Sampling and Fielding Approach

The broad scope of the Ananya program, which aims to improve a range of outcomes across multiple family health domains, necessitated a similarly broad-based data collection effort. To this end, we collected baseline data from households, FLWs, and public sector health facilities and providers. Next, we describe the target populations, sample design, fielding procedures, and response rates for our surveys.

1. Target Populations

Household survey. We focused our data collection for the household survey on women who had given birth within the past 12 months. This decision was motivated by the fact that *most* of the core interventions being implemented by the grantees under the Ananya program focus on the window between the last trimester of pregnancy and the child reaching one year of age. Using this target population for our surveys enables us to focus on relevant coverage outcomes for these women, which include most of the key Ananya outcome indicators. It also enables us to obtain estimates of the neonatal mortality rate (NMR), which is a key ultimate target outcome for the Ananya program. Although the Ananya program also intends to affect other mortality rates—such as the infant mortality rate (IMR) and under-5 mortality rate—the NMR is particularly relevant due to the program's focus on factors that are likely to affect outcomes and survival during the neonatal period. This includes a focus on birth preparedness, the quality of delivery and immediate postpartum care, infection control, prevention and management of hypothermia, and immediate and exclusive breastfeeding.

Although we believe that this is the most appropriate target population for the evaluation, we recognize that we will have limited ability to fully capture outcomes for the broader population of women of reproductive age and young children (which is targeted by some components of the Ananya program) using these data. For example, we will not be able to measure contraceptive use amongst all women of reproductive age or full immunizations for children over one year old. In addition, we will not be able to measure the impact on indicators like the IMR, under 5 mortality rate, maternal mortality rate (MMR), and TFR—all of which the Ananya program intends to affect in the long term. Instead, we will rely on secondary sources that publish reports on these indicators at the district or state level to the extent they are available.

Frontline worker surveys. Many of the Ananya interventions focus on improving the quantity and nature of interactions between women and FLWs. We therefore conducted surveys of ASHAs, AWWs, and ANMs serving the women in our household sample to capture information about their interactions with these women, as well as their knowledge of topics related to delivery and newborn care and maternal and newborn issues. The FLW surveys will also provide valuable insight into barriers to and use of existing family health services at the community level.

Facility and provider surveys. The primary objective of the facility and provider surveys was to capture data that could be used to measure the effects of grantees' facility-based activities—especially the IFHI interventions focusing on delivery care, newborn care, and family planning

services offered at facilities. In addition, these surveys will provide additional context for the interpretation of findings from other surveys and will enable us to relate household outcomes to the condition of the PHCs serving the community. We focused our surveys on block PHCs serving the women in our household sample, since block PHCs are the main facilities where deliveries are conducted and are the focus of the IFHI facility-based interventions. We gathered information about the facilities themselves from the medical officer in charge (MOIC) and the block health managers (BHMs). We also surveyed providers (nurses or ANMs) responsible for deliveries at these facilities to capture delivery practices.

2. Sample Design

Household survey. We decided to draw a representative sample of targeted women in each of the 38 districts in Bihar. This ensured that our sample would be representative of each district, as well as of any combination of districts (such as the eight focus districts or the entire state). As described in our design report (Smith et al. 2011), this was the most efficient approach in terms of statistical power. The approach of sampling in all districts also had several other advantages, such as enabling us to provide some estimates at the district level and providing flexibility in the choice of comparison districts.

To obtain our sample of women, we implemented a multi-stage sampling design that involved drawing a representative sample of blocks in each district and a representative sample of communities in each block.[2] Communities were defined as villages (or segments of large villages) in rural areas, and as urban blocks (BLs) in urban areas. We used the 2001 census as our rural sample frame and the 2007-2010 National Sample Survey Office (NSSO) sample frame from the Urban Frame Survey (UFS) as our urban sample frame (Appendix A describes our sampling frame and sampling approach in further detail). We then conducted a household listing in the sampled communities to identify women who had given birth in the previous year, and surveyed *all* these eligible women.

The number of blocks and communities that we drew was determined using statistical power calculations to ensure that, by surveying all eligible women in the sampled communities, our sample sizes would be sufficient to detect the expected statewide NMR impacts. These impacts are difficult to statistically detect because neonatal mortality is a relatively rare event. The power calculations indicated that, with sufficient statistical power to detect NMR impacts, we would also have sufficient power for other household outcomes, FLW outcomes, and subgroup analyses for key coverage indicators (see Appendix A for details). Our final sample consisted of 342 blocks and 1,017 communities across all 38 districts in the state, and we identified a total of 14,706 women in these communities who were eligible for the household survey.

Frontline worker surveys. For the FLW surveys, we sampled all the AWWs, ASHAs, and ANMs attached to the sampled communities. This generally involved interviewing one AWW, ASHA (in rural communities only), and ANM per community. Since communities were selected randomly, this approach provided a representative sample of FLWs across the state without requiring a sample frame of FLW names, which was not available. Surveying frontline workers from

[2] As described in Chapter I, in the administrative structure of Bihar each district is divided into blocks and each block contains a large number of communities.

the same communities also has the advantages of enabling us to relate women's outcomes to those of the FLWs serving them and of lowering survey costs because the data collection team was already in the communities for the household survey.

Facility and provider surveys. For the facility and provider surveys, we surveyed the block PHC administrators and the providers in the main PHC used for deliveries in the sampled blocks. For the provider survey specifically, we conducted interviews with one nurse or ANM responsible for conducting deliveries at the facility. This approach provided a representative sample of block PHCs and nurse/ANM providers at the state level, while again enabling us to link women's outcomes to those of the main delivery facilities serving them and to reduce survey costs.

3. Fielding Procedures

The Sambodhi team led the field data collection effort, working closely with Mathematica and PHFI. The baseline household and FLW surveys were conducted between January and April 2012, and the baseline facility and provider surveys were conducted between March and May 2012.[3] Different teams of investigators were hired for the various surveys and were provided intensive training to ensure that high-quality data were collected. The listing surveys that were used to identify eligible women for the household survey were conducted using an application installed on mobile handsets. The household survey was conducted using computer assisted self-interviewing (CASI) program on notebook computers, and the FLW, facility, and provider surveys were conducted using paper questionnaires. We also implemented several field procedures and checks throughout the data collection process to ensure high response rates and quality control (Appendix A discusses the fielding procedures in greater detail).

4. Response Rates

Our response rates were generally very high (Table II.1). About 94 percent of households in sampled communities responded to our listing survey, and about 89 percent of eligible women responded to the household survey (this combined response rate is about 84 percent). This yielded a total sample of 13,069 completed women interviews. Response rates for AWWs and ASHAs were both around 90 percent, with a lower sample size for ASHAs because they are not present in urban areas. In total we surveyed 667 ASHAs and 892 AWWs. Response rates for ANMs were lower

Table II.1. Sample Sizes and Response Rates for the Baseline Surveys

Survey Type	Completed Interviews	Response Rate (Percent)
Household Listing	110,094	94.3
Household Survey	13,069	88.9
Frontline Worker Surveys		
ASHAs	667	90.7
AWWs	892	91.2
ANMs	589	59.1
Facility Survey	335	98.0
Provider Survey	324	94.7

[3] Although the Ananya Program began in 2011, many of the initial activities involved developing the interventions and preparing for implementation. Most of the activities would therefore not have substantially affected the target populations at the time of our surveys in early 2012.

(about 60 percent, yielding a total sample size of 589), because ANMs are very mobile as part of their job and it was often difficult to contact them during the survey team's visit. Response rates to the facility and provider surveys for the 342 block PHCs identified were very high—at least 94 percent for both. Overall, these high response rates suggest that the survey effort was successful in interviewing the targeted populations, and that the scope for systematic non-response bias is limited.

C. Survey Design and Content

In this section we describe the design and content of the baseline surveys that we used to collect from households, frontline workers, and facilities and providers. To the extent possible, we used questions from existing, validated surveys conducted in India to develop the instruments for each of these surveys, but supplemented these with additional items specifically relevant to the Ananya program. We attempted to make our surveys as comprehensive as possible while keeping the survey length reasonable to avoid respondent fatigue and ensure high quality data. We produced draft survey instruments in fall 2011 which were reviewed by grantee teams as well as the foundation, and we revised the instruments based on the input received. We also conducted two rounds of piloting in the fall of 2011, and used the results from each round to further revise our baseline survey instruments. Below we describe the scope of each of our surveys in greater detail.[4]

1. Listing Survey

Before conducting interviews for the household survey, we conducted a listing survey for all residential households in the sampled communities to identify eligible women. A household was defined as a group of people who usually live together and eat from the same kitchen. The listing survey involved recording information on live births, still births, miscarriages and abortions within the last 12 months for each ever married female member of the household between the ages of 12 and 60 years. We used detailed probes about the timing and nature of each birth event to determine whether it took place in the last 12 months, whether the outcome was a live birth, and whether (and, if so, when) the child subsequently died. The purpose of this survey was twofold: to identify eligible women for the household survey, and to enable us to estimate NMR and other mortality rates (such as the stillbirth rate) by capturing birth events in the previous year.

2. Household Survey

The household survey instrument was designed to capture data on outcomes in four broad areas: (1) access, use, and content of antenatal, delivery, and postpartum care; (2) interactions with frontline workers; (3) knowledge, attitudes, and practices in a range of family health areas (such as child nutrition and reproductive health); and (4) exposure to and understanding of family health messages disseminated through various channels. Additional sections of the instrument obtained data on various characteristics of the household and respondents, which will be used to support a range of descriptive and multivariate analyses. These data include household composition and assets and a range of individual-level socioeconomic and demographic characteristics (see Table II.2 for a full set of domains and illustrative outcomes).

[4] All survey instruments are available upon request.

Table II.2. Domains and Illustrative Indicators for the Household Survey

Domain	Illustrative Indicators
Household Roster	• Sex, age, and household composition
Household Characteristics	• Characteristics of dwelling • Source of drinking water • Type of toilet facility • Listing of household assets • Food security
Respondent Characteristics	• Religion and caste • Literacy • Occupation • Autonomy (for example, who makes decisions regarding healthcare and household purchases)
Birth History	• Age and gender of each child born • Whether child is currently alive; age at time of death, if relevant
Pregnancy and Antenatal Care	• Receipt of antenatal care (frequency and elements) • Knowledge of danger signs • Preparations for delivery • FLW visits and advice received
Labor and Delivery	• Place of delivery • Access to and procedures at health facility • Danger signs during labor and delivery • Receipt of immediate postpartum care • Receipt of advice on family planning from health worker
Postpartum Care	• Knowledge and experience of danger signs after delivery • Home visits by frontline health workers • Duration of exclusive breastfeeding; frequency of breastfeeding
Well-baby Care	• Liquids, foods consumed by the child; frequency of intake • Opinions on feeding infants and proper hygiene
Quality of Care	• Opinions on frontline worker • Opinions on facilities (for those who delivered at a facility)
Anthropometry	• Measurement of child's weight and height
Immunizations	• When the child received vaccinations • Reason child has not received vaccinations (if relevant) • Information provided by health workers
Reproductive Health	• Family planning methods used by couple • Topics discussed with health worker • Preference for another child/more children • Husband and mother-in-law perspectives on family planning
Community Groups	• Knowledge of and involvement in community groups • Discussion of health topics at meetings
Media	• Access to radio, television, and print media • Frequency of use • Exposure to topics related to pregnancy, delivery, well baby care, newborn danger signs, and family planning

3. Frontline Worker Surveys

The FLW surveys focused on capturing outcomes data in four broad areas: (1) activities to enumerate and track households eligible for services; (2) participation in training; (3) frequency and content of services provided; and (4) knowledge and attitudes about key family health topics. In addition, we collected information on the socioeconomic and demographic characteristics of FLWs,

including age, religion, caste, qualifications, and tenure in current post, among others (see Table II.3 for a full set of domains and illustrative outcomes).

Table II.3. Domains and Illustrative Indicators for the Frontline Worker Surveys

Domain	Illustrative Indicators
Background Characteristics	• Age, religion, and caste • Education and work experience
Village Characteristics and Workload/Activities	• Number and types of populations served • When last conducted mapping and enumeration • Availability of health providers • Access to health facilities
Subcenters	• Size and accessibility of sub-center • Availability of birth and delivery services • Frequency of beneficiary visits to sub-center • Frequency of ANM visits to villages in catchment area
Training	• Length, frequency, and facilitators of training sessions • Topics covered in training sessions related to pregnancy, delivery, postnatal care, and reproductive health
Supervision	• Frequency and content of meetings with supervisor • Whether monthly sector meetings are offered, and topics discussed at these meetings
Materials, Equipment, and Supplies	• Whether FLW possesses relevant equipment, supplies, and medicines • Availability of informational materials or job aids • Availability and use of mobile phones
Services	• Frequency of home visits to beneficiaries • Whether FLW provided relevant services (for example, weight measurement, immunizations, and accompanying women to health facilities) • Whether FLW provided counseling on pregnancy, delivery, postnatal care, and reproductive health
Honoraria and Incentives	• Frequency of payment • Satisfaction with mode and timeliness of payments • Amount of payment for various services
Village Health and Nutrition Days (VHNDs) and Community Participation	• Attendance at and services provided during the last VHND • Modes of tracking of those due for immunizations • Frequency of and attendance at community group meetings, and discussion of family health in these meetings
Knowledge	• Knowledge about appropriate practices throughout the continuum of care • Knowledge about advice and treatment that should be provided at different points in the continuum of care
Media Messages and Exposure	• Whether (and through what medium) the FLW heard media messages related to various aspects of family health

4. Facility and Provider Surveys

The facility assessment component of the facility survey collected data on five main areas: (1) facility infrastructure; (2) staffing; (3) management support systems (including data collection and use and quality assurance procedures); (4) patient communication and education; and (5) the provision of antenatal, delivery, postpartum, newborn, and family planning services, including the availability of equipment, supplies, and drugs and infection-control procedures (see Table II.4 for a full set of domains and illustrative outcomes). These surveys were typically completed primarily by the MOIC of the facility, with additional input from the block health manager and other staff. We also asked the nurse or ANM responsible for deliveries at the facility to complete a provider survey.

This survey focused on training, knowledge, and attitudes, and the content and quality of care processes related to pregnancy- and newborn-related care and postpartum family planning (see Table II.4 for a full set of domains and illustrative outcomes).

Table II.4. Domains and Illustrative Indicators for the Facility and Provider Surveys

Domain	Illustrative Indicators
FACILITY SURVEY	
General Information	• Education and work experience of medical officer interviewed • Sub-centers, villages, and people served by PHC
Services and Procedures	• Facility hours of operation and physical capacity • Sterilization methods for surgical instruments, gloves, needles, and other equipment • Methods of disposal used for soft tissue, dressing materials, needles, blades, and other waste
Normal Delivery and Newborn Care	• Ability to handle and history of handling delivery-related and newborn complications, such as prolonged labor, anemia, and sepsis • Antenatal care typically provided at facility
Referrals	• Medical complications typically leading to a referral • Facilities to which PHC refers patients
Family Planning	• Facility provision of temporary, semi-permanent, and permanent family planning methods • Frequency of immediate postpartum family planning procedures
Management, Supervision, and Training	• Whether PHC has a quality improvement team • Results and methods of self-assessments conducted by PHC • Oversight by outside personnel and the types of oversight activities • Length, frequency, and facilitators of training sessions on medical and non-medical topics
Staffing	• Staff positions currently filled and left vacant at PHC
Infrastructure	• Equipment, utilities, and vaccines available at PHC • Whether PHC contains delivery room, operating room, nursery/newborn corner, and family planning corner
Observations of Delivery Room and Family Planning Corner	• Setting for the delivery room, including conditions of walls, doors, windows, and ceiling • Availability of equipment, instruments, and medicines in delivery room and area where tubal ligations are performed
Register Information	• Whether PHC keeps register of deliveries and the information recorded in the register • Number of complicated deliveries in register and types of complications • Maintenance of referral, stillbirth, and tubal ligation registers
General Building Condition	• Physical condition of building walls, floors, and roof.
PROVIDER SURVEY	
Background Characteristics	• Age, religion, and caste • Education and work experience
Training	• Length, frequency, and facilitators of training sessions • Topics covered in training sessions related to pregnancy, delivery, newborn care, and reproductive health
Services	• Hand washing and other hygienic practices • Usual care for baby in first hour of life • Postnatal counseling provided
Background Characteristics	• Age, religion, and caste • Education and work experience
Training	• Length, frequency, and facilitators of training sessions • Topics covered in training sessions related to pregnancy, delivery, newborn care, and reproductive health

Domain	Illustrative Indicators
Services	• Hand washing and other hygienic practices • Usual care for baby in first hour of life • Postnatal counseling provided
Knowledge	• Knowledge of appropriate practices related to cord care, immediate newborn care, postpartum care, and breastfeeding • Knowledge of family planning methods
Supervision	• Frequency and content of meetings with supervisor and supervisee(s)
Respondent's Opinion of the Facility	• Changes in quality of delivery-related care provided at facility in past 6 months • Most important issues impeding quality of care
Most Recent Delivery	• Vital signs observed and recorded during last delivery • Injections administered at last delivery

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III. FINDINGS FROM THE HOUSEHOLD SURVEY

The household survey focused on the experiences of women who had given birth in the previous 12 months, spanning the continuum of care from pregnancy to the first year of the child's life. As noted earlier, the household survey instrument was designed to capture indicators most relevant to the Ananya program. These included key coverage indicators as well as interactions with FLWs, the focus of many of the core Ananya interventions. In addition, the listing instrument used to identify women eligible for the household survey was designed to provide estimates of the neonatal mortality rate (NMR) through a detailed list of questions about birth events in the previous year.

In this chapter, we report the key baseline findings from the household survey and the related listing survey. We describe the characteristics of the households and women surveyed, summarize the baseline findings on NMR, and discuss the baseline levels of key indicators most relevant to the Ananya program across several domains. For clarity of exposition, we focus on the baseline findings for the entire state rather than those for the eight focus districts: the two sets of results were, however, very similar for most indicators.

Throughout this chapter, we compare our results to published results from other recent health surveys in Bihar that provide data on similar indicators. These other surveys include the 2005-2006 National Family Health Survey (NFHS), the 2007-2008 District Level Household Survey (DLHS), and the 2010-2011 Annual Health Survey (AHS). The comparisons to these surveys will help to place our results in context and to assess trends in certain key indicators over time. However, these comparisons should be interpreted with some caution because our target population—women who have given birth in the previous 12 months—is different from the typical target population of those surveys, which is typically all women of reproductive age. As a result, our sample is younger, has lower birth parity, and consists of women who recently became pregnant and gave birth—all of which may lead to differences in some coverage indicators if these characteristics are related to the indicators. For instance, the rate of contraceptive use will likely be lower for women in our sample, both because they are younger and because they recently became pregnant and therefore were unlikely to have been using contraception. Despite these caveats, comparisons to other surveys are still likely to be instructive at a broad level.[1]

A. Sample Characteristics

The demographic and socioeconomic characteristics of the surveyed women provide important context about the population being targeted by the Ananya program. They also enable us to examine variations in indicators by key subgroups of interest, including those defined by rural or urban status, scheduled caste (SC) and scheduled tribe (ST) status, religion, birth parity, and socioeconomic quartile.[2]

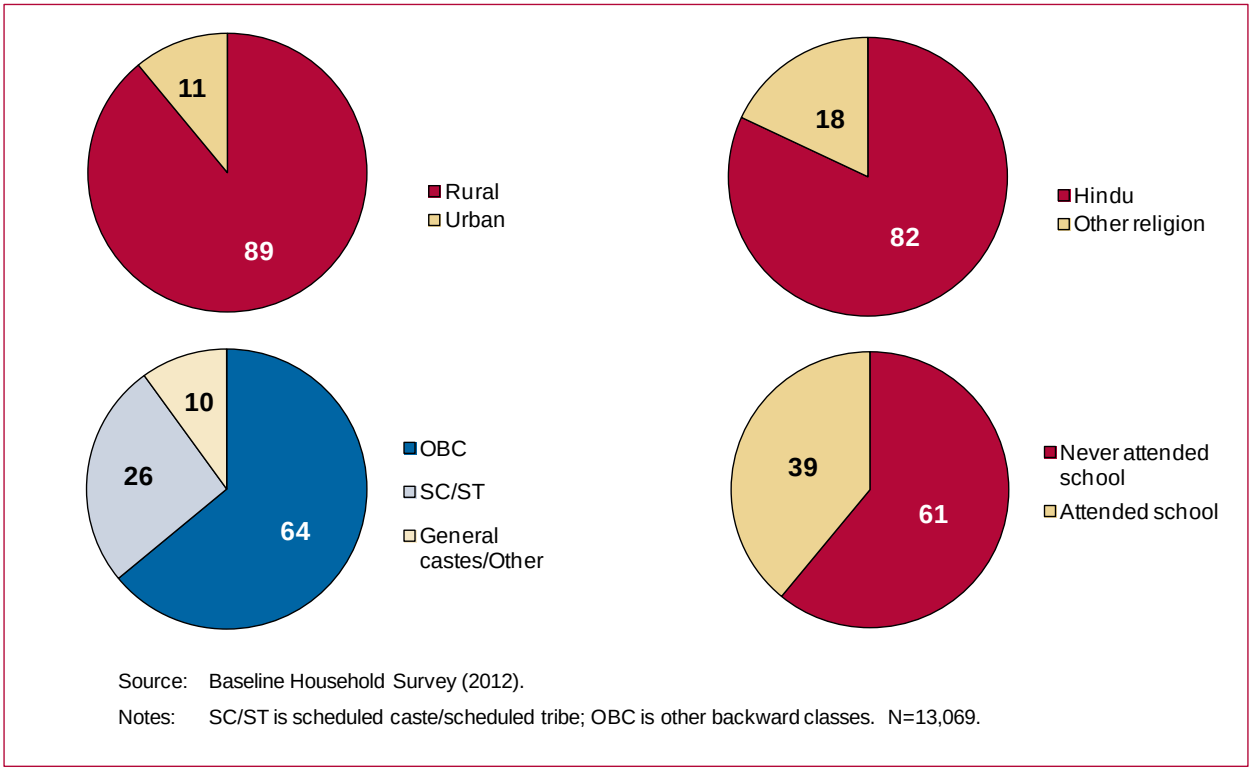
[1] Where the difference in samples across surveys was most relevant—particularly for family planning indicators—we attempted to obtain a more appropriate comparison by restricting the samples in other surveys to women who gave birth the previous 12 months. However, we could only do this for the NFHS and DLHS; individual-level AHS data are not available for research purposes.

[2] We examined the variation in all baseline indicators across key subgroups of interest. For the purposes of this report, however, we focus on the results for the full sample and only report subgroup differences where these are noteworthy.

Our sample of women is predominantly rural, one-quarter belong to scheduled castes or tribes, and the majority has no formal education.

Our sample population is predominantly rural and disadvantaged (Figure III.1). Almost 90 percent of women in our sample live in rural areas; by virtue of our sampling design, this is identical to the proportion of rural dwellers in Bihar in the 2001 census. About 82 percent of the sample is Hindu while 26 percent belong to scheduled castes or scheduled tribes (SCs or STs) and 64 percent belong to other backward classes (OBC). Levels of formal education are extremely low: about 61 percent of the sample has no formal education whatsoever, and only 38 percent can read and write (not shown). Most of the characteristics of our sample are similar to those reported in other health surveys in Bihar (such as the NFHS and DLHS).

Figure III.1. Basic Demographic Characteristics of Surveyed Women



Source: Baseline Household Survey (2012).

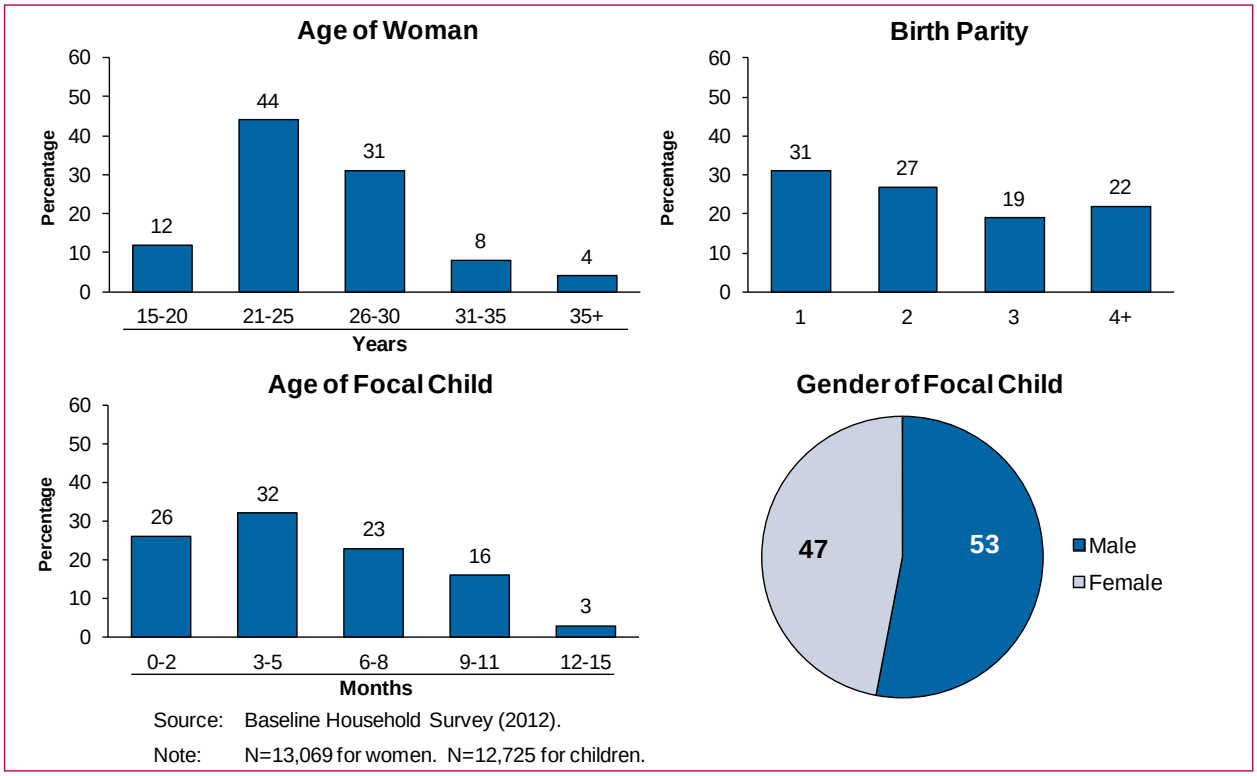
Notes: SC/ST is scheduled caste/scheduled tribe; OBC is other backward classes. N=13,069.

Our sample is younger and has lower birth parity than samples in other health surveys.

Because our target population consists of women who gave birth in the previous 12 months, our sample is younger and has lower birth parity relative to other health surveys in Bihar. The median respondent in our sample is 25 years old, with about 3 in 10 of the women surveyed having recently given birth to their first child and 4 in 10 having given birth to three or more children to date (Figure III.2). Similarly, our sample of children ("focal children")—which consists of the last child born to each woman—is younger than samples in other typical health surveys. Almost all the children in our sample are under 12 months of age, with some variation in the age distribution

within that range due to seasonality of births (Figure III.2).[3] There is also a gender imbalance in our sample of children: about 53 percent are male and 47 percent are female. By comparison, the median respondent in the 2007–2008 DLHS (for example) was 29 years old, about half of women in that sample had given birth to three or more children, and indicators were determined for children up to 36 months of age.

Figure III.2. Age, Birth Parity, and Gender of Subjects in Household Survey



Source: Baseline Household Survey (2012).

Note: N=13,069 for women. N=12,725 for children.

B. Mortality Rates

Because many Ananya interventions focus on the period from the last trimester of pregnancy through the postpartum period, the program is likely to affect health outcomes and survival during the neonatal period and to lead to a reduction in the NMR in the long term. The baseline NMR—and related mortality rates—therefore provides an important benchmark against which to assess the program's success at endline.[4]

[3] All births that we captured took place in the 12 months prior to the listing survey. However, in some cases, there was a delay between the listing and the household survey, so that a small fraction (around 3 percent) of children were older than12 months by the time the household survey was conducted.

[4] We also expect that, if successful, the program will reduce the IMR, the under-5 mortality rate, and the MMR. However, as discussed in Chapter II, we are not measuring these indicators as part of our data collection effort and will rely on secondary sources instead.

The statewide NMR is 32 per 1,000 live births.

Using our listing survey data, we estimated the baseline NMR in Bihar as 32 per 1,000 live births (Table III.1). This rate reflects a continuation of the decrease in NMR observed in other health surveys in Bihar over time. For example, the NMR decreased from 40 per 1,000 in the 2005–2006 NFHS to 35 per 1,000 in the 2010–2011 AHS. As mentioned earlier, our estimates of the NMR may not be strictly comparable to those from other surveys because we targeted a very specific population (women who gave birth in the previous 12 months). Nevertheless, these estimates are broadly in line with the existing data.

Table III.1. Statewide Mortality Rates

		Bihar		
Indicator	Definition	Estimate	95% CI	N
Neonatal Mortality	Deaths within the first 28 days of life per 1,000 live births	32.2	27.6–36.8	13,450
Stillbirths	Dead births of at least 7 months gestation per 1,000 pregnancies of 7 months or longer	20.1	15.6–24.5	15,116
Perinatal Mortality	Dead births of at least 7 months gestation and deaths within the first 7 days of life per 1,000 pregnancies of 7 months or longer	45.5	39.7–51.3	14,647

Source: Baseline Listing Survey (2012).

The statewide stillbirth rate is 20 per 1,000 pregnancies, and the perinatal mortality rate (PNMR) is 46 per 1,000 pregnancies.

We also computed two other mortality rates relevant to the Ananya program, the stillbirth rate and the perinatal mortality rate. The rate of stillbirths is 20 per 1,000 pregnancies of 7 months or longer, and the PNMR is 46 per 1,000 pregnancies of 7 months or longer (Table III.1). These estimates are valuable for three reasons. First, these mortality rates are not typically measured in other surveys in Bihar, so they provide a useful benchmark for policymakers and other stakeholders. To the best of our knowledge, the only recent estimate of stillbirths for Bihar is from the 2010 Sample Registration System (SRS), which showed a rate of 1 per 1,000. This is far lower than our estimate, which is based on detailed probing to identify the nature and timing of birth events to ensure that stillbirths are captured accurately. Second, these estimates provide benchmarks we can use to assess the success of the program along dimensions other than NMR. Third, they may also help to interpret changes in NMR, the primary long-term impact indicator we are measuring. For example, if the program leads to weaker fetuses—who are more likely to die in the first month of life—being brought to term, then we might not observe the desired decrease in NMR; we would be able to investigate whether this explanation is plausible by exploring changes in the stillbirth rate over the same period.

C. Antenatal Care and Preventive Practices

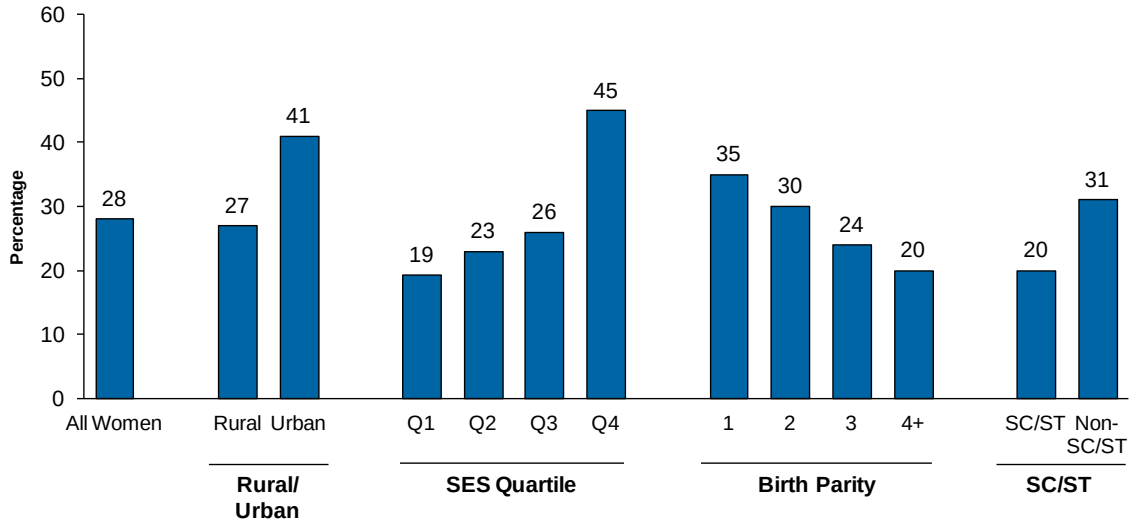
The level and quality of antenatal care (ANC) and preventive practices during pregnancy can have important implications for birth and subsequent health outcomes for both the mother and child. Women in Bihar typically access ANC services from doctors and nurses at PHC's or private facilities or from nearby subcenters. Community-level FLWs can also play an important role in providing information and advice about important preventive practices by conducting home visits

during pregnancy. In addition, pregnant women can obtain food rations from AWWs and iron tablets from ASHAs. The Ananya program focuses on improving antenatal care through improvements in the quantity and quality of FLW interactions with pregnant women.

Many women do not receive adequate antenatal care.

Both the quantity and quality of reported ANC visits are insufficient. Indian Public Health Standards (IPHS) guidelines recommend an initial visit for pregnancy registration once pregnancy is known and at least three visits for care thereafter (between 4 and 6 months of pregnancy, at 8 months, and at 9 months). However, only 28 percent of women in the survey reported having the recommended three ANC visits during their most recent pregnancy, although almost 75 percent said they had at least one ANC visit, and 68 percent had at least one visit before the sixth month of pregnancy (not shown). There is important variation in the percentage of women with at least three ANC visits across key subgroups of interest (Figure III.3).[5] The percentage was higher in urban areas (41 percent compared to 27 percent in rural areas), for women with low parity (35 percent of those who had their first child compared to 20 percent of those who had their fourth or later child), for non-SC and non-ST women (31 percent compared to 20 percent for SC or ST women), and for women in the highest SES quartile (45 percent compared to 19 percent in the lowest quartile). The higher rate for urban women might reflect closer proximity to health facilities where ANC options

Figure III.3. Three or More ANC Visits by Subgroup



Source: Baseline Household Survey (2012).

Note: N=13,069. ANC is antenatal care. SES is socioeconomic status. SC is scheduled caste. ST is scheduled tribe.

[5] One subgroup we consider in our analysis is defined by socioeconomic status (SES) quartile. To determine these quartiles, we followed the procedure used in the NFHS. Specifically, we used principal components analysis to compute a wealth index for each household using a number of household characteristics—the same ones used in the NFHS—likely to reflect poverty (such as the number of household members per room, the material from which the residence was constructed, and ownership of various durable goods). We then allocated each woman the wealth index for her household and divided our sample into SES quartiles based on the (weighted) distribution of the wealth index across women. The final quartiles therefore reflect the SES of women rather than households.

are more readily available; the lower rate for women with higher parity could reflect greater experience with the birth process, making these women less likely to seek care. Our overall estimate of 28 percent is consistent with an estimate of 26 percent in the 2007–2008 DLHS although slightly lower than the estimate of 34 percent in the more recent 2010–2011 AHS.

Consistent with the low number of ANC visits, the baseline results suggest that most women did not receive even very basic antenatal care during their pregnancy. Only 40 percent of all women reported being weighed, having their blood pressure measured, and having their abdomen checked at least once during pregnancy (not shown). These findings are driven both by low utilization of ANC as well as by the quality of ANC received by those women who received any care. [6]

Coverage of some key preventive practices during pregnancy is high while others are low.

The coverage of certain key preventive practices during the antenatal period varies substantially. For example, while 93 percent of women reported receiving the recommended two tetanus toxoid (TT) injections, only 12 percent said they had consumed the recommended 90 iron folic acid (IFA) tablets (not shown).[7] The low rate of recommended consumption of IFA tablets during pregnancy is consistent with other surveys (which report 10 percent or less) while the high rate of TT injections is consistent with an increasing trend over time (most recently, 84 percent of women in the 2010–2011 AHS reported receiving at least one injection).

Interactions with FLWs in the final trimester of pregnancy are limited.

Although ANC throughout pregnancy is important, visits by FLWs in the last trimester may be especially critical because these visits could influence whether women make appropriate preparations for safe delivery and whether delivery-related risk factors are detected. These visits are currently limited, however: less than half of women surveyed reported being visited at home by an FLW in the final trimester, and only about one-third were visited two or more times (Figure III.4). Home visits tended to be higher in rural areas (48 percent received a visit compared to 24 percent in urban areas), a difference that is likely driven by the presence of ASHAs in rural areas. However, even those who were visited during pregnancy (either in the final semester or earlier) did not receive advice on key pregnancy and delivery topics, such as preparation for delivery or immediate newborn care. Only around one third of women reported receiving advice from FLWs on most relevant topics during meetings throughout their pregnancy (Figure III.4).[8]

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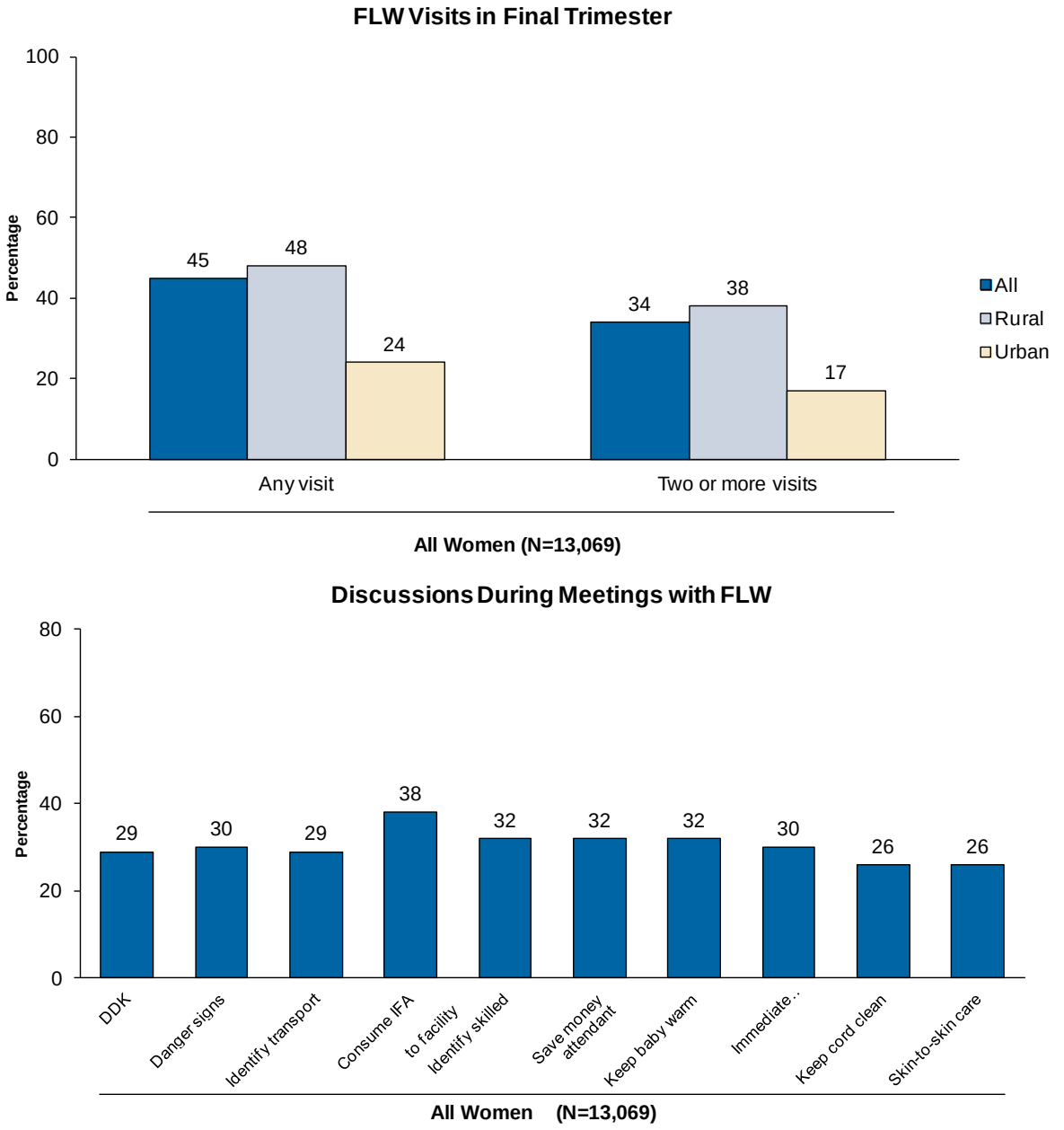
[6] To check whether recall error may be a concern for some of these coverage indicators, we investigated differences by the timing of birth. Specifically, we checked for differences between women who gave birth in the 6 months prior to the survey and those who gave birth between 6 and 12 months prior, under the hypothesis that women who gave birth more recently may be more likely to recall ANC and preventive practices. The indicators were very similar for both groups, however, suggesting that recall error is not a major concern.

[7] The percentage of women who reported *receiving* 90 or more IFA tablets was 17 percent, suggesting that few women had access to the recommended IFA dosage in the first place.

[8] For these questions—and many similar types of questions in our survey—we asked the respondent to spontaneously report the topics discussed without any prompting. For any topic that the respondent did not mention, we then probed further by asking specifically whether that topic was discussed. In reporting most results, we present the responses after probing because these include possible response bias and can therefore be considered as an upper bound. For the topics in Figure III.4, the spontaneous responses were about half as large as the combined responses on average.

Figure III.4. FLW Interactions During Pregnancy



Source: Baseline Household Survey (2012).

Notes: FLW is frontline health worker. DDK is disposable delivery kit. IFA is iron folic acid. Questions on danger signs and transportation advice did not ask about specific items. Questions on keeping the cord clean did not mention other aspects of cord care.

D. Delivery

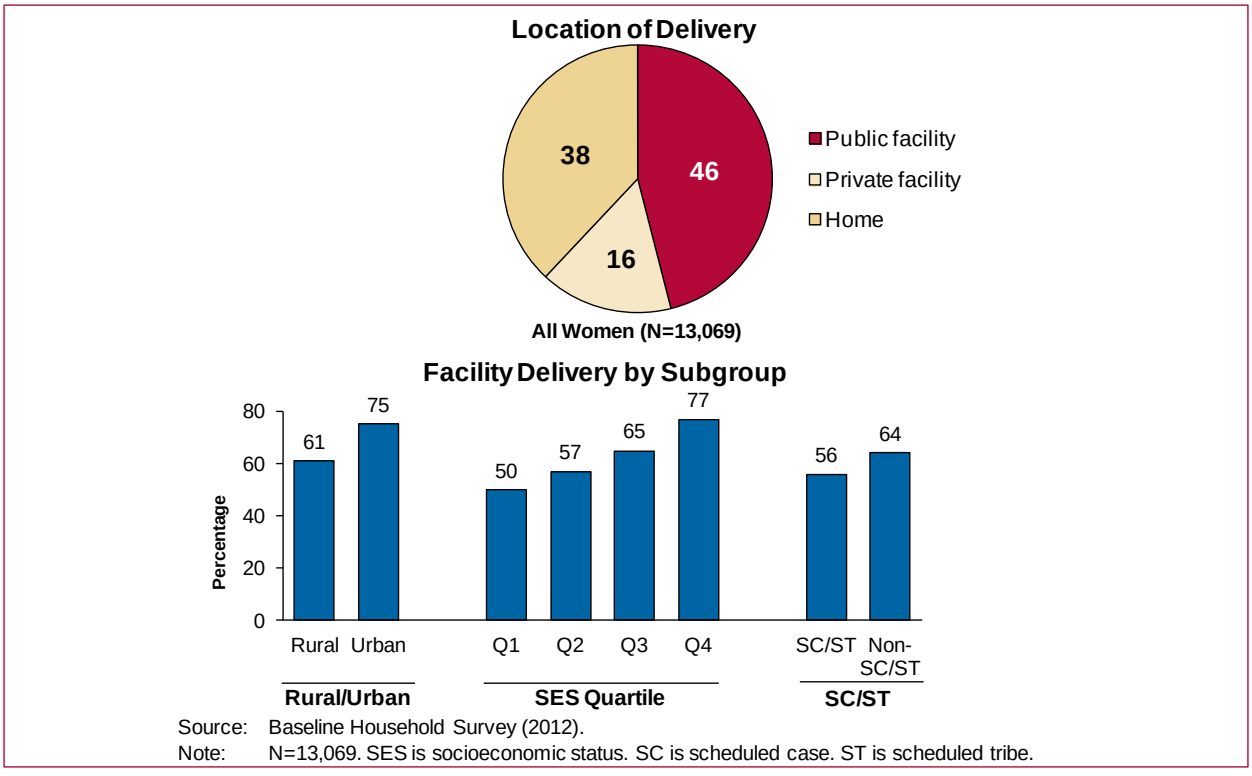
The Ananya interventions focus on several aspects of delivery care. These include ensuring appropriate preparations for delivery and delivery-related emergencies, improving recognition of danger signs during pregnancy and delivery, and facilitating appropriate referrals or treatment for these danger signs. Ananya also seeks to improve the quality of delivery care provided at facilities through a component of the IFHI grant that focuses on delivery care at PHCs.

Over half of women deliver at facilities, but facility care tends to be inadequate.

About 62 percent of women reported delivering at a facility, the majority of whom (46 percent of all women) delivered at public facilities (Figure III.5). The overall rate of facility deliveries reflects a continuation of an upward trend in Bihar, from 20 percent in the 2005–2006 NFHS to 28 percent in the 2007–2008 DLHS and 48 percent in the 2010 AHS. This ongoing increase may reflect the effects of the Janani Suraksha Yojana (JSY) conditional cash transfer program, which was introduced in 2005 to provide cash incentives to women to deliver at a facility. The rate of facility deliveries varied across key subgroups of interest (Figure III.5). Facility delivery was more common for women in urban areas (75 percent compared to 61 percent in rural areas), for those in higher socioeconomic quartiles (77 percent of those in the highest quartile compared to 50 percent in the lowest), and for non-SC and non-ST women (64 percent compared to 56 percent for SC and ST women). These differences are likely due in part to the closer proximity of urban women to facilities and to the greater ability of wealthier households to bear the costs associated with facility delivery, such as fees for private delivery or out-of-pocket costs for public delivery.[9] Private delivery was more common for higher SES quartiles—42 percent of facility deliveries for women in the highest quartile took place in private facilities, compared to only 13 percent for the lowest quartile (not shown). It was also more common in urban areas—46 percent of urban facility deliveries were private, compared to 21 percent in rural areas (not shown).

Even for women who delivered at a facility, however, the stay at the facility tends to be short and there are important gaps in the content and quality of postpartum care provided (Figure III.6).

Figure III.5. Facility Delivery

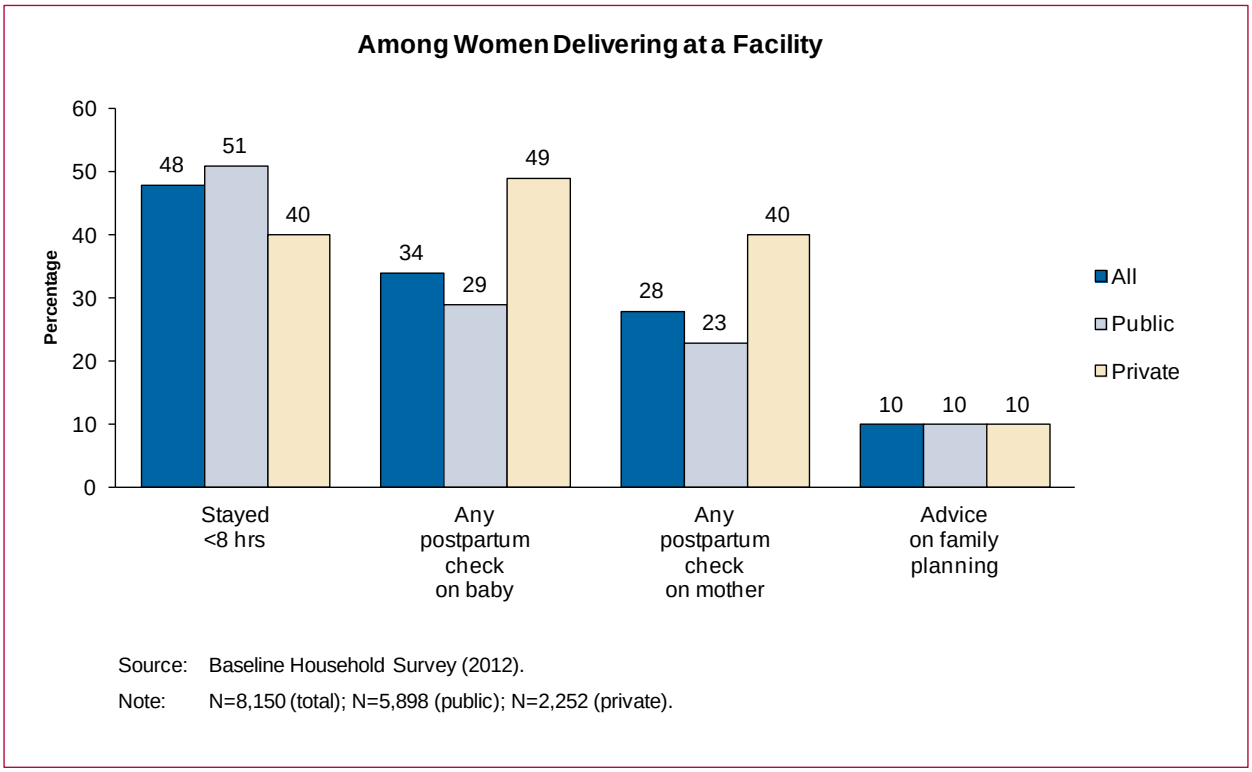


Source: Baseline Household Survey (2012).
Note: N=13,069. SES is socioeconomic status. SC is scheduled case. ST is scheduled tribe.

[9] Although public delivery services are nominally free, women typically incur some out-of-pocket expenses for transportation, food and lodging, and medicines.

Almost half of women who delivered at a facility left that facility within eight hours of delivery, and almost a quarter left within four hours. Only about 34 percent reported that the baby was checked before discharge, and only about 28 percent reported that the mother was checked before discharge. These rates were all somewhat higher for private facility deliveries compared to public facility deliveries. Similarly, only one in 10 women reported having received any advice about family planning before discharge. These service gaps may limit the benefits of facility deliveries.

Figure III.6. Quality of Facility Deliveries



Source: Baseline Household Survey (2012).

Note: N=8,150 (total); N=5,898 (public); N=2,252 (private).

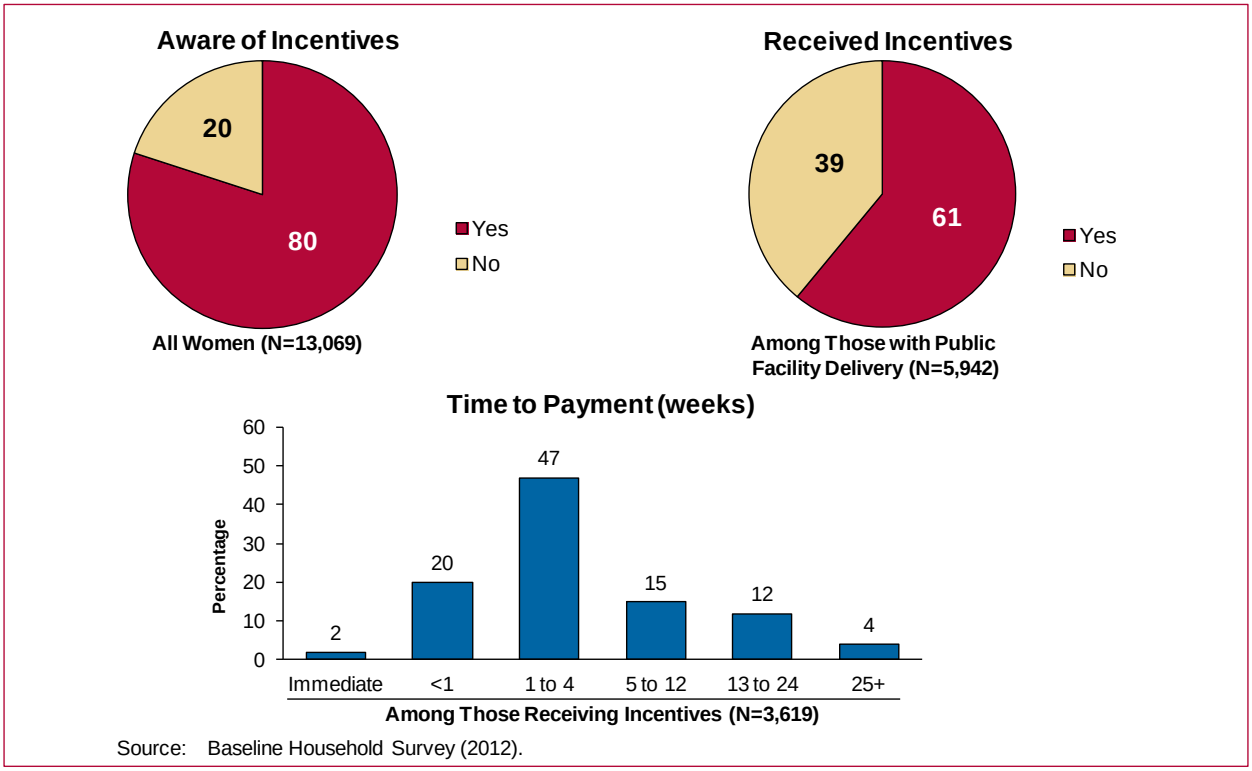
Many eligible women do not receive their incentives for facility delivery.

Although women who deliver at a public facility are eligible for JSY incentive payments and the vast majority of women surveyed were aware of these incentives, only about 6 in 10 of those who delivered at a public facility reported having actually received the promised incentive (Figure III.7). Among those recipients, 69 percent received the payment within a month of delivery, and 22 percent received it within a week. One of the Ananya grants, the G2P health payments grant, is aimed at improving the receipt and timeliness of these incentives through the HOPE mechanism. This grant also seeks to improve the timeliness of payments made to FLWs (see Chapter IV). If successful, improved payments may encourage more women to deliver at facilities and motivate FLWs to encourage such deliveries.

Almost two-thirds of women deliver with a skilled attendant.

Overall, almost two-thirds of women reported that a skilled attendant—a doctor, nurse, or ANM—was present at their last delivery (not shown). These numbers are largely driven by women delivering at a facility: almost all facility deliveries (97 percent) were conducted by a skilled attendant,

Figure III.7. Awareness and Receipt of JSY Incentives



Source: Baseline Household Survey (2012).

while only about 8 percent of home deliveries were conducted by one. About three-quarters of home deliveries were conducted by a dai, a traditional birth attendant, who may be adequate for normal deliveries but may lack the training and knowledge to deal with complications during births.

FLWs are rarely present at home delivery, but tend to attend facility deliveries more often.

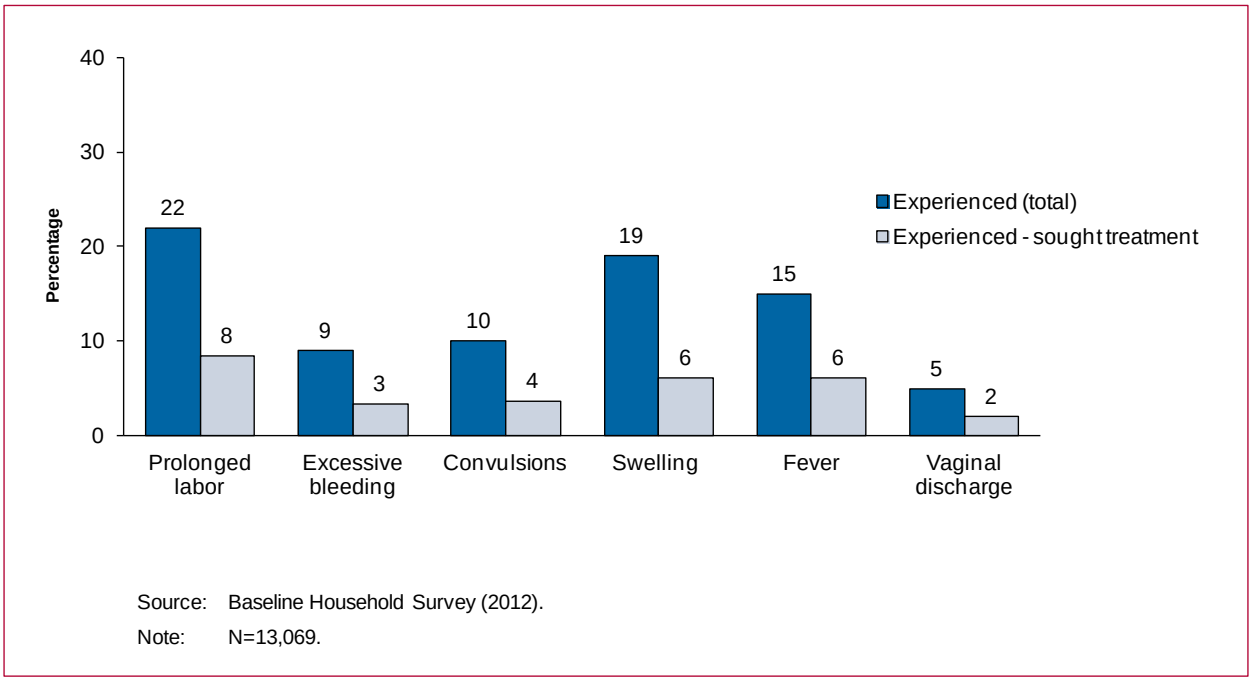
Very few women with a home delivery reported that an FLW was present. Only 10 percent of women reported that an ASHA was present at their home delivery, and only 1 percent reported that an AWW or ANM was present (not shown). Although attendance at home deliveries is not part of these FLWs' official duties—and they are not necessarily skilled or qualified in providing assistance during delivery—they may still have a role to play in improving health outcomes for home deliveries. For example, they could help to identify delivery complications and arrange for transport to a facility when they arise. In contrast to the limited FLW presence at home deliveries, ASHAs in particular were much more likely to be present at facility deliveries (52 percent of facility deliveries), likely as a result of the monetary incentive they receive for accompanying women to these deliveries (not shown).

Many women do not seek treatment for danger signs during pregnancy and delivery.

Although certain symptoms during pregnancy and delivery may threaten the lives of the mother or child, only a small fraction of women who experienced these symptoms sought treatment. For example, while 22 percent of women reported prolonged labor of over 12 hours, only about one third of them (8 percent) sought treatment (Figure III.8). A similar pattern exists for other important danger signs that we asked about, such as excessive bleeding, convulsions, and swelling. Early identification and treatment of these danger signs may help improve maternal and birth outcomes. One intention of the Ananya program is to improve women's awareness of these danger signs

and to encourage them to seek treatment through information provided to them by FLWs during home visits.

Figure III.8. Maternal Danger Signs During Pregnancy and Delivery



Source: Baseline Household Survey (2012).

Note: N=13,069.

E. Newborn Care

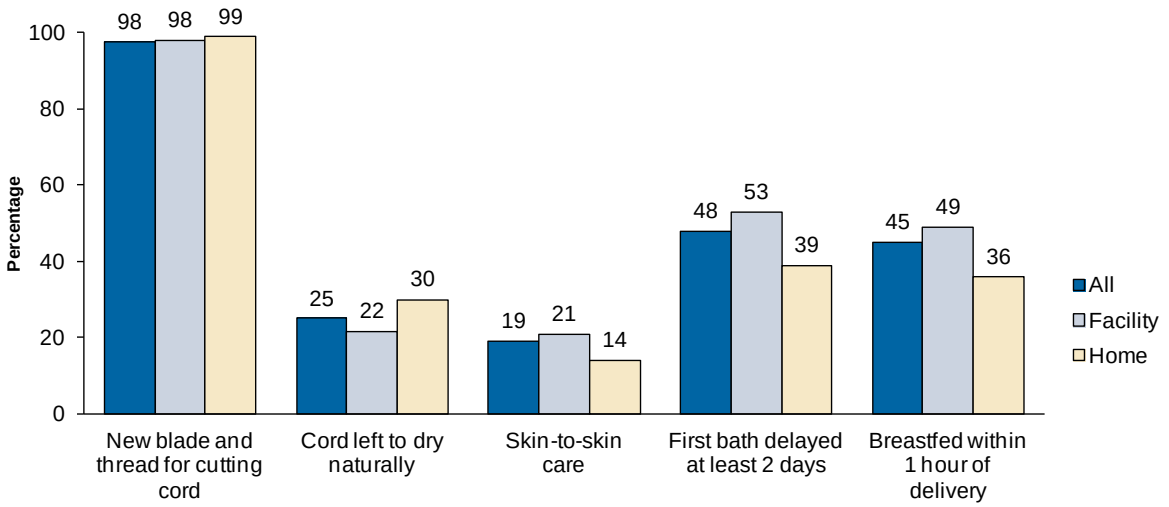
Newborn care practices can have important implications for child health outcomes. In the short term, the quality of immediate newborn care, such as appropriate cord care and immediate and exclusive breastfeeding, could be especially important given that the vast majority of infant deaths in Bihar (90 percent of those in our sample) occur within the first month of life. In addition, newborn care practices can have longer term effects on child health—for example, immediate and exclusive breastfeeding can both affect subsequent breastfeeding behavior and reduce the incidence of illness and infection in infants. Many Ananya interventions that seek to improve newborn care are based on the premise that improving the quantity and quality of FLW interactions in the postpartum period will translate into improved practices and outcomes.

There are important gaps in newborn care practices, including cord care, thermal care, and early breastfeeding.

Although the rates of some appropriate newborn care practices are high, there are also important gaps (Figure III.9). For example, almost all women reported that a new blade and thread were used to cut and tie the umbilical cord after delivery. However, only about one-quarter of women allowed the cord and umbilicus to dry naturally (recommended practice in most cases),[10]

[10] We asked separately about whether anything was applied to the cord after cutting and tying, and to the umbilicus after the cord fell off. About 40 percent of women reported not applying anything to the cord, and about 25 percent reported not applying anything to the umbilicus.

Figure III.9. Newborn Care Practices



Source: Baseline Household Survey (2012).

Note: N=13,069 (all); N=8,150 (facility); N=4,919 (home).

about one-fifth engaged in skin-to-skin (kangaroo) care, and only one-half delayed the newborn's first bath by at least two days (recommended to avoid hypothermia). Fewer than half of women initiated breastfeeding within an hour of delivery, although the 45 percent rate does reflect a continuation of an upward trend observed in other health surveys (7 percent in the 2005–2006 NFHS, 16 percent in the 2007–2008 DLHS, and 30 percent in the 2010–2011 AHS).

Appropriate newborn practices were generally more common for facility deliveries than for home deliveries (Figure III.9). Women delivering at a facility were more likely than those delivering at home to delay the child's first bath by at least two days (53 percent compared to 39 percent), to engage in skin-to-skin care (21 percent compared to 14 percent), and to breastfeed within one hour of delivery (49 percent compared to 36 percent). These findings suggest that there may be benefits to facility delivery in terms of newborn care, despite current gaps in facility quality. Nevertheless, there is still considerable scope for improvement in these coverage indicators for all women, regardless of the location of delivery.

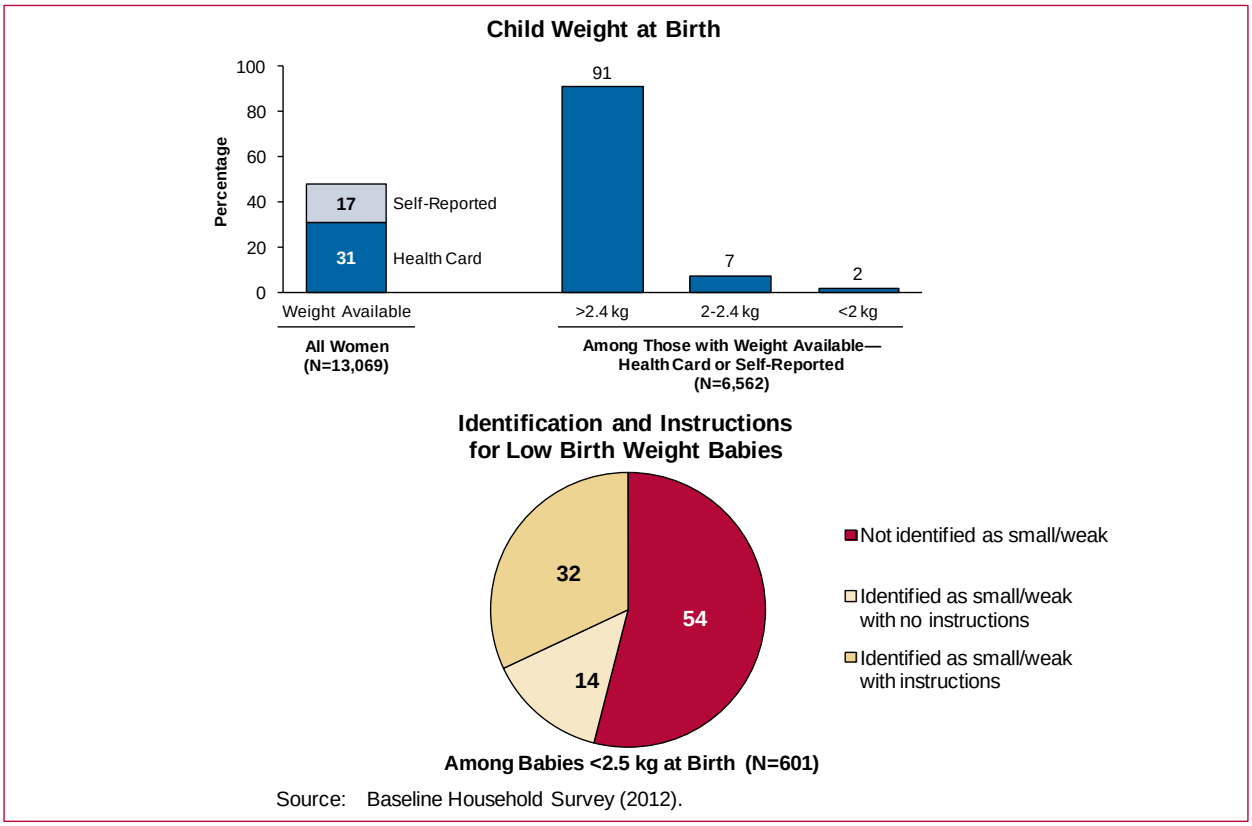
Small and weak babies were often not identified as such or provided with special care.

A particular concern for newborn child health and survival is whether weak or small newborns—who are particularly vulnerable—are identified and provided with extra care by their mothers. About 1 in 10 children who were weighed at birth (approximately half of our sample) weighed less than 2.5 kg at birth, the standard definition of a low birth weight baby (Figure III.10).[11] Of the 10 percent of small or weak babies, 54 percent were not identified as weak or small by health

[11] We combined birth weight reports from the health card (31 percent of women) and mother self-reports (17 percent of women) in the analysis, because the distributions were similar.

workers according to mothers' reports. Of the remaining 46 percent who *were* identified as weak or small, in only two-thirds of the cases (32 percent of all small or weak babies)did mothers report receiving additional instructions from health workers (Figure III.10). These results suggest gaps both in health worker identification of weak and small babies and in the provision of additional instructions for the care of those babies.

Figure III.10. Low Birth Weight Baby Care



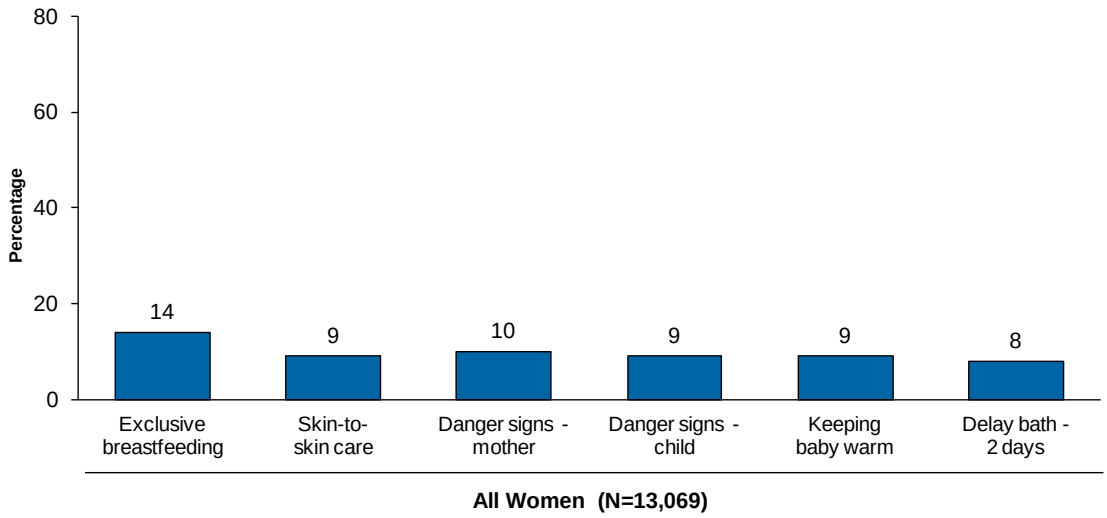
Source: Baseline Household Survey (2012).

New mothers typically have little interaction with FLWs during the postpartum period.

There are very few interactions between women and FLWs in the postpartum period, during which time FLWs could potentially provide key advice on newborn practices such as appropriate breastfeeding, recognition and treatment of danger signs, and appropriate thermal care.[12] Only 20 percent of women reported having received a postpartum visit from any FLW—which we define as a home visit for the purpose of checking on the mother and baby—and only 13 percent received a visit in the first week after delivery (not shown). Because almost 85 percent of women delivering at a facility returned home after one day or less (not shown), it is unlikely that women are receiving sufficient postpartum care at facilities either. In addition, not all of the women who were visited by an FLW received advice on relevant newborn care topics. Overall, only between 8 and 14 percent of women in the full sample reported discussion of key newborn care topics, such as danger signs for the child, thermal care, and exclusive breastfeeding with FLWs in the postpartum period (Figure III.11).

[12] To promote the provision of postpartum care for the mother and newborn through home visits, the NRHM has recently introduced monetary incentives for ASHAs to conduct these visits.

Figure III.11. Topics Discussed with FLWs During Postpartum Home Visits



Source: Baseline Household Survey (2012).

Note: N = 13,069. Questions on danger signs did not ask about specific danger signs.

F. Nutrition

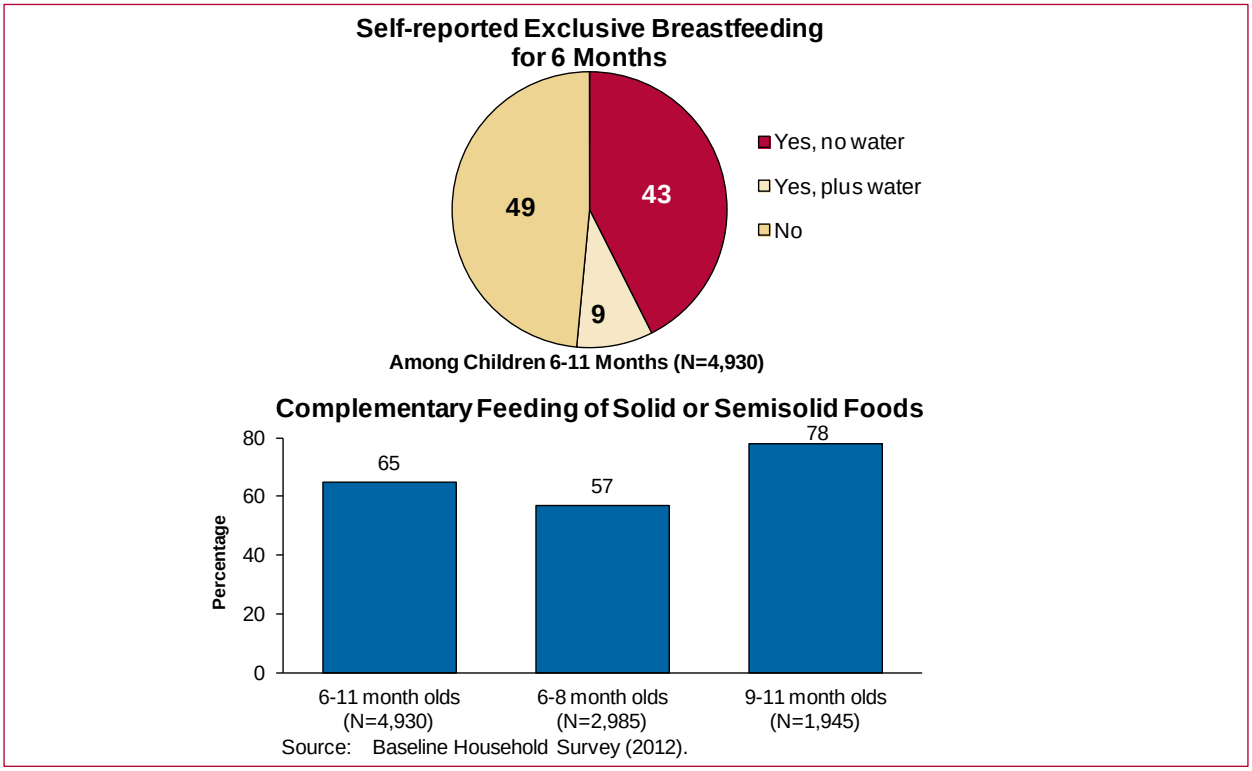
The nutrition component of the Ananya program focuses on encouraging exclusive breastfeeding up to 6 months of age, continued breastfeeding through age 2 years, and age-appropriate complementary feeding starting at 6 months. As with other practices, the aim of the program is to improve these practices in large part through improved FLW interactions with mothers. The hope is that improving these aspects of child nutrition will reduce undernutrition and result in generally better child health.

There are gaps in appropriate feeding practices, both for newborns and older infants.

We measured exclusive breastfeeding in two different ways. First, we asked women directly to self-report the duration of exclusive breastfeeding, and whether or not water was given during this period. Our analysis using this measure focused on children older than 6 months, in order to allow for full exposure to the ideal exclusive breastfeeding period of 6 months. Only about 43 percent of mothers of children over 6 months reported having exclusively breastfed their child (without supplementing breast milk with water) for the first 6 months of the child's life (Figure III.12), although virtually all the children in our sample were still being breastfed to some extent (not shown). This self-reported measure of exclusive breastfeeding does show an increase compared to a rate of 29 percent in the 2010–2011 AHS (for children from 6 to 35 months), but the remaining gap is still a cause for concern.

Our second measure of exclusive breastfeeding was based on mothers' reports of what liquids or solids they had fed their child in the previous day. This enabled us to compute a measure of exclusive breastfeeding recommended by the WHO (WHO, 2010), namely the fraction of children

Figure III.12. Feeding Practices



under 6 months of age who were not given any other liquids besides breast milk during the previous day.[13] We find that around 60 percent of children under 6 months of age in our sample were exclusively breastfed using this definition. This rate was far higher for younger children: 77 percent of children for children 3 months or younger were exclusively breastfed, compared to 47 percent of children between 4 and 6 months.[14]

Although appropriate complementary feeding is recommended to start at age 6 months, only 65 percent of infants aged 6 to 11 months received solid or semisolid food in the previous day according to mothers' reports (Figure III.12).[15] This rate is higher for older children—78 percent for children aged 9 to 11 months compared to 57 percent for children aged 6 to 8 months—suggesting

[13] Asking mothers of older children to self-report the duration of exclusive breastfeeding may be subject to error. In addition to the potential for recall error, around 16 percent of mothers who reported that they were *currently* exclusively breastfeeding also reported that they gave their child some other liquid (excluding water) the previous day—an inconsistent response. The WHO indicator of exclusive breastfeeding, which relies only on 24 hour recall of specific liquids and solids given to the child, avoids many of these errors although it only reflects the current exclusive breastfeeding status of young children and not the duration of exclusive breastfeeding.

[14] For children aged between 4 and 6 months, the WHO indicator of exclusive breastfeeding (47 percent) is close to the indicator of the percentage of women who exclusively breastfed for 6 months based on self-reports (43 percent). This provides some degree of cross validation—one would expect the two indicators to converge for children aged 6 months, because those currently exclusively breastfed would have experienced the requisite 6-month period of exclusive breastfeeding.

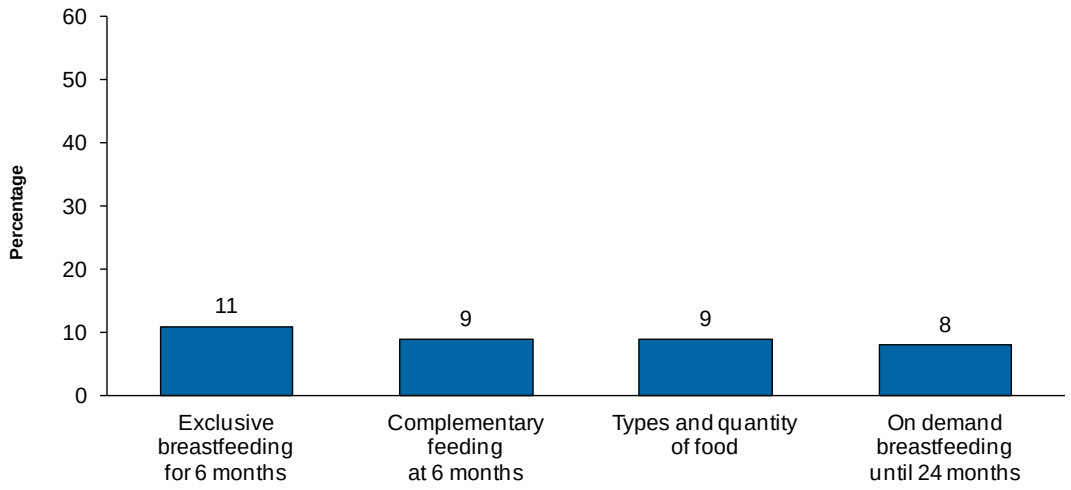
[15] In the baseline survey, we did not ask about whether the child was fed from a different bowl, the quantity of food, or the consistency of the food: all of which are a focus of the program. The complementary feeding practices reported here might therefore differ somewhat from the programmatic definition. In our midline and follow-up surveys we intend to capture additional dimensions of complementary feeding to match the programmatic focus.

that there is a delay in initiating complementary feeding (similarly, around one quarter of mothers who were complementary feeding reported that they initiated complementary feeding at age 7 months or later). Looking at specific foods that were given, about 56 percent of infants aged 6 to 11 months were fed cereal-based foods (rice, khichri, or bread) in the previous day and about 34 percent were fed daal (not shown).

Discussions between households and FLWs on appropriate child nutrition are limited.

Few women reported discussing key newborn and infant feeding topics, such as exclusive breastfeeding and appropriate complementary feeding, with FLWs. The percentage of women reporting having received a home visit from an FLW after the birth of their child and having discussed specific nutrition-related topics was less than 10 percent for most topics (Figure III.13). These numbers are very similar if we restrict the sample to mothers of children over 6 months of age, for whom some of these topics are more relevant.[16] It therefore seems likely that most women are simply not receiving information about appropriate feeding practices and that improvements in providing such information might translate into improved practices and better child health outcomes.

Figure III.13. Women Receiving Postpartum Home Visits and Discussing Infant Feeding Topics with FLWs



Source: Baseline Household Survey (2012).

Notes: N=13,069. FLW is frontline health worker. Numbers are the percentage of women who received a postpartum home visit from an FLW and reported discussions on a specific topic.

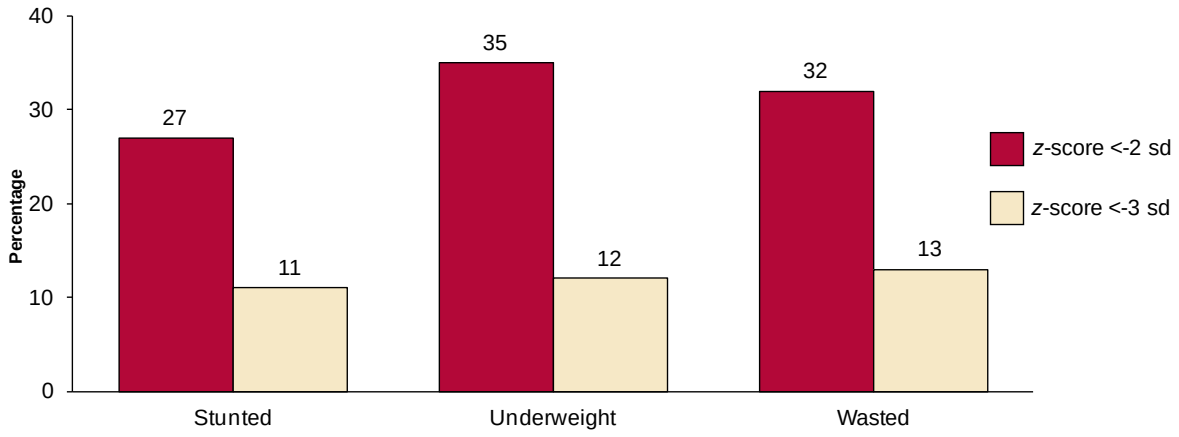
About one-third of children aged 6 to 11 months are undernourished.

Anthropometric measurements for children aged 6 to 11 months suggest that about one in three children in our sample are undernourished based on standard indicators of undernutrition

[16] Again, we first asked the respondent to recall the topics discussed without any prompting and then probed further by asking about specific topics that the respondent did not mention. Figure III.13 shows the responses after prompting; the spontaneous responses were about half as large.

(Figure III.14).[17,18] Specifically, about 27 percent of children were stunted (low length for their age), about 35 percent were underweight (low weight for their age), and about 32 percent were wasted (low weight for their length).[19] These rates of undernutrition are all approximately 15 to 25 percent lower than those we computed from the 2005–2006 NFHS for children in the same age range. Despite this decrease over time, our findings indicate that undernutrition in young children is still prevalent in Bihar.

Figure III.14. Undernutrition in Children Aged 6–11 Months



Source: Baseline Household Survey (2012).

Notes: *Z*-scores calculated with reference to WHO growth standards. N=4,284. sd is standard deviation.

There were also some differences in undernutrition based on birth weight and gender (not shown). Among children for whom birth weight was available from a health card or mother's report, children with a low birth weight (less than 2.5 kg) were more likely to be stunted (by 2 percentage points), underweight (by 7 percentage points) and wasted (by 5 percentage points), although these differences were not statistically significant. Males had much higher rates of undernutrition than females, and were significantly more likely to be stunted (33 percent versus 21 percent), underweight (45 percent versus 24 percent), or wasted (38 percent versus 25 percent). In contrast, males and females had similar rates of undernutrition in the 2005-2006 NFHS, even when restricted to the same age range as our survey. The difference in undernutrition rates by gender in our sample is driven by the fact that males and females have relatively small differences in height and weight, unlike the WHO reference population; the difference in growth standards by gender therefore leads to substantial differences in undernutrition indicators.

[17] We measured the length and weight for each child aged 6 to 11 months in our sample twice, and took the average of the two measurements. We then used the World Health Organization growth standards to compute z-scores for length for age, weight for age, and weight for length based on a gender-specific reference population.

[18] The standard indicators of undernutrition are typically computed for children under the age of 23 months. However, given that our sample of children is restricted to those who were born in the previous year and the difficulty in taking accurate measurements (especially length) for very young children, we compute these indicators for children between the ages of 6 and 11 months.

[19] These indicators are defined by having the relevant z-score (relative to the reference population) of lower than negative two standard deviations. Those with scores below negative three standard deviations are *severely* undernourished, and about one in 10 children in our sample were severely undernourished on each indicator.

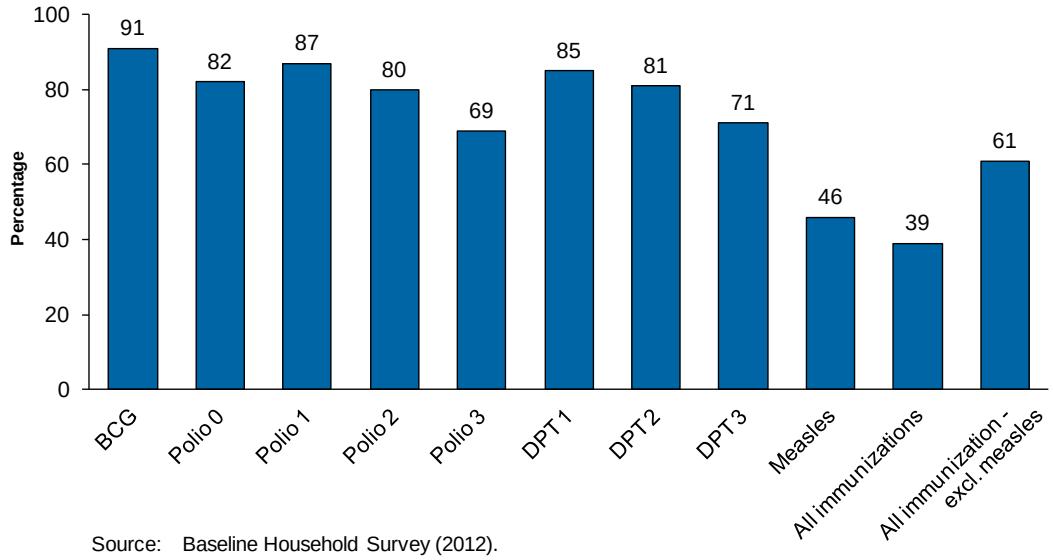
G. Immunization

Child immunization has been a major policy focus in India and Bihar in recent years, and the government provides financial incentives to FLWs for meeting immunization targets. Despite this focus, there is a particular concern that children may not receive the full set of routine immunizations following those given at birth.[20]

Early immunization rates for children in our sample are high, but later immunizations rates tend to drop off.

Immunizations recorded from immunization cards or mother reports (when cards were not available) suggest that early immunization rates are high in Bihar (Figure III.15). About 9 in 10 of our sample of children over 9 months of age received the basic set of early immunizations, including BCG (91 percent), polio 1 (87 percent), and DPT 1 (85 percent). However, immunization rates do tend to decrease for subsequent immunizations, dropping to around 70 percent for polio 3 and DPT 3. Overall, about 61 percent of children over 9 months of age in our sample received all required routine immunizations (ignoring measles, for the reason explained below). Immunization rates differ significantly by gender, with females over 9 months of age about 6 percentage points less likely to have received all required routine immunizations compared to males of the same age (not shown). Overall, the pattern of immunizations suggests that there is scope for improvement in reducing the drop-off between early and later immunization, so that children receive the full set of recommended immunizations.

Figure III.15. Routine Immunizations Among Children over Nine Months of Age



Source: Baseline Household Survey (2012).

Note: N=1,911.

[20] The full set of routine immunizations includes BCG and polio 0 at birth, OPV 1 (polio 1) and DPT 1 at age 6 weeks, OPV2 (polio 2) and DPT 2 at age 10 weeks, OPV 3 (polio 3) and DPT 3 at age 14 weeks, and measles at age 9 months.

Our findings on immunization rates are largely consistent with data from other surveys in Bihar, which suggest that these rates have been rapidly increasing in recent years. For example, the BCG immunization rate increased from 64 percent in the 2005–2006 NFHS to 94 percent in the 2010–2011 AHS, while DPT 3 increased from 46 percent to 80 percent in the same period. Our findings of the drop-off between early and late immunizations are also consistent with other surveys. For example, 65 percent of children in the NFHS received DPT 1, but only 46 percent received DPT 3.

These findings should be viewed with some caution, however, because our sample of children, all born in the previous 12 months, is younger than in other surveys, which typically report immunizations for children aged 12 to 23 months. An older sample is typically preferred in order to account for possible delays in receiving some immunizations. However, because most routine immunizations are intended to be administered by age 6 months, our restriction to children over 9 months should account for most of the delays (unless these are severe), and the estimates should be broadly comparable to results of other surveys. The exception is the measles vaccine, which is supposed to be administered at 9 months and is therefore likely to be more substantively affected by our age restriction. For this reason, we focused on the other immunizations in our analysis and discussion.

H. Family Planning

Family planning is another major family health area that the Ananya interventions are attempting to address, with a particular focus on postpartum contraceptive use. Many of the program's interventions target changes in practice through interactions with FLWs and by stimulating awareness of and demand for family planning, including through media efforts.[21]

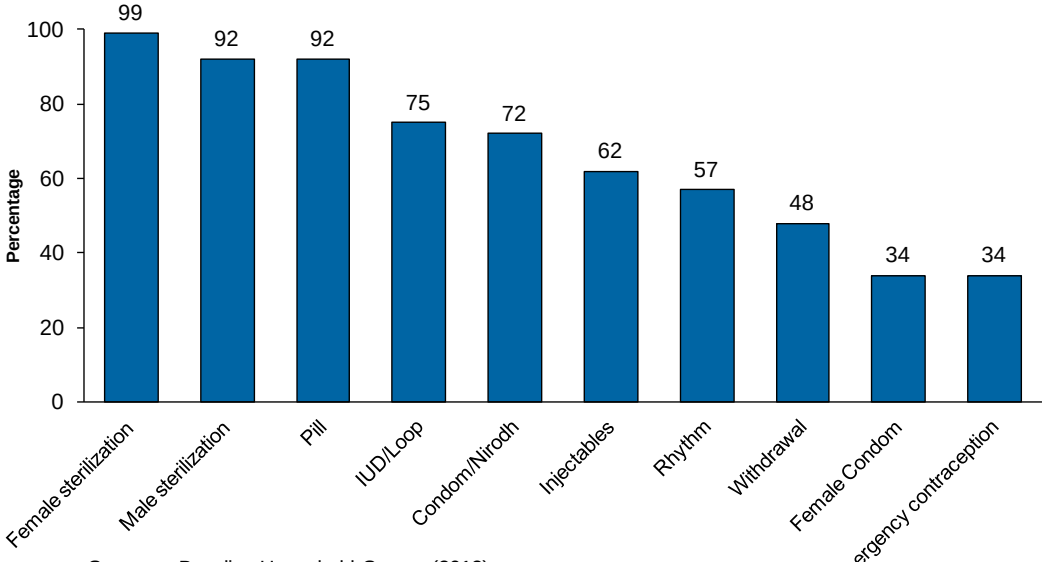
Knowledge of contraceptive methods is high, but contraceptive use is low.

Awareness of modern contraceptive methods was high, especially for permanent methods. Almost all women surveyed were aware of female sterilization, and over 90 percent were aware of male sterilization (Figure III.16). Knowledge of nonpermanent modern methods such as the pill, intrauterine devices (IUDs), condoms, and injectables varied but was relatively high overall (between 62 and 92 percent). However, only about 27 percent of women in our sample who were not pregnant and gave birth more than six months ago were currently using any form of contraception (Figure III.17).[22] Those using contraception were roughly evenly divided between those using permanent methods, other modern methods, and traditional methods such as the rhythm method or withdrawal (Figure III.17). About half of nonusers reported that they intended to use contraception in the next year (not shown), although the extent to which these intentions will translate into practice is unknown.

[21] Our understanding is that this component may be strengthened by an increased focus on family planning corners and other improvements in family planning at PHC facilities.

[22] We restrict to women who gave birth more than six months ago to account for the contraceptive effects of early breastfeeding, although results are similar without this restriction.

Figure III.16. Awareness of Contraceptive Methods



Source: Baseline Household Survey (2012).

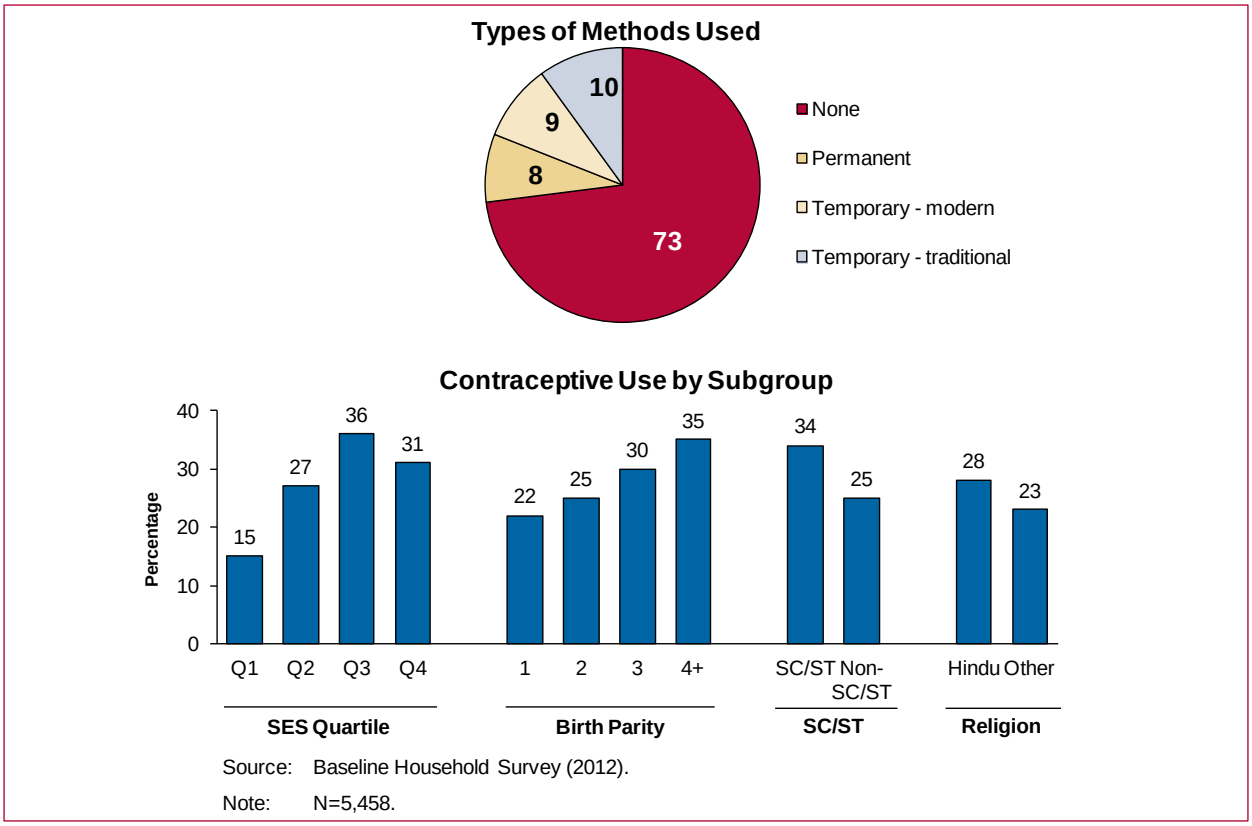
Notes: N=13,069. IUD is intrauterine device.

These rates—especially for permanent methods—are lower than those reported in other health surveys in Bihar (for example, 38 percent of women in the 2010–2011 AHS use contraception of some form). This difference is most likely because our sample of women is restricted to those who gave birth in the previous year and therefore excludes many women who have been sterilized and who would appear in surveys of all women of reproductive age. The higher rates of permanent methods in other surveys (for example, 30 percent of women in the 2010–2011 AHS report using a permanent method) drive the differences in overall contraceptive rates between our survey and others. Indeed, if we restrict the sample in the 2005-2006 NFHS to women who gave birth in the previous year in Bihar, use of permanent methods and overall contraceptive use is much lower; for example, overall contraceptive use drops from about 30 percent to 15 percent (AHS micro-data were not available to make this comparison).

Contraceptive use varies substantially across key subgroups of interest.

Subgroups defined by birth parity, SES status, religion, and caste showed substantial differences in contraceptive use (Figure III.17). Use tended to be highest for women with higher birth parity (35 percent for those with more than three children compared to 22 percent for those with one child) and for women in higher socioeconomic quartiles (31 percent in the highest quartile and 36 percent in the second highest quartile, compared to 15 percent in the lowest). It was also higher for Hindu women (28 percent compared to 23 percent for other women, almost all of them Muslim) and, perhaps surprisingly, higher for SC or ST women (34 percent compared to 25 percent of non-SC or non-ST women). The differences in overall contraceptive use across subgroups are driven by differences in the use of specific contraceptive methods. For the birth parity and religion subgroups, it is driven primarily by permanent methods, for the SES subgroup it is driven by temporary methods, and for the caste subgroup it is driven by non-modern methods (not shown).

Figure III.17. Use of Contraceptive Methods Among Women Who Were Not Pregnant and Had a Child over 6 Months Old



Source: Baseline Household Survey (2012).

Note: N=5,458.

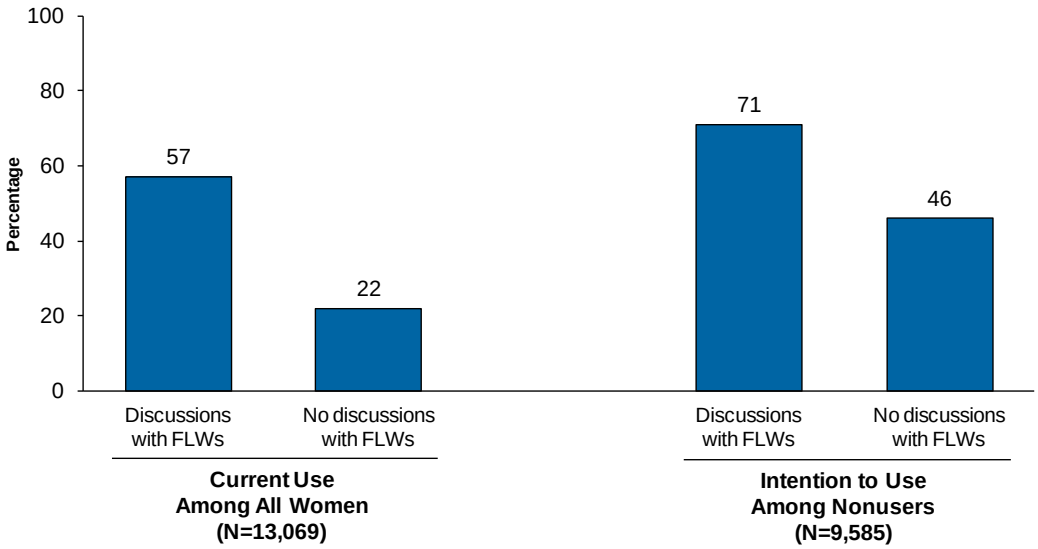
Information provided to women about family planning by FLWs or other health workers is limited.

Few women appear to have received information about contraception and family planning. As mentioned earlier, only about 10 percent of women who delivered at a facility had a family planning discussion before leaving the facility. In addition, only about 12 percent of women discussed contraception with an FLW during pregnancy or after giving birth (not shown). There is some suggestive evidence that these discussions—one focus of the Ananya program—may translate into improved practices (Figure III.18). Specifically, current use of contraception is higher among women who have discussed contraception with FLWs than those who have not (57 percent versus 22 percent), as is the intention to use amongst nonusers (71 percent versus 46 percent). However, these relationships are not necessarily causal as they may be driven by other observable or unobservable factors (for example, socioeconomic status or interest in contraception).

I. Other Baseline Findings

In this subsection, we discuss remaining baseline household survey findings in three areas that are relevant to specific Ananya grants: (1) hygiene and sanitation, which is relevant to the PSI grant's focus on improving sanitation practices; (2) existence of and participation in community groups, through which the PCI grant intends to catalyze behavioral change; and (3) access to and information received from various forms of media, the mechanism through which some of the interventions of BBC Media Action's SDP grant are being implemented.

Figure III.18. Association Between FLW Discussions and Use of Contraception



Source: Baseline Household Survey (2012).

Note: FLW is frontline health worker.

There are gaps in hand washing behavior, and open defecation is practiced in the majority of households.

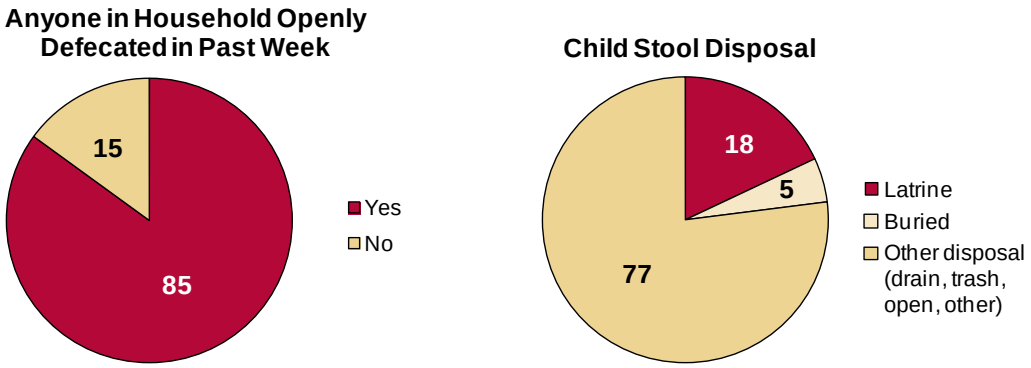
There were important deficiencies in basic hygiene and sanitation practices among women surveyed. Although over 90 percent of women reported having washed their hands with soap the previous day, only 29 percent reported typically washing their hands before feeding their infant, and only 30 percent reported doing so after cleaning infant feces (not shown).[23] These shortcomings in hand washing practices could have adverse implications for the health of the child and mother. Open defecation, which can lead to the spread of disease, is widespread: only 15 percent of women reported that nobody in the household had openly defecated in the previous week. Child stools can also spread disease if they are not correctly disposed of, but less than one-quarter of households disposed of the most recent child stool in a hygienic manner (Figure III.19). Even households with access to latrines did not always use them: 33 percent of those with a latrine reported that someone in the household had openly defecated in the previous week (not shown).

Very few women participate in community groups.

Only 19 percent of women reported any community group operating in their area, and only about 3 percent of women had attended a community group meeting in the previous three months (not shown). Therefore, creating or ensuring functional community groups that attract participation will be critical for community group–based interventions, such as those being implemented by the community mobilization grant.

[23] To measure hand washing practices, we asked women "when do you wash your hands during a typical day" and recorded spontaneous responses.

Figure III.19. Open Defecation and Child Stool Disposal



Source: Baseline Household Survey (2012).

Note: N=13,069.

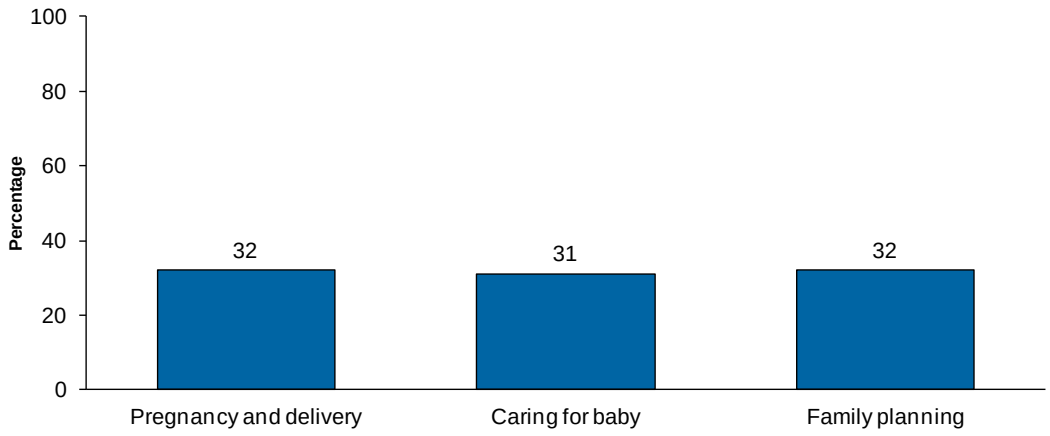
Few women have access to media, although there are some suggestive correlations between media messages and practices.

Access to traditional forms of media is quite limited. Only 7 percent of women reported having read (or having had read to them) a newspaper or magazine in the previous three months, 9 percent listened to the radio, and 20 percent watched television (not shown). These rates are somewhat higher in urban versus rural areas, especially for television (47 percent compared to 17 percent in rural areas). Overall, 24 percent of women reported having used one form of media in the previous three months.

Only about one-third of all women reported hearing messages relevant to maternal and child health through the media, such as messages about pregnancy and delivery, caring for the baby, or family planning (Figure III.20). These rates were somewhat higher than the reported exposure to media, which could reflect messages received though other mechanisms such as billboards or posters at facilities. They could also reflect differences in recall for specific messages versus general media use. Receipt of these messages is correlated with appropriate practices (Figure III.21). For example, those who have heard messages on family planning were more likely to use contraception (44 percent compared to 17 percent for those who have not heard messages) and to plan to use contraception in the future (59 percent of nonusers compared to 44 percent). However, as before, these relationships do not necessarily have a causal interpretation as they may reflect other underlying differences in the characteristics of message recipients.

Overall, these results suggest that traditional interventions that rely on access to media could be effective, but these effects may be limited by low media penetration. Therefore it may also be important to use other approaches to reach households. For instance, some of the SDP interventions are delivered through mobile phones, for which penetration rates are much higher than for traditional media: 59 percent of women in our sample reported having a mobile phone that they use for themselves.

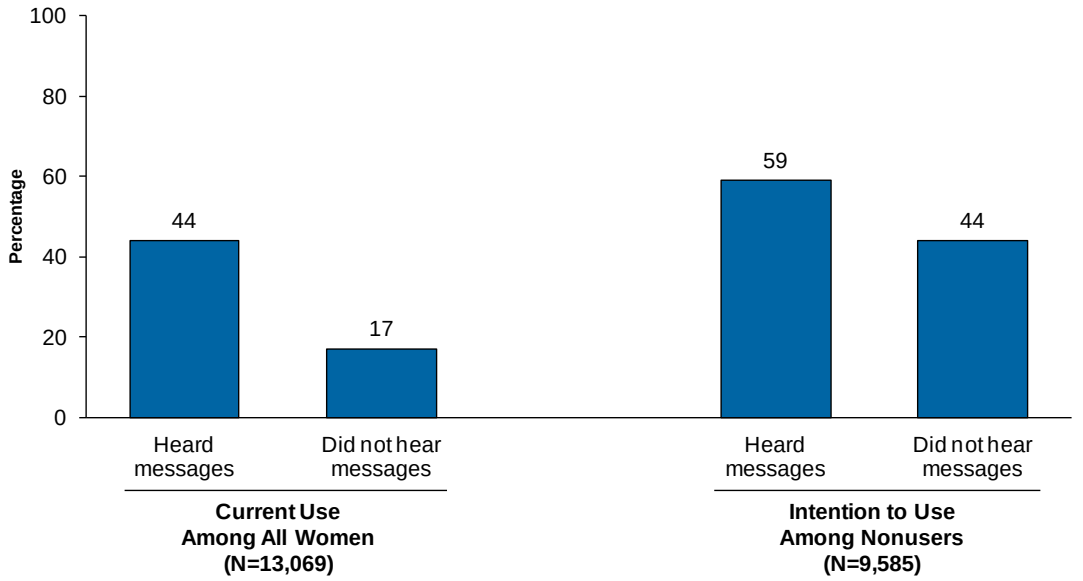
Figure III.20. Exposure to Media Messages on Maternal and Child Health



Source: Baseline Household Survey (2012).

Note: N=13,069.

Figure III.21. Association Between Exposure to Family Planning Messages and Use of Contraception



Source: Baseline Household Survey (2012).

J. Conclusion

The results from our baseline household survey suggest that, despite steady improvements in some coverage areas, there are still substantial gaps in key family health practices and in access to quality family health care in Bihar. These gaps persist across all of the domains that we considered, including antenatal care, delivery, newborn care, nutrition, immunization, and family planning. The core Ananya interventions aim to address many of these gaps, especially through improvements in the quantity and content of interactions between women and FLWs, which are currently very limited, as well as through improvements in the quality of delivery services provided at facilities. We will use our subsequent household surveys at midline and endline to assess the extent to which the Ananya program was successful in achieving changes in key family health indicators in the eight focus districts and across the state.

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IV. FINDINGS FROM FRONTLINE WORKER SURVEYS

Enhancing the coverage and quality of services provided by FLWs is one of the key strategies through which the Ananya program seeks to improve maternal and child health outcomes. The program provides FLWs with job aids and other tools to help them improve communications with households on a range of maternal and child health areas. Through subcenter platform meetings and other trainings, the program provides inputs on how to use these tools and conduct home visits, thereby seeking to motivate FLWs to improve the quality and quantity of services they provide to households. In addition, the Ananya program aims to integrate more closely the functions of ASHAs and AWWs. The goal is to enable FLWs to provide beneficiaries with a comprehensive package of services across the continuum of family health care.

We administered baseline surveys to the three types of FLWs—ASHAs, AWWs, and ANMs—designed to capture information in four areas: (1) training, (2) knowledge in areas of maternal and child health practices that Ananya hopes to improve, (3) household counseling on these practices and the implementation of other services, and (4) receipt of incentive payments. This chapter describes the FLWs' self-reports related to these outcomes. Although we present information obtained from all three types of FLWs for each domain, we center our discussion on the reports of ASHAs and AWWs, given that these workers reside in the communities, have maximum interaction with the households, and are an important focus of the program's efforts. As in our analysis of the household data in Chapter III, we focus on results for the entire state; results for the eight focus districts were similar in most cases.

A. Background Characteristics

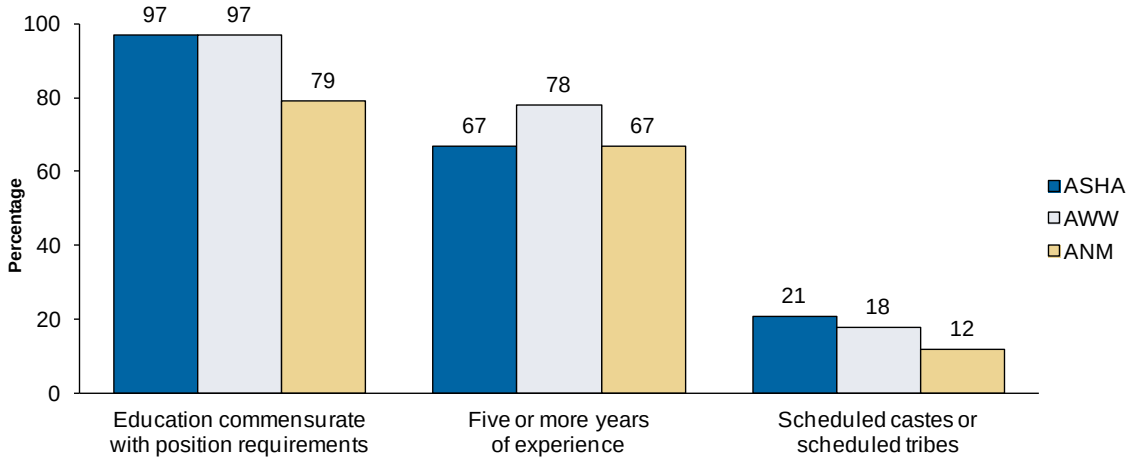
This section provides context for the baseline FLW findings by describing the background characteristics of FLWs, including their education, work experience, caste, and other characteristics.

The educational levels of FLWs correspond with position requirements; their work experience levels reflect the duration of these positions in the public health sector.

According to the standards set by the ICDS, AWWs are expected to have a 10th grade education. Around 97 percent of AWWs in our sample met that requirement. The NRHM requires ASHAs to have completed the 8th grade, and consistent with those standards, 97 percent of ASHAs in our sample have an 8th grade education (Figure IV.1). ANM educational requirements have recently changed. Originally, ANMs were required to have completed the 10th grade and taken a diploma course. That minimum qualification was raised last year to a 12th grade education and diploma course. In our sample, 79 percent of ANMs have completed the 10th grade and attended college, taken a college-level course, or received a diploma (Figure IV.1). However, only 45 percent fulfill the new requirement of a 12th grade education and diploma course.

In general, FLWs appear to stay in their positions for long periods. For example, more than three-quarters of AWWs had held their positions for five or more years (Figure IV.1), and the average tenure for these workers was almost nine years (not shown). The ASHA position was introduced into communities in 2005–2006, and almost 70 percent of the ASHAs in our sample reported working as ASHAs for five or more years, suggesting that many of them joined the program soon after it was initiated and have remained in their positions. The distribution of caste, particularly among ASHAs and AWWs (Figure IV.1), is similar to the caste characteristics of the households in our sample.

Figure IV.1. Education, Work Experience, and Caste



Source: Baseline ASHA, AWW, and ANM Surveys (2012).

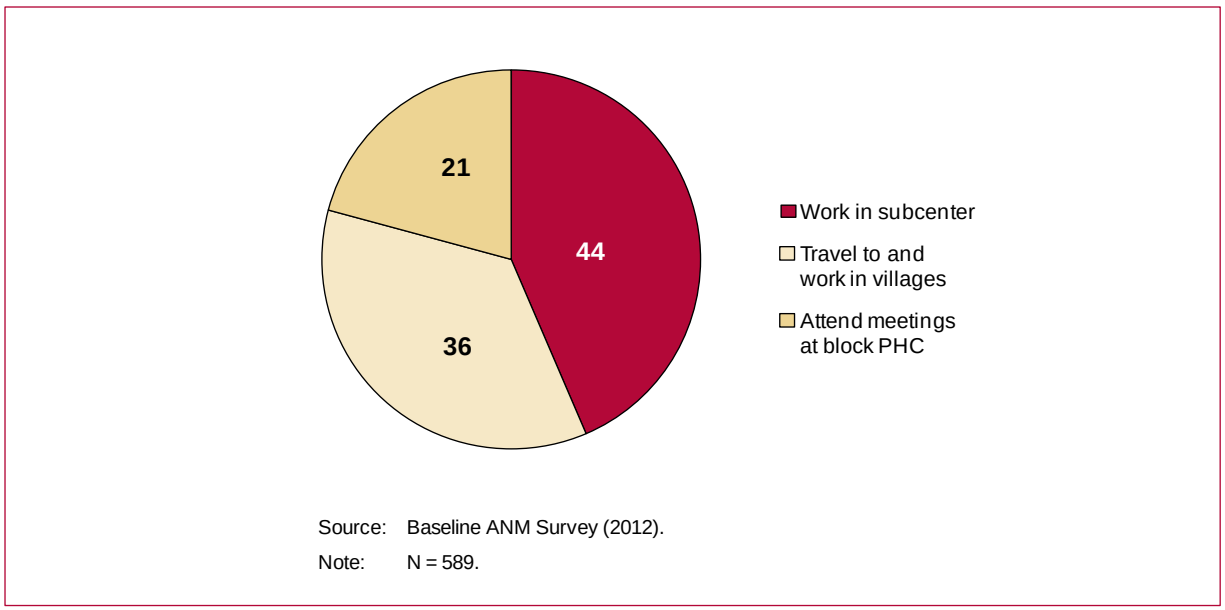
Note: ANM is auxiliary nurse midwife; ASHA is accredited social health activist; AWW is anganwadi worker. N=667 for ASHAs; N=892 for AWWs; N=589 for ANMs.

ANMs spend much of their time away from the subcenter and in the field visiting villages in their catchment area.

The subcenter is the ANM's main place of operation. It is the lowest tier in the rural health care system and the first point of contact with a health care provider for those living in rural communities. At the subcenter, ANMs are responsible for providing basic antenatal and postnatal care, family planning services, immunization services, drugs for minor health complaints, and counseling on institutional delivery and other maternal and child health practices. ANMs reported spending 44 percent of their time at the subcenter (Figure IV.2). ANMs have a heavy immunization-related workload. They attend the monthly VHND activities at each of the villages in their charge, vaccinating children and coordinating the tracking of immunization due dates with ASHAs and AWWs. With an average of five to six villages in their subcenter catchment areas, and each village holding a VHND once a month, ANMs are frequently on the road visiting villages (more than one-third of their time). ANMs are also regularly asked to attend meetings with block-level officials. They reported spending 21 percent of their time (about one day per week) at the primary health center (Figure IV.2).

For additional insight into the workload levels of ANMs, we asked respondents how many pregnant women and children typically visit their center. They reported that a median of 10 pregnant women and 10 sick children visited the subcenter in the 30 days before the interview (not shown). We also asked about the caseloads of ASHAs and AWWs. According to reports across all ASHAs and AWWs in the sample, they serve, on average, approximately 33 children under 12 months of age, 20 pregnant women, and 16 lactating women (not shown).

Figure IV.2. ANM Work Activities



Source: Baseline ANM Survey (2012).

Note: N = 589.

Not all communities are formally linked to an anganwadi center.

One of Ananya's goals is to ensure that coverage is universal and that the services of the NRHM and ICDS are reaching all households targeted by the programs. In our surveys, 29 percent of ANMs reported that parts of their catchment area were not served by an anganwadi center (not shown). Consequently, some households in these areas may not be receiving the services of an AWW or ASHA, including take-home rations, preschool activities for young children, and other nutrition and maternal and child health services. These findings align with the enumeration activities facilitated by CARE to inform the IFHI Initiative under Ananya, which also found that either individual households in catchment areas or segments of catchment areas (hamlets or *tolas*) are left out of official FLW coverage.

B. Training

Training is one approach to increasing the capacity of FLWs to provide families with key maternal newborn and child health (MNCH) services and information. In the initial years of their service, FLWs receive introductory and refresher training sessions. In our survey, we aimed to develop an understanding of any recent training they may have received. As part of our baseline (which largely took place before the Ananya training efforts were in place), we asked respondents whether they had participated in any trainings during the previous year or whether they had attended meetings at which training was provided. We also asked them about the topics that these sessions covered.[1] This section describes the training that FLWs reported receiving in the past year, and the broad topics covered during those sessions.

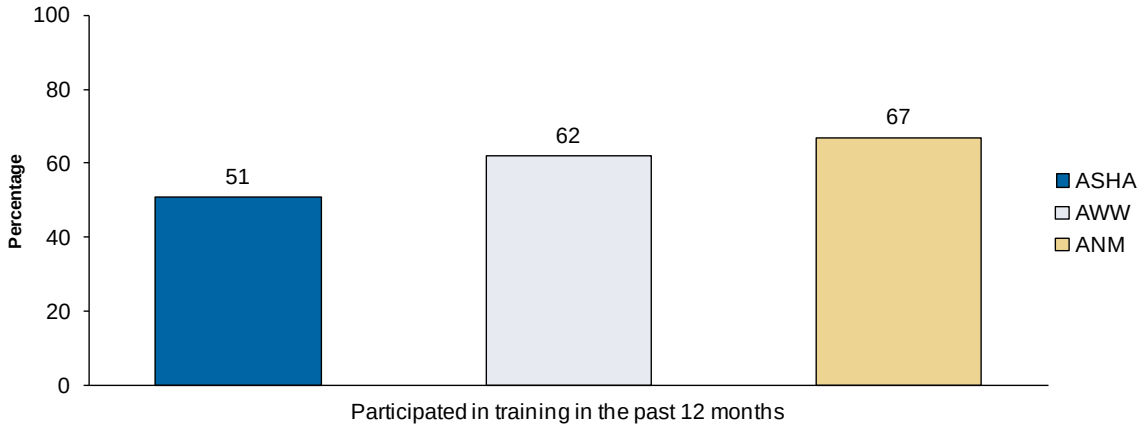
[1] There is likely to be variation in what FLWs consider to be training, as they are often asked to attend meetings at which health topics may be discussed. In addition, we do not capture information on the quality of the trainings and how the content was explained. Nonetheless it is useful to get an understanding of how much training is reported and the topics FLWs report as being covered. We will attempt to explore the quality of trainings in our qualitative process study. Our midline data collection will also attempt to capture any likely variation in the type or intensity of training as well as topics covered in focus versus non-focus districts.

Slightly more than half of the FLWs report receiving some form of training in the past 12 months.

Around 62 percent of AWWs and 51 percent of ASHAs reported having received training in the 12 months before the survey was administered (Figure IV.3). Self-reported training rates are similar for ANMs (67 percent).[2] FLWs may consider "training" to include meetings at which health topics are discussed, such as the monthly meetings for ASHAs and AWWs held at the block level. Therefore, these numbers may not capture the extent of the formal trainings received by FLWs and should instead be interpreted as the level of their exposure to both meetings and trainings where they received guidance on family health practices.

Given Ananya's focus on offering training at the subcenters through subcenter platform meetings, we also tried to understand whether at baseline FLWs reported attending any meetings at the subcenters. Reports of subcenter meetings or trainings were low, with 14 percent of ASHAs and 19 percent of AWWs reporting having attended training at the subcenter (not shown). Given that the Ananya subcenter meetings had just begun at the time of the survey data collection, we examined whether these numbers reflected program efforts. Indeed, we found that reports of attending subcenter meetings were higher in the focus districts (around 22 percent for ASHAs and 31 percent for AWWs) compared with the non-focus districts (12 percent for ASHAs and 15 percent for AWWs) (not shown).[3]

Figure IV.3. Participation in Training



Source: Baseline ASHA, AWW, and ANM Surveys (2012).

Note: ANM is auxiliary nurse midwife; ASHA is accredited social health activist; AWW is anganwadi worker. N=667 for ASHAs; N=892 for AWWs; N=589 for ANMs.

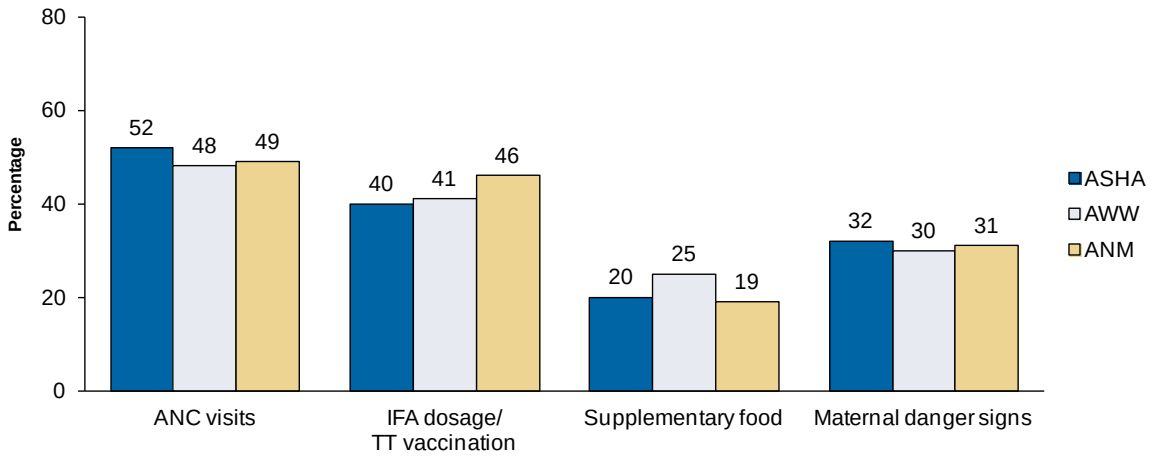
[2] We asked respondents, "During the last 12 months, did you receive any training for your job functions/duties as [AWW/ASHA/ANM]?"

[3] The reports of sub-center meetings in non-focal districts may reflect the work of other development partners and NGOs.

Despite the modestly high levels of training reported, most FLWs have not received recent training on important antenatal care topics, including recognizing danger signs and supplementary feeding.

The training that FLWs report having received in the past 12 months shows critical gaps. Across the group, less than half of the FLWs reported receiving training on a number of antenatal care topics, including ANC visits and preventative measures such as the dosage of IFA tablets and TT vaccinations (see Figure IV.4).[4] Reports of receiving training on supplementary feeding were particularly low (roughly 20 to 25 percent). In addition, only one in three reported having received training in the past year on recognizing maternal danger signs.[5]

Figure IV.4. Training on Antenatal Care



Source: Baseline ASHA, AWW, and ANM Surveys (2012).

Note: ANM is auxiliary nurse midwife; ASHA is accredited social health activist; AWW is anganwadi worker; IFA dosage is iron and folic acid; TT is tetanus toxoid. N=667 for ASHAs; N=892 for AWWs; N=589 for ANMs.

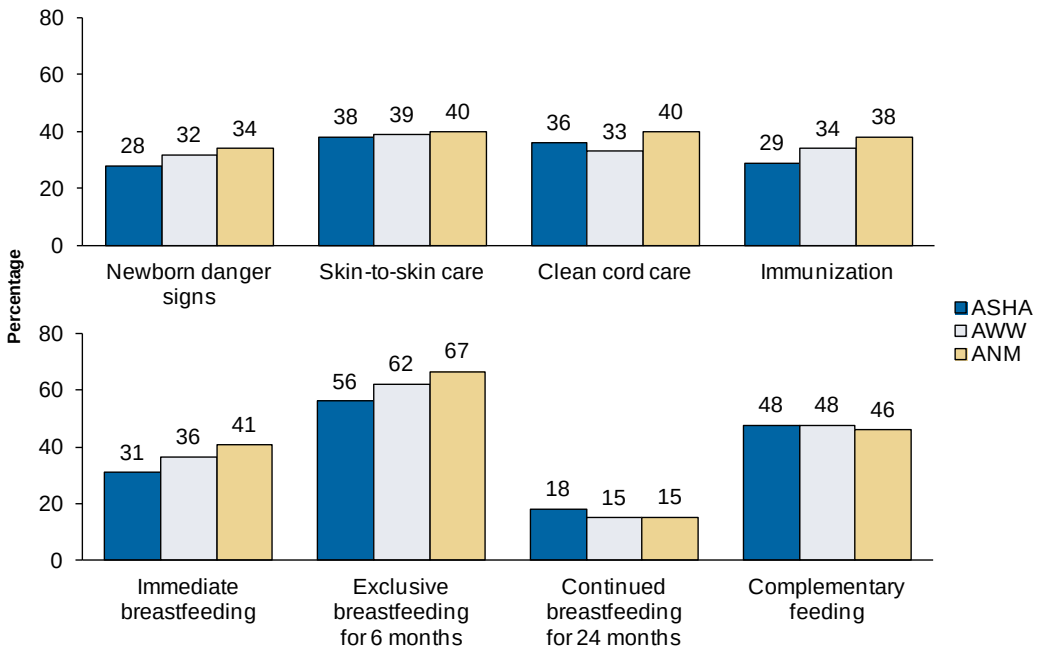
Most FLWs have not received recent training on newborn care topics, and information related to infant and child nutrition is varied.

Roughly one-third of FLWs reported receiving training on newborn care topics in the past 12 months. This includes information on newborn danger signs, skin-to-skin care, clean cord care, and immunization (Figure IV.5). There is greater variation in reports of infant feeding in the past 12 months. For example, although around two-thirds of FLWs reported receiving information on exclusive breastfeeding for six months, there is less coverage of other feeding-related topics, such as immediate breastfeeding and continued breastfeeding for 24 months. Only 30 to 40 percent of

[4] We asked FLWs whether the meetings or trainings they attended covered specific topics, not whether they received guidance on how to communicate that information to households.

[5] Respondents were asked first whether trainings over the past year covered any topics related to antenatal care, labor, or delivery. If they responded in the affirmative, we posed an open-ended question asking them to describe the topics discussed (responses were spontaneous). This format was followed for all other MNCH topic areas, including newborn care, breastfeeding and infant feeding, and reproductive health.

Figure IV.5. Training on Newborn Care and Infant Feeding



Source: Baseline ASHA, AWW, and ANM Surveys (2012).

Note: N = 667 for ASHAs. N = 892 for AWWs. N = 589 for ANMs.

FLWs reported receiving information on immediate breastfeeding and an even smaller percentage on continued breastfeeding (Figure IV.5). Providing information to FLWs these issues is particularly important in a population that does not typically breastfeed newborns immediately after birth and has a strong tradition of giving pre-lacteals to newborns. (As Chapter III reports, only 45 percent of mothers reported that they breastfed within an hour of delivery, while 28 percent of mothers said they fed their newborns something other than breast milk on the first day.) Similarly, less than half the FLWs reported receiving information in the past 12 months on complementary feeding, an important aspect to focus on when undernutrition and stunting are prevalent (affecting about one-third of children between 6 and 11 months in our sample).

A larger percentage of FLWs reported receiving training related to family planning. Approximately two-thirds (59 to 71 percent) of FLWs reported receiving information on permanent and temporary birth control methods in the past 12 months (not shown). Training on "birth spacing"—that is, advice related to ensuring adequate spacing between children—was reported less frequently (by 18 to 27 percent of respondents) as a topic of discussion (not shown).

C. Knowledge of Maternal and Child Health Topics

As noted in Chapter I, although their responsibilities can overlap, AWWs, ASHAs, and ANMs have each traditionally focused on different segments of family health. Employed by ICDS, AWWs primarily focus on nutrition. They are responsible for distributing take-home rations to pregnant women, nursing mothers, and young children, and they run a small daily preschool for young children at the anganwadi center. They also help gather children for immunization when the ANM is in the village for the village health and nutrition day. ASHAs are employees of the NRHM and have a broader health focus. They are responsible for providing information to pregnant women (and

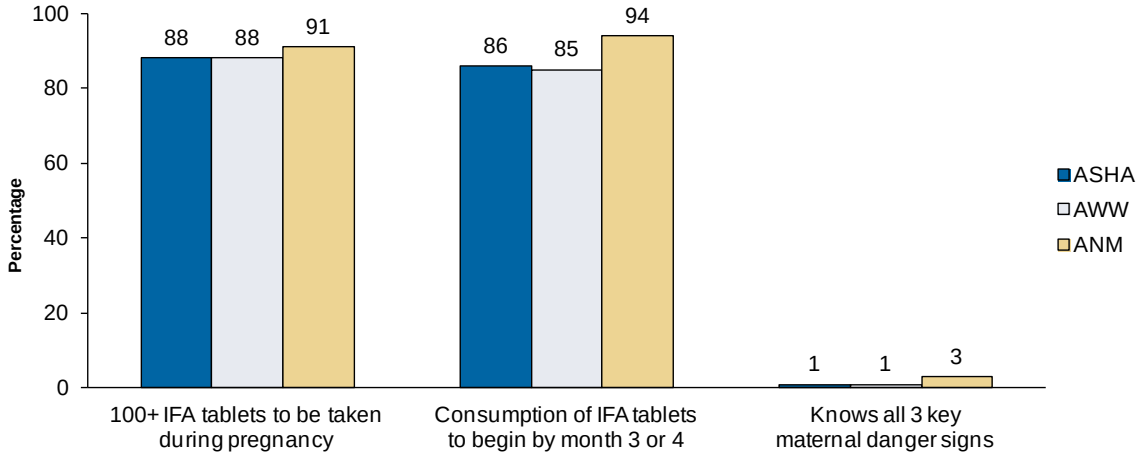
new mothers) on various aspects of antenatal, delivery, and postnatal care, including how to prepare for delivery, the benefits of institutional delivery, comprehensive immunization, and family planning. ANMs supervise ASHAs. Their responsibilities include comprehensive immunization, antenatal care, and other maternal and child health services. They spend a significant portion of their time traveling to villages in their catchment areas to immunize all children under the age of 2 and to administer TT injections to pregnant women.

One of the goals of the Ananya program is to integrate some of the FLW functions so that ASHAs and AWWs, who are both located in the community and have immediate access to beneficiaries, can work together more fluidly to provide services at all critical junctures of pregnancy, delivery, the postpartum period, and early childhood. For instance, the SDP grant's interventions provided training to all ASHAs and AWWs in the focus areas, and similarly, the IFHI subcenter platform meetings include both ASHAs and AWWs. To obtain an overall understanding of the FLWs' familiarity with different MNCH topic areas, we asked both sets of workers about their knowledge of key practices across the family health continuum of care. We sought to capture at a high level their familiarity with basic elements of antenatal, delivery, newborn, and postpartum care, as well as reproductive health and family planning.

FLWs show high levels of knowledge related to ANC preventative practices but are less aware of important maternal danger signs.

Knowledge of some preventive antenatal care practices is high (Figure IV.6). Around 90 percent of respondents reported correctly that women should ideally take 100 or more IFA tablets during pregnancy. Most FLWs further reported that women should begin taking IFA tablets by the third or fourth month of pregnancy.

Figure IV.6. Knowledge of Key Antenatal Care Practices



Source: Baseline ASHA, AWW, and ANM Surveys (2012).

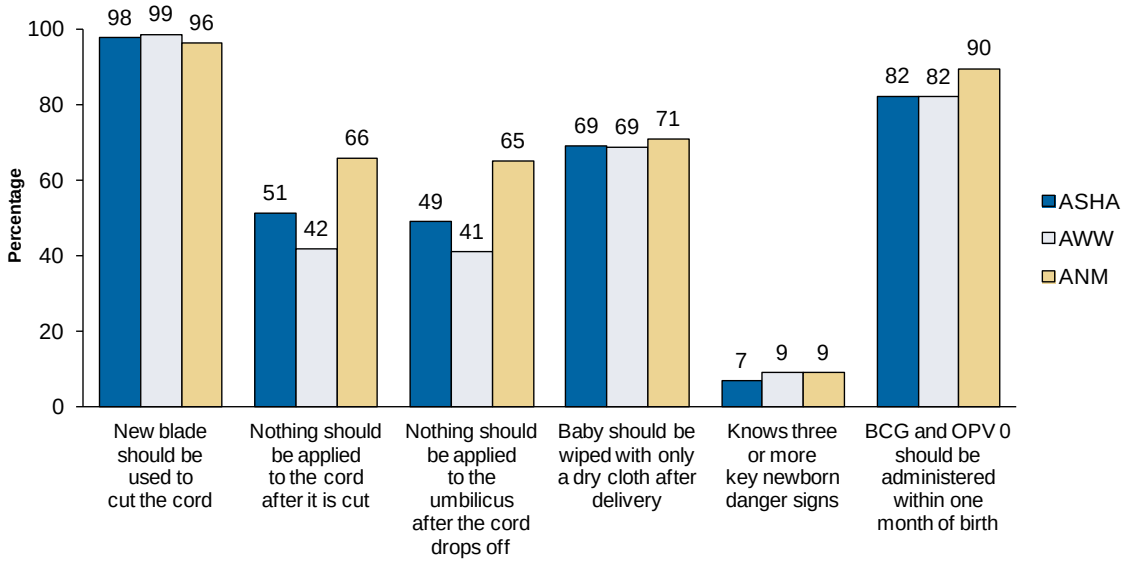
Note: Key maternal danger signs include swelling in the hands, body, or face; convulsions; and excessive vaginal bleeding. N = 667 for ASHAs. N = 892 for AWWs. N = 589 for ANMs.

However, there is less familiarity with key maternal danger signs, and few FLWs were able to report on multiple key danger signs. The most commonly reported key danger sign is swelling in the hands, body, or face; around 47 to 61 percent spontaneously mentioned this symptom when asked to name some of the common maternal danger signs during the delivery and postpartum period. However, the rates fall considerably when we look at knowledge of other key danger signs. Only one-quarter or less of the FLWs mentioned convulsions and excessive vaginal bleeding (not shown). Very few FLWs (only 1 to 3 percent of respondents) were able to name all three of these key danger signs.

Knowledge of newborn care practices varies.

Knowledge of some elements of newborn care is high, particularly those related to immunization. Between 82 and 90 percent knew that BCG and OPV 0 vaccinations should be administered within one month of birth (Figure IV.7). Nearly all respondents also reported knowing that a new blade should be used to cut the umbilical cord. However, FLWs are less familiar with how to keep the cord clean; only around 40 to 65 percent reported that nothing should be applied to either the cord after it is cut or to the umbilicus after the cord drops off.

Figure IV.7. Knowledge of Key Newborn Care Practices



Source: Baseline ASHA, AWW, and ANM Surveys (2012).

Note: Key newborn danger signs include difficult or rapid breathing, drowsiness or lethargy, poor sucking, low birth weight or lack of weight gain, and when the baby's body is cold to the touch. N=667 for ASHAs, N=892 for AWWs, N=589 for ANMs.

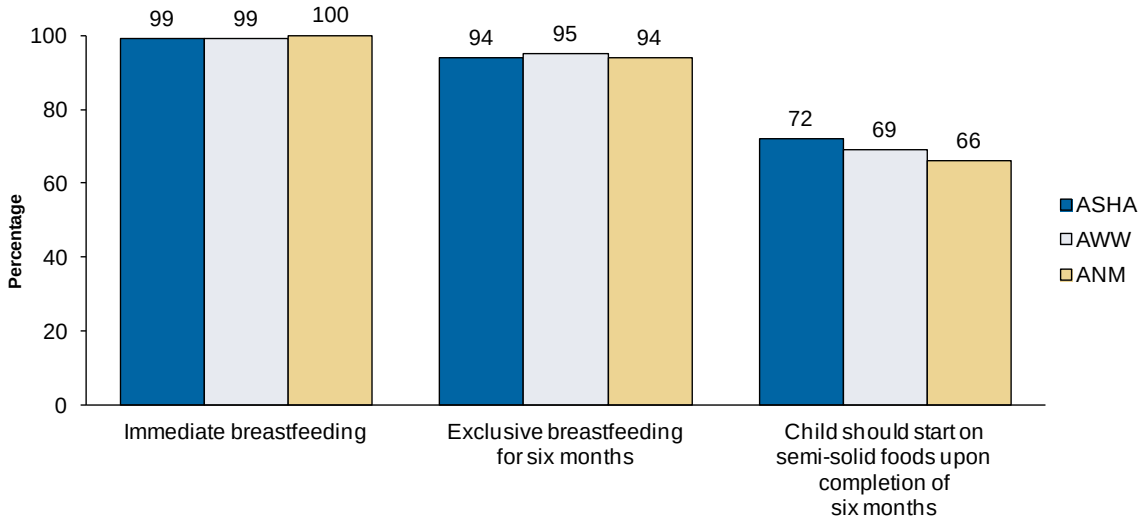
Between 69 and 71 percent of FLWs were familiar with an important thermal care practice: wiping the baby with a dry cloth after delivery (as opposed to bathing the baby or wiping the baby with a wet cloth). Much like low levels of training on newborn danger signs, knowledge of newborn danger signs is also low. When asked to name some of the common danger signs that can appear for the baby after birth, less than 10 percent of the respondents spontaneously mentioned three or more of the key danger signs that Ananya is training FLWs to recognize: difficult or rapid breathing,

drowsiness or lethargy, poor sucking, low birth weight or lack of weight gain, and a body that is cold to the touch. Even ANMs, who have more advanced education, show the same level of familiarity with these key danger signs as ASHAs and AWWs. Several FLWs (around 30 to 45 percent of the sample) mentioned more general illnesses, such as diarrhea, fever, and a cough, when asked to name common danger signs in a newborn.

FLWs show relatively high levels of knowledge related to infant feeding practices.

Knowledge of breastfeeding and infant feeding practices is generally high. Between 94 and 100 percent of FLWs were familiar with immediate and exclusive breastfeeding. Familiarity with complementary feeding practices is lower (Figure IV.8). Between 66 and 72 percent correctly said a child should start eating semisolid foods once he or she has completed six months (that is, in the seventh month after birth). There is less awareness of what types of semisolid foods to give children and when to give them. Most believe that consumption of protein-rich foods, such as meat, fish, and eggs should begin much later. Between 65 and 69 percent of respondents believe that children should not start eating eggs until they are 12 months of age or older (not shown). These frequencies are even higher for the consumption of meat (79 to 82 percent) and fish (77 to 81 percent). Again, it is interesting to note that there was not much difference in the reported levels of knowledge across the types of workers on these outcomes.

Figure IV.8. Knowledge of Infant Feeding Practices



Source: Baseline ASHA, AWW, and ANM Surveys (2012).

Note: N = 667 for ASHAs. N = 892 for AWWs. N = 589 for ANMs.

D. Attendance at Deliveries and Home Visits

By improving the frequency and quality of FLW interactions with households, the Ananya program aims to raise awareness of antenatal care, healthy delivery practices, newborn care, postpartum care, reproductive health, and more. NRHM currently provides incentives to ASHAs for the promotion of institutional deliveries. The Ananya interventions aim to ensure that FLW interactions with households promote birth preparedness for those who have decided on institutional deliveries as well as those planning home deliveries, or for the contingency of a home or institutional delivery in case of an emergency. In addition, the program seeks to promote pre- and post-birth home visits, and to improve the delivery of key family health messages during those visits.

We asked FLWs about their attendance at deliveries, and also about home visits conducted during pregnancy and after birth to gain an understanding of the variety of topics discussed with households. Below, we describe FLWs' self-reports on attendance at institutional and home deliveries as well as home visits.[6]

As expected, ASHAs are more likely to report attendance at institutional deliveries than home deliveries.

ASHAs are incentivized to accompany women to deliveries at institutions. Not surprisingly, among ASHAs who reported institutional deliveries in their catchment area in the 30 days prior to the survey, nearly 88 percent reported having attended any of those deliveries. To assess the extent to which ASHAs are attending all institutional deliveries in their catchment area, we used respondents' reports of the number of institutional deliveries that took place in their catchment area in the past 30 days, and the number of institutional deliveries they reported attending in the past 30 days. Combining these two measures, we estimate that about 70 percent of ASHAs reported attending all facility deliveries in their area in the 30 days prior to the survey (Figure IV.9). These findings are considerably higher than those reported by women in the household survey (approximately 52 percent reported that an ASHA attended their institutional delivery).

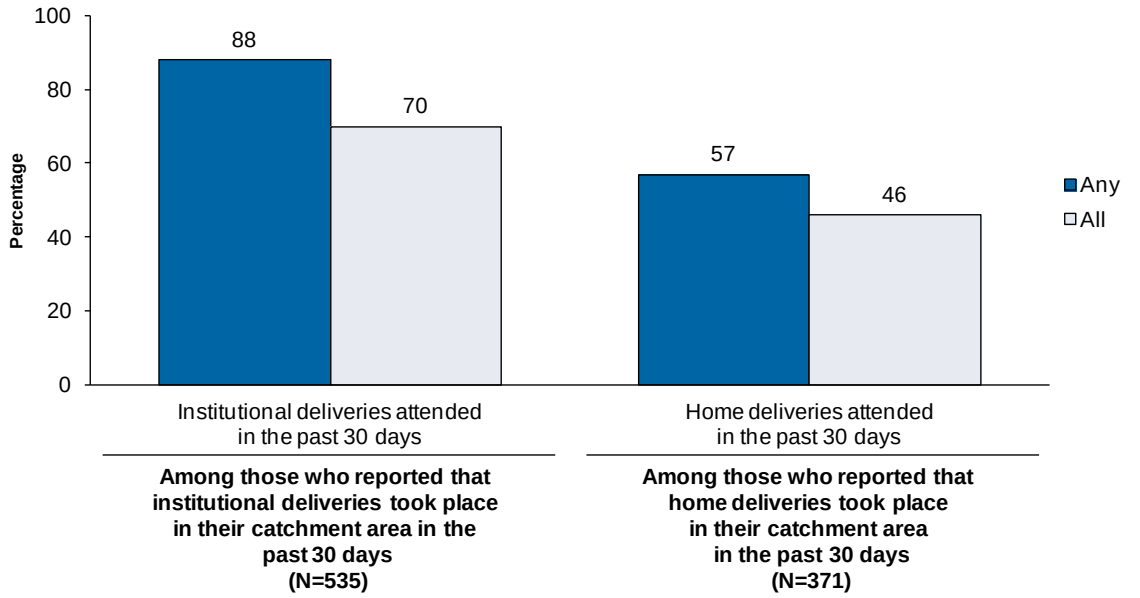
Looking at similar reports for home deliveries, among ASHAs who reported home deliveries in their catchment area in the past 30 days, 57 percent reported having attended any of those deliveries. Nearly half (46 percent) reported having attended all of the home deliveries in their communities, based on calculations similar to those described above (Figure IV.9).[7]

There are large gaps between FLW reports of attendance at home deliveries and what households reported (for example, only 10 percent of households in our sample reported that an ASHA was present at home during delivery). We expect that these gaps might be largely the result of

[6] Although we attempted to verify the information on deliveries and home visits provided by the FLWs by matching the information against the registers, we found that recordkeeping was poor. In addition, FLWs often did not have their registers with them at the time of interviewing. As a result, what we note are self-reports. These descriptive data should be viewed with some caution, as FLWs are likely to overreport on questions related to what is expected from them as part of their job.

[7] The presence of FLWs at home deliveries is desirable; although they are not in a position to conduct the deliveries, they can ensure that households are well-prepared and provide support during emergencies or complications (such as assisting with transportation or accompanying the mother to a health facility).

Figure IV.9. ASHAs' Attendance at Deliveries



Source: Baseline ASHA Survey (2012).

a tendency among FLWs to give a socially desired response. Around three-quarters of the ASHAs who reported any home delivery in their community in the past 30 days said that only one or two home deliveries had taken place and might have felt the need to report that they had attended the delivery (or deliveries).[8]

Home visits immediately after delivery are infrequent.

Home visits within one to two days of birth are especially important, as they can help identify postpartum complications. For instance, the first few days after birth are a critical period for newborns, because it is when the likelihood of developing sepsis is highest. Visits from FLWs can help with the early identification of danger signs, so newborns receive the care they need as quickly as possible. Currently, coverage of immediate postpartum home visits is low, even using the (likely overreported) self-reported measures. Using their estimates of the number of deliveries in their catchment area in the past 30 days as well as the number of home visits they reported making one to two days after delivery, we estimate the coverage of postpartum home visits to all deliveries in their catchment area to be around 38 percent for ASHAs and 34 percent for AWWs (not shown).[9]

[8] It is also possible that households did not remember who was present at delivery, particularly if they were not generally engaged with the FLWs.

[9] These percentages include mothers who because they stayed at the facility for 24 hours or more after an institutional delivery, may not need a postpartum visit by an FLW. Among household survey respondents, around 28 percent (45 percent of the 62 percent who delivered at a facility) reported that they remained at the facility for 24 hours or more after their delivery.

Again, these numbers are higher than those reported by the household survey respondents, perhaps for several reasons. FLWs may be overreporting their postpartum home visits. Also, households may not remember a visit that occurred some time ago. Finally, households and FLWs may have different perceptions of what a home visit entails. We asked households about visits that FLWs had made to check on mothers and their babies. FLW respondents, however, may be interpreting home visits more expansively. For example, some of them may also include in their tally of visits the times when they accompanied mothers and newborns back to their homes after delivery. Despite the difference in responses in these two surveys, both sets of findings on the coverage of postpartum home visits indicate that these numbers are low and that there is considerable room for improvement.

There is limited discussion with beneficiaries about many key MNCH practices.

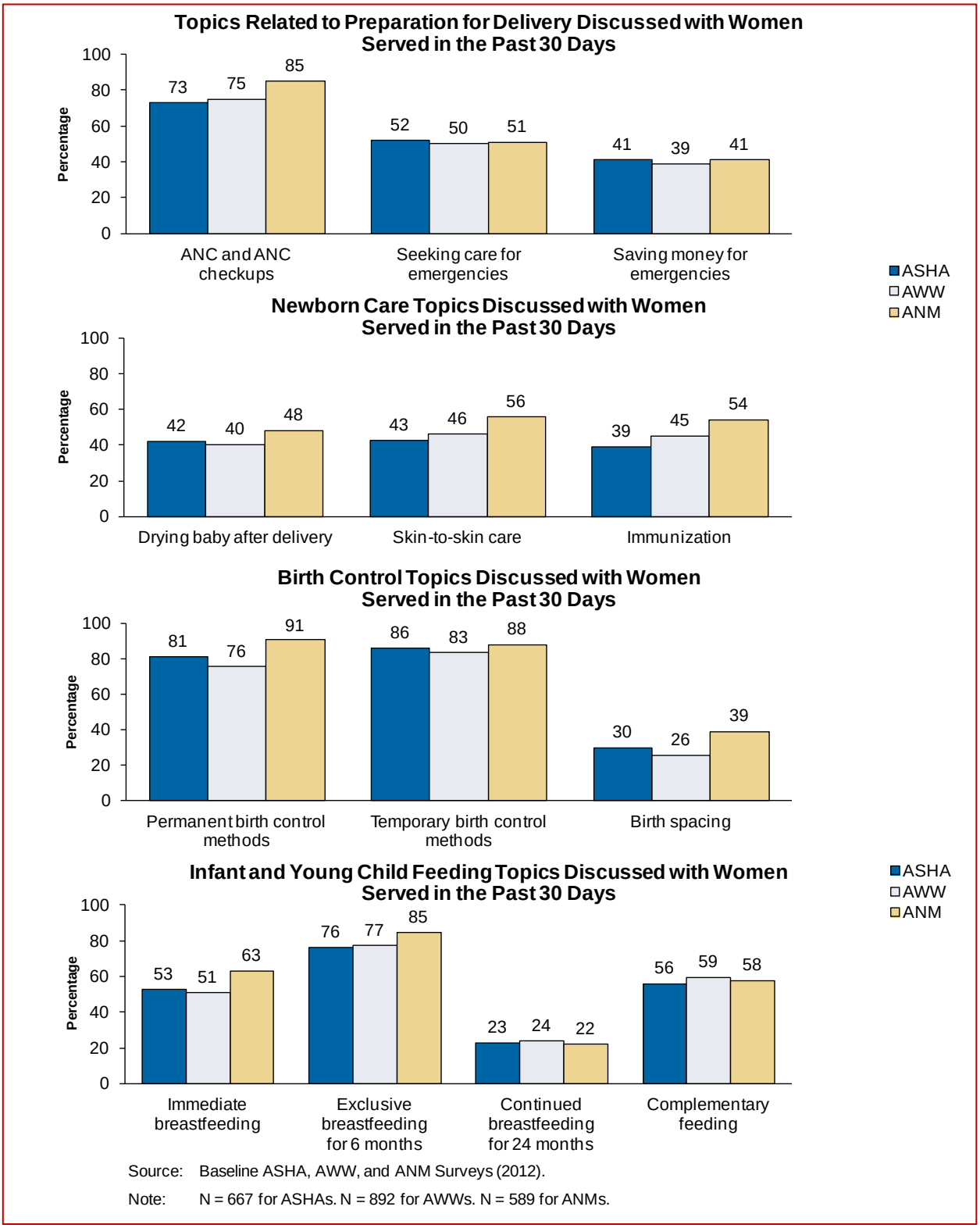
We also asked FLWs what topics they discussed with pregnant women or young mothers during home visits. In our surveys, we first asked FLWs whether they had discussed a specific area of family health (for example, newborn care or infant and young child feeding) with any woman they had served in the previous 30 days. If they reported discussing that area, we posed an open-ended question asking them to name the specific practices they had discussed (that is, FLW responses were spontaneous).

More than two-thirds of the FLWs reported discussing antenatal care and ANC checkups with some beneficiary in the 30 days prior to the surveys (Figure IV.10). This area was a particular focus for ANMs, who are often responsible for ANC checkups, and around 85 percent of ANMs said they raised these issues in discussions with pregnant women. In general, among all FLWs, there were fewer reports on providing advice on preparations for delivery. Around half of the respondents (or fewer) reported counseling women on seeking care when emergencies or complications arise during pregnancy, and on saving money for emergency care during pregnancy or delivery.[10] In general, less than half of the FLWs reported discussing key newborn care topics, such as drying the baby after delivery, skin-to-skin care, and immunization, during home visits in the previous 30 days. More than three-quarters of FLWs reported discussing permanent and temporary birth control methods. However, only 26 to 39 percent said they raised the issue of birth spacing during counseling visits.

Reports of discussions around breastfeeding and complementary feeding were slightly more frequent (Figure IV.10). More than half of respondents said they provided counseling to beneficiaries on immediate breastfeeding and complementary feeding during home visits, and more than three-quarters reported discussions of exclusive breastfeeding. As noted in section C, however, by contrast, almost all FLWs reported *knowledge* of immediate and exclusive breastfeeding and complementary feeding, suggesting that even when FLWs were aware of MNCH practices, they did not always impart that information to beneficiaries.

[10] These reports provide an overview of the information being discussed with households during home visits. We do not know how many households are receiving this information or the quality of the communication between FLWs and households.

Figure IV.10. FLW Self-Reports of MNCH Topics Discussed with Women Served in the Previous 30 Days



Source: Baseline ASHA, AWW, and ANM Surveys (2012).

Note: N = 667 for ASHAs. N = 892 for AWWs. N = 589 for ANMs.

E. Incentive Payments

The government offers FLWs incentive payments for facilitating three services: (1) immunization, (2) institutional delivery, and (3) family planning. ASHAs are eligible for the immunization, institutional delivery, and family planning incentives provided by the NRHM. Both ASHAs and AWWs are eligible for immunization incentives under the Muskaan program, which is managed by the State Health Society of Bihar, and for incentives under the Pulse Polio campaign, through which all children under age 5 receive doses of the oral polio vaccine (OPV) two or more times a year.[11]

These incentives are commonly viewed as key drivers of change that encourage FLWs to improve their coverage of services related institutional delivery, family planning, and immunization. However, delays in receiving these payments can be a source of dissatisfaction and may discourage FLWs from reaching out to households to provide these services. The G2P initiative of the Ananya program, called the Health Operations Payment Engine (HOPE) and implemented by the IFC, aims to address this issue by developing and implementing a better payment processing system. We asked FLWs about the length of time it took to receive incentive payments to develop some baseline measures against which to measure improvement in time to payment in future surveys.

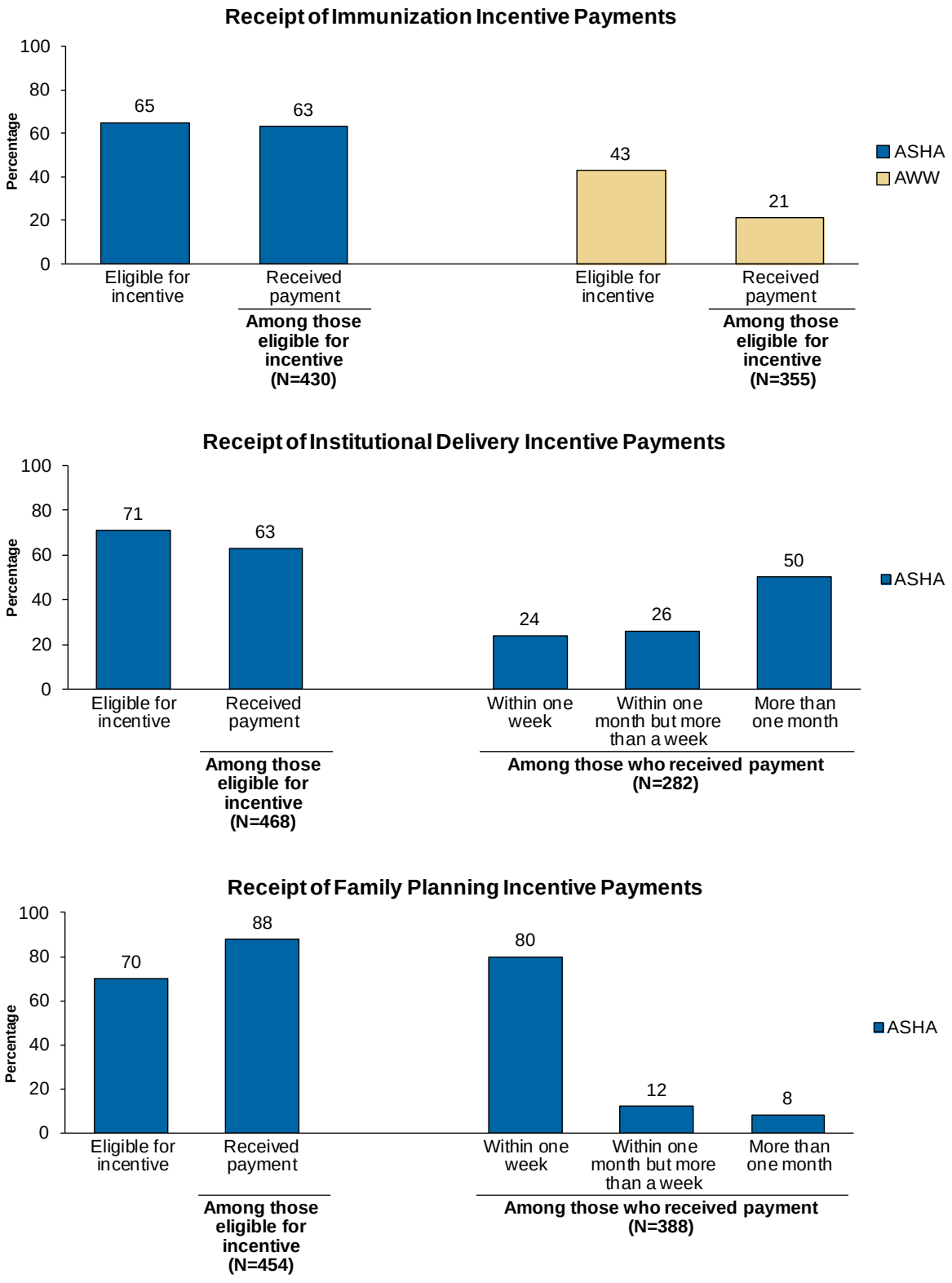
There are considerable gaps in the receipt of immunization and institutional delivery incentives.

Respondents were asked whether they had provided any of the following incentivized services in the previous three months: (1) facilitated the immunization of a child, (2) accompanied a woman to the health facility for an institutional delivery, or (3) taken a woman to the facility for a family planning procedure. Eligibility for the incentive was reported by 65 to 71 percent of ASHAs, depending on the type of incentive (Figure IV.11). As noted earlier, AWWs are eligible only for immunization incentives, and 43 percent of AWWs reported that they had provided immunization services to a child in the previous three months. Because they receive an honorarium for their services and are not entirely dependent on incentive payments, they may be less likely to perform these incentivized services.

For both the immunization and institutional delivery incentives, we see significant gaps in the receipt of payments. Under the JSY program, ASHAs are supposed to receive two payments related to institutional delivery, the first upon arriving at the health facility with the expectant mother, and the second after she has conducted her postnatal visit and the newborn has received the BCG vaccination. Slightly more than 60 percent of eligible ASHAs reported receiving institutional delivery incentive payments. Around half of those reported that the payment arrived more than a month after the services in question were performed. A similar percentage reported receipt of incentive payments for immunization services they had provided in the three months before the survey (these payments are supposed to be made on a monthly basis and we therefore do not report the timing in Figure IV.11). Receipt of immunization incentive payments was even lower among AWWs. Of those who reported providing eligible immunization services in the previous three months before the survey, only 21 percent reported receiving their incentive payments (Figure IV.11). These findings align with one of the IFC scoping study's early findings that bottlenecks in the payment apparatus lead to considerable delays in payments reaching FLWs.

[11] As of late 2012, AWWs are no longer eligible for Muskaan incentives.

Figure IV.11. Receipt of Incentive Payments



Source: Baseline ASHA and AWW Surveys (2012).

Note: N = 667 for ASHAs. N = 892 for AWWs.

The processing of family planning incentives provides a contrast. Around 88 percent of ASHAs who said they were eligible for family planning incentives reported receiving the payments (Figure IV.11). Most (80 percent) of these respondents noted that they received the payment within one week. This response is most likely linked to the PHC's practice of issuing the family planning incentive payment immediately following the tubectomy or vasectomy.

F. Summary

Surveys with FLWs indicate that they are more familiar with some MNCH topics (such as ANC checkups, breastfeeding, and immunization) than others. Further, FLWs self-report having more discussions with households on MNCH topics than what we observed from the household interviews. The FLW self-reports may indicate socially desirable responses to some extent. It is also possible, however, that in some instances the FLWs visit target households, but the focal women do not recall being visited or the topics that were discussed during visits. This suggests that more communication and more effective communication is critical. If successfully implemented, Ananya's recurring trainings on key MNCH areas, its efforts to improve interpersonal communications, and its focus on home visits as a tool for delivering targeted messages at critical times may help improve the quality and frequency of FLW interactions with households and increase coverage of key MNCH indicators.

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V. FINDINGS FROM FACILITY- AND PROVIDER-LEVEL SURVEYS

In addition to working directly with FLWs, the Ananya program also attempts to improve MNCH outcomes by working with nurses, ANMs, and other staff at block primary health centers (PHCs). The program seeks to improve the care provided at PHCs by supporting nurses/ANMs who conduct deliveries with additional, intensive trainings, provided in a manner to ensure that these practitioners can immediately use the skills they learn. Additionally, the Ananya program aims to increase the quality of oversight and management at facilities through promoting detailed facility assessments and stimulating District Quality Assurance Cell (DQAC) activities. The results from the facility surveys provide a baseline which will allow us to track the results of these interventions.

As noted in Chapter II, we conducted facility- and provider-level surveys at PHCs in sampled blocks. The PHC-level data collection involved two instruments—(1) a facility survey targeted to the medical officer in charge (MOIC) and the block health manager (BHM) at each PHC and (2) a provider survey administered to a nurse or ANM at the PHC who conducted deliveries.[1] The facility survey was designed to obtain information on facility infrastructure, services delivered, procedures, staffing, oversight, and recordkeeping. The provider survey focused on the nurse's or ANM's qualifications, knowledge, practices, and recordkeeping procedures related to deliveries. Facility level interviews were completed at 335 PHCs, representing over 98 percent of targeted facilities. The provider survey was completed by 255 ANMs and 69 staff nurses, for a response rate of 95 percent.[2]

In the remainder of this chapter, we summarize the results of the facility and provider surveys. As in Chapters III and IV, we focus on findings across all surveyed districts rather than on Ananya's eight focus districts, though the results are similar when we restrict the sample to focus districts. The chapter is divided into sections that each focus on a different aspect of the facility, its operations, and its service delivery, including facility infrastructure, hygiene practices and sanitation, the delivery-related and reproductive-health services provided at PHCs, and recordkeeping at the facilities and by nurses/ANMs.

A. Infrastructure

The infrastructure, capacity, and capabilities of a PHC can be important drivers of the demand for its services. Thus, understanding the basic physical characteristics of PHCs can inform Ananya and other interventions about the facility-based care available to women.

The average PHC in our sample serves 6 subcenters and 31 villages. Most facilities (88 percent) provide services 24 hours per day and 7 days per week, and almost all centers (86 percent) provide some inpatient care. Although facilities offer a range of services, we also observed some notable gaps in infrastructure, equipment and supplies, and the types of services offered at PHCs.

[1] Our sample of ANMs at PHCs is distinct from the sample of subcenter ANMs discussed in Chapter IV.

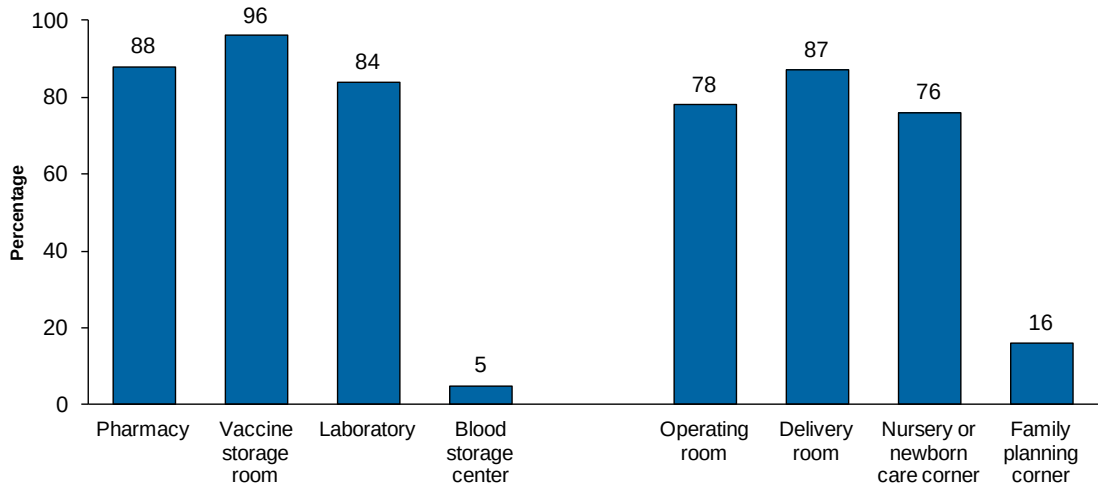
[2] 286 of the 324 surveyed nurses/ANMs and 286 of the 335 surveyed PHCs reported providing delivery services. As some questions were not relevant for facilities or nurses/ANMs not providing delivery services, we limit some statistics to the subsamples that did provide them.

Most facilities have basic infrastructure and delivery rooms.

The majority of the surveyed PHCs demonstrated the physical capacity to provide a range of services (Figure V.1). Eighty-seven percent of PHCs have a dedicated delivery room, and 76 percent contain a nursery or newborn corner, though only half of newborn corners contain a functioning radiant warmer, baby scale, and phototherapy unit (not shown).[3] Few facilities (16 percent) have family planning corners.

The vast majority (88 percent) of facilities reported having an onsite pharmacy. While most PHCs have pharmacies, about 20 percent of pharmacies do not have refrigeration (not shown), and only 60 percent of facilities with pharmacies reported being regularly supplied with drugs (not shown). Blood storage at the PHC is rare; only 5 percent of PHCs reported having such a center.

Figure V.1. Facility Infrastructure



Source: Baseline Facility Survey (2012).

Note: N=335 facilities.

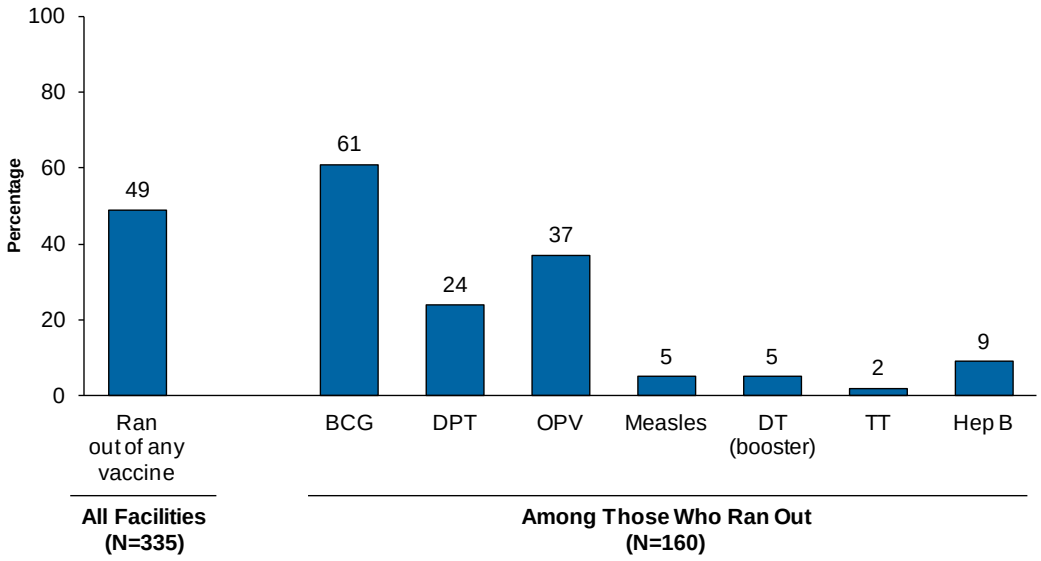
Commonly used vaccines are usually available but half of facilities ran out of some vaccine in the month prior to our survey.

The delivery of immunization services is an important function of a PHC and most health centers have storage facilities for vaccines. Ninety-three (93) percent of facilities have ice-lined refrigerators for vaccine storage, and 95 percent had at least one vaccine carrier observed in working order (though many also had non-working carriers). Over 90 percent of facilities reported that vaccines for BCG, DPT, polio, measles, and TT were "usually" available to patients (not shown).

[3] A "corner" (newborn corner, family planning corner) refers to any space set aside for a specific purpose (which may or may not be a room in itself).

However, when questioned directly about supply, MOICs often revealed that they recently ran out of these vaccines (Figure V.2); 49 percent of medical officers reported that they ran out of some vaccine in the past month, with BCG, DPT, and polio vaccines most commonly missing.

Figure V.2. Reported Vaccine Shortages in the Past Month



Source: Baseline Facility Survey (2012).

Many PHCs provide basic laboratory testing services.

Seventy-seven percent of surveyed facilities reported providing at least some basic onsite laboratory testing services. Figure V.3 shows the range of tests available through such labs. The majority of onsite labs provide testing of sputum (93 percent), blood (53), and pregnancy (51 percent). Other common tests include those of urine (41 percent), blood sugar (39 percent), and HIV (32 percent). However, 29 percent of facilities without labs and 46 percent of those with labs (also) use public-private partnerships (PPPs) for lab testing. PPPs generally give patients access to a larger number of tests.

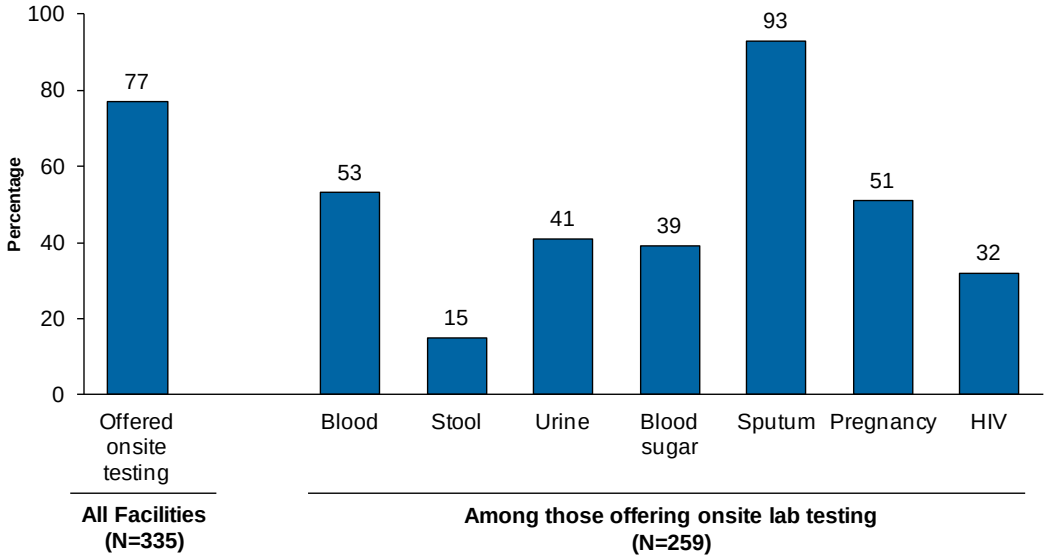
B. Sanitation and Hygiene Practices

Sanitation (including waste management) and hygiene practices at PHCs are important determinants of the overall service-delivery environment, as well as the risk of acquiring health-care associated infections at the facility. In this section, we discuss select aspects of sanitation and waste management at the PHC level, and then turn to nurse hygienic practices.

Most facilities are structurally sound, although a significant minority have issues such as water damage or cracked walls.

To assess the environment in which services are delivered, survey investigators observed and recorded the physical condition of facilities. As shown in Table V.1, 96 percent of all facilities we visited are of permanent construction (pucca, made out of materials such as brick and concrete);

Figure V.3. Lab Tests Provided at PHCs



Source: Baseline Facility Survey (2012).

the remainder are semipermanent (made out of materials including asbestos and stone). Most facilities have plastered, whitewashed walls, and were judged by surveyors to not need repainting. Given that over half of PHCs have been in operation for 50 or more years, this suggests that maintenance is being carried out at the facilities. However, the results for some indicators of physical infrastructure management show deficits. Twenty-nine (29) percent of facilities have walls impacted by water leakage or dampness and 36 percent of facilities have cracked walls. Interviewers also observed cobwebs in almost 40 percent of facilities.

Table V.1. Physical Conditions of Facilities Promoting Sanitation

	Percentage Reporting
Building is permanent (pucca)	96
Walls	
Plastered	89
Whitewashed, do not need repainting	82
Cracked	36
Issues with leakage or dampness	29
Waste	
Useless or condemned articles present	24
Cobwebs	37

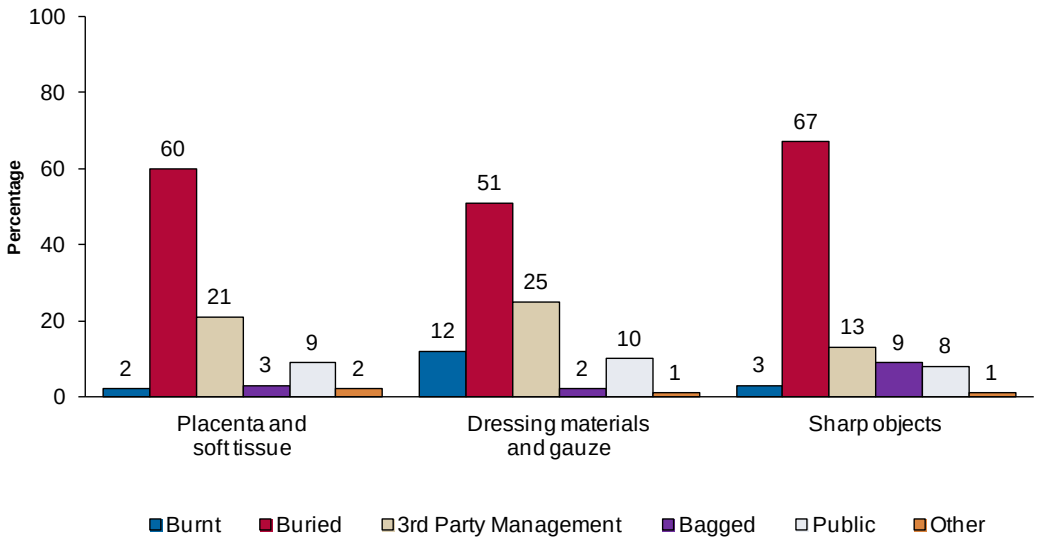
Source: Baseline Facility Survey (2012).

Note: N = 335.

Most facilities bury biomedical waste or use third-party management to dispose of this material, but some dispose of waste in public places.

Correct waste disposal is a key for preventing infections; however, methods of waste disposal vary across both facilities and the type of waste considered (soft tissue, dressing materials, or sharp objects). According to MOIC reports, around 50 to 60 percent of facilities bury their waste, and about 20 to 25 percent use third-party management for disposal of waste (see Figure V.4). A small but significant number (8 to 10 percent) of PHCs dispose of waste in public pits or simply throw waste outside of the hospital compound.

Figure V.4. Biomedical Waste Disposal Practices



Source: Baseline Facility Survey (2012).

Note: N=335.

Gaps exist in nurses' and ANMs' hygienic practices; many fail to use appropriate procedures.

Nurses and ANMs were asked by interviewers about their typical hygienic practices in the delivery room. As these statistics are based on self-reports, they may be biased by perceptions of correct procedures and desire to report appropriate practices. Despite this potential for over-reporting, these statistics still reveal important gaps in both practices and information.

Seventy-seven percent of nurses/ANMs reported using clean gloves for each patient (Table V.2). However, only just over one-quarter (28 percent) reported using proper scrubbing practices (a combination of surgical-soap use, washing for 5 or more minutes, scrubbing to the elbows, and using running water in the delivery room), and only 18 percent reported proper apron or gown use (that is, they wore an apron or gown, they changed the article between patients, and the apron or gown was washed with soap and water, autoclaved, or bleached). The high prevalence of

inadequate hygiene practices among providers may be due in part to facility infrastructure and shortages in basic hygiene-related supplies. Interviewer observations revealed that soap was visible in only 70 percent of delivery-room handwash areas, and less than a quarter of these areas had a deep, wide sink with a long tap, which facilitates proper handwashing (not shown).

Table V.2. Self-reported Nurse/ANM Hygiene Practices

Activity	Percentage Reporting
Clean Gloves Worn	77
Proper Scrubbing (all four)	28
Use surgical soap	83
Wash for ≥5 minutes	61
Scrub to elbows	65
Use running water in delivery room	87
Proper Apron/Gown Use (all three)	18
Aprons or gowns worn	50
Changed between patients	22
Washed with soap and water, autoclaved, or bleached	40

Source: Baseline Nurse Survey (2012).

Notes: N= 286 nurses and ANMs who performed delivery services.

C. Staffing and Management

The provision of appropriate and high-quality services at the PHC level requires that facilities have adequate numbers of qualified staff and that service delivery is supported by good management practices. We start this section by describing vacancies for key staff positions at the PHCs surveyed. We then discuss MOICs or BHM's reports on efforts within PHCs to assess and improve quality, as well as oversight of PHCs by outside personnel.

PHCs are staffed by a variety of different health practitioners. On average, one MOIC, three general duty doctors, two to three nurses (mostly ANMs), and several other medical and nonmedical personnel work at surveyed PHCs (not shown). Less than 15 percent of PHCs employ specialists in gynecology, obstetrics, pediatrics, and surgery, and many positions remain unfilled.

Staff vacancies are common, especially for lady health visitors and pharmacists.

Few of the PHCs surveyed are fully staffed. Table V.3 indicates the percentage of facilities stating that they had at least one vacancy of a given type at the time of the survey. Facilities most commonly reported vacancies for lady health visitors and pharmacists, with 55 percent of PHCs reporting openings for each of these positions. PHCs also often reported vacancies for drivers (36 percent), additional general duty doctors (35 percent), male multipurpose workers (34 percent), and female ward assistants (32 percent). There are fewer vacancies open for nurses and ANMs, with 19 percent of facilities reporting the need to hire one or more additional ANMs, and 7 percent with vacant positions at the staff nurse level. As most facilities employ multiple nurses, 10 percent of all ANM and 6 percent of all staff nurse positions were vacant at the time of the survey (not shown). Altogether, 93 percent of facilities reported some vacancy, with the average PHC reporting 4.65 medical and 0.65 nonmedical positions as vacant (not shown).

Table V.3. PHCs with Any Vacancy at Level

Position	Percentage of PHCs with Vacancy
Doctors	
OB/GYN	13
General duty doctor	35
Nurses	
ANM	19
Grade A/Staff nurse	7
Other Medical Staff	
Lady health visitor	55
Female health/Ward assistant	32
Male multipurpose worker	34
Pharmacist	55
Lab technician/Assistant	19
Other Staff	
Block health manager	11
Driver	36

Source: Baseline Facility (2012).

Note: N=335.

Some PHCs conduct self-assessments to identify gaps and create action plans.

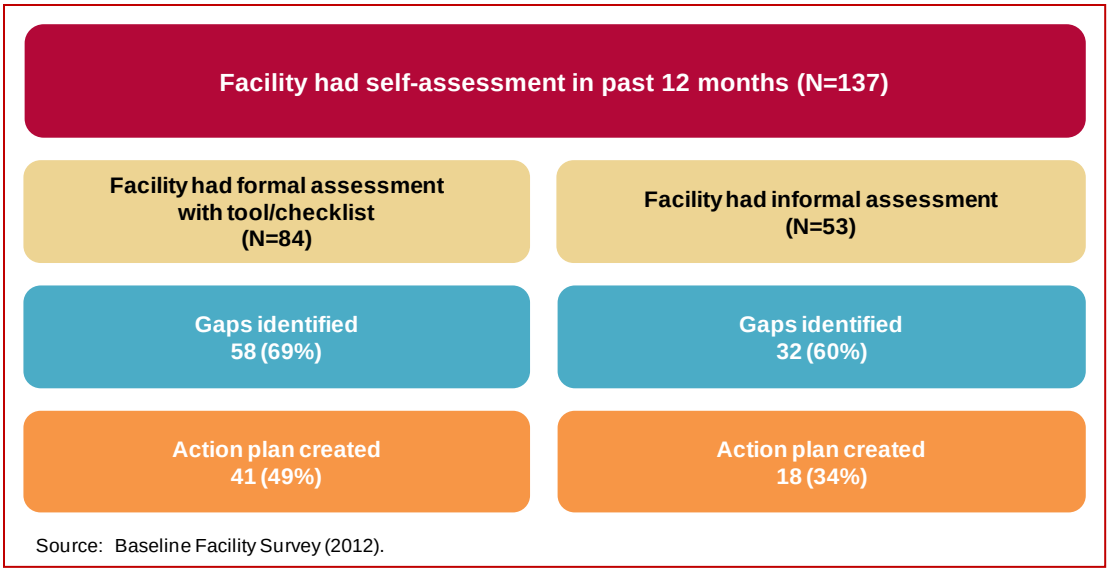
Of the 335 facilities surveyed, 137 (41 percent) reported performing a self-assessment in the year prior to the survey (Figure V.5). About 60 percent of facilities that conducted an assessment (or about one-quarter of all facilities) reported using some protocol or checklist to formalize the procedure.[4] Of the 84 PHCs that reported some type of tool to conduct an assessment, 69 percent identified gaps in capabilities, and 49 percent reported creating an action plan to improve their quality of care. In contrast, fewer gaps were identified by those that reported conducting less formal reviews, with 60 percent of informal assessments identifying gaps and 34 percent of these assessments resulting in an action plan (Figure V.5). Gaps in infrastructure, staffing, and equipment were reported respectively by 46, 38, and 30 percent of those facilities that conducted assessments (or 18, 16, and 12 percent of all facilities; Figure V.6).

Among the PHCs that reported any type of self-assessment in the year prior to the survey, about half reported that they had created a plan to address the gaps they had found. The types of actions reported, shown in Table V.4, include requesting additional staff (49 percent), improving infrastructure (43 percent), and ordering new equipment (26 percent).[5] Additionally, 41 percent of

[4] This could include the assessments facilitated by CARE as part of the Ananya program or other efforts by facilities to assess how close they are to meeting International Organization for Standardization (ISO) certification. Some medical officers also reported receiving and completing a self-assessment form related to newborn care.

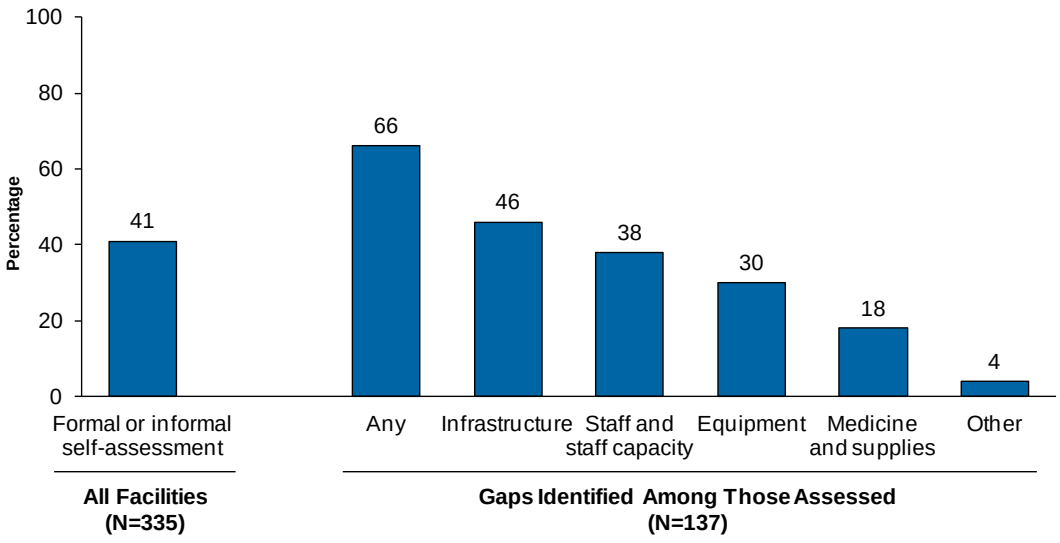
[5] Our survey did not determine the outcomes of these requests.

Figure V.5. Outcomes of Formal and Informal Assessments



Source: Baseline Facility Survey (2012).

Figure V.6. Assessments in Past 12 Months and Gaps Identified



Source: Baseline Facility Survey (2012).

facilities reported having a team in place that focused on quality improvement, about three-quarters of which met three months or less before the survey (not shown).[6]

Table V.4. Actions Resulting from Assessment and Planning Based on the Assessments

	Percentage Reporting
Any Action Taken	100
Request Additional Staff	49
Request Additional Supplies	18
Order New Equipment	26
Made/Requested Infrastructure Changes	43
Requested Additional Medicines	23
Other	5

Source: Baseline Facility Survey (2012).

Note: N=65 facilities that created action plans.

Visits from civil surgeons are the most common form of facility supervision.

Most MOICs (83 percent, not shown) reported that someone from outside their facility conducted a supervisory visit to the PHC during the three months prior to our survey. When asked who visited, respondents most frequently mentioned the civil surgeon (57 percent of those with a visit), though other commonly mentioned individuals include the regional deputy director (23 percent), the district magistrate/collector (9 percent), and generic district health officials (12 percent, numbers not shown).

We also asked about the types of activities conducted during these supervisory visits (see Table V.5). According to MOIC reports, most oversight visits involved reviewing registers or books (96 percent of visited centers), checking inventories or supplies (91 percent), discussing problems (98 percent), discussing practices related to delivery services (82 percent), and discussing policies or administrative issues (75 percent). Visits sometimes also involved observations of staff or an official staff meeting but interaction with medical staff during visits was less common than interaction with management.

Table V.5. Oversight Activities: Visits in Past 3 Months

Activities at Last Visit	Percentage Reporting
Discuss Problems	98
Checked Registers or Books	96
Checked Inventories and Supplies	91
Discuss Practices Related to Delivery Services	82
Discuss Policy or Administrative Issues	75
Observe Individual Staff Performing Duties	70
Hold an Official Staff Meeting	60

Source: Baseline Facility Survey (2012).

Note: N=279 facilities that had an external supervisory visit.

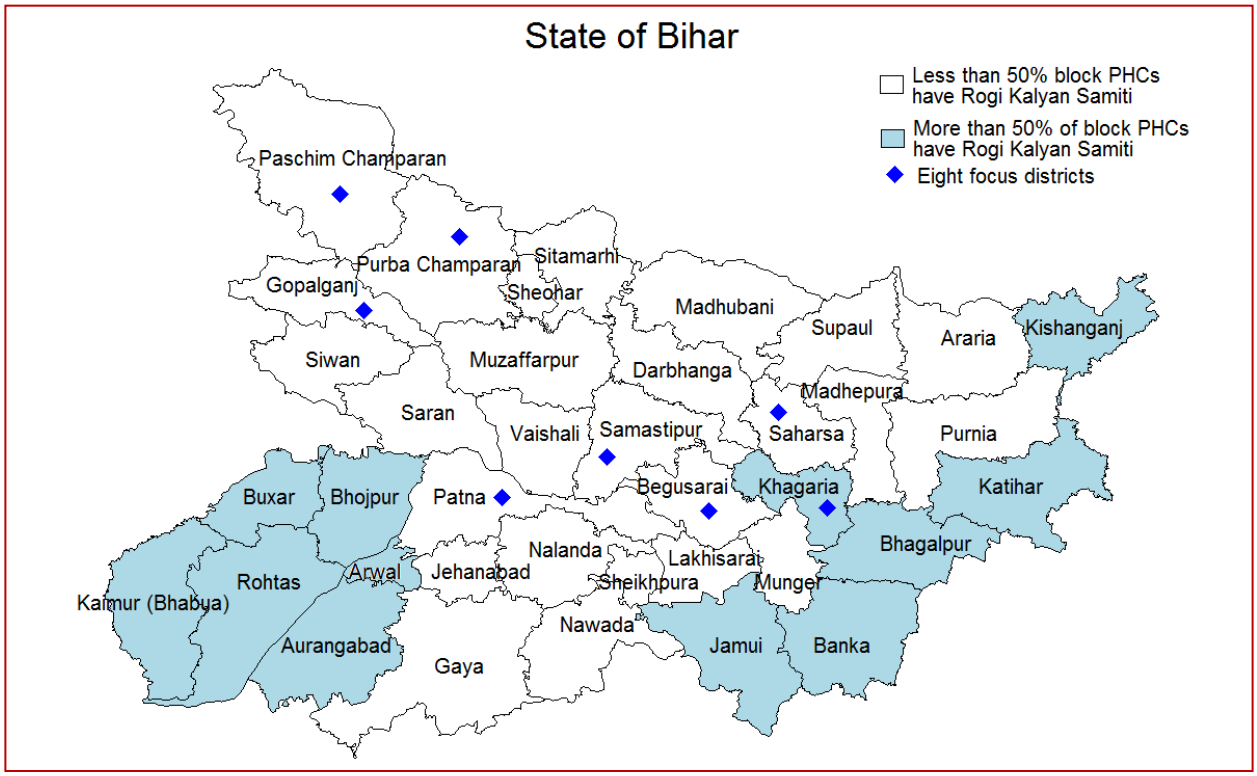
[6] Focal and nonfocal districts did not have statistically significant or notable differences in the proportion of PHCs having a quality improvement team, having this team meet in the past three months, or conducting a formal or informal self-assessment in the past year. Although CARE began implementing some quality improvement measures prior to this baseline survey, these efforts had only been in place for a short time. The equivalence result demonstrates that, at the time of survey, these Ananya interventions had not yet impacted facility reports.

Although Rogi Kalyan Samitis are intended to govern PHCs, they do not exist in the majority of blocks.

Rogi Kalyan Samitis (RKSs) or Patient Welfare Committees were developed to provide oversight of PHCs, while also engaging community members. An RKS includes several representatives from the PHC catchment area (for example, pharmacists and/or workers from a local health-sector NGO) along with a few government officials. The main duties of the RKS are to levy charges for facility use and help to direct the resultant funds towards PHC improvement.

Only 36 percent of our surveyed PHCs reported their block had an RKS in place to provide accountability for basic expenditures. Figure V.7 shows the districts where more than half the blocks had an RKS (in blue) or fewer than half the blocks had an established RKS (in white). These groups were less prevalent in the Ananya focal districts; seven out of eight of these districts had RKS coverage of less than 50 percent.

Figure V.7. District Rogi Kalyan Samiti Coverage



D. Maternal and Delivery Care Services

Given the Ananya program's focus on improving maternal and child health outcomes, our surveys also tried to obtain information related to the ability of PHCs to respond to the health care needs of pregnant women and newborns. In this section, we describe the conditions of delivery rooms and the extent to which facilities are able to handle complications related to childbirth. We also examine ongoing trainings reported by nurses/ANMs, as well as these practitioners' knowledge and implementation of practices related to newborn and delivery care.

Many PHCs do not contain a private, clean place to deliver.

Table V.6 describes the conditions of delivery rooms that interviewers observed when conducting the facility survey. Approximately half of the facilities providing delivery services have delivery rooms with single beds/labor tables, which allow for maximum privacy.[7] An additional 21 percent of PHCs provide women with some privacy by having barriers between multiple beds in the delivery room. However, nearly one in three centers have multiple beds in the delivery room with little or no privacy. The physical state of delivery rooms is also often uninviting. For example, over half of the rooms contain tables not covered by clean and unstained Mackintoshes. Interviewers also noted cobwebs in nearly one in four delivery rooms.

Table V.6. Physical Conditions of Delivery Rooms

	Percentage Reporting
Privacy	
Private delivery room	49
Semiprivate delivery room	21
No barrier between beds	30
Doors or windows can be seen through	21
Sanitation	
Clean, unstained Mackintosh on delivery table	47
Water leakage or dampness	13
Condemned or useless articles	8
Cobwebs	23

Source: Baseline Facility Survey (2012).

Note: N=286 facilities providing delivery services.

Some important medicines and tools are in short supply in the delivery room.

To be able to provide quality delivery services, a facility must stock appropriate medicines and equipment. Table V.7 shows that although some important supplies are widely available, others are scarce. For example, active management in the third stage of labor (AMTSL) generally includes giving a woman an oxytocin injection, however, only 56 percent of delivery rooms had this medicine stocked on the day of interview (and only 33 percent of facilities were observed to have this medication within its expiry date, not shown). Other injections, such as methergine (72 percent) and antibiotics (91 percent), are more commonly available, but not universal. Most delivery rooms contain standard essential equipment, such as a blood pressure monitor, heat source, and baby scale, though some of these were not in good working order, and interviewers were unable to determine how often staff used these tools due to poor recordkeeping (see Section E for further information on recordkeeping). Fewer facilities contain phototherapy units (54 percent) or spotlights (31 percent), suggesting that some PHCs may have difficulties in treating newborn complications such as jaundice (and again, there were questions about whether these were in working order, or the extent to which they were used even when in working order).

[7] We did not track how many labor beds were available at each facility in the labor room. It is possible that PHCs with "private" delivery rooms may be classified as such because they had only one or very few beds available for delivery. Facilities with private delivery rooms record around 10 percent fewer births in their registers (a statistically significant difference), suggesting these rooms may be private by default.

Table V.7. Delivery Room Medicines and Equipment

	Percentage Reporting or Observed
Medicines and Compounds	
Oxytocin	56
Misoprostol	62
Methergine injection	72
Magsulf injection	32
Injectable antibiotic	91
Saline	89
Ringer's lactate	83
Functioning Equipment	
Blood pressure machine	92
Heat source/radiant warmer	87
Baby scale	80
Phototherapy Unit	54
Spotlight	31

Source: Baseline Facility Survey (2012).

Note: N=286 facilities providing delivery services. Oxytocin is used to induce labor or placenta-delivery; Methargine is used to treat uterine bleeding; Misoprostol is used to induce labor or terminate an early pregnancy; Magsulf (Magnesium Sulfate) is used to delay labor and treat eclampsia; Ringer's Lactate is used for fluid resuscitation after blood loss.

Few PHCs are equipped to handle delivery or newborn complications.

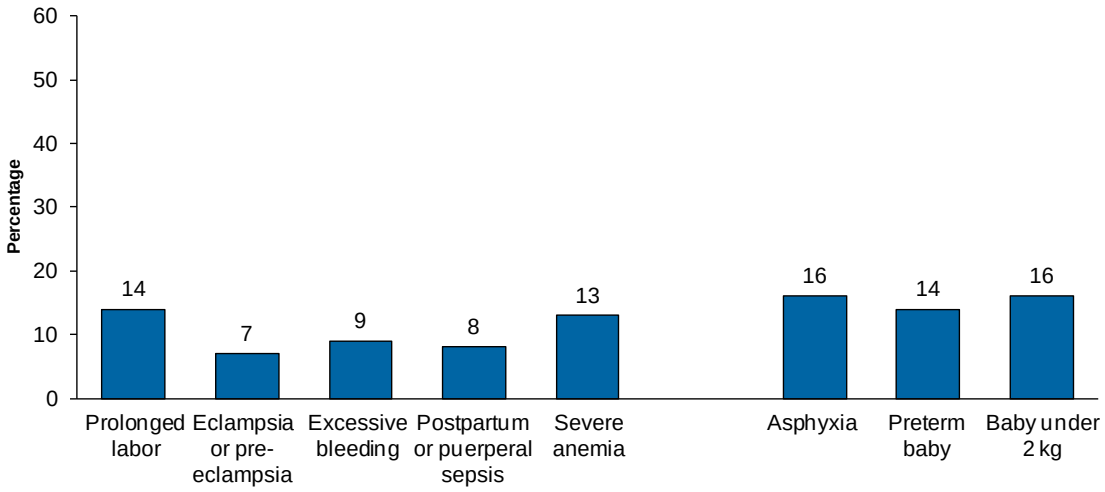
When asked about the types of delivery-related services their PHC can provide, most MOICs reveal constraints in their ability to provide comprehensive delivery and postpartum services. The vast majority of facilities (generally 85 percent or more) reported the inability to handle complications such as prolonged labor, sepsis, preterm labor or preemies, and anemia (Figure V.8). Administrators, however, more often reported that the facility could treat such cases if the complication was "not very complex." Nonetheless, very few MOICs reported treating such patients in the month prior to the survey and most MOICs mentioned that these complicated cases were referred to the district hospital (not shown).

While most MOICs reported that there was some ongoing training for PHC staff, there are large gaps in training on infection control and the management of complicated deliveries.

Interviewers asked MOICs if any PHC personnel had received training on infection control, biomedical-waste management, and management of records and/or finances, as well as any medical training received by doctors and nurses at their PHC. Ninety-one percent of MOICs reported they or their staff received some medical training within the past year and 85 percent reported any non-medical training. Table V.8 further details the content of these sessions, classified by the personnel of interest.

In approximately one-half of PHCs, MOICs reported that doctors had not received any medical training in year prior to the survey. Regarding the types of trainings received, MOICs reported that about 46 percent of doctors had received training on family planning and about 21 percent of doctors had received training on complex deliveries. According to MOIC reports, nurses/ANMs received training more often; 87 percent reported that the ANMs and/or nurses at their PHC received some training in the past year. Infection control training was reported relatively rarely, with

Figure V.8. MOIC Reports of PHC Capacity—Handling Delivery and Newborn Complications



Source: Baseline Facility Survey (2012).

Note: N=286 facilities providing delivery services.

over 60 percent of MOICs reporting no training at the facility on infection control in the past 12 months. Non-medical training occurred almost as often as medical training, with 85 percent of MOICs stating that staff members received instruction in biomedical waste management (81 percent), management of finances (36 percent), or record maintenance (10 percent).

Table V.8. Reports on Training Received by Hospital Personnel within the Past 12 Months

	Percentage Reporting
Medical Training: Any Staff Received Any Training	91
Any Doctors	53
Complicated delivery	21
Family planning	46
IUD	32
Female sterilization	17
Male sterilization	6
Any Nurses/ANMs (Delivery and Newborn Care)	87
Any staff received infection control training	39
Non-Medical Training: Any Staff Received Any Training	85
Biomedical waste management	81
Management of finances	36
Maintenance of records	10

Source: Baseline Facility Survey (2012).

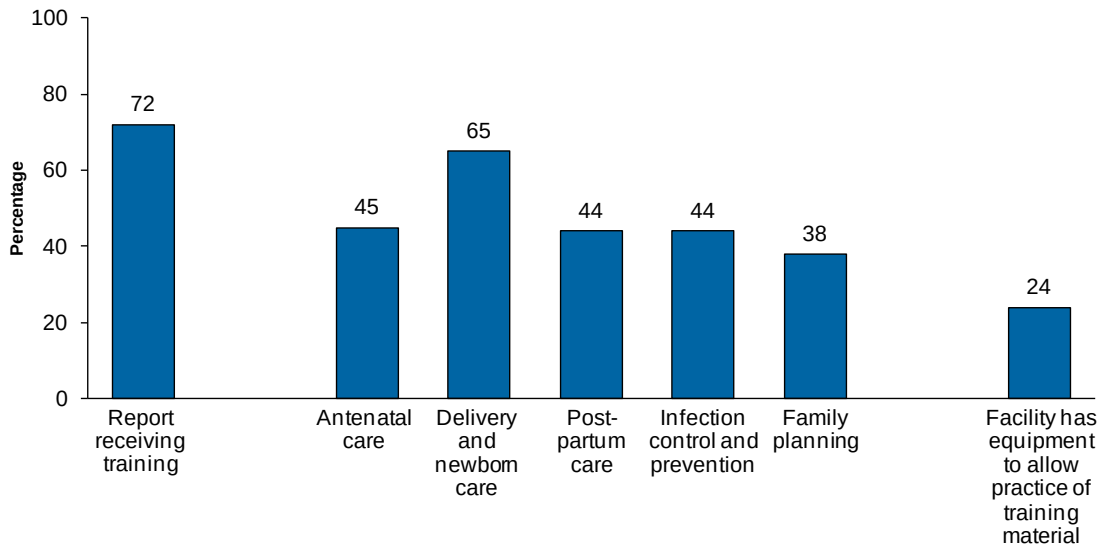
Note: N=335.

Most nurses/ANMs also report receiving training, but facility infrastructure often limits the use of the acquired knowledge.

Similar to MOIC reports, 72 percent of nurses and ANMs providing delivery services reported receiving some training over the past year (see Figure V.9), and reported attending trainings for an average of 6.5 days (not shown).[8]

Of the nurses and ANMs that reported training, 91 percent (or 65 percent of the whole sample) reported receiving information on delivery and newborn care. Nurses and ANMs who participated in trainings on delivery care most often reported that these sessions focused on conducting clean and safe deliveries or monitoring and recording delivery information.[9] Newborn care training focused on care after normal deliveries, with the most commonly cited topics being immediate newborn care, care of small or preterm babies, and exclusive breastfeeding. Only one-quarter of nurses/ANMs reported that their delivery-care training focused on handling complications (not shown).

Figure V.9. Self-reports on Nurse/ANM Training Receipt in the Past 12 Months



Source: Baseline Facility Survey (2012).

Note: N=286 nurses/ANMs providing delivery services.

[8] Note that nurses/ANMs reported slightly lower training prevalence than MOICs; however MOICs were asked about training for *any* nurses and ANMs at a facility, while a nurse/ANM was asked about their particular experience. This distinction may explain the gap.

[9] Later in this chapter, we provide evidence on the limitations of current recordkeeping practices.

Fifty-three (53) to 62 percent of the nurses and ANMs who received any training (that is, approximately 40 percent of all nurses/ANMs interviewed) reported receiving training on each of the following topics: antenatal care, postpartum care, infection control and prevention (mostly focused on handwashing), and family planning. When asked specifically about training content, most nurses/ANMs who reported received training on antenatal care indicated that the training focused on health or nutrition during pregnancy or maternal danger signs. Nurses/ANMs also most often reported that the postpartum care training focused on postpartum hemorrhage management. Finally, nurses/ANMs were most likely to report learning about IUDs or sterilization in family planning training sessions.

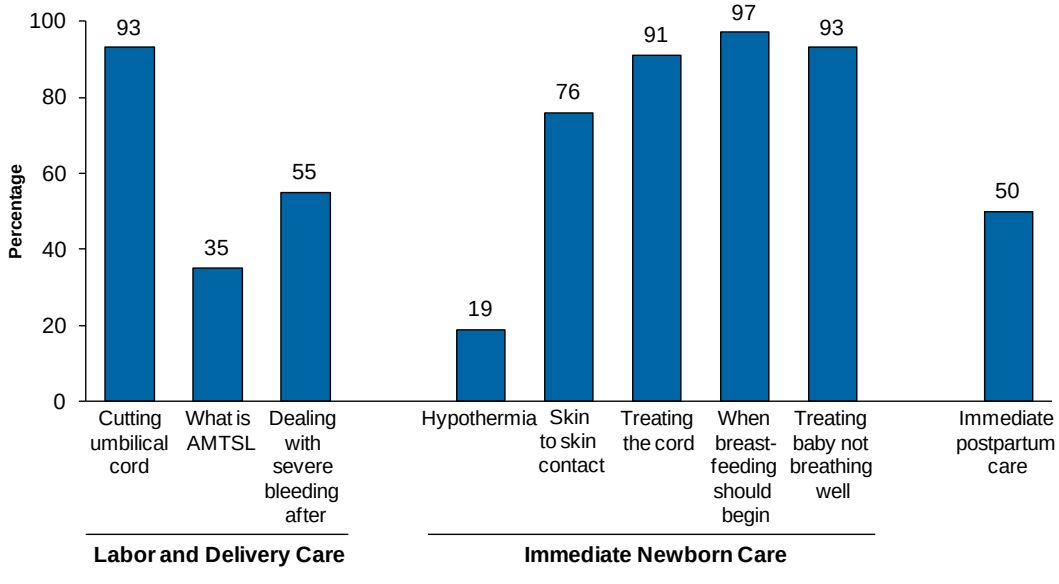
Despite providing training, facilities were often not equipped to allow providers to practice what they may have been trained on. Only one-third of the nurses and ANMs that reported receiving training also reported they worked at a PHC with the equipment allowing them to apply their newly acquired knowledge (not shown). Thus, less than one-quarter of nurses/ANMs reported receiving training that they could use to improve the quality of care they provide.

Nurses/ANMs often have substantial gaps in their knowledge of proper delivery-related care and practices.

We asked the nurses/ANMs questions about basic delivery-related practices, as well as a few questions related to their understanding of potential complications. Our survey findings suggest that although nurses/ANMs know about standard care for mothers and newborns, their knowledge of the complications that can arise during atypical deliveries is more limited.

To assess provider knowledge, interviewers asked nurses and ANMs several questions about the best practices to use in certain scenarios. Figure V.10 displays the proportion of nurses/ANMs who

Figure V.10. Nurse/ANM Knowledge of Proper Practices



Source: Baseline Facility Survey (2012).

Notes: N=266 nurses/ANMs who performed delivery services. AMSTL is active management of third-stage labor.

correctly answered questions on a selection of topics. These results reflect the familiarity of nurses and ANMs with correct delivery and newborn care practices and procedures, not whether they are implementing those practices.

Most nurses and ANMs responded correctly when asked about proper cord care, breastfeeding, and how to treat a baby who is not breathing well. Fewer nurses/ANMs responded correctly when asked about topics such as active management of third-stage labor, dealing with severe bleeding, and immediate postpartum care. These findings suggest large knowledge gaps in some important areas.

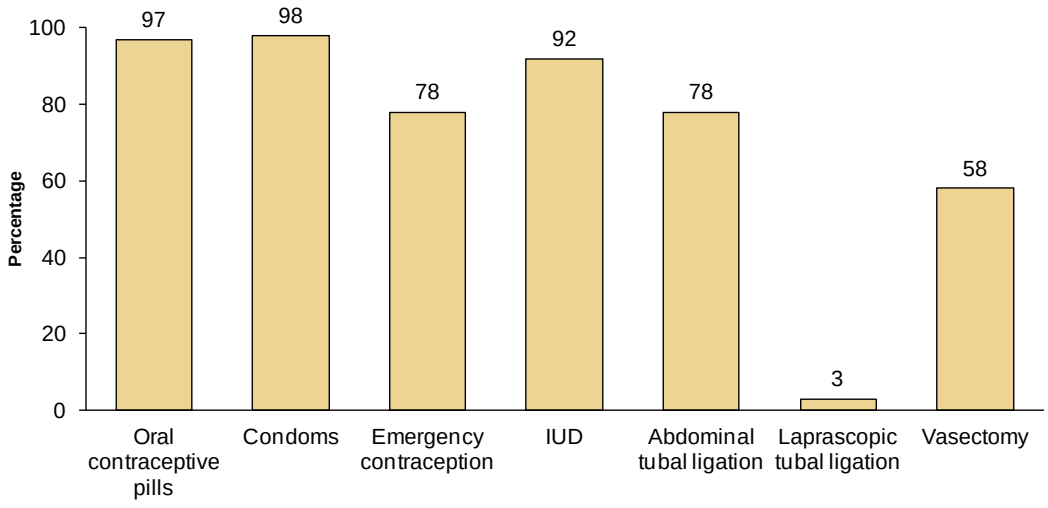
E. Family Planning

A long-term goal of the Ananya program is to reduce the total fertility rate. To achieve this goal, the program focuses on promoting the use of long-term contraceptive methods, such as intrauterine devices (IUDs), to increase birth spacing and more permanent methods for those with two or more children. PHCs are typically where women go for these types of contraception. This section describes MOICs' reports of the PHCs' provision of contraception, including long-term and permanent methods.

Most facilities provide a range of family planning options and materials, but immediate, long-term postpartum family planning is rare.

Nearly all of the PHCs surveyed provide women with a variety of reproductive health services. Condoms and oral contraceptives are almost universally available at PHCs (see Figure V.11). Further, the vast majority (92 percent) of MOICs reported that their PHC offered IUDs, and 78 percent reported that tubal ligation (TL) services are provided. However, immediate postpartum

Figure V.11. Family Planning Services Provided at the Facility



Source: Baseline Facility Survey (2012).

Note: N=335.

IUD insertion or sterilization is rare. In the three months preceding the survey, about 8 percent of facilities with delivery services reported performing any immediate postpartum IUD insertion (see Table V.9). Postpartum TL was even less common (2 percent of such facilities).

Table V.9. Provision of Postpartum Family Planning Services

	Percentage of PHCs Providing Delivery Services
IUD	
Provided IUD insertions	97
Any immediate postpartum insertion in past three months	8
Tubal Ligation	
Provided TL	89
Any TL cases in past three months	79
Any immediate postpartum TL in past three months	2

Source: Baseline Facility Survey (2012).

Note: N =286 facilities providing delivery services.

F. Recordkeeping

Proper recordkeeping is essential for monitoring staff, tracking progress, and providing quality care. We examined the recordkeeping at PHCs in two ways. First, interviewers asked nurses/ANMs to report the vital signs they tracked during the last delivery they conducted or participated in. On average, the last delivery had taken place 3.3 days before the survey (with two-third occurring the day of or before the survey), so these events were fairly fresh in the nurses' and ANMs' minds. We then asked the nurse/ANM to show any record maintained related to the delivery and compared their oral reports to whatever records or notes were available. Additionally, at the facility level, interviewers attempted to examine registers that tracked the number and types of delivery complications and referrals provided by the facilities for complications, as well as the number of births, stillbirths, and TL procedures.

Nurses/ANMs reported tracking many vital signs as pregnant mothers went into labor, but the records or notes we saw rarely contain these measures.

When asked which vital signs they track during delivery, nurses and ANMs generally reported a wide range of measures. As shown in Table V.10, over 80 percent reported monitoring cervical dilation, uterine contractions, fetal heart rate, blood pressure, and other key indicators of labor progression. However, few workers record these measures. While most nurses/ANMs (67 percent) were able to produce some type of record, most of these records included information on the date a mother was admitted (88 percent) and the date of delivery (96 percent) but little else. For example, only 18 percent of staff were able to show investigators where they had recorded information on their patient's blood pressure. Even fewer records contained information on the progress of labor, such as cervical dilation and contractions.[10]

[10] We did not attempt to check the accuracy of the information recorded by nurses/ANMs. Thus, statistics only reflect whether this information was recorded and not whether measures were properly taken and accurately documented.

Table V.10. Delivery Monitoring Reported and Information Noted in Any Form for the Delivery

Vital Statistic	Percentage Reported Monitoring	Percentage of Observations Recorded in Observed Record
Cervical Dilation	92	15
Uterine Contraction	86	12
Fetal Heart Rate	80	13
Pulse	85	18
Blood Pressure	79	18
Head Station	77	12
Fetal Position Using Palpation	48	8

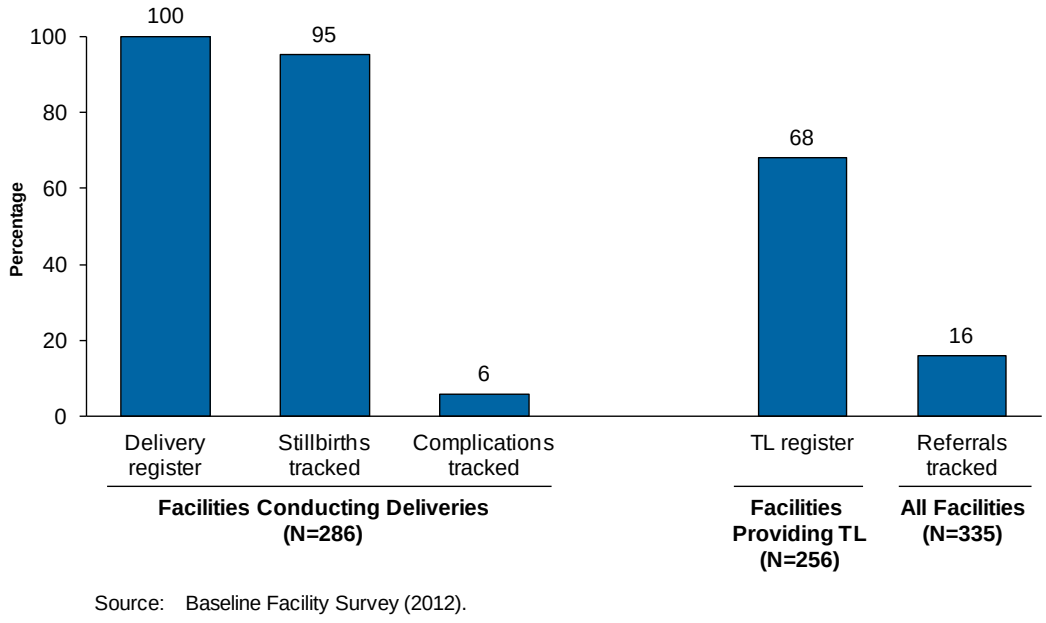
Source: Baseline Nurse Survey (2012).

Notes: N=286 nurses/ANMs providing delivery services. N=192 records observed. Observed records reflect only whether information was seen in a delivery record, not whether it was properly measured and documented.

All sampled facilities keep delivery registers; however, few PHCs track referrals or complications associated with delivery.

Interviewers worked with BHMs to determine which registers PHCs maintain and the type of information they contain. Figure V.12 details findings about the types of information tracked by facilities. All facilities that conduct deliveries keep at least some record of these events. Most also track stillbirths, sometimes using a separate register. However, complications are rarely tracked by PHCs, and we observed recordkeeping on complications in only 6 percent of facilities (Figure V.12). Further, only half of the facilities that track the existence of complications during delivery, that is only 3 percent of all facilities providing delivery services, recorded information on the type of birth-related complications (both not shown).

Figure V.12. Types of Data Tracked by Facilities



Source: Baseline Facility Survey (2012).

Note: TL is tubal ligation.

About two-thirds of facilities providing TL also had formal registers to track these services. We also saw very few records tracking referrals. For instance, only 16 percent of facilities tracked referrals using any system, and only 8 percent of PHCs kept information on the specific reasons for referrals (not shown).

For the 92 percent of delivery registers we observed, interviewers listed the type of information compiled. Entries varied greatly across PHCs (see Table V.11). Most delivery registers track basic information, including mother's and husband's names, the time and date of delivery, and baby's sex. Birth weight was also recorded in 80 percent of registers. Other information is somewhat sparse. A third of registers track a newborn's 0-level vaccinations, and just under half record birth order. Few registers include information on details of delivery (for example, placenta delivery or tearing). Thus, while delivery registers serve as a means of listing births, they do not include information allowing for the assessment of delivery practices or delivery complications at the facilities.

Table V.11. Information Recorded in Delivery Register

	Percentage Recording
Mother's Name	100
Date of Birth	99
Husband's Name	98
Sex of Baby	98
Type of Birth	95
Name of ASHA	84
Weight of Baby	79
Type of Delivery	58
Birth Order	47
Baby's Level-0 Immunizations	31
Name of Mamta	34
Placenta Delivery	13
Any PPH or Tear	11
Any Complications	6
Complications	3
Registers Observed	92

Source: Baseline Facility Survey (2012).

Notes: N=286 facilities providing delivery services. ASHA is accredited social health activist; a MAMTA is a voluntary, non-medical support worker; PPH is postpartum hemorrhage.

G. Summary

Most PHCs provide a range of important delivery and newborn care services, but delivery conditions at some PHCs are unsafe or unsanitary. While nurses and ANMs who conduct deliveries show good knowledge of basic newborn care—such as cord care and breastfeeding—they tend to lack knowledge of emergent care—such as how to handle postpartum complications. There is also potential for improvement in hygiene and sanitation practices which could help reduce infections. Finally, there is great scope for improvement in recordkeeping practices, both by nurses/ANMs in recording vital information related to a delivery and more broadly by PHCs in recordkeeping related to birth complications, referrals, and other services provided. The IFHI intervention being implemented by CARE aims to address some of these gaps. In particular, at the PHC-level, they are focusing on providing nurses/ANMs detailed and on-site training on safe delivery, infection control, hygiene practices, and recognizing complications. If training is effectively delivered and practiced, these interventions can help PHCs improve MNCH outcomes.

VI. CONCLUSION AND NEXT STEPS

Bihar is one of India's poorest states, and continues to face many public health challenges, including in the area of family health. The Ananya program is attempting to address some of these family health challenges through a set of complementary grants that include interventions at the household, community, and health facility levels. The baseline data that we collected from households, FLWs, and facilities and providers throughout the state in early 2012 have been presented at various forums to the foundation and other development partners, as well as to the state health department officials at the Government of Bihar. This report summarizes the findings from our presentations and additional descriptive indicators to provide context for and inform our evaluation of the effects of the Ananya program.

The results from our baseline surveys suggest that, while there have been some recent improvements, there are important remaining gaps in coverage and services in many areas related to family health. In particular:

- Our household surveys show recent trends towards improvements in certain coverage indicators, such as institutional deliveries, immediate breastfeeding, and immunizations. Nonetheless, these surveys suggest that there are still large gaps in other key coverage indicators across the continuum of care, such as ANC, complementary feeding, and family planning.
- Further, the reported quantity and quality of interactions between households and FLWs are also very limited. Home visits by FLWs are relatively infrequent, and the content of discussion during these visits often omits important information. This might partly reflect gaps in FLW knowledge in key areas, such as recognizing danger signs and appropriate newborn care as well as limited guidance on which messages should be provided to households at appropriate times.
- Finally, our baseline results suggest that the health facilities in which most deliveries take place are lacking in quality along a number of dimensions. There are gaps in the supply of important medicines and equipment, as well as in the ability of these facilities to handle delivery or newborn complications. The providers responsible for deliveries at these facilities also have limited knowledge about appropriate practices and often do not maintain proper records of deliveries, complications, and referrals.

The Ananya program is targeting many of these gaps through interventions targeted directly at households, efforts to improve FLW knowledge and communication, and facility-based interventions focused on improving facility quality and provider skills. The evaluation of the Ananya program will assess the extent to which these efforts, in combination, were successful in reducing NMR and improving key coverage indicators.

The next steps in the evaluation are: (1) to report the findings of the process study, (2) to conduct the midline surveys, and (3) to conduct the endline surveys. The process study will provide information on program implementation and sustainability of key program elements, and will also provide input into key outcomes to measure as part of the midline surveys. The midline surveys, which will be conducted in late 2013/early 2014, will enable us to assess the effects of the Ananya interventions in the eight focus districts using a comparison group design. Prior to collecting the midline data, we will determine which set of districts would provide the most appropriate comparison group and document this in a memo. We will also conduct additional analyses,

comparing changes in the eight focus districts to changes in the rest of the state, as well as to changes in districts in which other development partners are directly engaged. These various comparison groups will provide some useful benchmarks related to the effectiveness of Ananya efforts in the eight focus districts relative to other districts. In addition, we will describe the levels of key outcomes in the initial scale-up districts (eight of the 30 non-focus districts have been selected for initial scale-up) to provide a "baseline" before scale up occurs through the newly established Technical Support Unit. Finally, we will also assess any improvements in coverage indicators that may have taken place from baseline to midline in the state as a whole, to assess progress towards program goals. In 2015 or 2016, depending on the scope of the scale-up and the foundation's needs, we will conduct the end-line surveys, which will primarily assess whether final state-wide goals were met at the end of the program, including the targeted reduction in NMR.

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APPENDIX A

This appendix provides additional details regarding the sampling and fielding procedures for the Ananya baseline surveys. Specifically, it discusses the sample frame, sampling approach, sample sizes, and fielding process for these surveys.

A. Sample Frame

To identify a representative sample of women who had given birth in the previous year in communities across Bihar, we required a sample frame of communities. We used the 2001 census—the latest publicly available census at the time—as our rural sample frame. This included a list of all districts, blocks and rural communities in Bihar, and their population sizes. We worked with the Registrar General's office to adjust this sample frame in response to the reclassification of some communities from rural to urban since 2001, as well as other administrative reorganizations. However, the 2001 census did not provide a sufficiently detailed urban sample frame, because it only included the names and population sizes of entire towns or cities and did not subdivide them into more manageable sampling units. For the urban sample frame, we therefore obtained and used the 2007-2010 National Sample Survey Office (NSSO) sample frame from the Urban Frame Survey (UFS), which included a list of urban communities and maps showing their division into urban blocks (BLs). We did not obtain a separate sample frame of FLWs, facilities, or providers; instead we used our household sample to drive the selection of these other samples, as described in Section B.

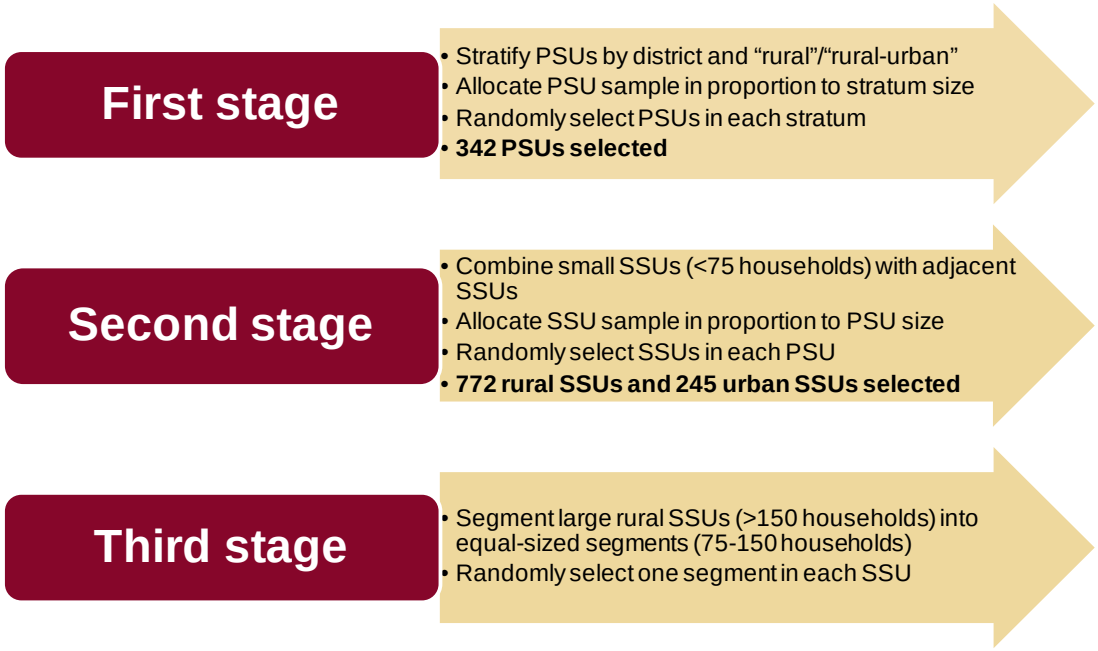
B. Sampling Approach

To draw the household sample, we used a two-stage sampling design in each district, except in the case of large rural villages where it became a three-stage design (see Figure A.1):

- In the first stage, we selected a representative sample of blocks (the primary sampling unit, or PSU) in each district, with larger districts receiving proportionally more PSUs. To ensure that sufficient urban communities were included, we first divided the PSUs in each district into two strata based on whether or not the PSU had any urban communities and drew PSUs separately in each of these strata.
- In the second stage, we drew a representative set of secondary sampling units (SSUs) in the sampled PSUs, with larger PSUs receiving proportionally more SSUs. In accordance with our sampling frame, SSUs were defined as villages in rural areas and BLs in urban areas. Small SSUs (those with fewer than 75 households) were combined with nearby SSUs into a single SSU before sampling to meet our sample size requirements.
- In the third stage, we divided large rural SSUs (those with 150 households or more) into several equal-sized segments of between 75 and 150 households per segment, and randomly selected a single segment into the sample (because urban BLs were rarely much larger than 100 households, this step was only necessary for rural SSUs). This was an additional stage of sampling that only applied to these SSUs and was introduced to make listing and surveying in these SSUs more manageable.

Each final SSU or segment therefore included approximately 100 households on average, which yielded approximately 15 women who had given birth in the previous year—as discussed below, this was our targeted sample size per SSU (we computed the necessary segment size to meet this target in advance, using current birth rates). We therefore attempted to survey *all* eligible women in the sampled SSUs or segments who were identified in our household listing.

Figure A.1. Sampling Approach for the Baseline Household Survey



Notes: PSU is primary sampling unit (block). SSU is secondary sampling unit (rural village or urban block [BL]). The sampling frame for SSUs was the 2001 census (rural areas) or the 2007-2010 National Sample Survey Organization urban sampling frame (urban areas).

C. Sample Sizes

Our sample sizes were driven by the need to statistically detect impacts of the desired size across the comparison group and pre-post designs. As we conducted our minimum detectable impact (MDI) calculations to determine the optimal sample size, we were aware of the importance of estimating impacts for a wide variety of outcomes with different baseline prevalence rates. This included the NMR indicator which, as mentioned earlier, requires a large sample size to detect expected impacts because of low prevalence. This outcome therefore drove our sample size determination; with sufficient sample size to detect the expected NMR impacts, our calculations indicated that we would have sufficient statistical power for other household outcomes, FLW outcomes, and subgroup analyses for key coverage indicators.

Based on the MDI calculations, we determined that a total sample size of 38 districts, 342 blocks (9 per district on average), 1026 SSUs (3 per block on average), and approximately 15,400 eligible women (15 per SSU on average) would allow us to detect a statewide reduction in NMR of about 6 per 1,000 live births from a projected baseline of 32 per 1,000 (Table A.1). Although this is larger than the decrease implied by the program target of 28 per 1,000, it is reasonable given the downward trend in NMR in Bihar.[1]

[1] For example, the NMR has decreased from 40 per 1,000 live births in the 2005-2006 NFHS to 32 per 1,000 in our baseline survey—a 20 percent decline over approximately five years. Even if the trend in NMR is not linear, it seems likely that a further reduction to the program target of 28 per 1,000 over the subsequent 5 years—a 12.5 percent decline—might be achieved even in the absence of the Ananya program.

Table A.1. Minimum Detectable Impacts (MDIs) for Assessing Impacts

	Total Districts	Total Respondents per Round[a]	Baseline Prevalence: NMR (Per 1,000 Live Births) 32	Baseline Prevalence: Various Coverage Outcomes (Percent) 10[b]	20[c]	30[d]	40[e]
				Minimum Detectable Impact (Percentage Points)			
Pre-Post Design							
Women Who Gave Birth in Previous 12 Months							
All	38	15,390	6	1.3	1.7	1.9	2.0
50 percent subgroup	38	7,695	8	1.5	2.0	2.3	2.4
33 percent subgroup	38	5,130	9	1.7	2.2	2.5	2.7
20 percent subgroup	38	3,078	12	2.0	2.7	3.1	3.3
Frontline Workers	38	2,052	NA	2.4	3.1	3.6	3.8
Comparison Group Design[f]							
Women Who Gave Birth in Previous 12 Months							
All	14	5,670	--[g]	4.2	5.5	6.3	6.8
50 percent subgroup	14	2,835	--[g]	4.9	6.5	7.5	8.0
33 percent subgroup	14	1,890	--[g]	5.6	7.4	8.5	9.1
20 percent subgroup	14	1,134	--[g]	6.7	8.9	10.2	10.9
Frontline Workers	14	756	NA	7.8	10.5	12.0	12.8

Notes: Calculations are for binary outcomes and assume the following: intraclass correlations (ICCs) of 0.08 at the SSU level, 0.02 at the block level, and 0.04 at the district level for coverage outcomes (the mean ICCs for a variety of coverage indicators from the DLHS-3); ICCs of close to zero at the district and block levels and 0.04 at the SSU level for NMR (from the DLHS-3) ;an R^2 of 0.3 at the individual, SSU, block, and district levels; a correlation of 0.3 between outcomes at baseline and follow-up in the sampled districts, blocks, and SSUs; and a response rate of 90 percent. The MDIs for the NMR are rounded up to the nearest whole number. All of these calculations assume a two-tailed test with 80 percent power and 5 percent significance.

[a]Assumes 9 blocks per district; 3 SSUs per block; and 15 respondents and 2 frontline workers per SSU.

[b]For example, percentage receiving a postpartum home visit within a week of delivery (13 percent in the baseline survey).

[c]For example, percentage receiving 90 iron folic acid tablets during the last pregnancy (18 percent in the baseline survey).

[d]For example, percentage having at least three ante-natal checkups (28 percent in the baseline survey)

[e]For example, percentage delivering at a facility (62 percent in the baseline survey)

[f]Assumes 8 focus districts and 6 matched comparison districts.

[g]We do not plan to assess the impacts on NMR in the comparison group design as we would not expect to see large differences in NMR within the two-year timeframe of this analysis.

NA = not applicable.

These sample sizes will provide us with enough power to detect expected changes in other outcomes (Table A.1). Specifically, they will enable us to detect improvements in most other key coverage indicators of between 1 and 2 percentage points for the pre-post design and between 4 and 7 percentage points for the comparison group design—well within the goals of the program. They will also give us sufficient power to detect impacts for several subgroups of interest to the study, such as members of scheduled castes and tribes (26 percent of the sample), women in the poorest socio-economic quintile in the state (20 percent of the sample), and women who have recently given birth to their first child (31 percent of the sample). The MDIs for frontline worker surveys, assuming one ASHA and AWW per sampled community, are also sufficient for the evaluation

(Table II.1).[2] Although these MDIs are considerably higher than for the household sample, they are more than sufficient given the large changes in frontline worker outcomes that we expect. We closely followed our planned sample size in drawing our sample and obtained a final sample size of 342 PSUs, and 1017 SSUs, in which we identified a total of 14,706 eligible women for the household survey.

D. Fielding Procedures

Below we describe the fielding procedures for the baseline data collection in detail, including the organization of the field teams, training, quality control procedures, and the specific fielding procedures for each type of survey.

Organization of field teams. There were three separate groups of field personnel for the baseline data collection—one group for each of (1) the listing survey, (2) the household and FLW surveys, and (3) the facility and provider surveys. Each group was divided into two separate teams, one of which proceeded district by district in the eastern part of Bihar and the other in the western part (the two teams were then split into sub-teams which visited different communities and facilities in each district). Each team was composed of field managers, field supervisors, and investigators (interviewers), and was supervised by senior Sambodhi staff and researchers. Given the sensitivity of some of the subject matter covered by these surveys, the investigators for the listing, household, and FLW surveys were typically female. The facility and provider survey teams included one male and one female investigator per team, with the female investigator conducting the nurse/ANM provider survey.

Training. Before commencing data collection, an intensive nine-day training was held for the field teams, which covered the content of the interventions, the evaluation goals, and the intent of the survey questions, and included extensive classroom and field practice. Investigators were trained on how to build rapport with respondents, explain confidentiality protocols, and obtain the informed consent of interviewees. In addition, investigators were provided with extensive training on how to use the mobile handset application to collect listing data and the computer assisted self-interviewing (CASI) program on notebook computers to collect the household survey data. Because of the complexities associated with these electronic tools, to the extent possible the Sambodhi staff attempted to hire investigators who already had some experience using these devices. As part of the training, investigators underwent several days of classroom practice as well as field practice to conduct interviews in communities that were not selected as part of the baseline. Investigators then debriefed, asked additional questions and had additional classroom practice before starting the baseline surveys. A full debrief session was held after data collection was completed in the first district (Patna) to address any initial concerns or difficulties, and additional debriefs were held at several points in time to flag any issues identified and to refresh the investigators on aspects of the surveys.

[2] We did not include ANMs in the MDI calculations because we will analyze them separately from ASHAs and AWWs due to differences in their roles and in the survey instruments. Our assumption of one ASHA and AWW per sampled community in the MDI calculations was a slight overestimate, because urban communities did not have ASHAs and because some positions were not filled. In practice we found approximately 1.7 ASHAs and AWWs per community on average rather than the 2 that we initially expected.

Ensuring high response rates and quality control. To avoid the potential for non-response bias, we sought to maximize the response rates for our surveys. Investigators made several attempts to visit the sample members if a targeted respondent was initially absent or unavailable. For the household and FLW data collection, the teams conducted a second round of visits to most communities after the main data collection in all districts was completed in order to make a final attempt to reach those who had not been available during the initial attempts. We also instituted several quality control mechanisms for the data collection—each day, field supervisors returned to a few households and FLWs to validate the responses to a list of preselected questions. They also checked a subset of filled-out electronic and hard copy forms to ensure that skips were correctly followed and that the data were complete. In addition, field supervisors, field managers, and senior field staff as well as researcher teams conducted observations to monitor the quality of the interviewing and data entry.

Listing survey. The listing survey began with the identification and mapping of secondary sampling units (SSUs). In rural areas (where SSUs were villages), the investigators met with the chief (or *mukhiya*) of the village or other elders to understand community boundaries and landmarks and drew a social map of the village. In villages with more than 150 households, investigators divided the village into equal-sized segments of between 75 and 150 household per segment using natural boundaries, numbered the segments in a systematic clockwise manner, and went to the segment that the research team had selected based on a preselected random number. In urban areas, supervisors used the urban frame survey (UFS) block maps obtained from the NSSO to identify the boundaries of the selected BLs for surveying. Once the SSUs or segments had been mapped, the investigators conducted the listing survey in all residential structures in that segment. Information about birth events in the previous 12 months for each woman of reproductive age in the household was obtained from the woman herself, or, if she was not available, from another knowledgeable female in the household (often an older woman such as the mother in law).

Household survey. Data collection for the household survey typically began approximately one week or so after the enumeration was conducted in a particular SSU. Of the women of reproductive age we had interviewed in the listing survey, we selected all those who had had a live birth in the past 12 months for the household survey. If there was more than one woman who had had a live birth in the past 12 months in a selected household, each such woman was interviewed. If a selected woman had twins or more than one live birth in the past 12 months, one "focal child" was selected at random and all survey questions referred to the woman's experiences with this child.

Frontline worker surveys. For the FLW surveys, we interviewed the ASHAs and AWWs in the selected SSUs or segments at the same time as the household interviews were being conducted. As mentioned above, these interviews were conducted by different group of investigators trained on the frontline worker survey instruments. In a few cases in which a selected SSU segment was under the jurisdiction of two Anganwadi Centers, we selected the ASHA and AWW associated with the Anganwadi Center that served the majority of households in the segment. To maximize response rates, supervisors of the listing survey teams collected the contact information of FLWs while in the field and we attempted to contact them in advance of the FLW data collection to set up appointments (where this was not possible we simply attempted to locate them while the survey team was in the community). Since ANMs were often traveling as part of their duties or busy with events such as pulse polio campaigns, the facility survey teams (which went into the field later) made an additional attempt to locate and interview ANMs at the facilities if they were not available during the time of the FLW data collection.

Facility and provider surveys. The facility data collection took place after most of the household and FLW data collection was completed. A different group of investigators with higher educational qualifications and experience with surveys of facilities and nurse/ANMs conducted these interviews. For each facility, the field teams made appointments with the medical officer in charge (MOIC) of the facility and the block health manager (who performs administrative functions) in advance in order to ensure a high response rate. However, when an MOIC was not available in a two-week window, another medical officer and the block health manager were asked to participate in his stead. We also conducted interviews with the nurses or ANM primarily responsible for conducting deliveries at the facility.

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