Maternal and newborn health care

Baseline findings from Uttar Pradesh, India, **April 2013**

Interactions between families and frontline workers (their frequency, quality, and equity), and coverage of interventions for mothers and newborns

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This report is one of three country-specific reports and is based on research findings from Uttar Pradesh, India.

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Cover image Mother and baby, Uttar Pradesh, India.
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Images right
Top and middle: Rural transport and Delhi
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Executive summary

The IDEAS baseline study of interactions between families and frontline workers and coverage of critical interventions for mothers and newborns was conducted in November 2012 in the state of Uttar Pradesh, India.

Photo above: ASHAs, frontline health workers, meeting. © Dr Neil Spicer

The aim was to gather information about the frequency, quality, and equity of interactions that women have with frontline workers during pregnancy, delivery, and in the first 28 days after birth, and to estimate the coverage of life saving interventions that frontline workers are able to deliver to mothers and newborns. In the context of Uttar Pradesh, frontline workers include Accredited Social Health Activists (ASHA) and Anganwadi workers working in communities, and Auxiliary Nurse Midwives (ANM), nurses and doctors working in primary or community health centres, or sub-posts.

The findings represent a descriptive analysis of interactions and intervention coverage along the continuum of care. At least two years after baseline, an endline survey will be carried out to investigate the extent to which projects working in Uttar Pradesh that aim to enhance family and frontline worker interactions (by making them more frequent, better quality, and more equitable) result in measurable increases in intervention coverage.

This investigation was carried out in the context of the Bill & Melinda Gates Foundation funding strategy to support actions to improve maternal and

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The findings represent a descriptive analysis of interactions and intervention coverage along the continuum of care from pregnancy to newborn."

newborn health care in Uttar Pradesh. Three such grants are active there at the time of writing in April 2013: (1) Manthan (a grant to Intrahealth International Inc.) has provided technical assistance to the Department of Family Welfare in Uttar Pradesh to implement evidence-based maternal and newborn health interventions along the continuum of care, from 2010; (2) Better Birth (a grant to Harvard School of Public Health, USA, in collaboration with the World Health Organisation, Population Services International, India, and the Community Empowerment Lab@ Shivgarh) is testing whether adoption of the WHO Safe Childbirth Checklist programme in birth facilities improves health outcomes for mothers and newborns, starting in 2012; (3) the Uttar Pradesh Community Mobilisation and Behaviour Change Management grant (to a five-partner consortium led by the Public Health Foundation of India) seeks to develop and scale up a package of family health interventions using the behaviour change management approach through institutionalised self-help groups, starting in 2012.

Data was collected in areas where these grants are, or will be, working (intervention areas), and from comparison areas. Intervention areas include eight blocks from six districts (Hardoi, Jhansi, Sultanpur, Maharanjganj, CSM Nagar, Raebaraily) where at least two grantees are active. Comparison areas include the remaining 44 blocks from the same six districts, excluding any blocks where other foundation funded activities are implemented.

A population-level household survey using cluster sampling (clusters defined as villages segmented into groups of approximately 75 households) asked women about live births in the 12 months preceding

survey. This data was linked to interviews with the frontline workers and with staff at the primary or community health facilities providing maternal and newborn health services to those households. Across the 40 intervention area clusters, 2621 households were surveyed and 4027 women aged 13-49 interviewed, of whom 308 had a recent live birth and completed a detailed module about behaviours and use of interventions. For the same clusters, 95 frontline workers were interviewed and 19 health facilities surveyed. Across the 40 comparison area clusters, 2637 households were surveyed and 4058 women aged 13-49 interviewed, of whom 296 had a recent live birth.

This report presents key findings on interactions and coverage of critical interventions from the intervention area.

Pregnancy care

Antenatal care in facilities and care provided by frontline workers in communities is described under the term 'pregnancy care'. Almost all pregnancy care was delivered at health facilities rather than in the community. Three-quarters of women had at least one pregnancy care interaction and 29% had at least four pregnancy care interactions, although there was considerable inequity in this indicator being just 13% amongst women from the poorest households but 46% amongst the least poor women. Two-thirds of women saw a skilled attendant at least once for pregnancy care during their last pregnancy, and one-fifth reported having a home visit for pregnancy care (predominantly being visited by an ASHA).

Just 16% of frontline workers had unprompted knowledge of the six core

elements of focussed pregnancy care (the need for a minimum of four visits, to prevent illness and promote health, to detect and manage infections, to counsel about birth planning, to teach danger signs, and to promote breastfeeding). Amongst these, knowledge about birth preparedness, teaching danger signs, and detection of infections were cited least frequently.

Birth preparedness
Thirty percent of women reported being counselled about birth preparations by a frontline worker, and approximately fifty percent of women reported making some preparations for their delivery, but just four percent made preparations for all five basic items (finances, transport, food, identification of a health facility and birth attendant).

Danger signs
Few women cited high blood pressure or anaemia as pregnancy danger signs. Fewer than half of health facilities had a means of testing haemoglobin, and only around one third of women reported having their blood pressure measured during pregnancy.

Detecting infections
Just five percent of facilities had any syphilis test kits in stock, none had HIV test kits. One quarter of women reported giving blood for tests while pregnant, and just five percent reported receiving a test result for syphilis.

Overall, only eleven percent of facilities surveyed were providing pregnancy care on the day of survey and had all the basic essential supplies needed, and just seven percent of women received good quality pregnancy care, in that they had their weight and blood pressure measured, their urine and blood tested, and were

counselled about birth preparedness, breastfeeding and danger signs. Nonetheless, over half of women received iron prophylaxis, and more than three quarters had tetanus toxoid protection, with little evidence of inequity in coverage of these critical interventions.

Intra-partum care

Three quarters of women gave birth in a health facility with skilled attendance at birth. There was evidence of inequity by socio-economic status of households: just over half of the poorest women had skilled attendance compared to almost all of the least poor women.

Amongst frontline workers attending births (predominantly health facility staff), the most frequently cited action to take when a woman began bleeding heavily during or immediately after birth was to refer her to the next level of care, and just under half of health staff cited administration of a uterotonic as an appropriate action. Approximately two-thirds of health staff reported having a uterotonic available at the last birth they attended, just under half of all health staff reporting that they used it. After adjusting for population level reports about birth attendants, we estimated that 27% of all women received a uterotonic at their last birth.

With regard to hygiene, the critical intra-partum interventions of the use of gloves and hand washing with soap by the birth attendant had high coverage, especially for facility births. This triangulates well with supplies available to frontline workers in health facilities with soap being present in 100% of facilities and disposable gloves available in 84% of facilities on the day of the survey. There was no evidence of socio-economic inequity

for either of these interventions.

Despite the high percentage of women reporting skilled attendance at birth (defined by the cadre of the primary birth attendant), only just over one half of health facilities had a functioning electricity supply on the day of the survey, only one quarter had a 24 hour light source, and just 16% of facilities were providing intra-partum services on the day of the survey and had all the items required to monitor labour using a partograph.

Post-partum care

Almost 60% of women reported having a post-partum check in the first week after birth, but there was a large difference by place of birth with just 20% of women who gave birth at home having a post-partum check within seven days. Only eight percent of post-partum checks took place at home, the vast majority being conducted by facility staff at a health facility. However post-partum checks lacked content, and less than one percent of women in the household sample had their breasts and bleeding checked, and were counselled about danger signs, family planning, and nutrition during the post-partum visit.

Post-natal care

Many life saving newborn care interventions occur at birth, including cord cutting and tying, immediate drying and wrapping, and immediate breastfeeding, while others depend on behaviours that take place in the first days after birth, such as not putting anything on the cord, exclusive breastfeeding for the first three days, and care seeking for danger signs (which may lead to a treatment intervention). Delayed bathing depends

in part on usual facility practice and the duration of facility stay after delivery.

Population level coverage of newborn interventions that occur at birth was highest for clean cord cutting and tying (both over 90%), followed by immediate drying and wrapping (both over 75%) and lowest for immediate breastfeeding (51%). From the facility survey, we observed that 37% of facilities surveyed could provide the basic newborn thermal care signal function on the day of survey, and 48% could provide the basic newborn clean cord care signal function.

Population level coverage of newborn interventions that occur in the first days after birth was highest for not putting anything on the cord (70%), followed by exclusive breastfeeding (61%). Differences in coverage of interventions were observed by place of birth, with better breastfeeding amongst those born in a facility compared to those born at home, but fewer newborns having delayed bathing amongst those born in a facility compared to those born at home. We found no other evidence of differences in coverage of newborn critical interventions by household socio-economic status, place of birth or gender of the newborn.

Post-natal care checks – where life saving newborn behaviours in the first days after life can be reinforced – were also more common for newborns born in a facility than those born at home. However, unlike post-partum care, around one in four newborn checks took place in the home, conducted by ASHA. Despite this, the content of post-natal checks by any cadre of frontline worker was poor and no newborns in the selected households had their weight and cord checked, and had their caregiver counselled about breastfeeding, thermal care, and danger signs.

Limitations

A number of limitations are present. First, survey data collection approaches to estimate the prevalence of behaviours in pregnancy, intra-partum and newborn periods may be susceptible both to recall error and to recall bias. We tried to limit recall error by only analysing data on births from the last 12 months in the household survey, and the last birth attended by frontline workers. Recall bias is harder to control (for example a frontline worker may report that she had used uterotonics at the last birth attended, even if she had not), but by triangulating data from different sources we have given more focus to findings that are both coherent and consistent, and we have highlighted areas where it was less clear. Second, estimating population level coverage of some intra-partum interventions is problematic: frontline workers cannot provide population level estimates where the majority of women have no skilled attendance at birth, and women cannot reliably answer questions about the drugs or medical interventions they received during labour. Therefore, for two intra-partum life saving interventions we have combined information from frontline worker reports about behaviours with population level reports about attendance at birth. Third, this report shows binary associations: analysis that adjusts for education level or age of women is planned for the next phase of work. Finally, this survey was powered to calculate a range of outcomes estimated at household level and had a relatively small sample of facilities and frontline worker interviews. Before the field work, we were unaware of the number of primary level facilities or frontline workers who would be present in the household clusters sampled.

Overall, the survey results present a clear picture of maternal and newborn health care in Uttar Pradesh. The number of interactions taking place is high, although there is some evidence of inequity in interactions. However, interactions often lack content due to a combination of frontline worker behaviour and to a shortage of basic supplies. Nonetheless, the coverage of basic life-saving interventions was relatively high across the continuum of care, and there was no clear evidence of socio-economic inequity in intervention coverage. The use of prophylactic uterotonics at birth, and readiness of health facilities to provide basic life-saving care could represent two areas for improvement in Uttar Pradesh: fewer than half of the skilled birth attendants interviewed in health facilities reported administration of a uterotonic at the last birth they attended, and fewer than one in six health facilities were ready to monitor labour using a partograph on the day of the survey. ■

Introduction and background
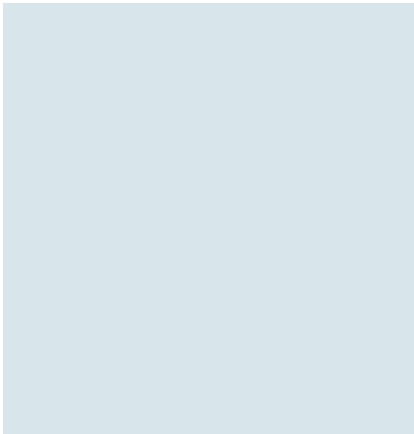
Photo above: Mother's group meeting, Uttar Pradesh, India. © Bill & Melinda Gates Foundation

1   http://www.censusindia.net/
2   http://www.unicef.org/sitan/files/ SitAn_India_May_2011.pdf

Maternal and newborn health profile in Uttar Pradesh

The 2011 census of India estimated the population of the State of Uttar Pradesh to be 200 million[1] 79% of whom live in rural areas and 31% live below the poverty line. Maternal and newborn mortality are very high across the State. In 2011, UNICEF estimated the maternal mortality ratio to be 440/100,000, with one in 42 women dying from maternal complications[2]. Neonatal mortality is also very high, with an estimated 45 newborn deaths in the first 28 days of life for every 1000 live births[2].

The context of this investigation

The work fits into a broad portfolio of investigation by the IDEAS project (Informed Decisions for Actions in maternal and newborn health) http://ideas.lshtm.ac.uk/, based at the London School of Hygiene and Tropical Medicine and funded by the Bill & Melinda Gates Foundation. The foundation has developed a Theory of Change that shapes its investments to improve the survival outcomes of mothers and newborn (figure 1). This Theory of Change supposes that in

order to reduce mortality, the coverage of interventions that are known to save lives (critical interventions, see Annex 1) must be increased, and in order to increase coverage of interventions the interactions between families and the frontline workers who can deliver interventions must be enhanced (in that they occur more often, are better quality, are equitably distributed, and are cost-effective to implement, see Annex 2 for a list of indicators for enhanced interactions). To realise these changes the foundation supports innovations that aim to enhance interactions between families and frontline workers in three high mortality geographies: North-Eastern Nigeria, Ethiopia, and Uttar Pradesh, India.

In areas where projects funded by the foundation are working to enhance interactions between families and frontline workers, the IDEAS project is investigating whether and how these projects are able to enhance interactions, and whether the coverage of critical interventions increases as a result. In doing so, IDEAS carried out a baseline survey in households, health facilities, and frontline workers across these three geographies in 2012, and will repeat this survey after at least two years of implementation by foundation funded projects. These

quantitative data will be supplemented by qualitative data collected around the time of the endline survey.

This report describes results from baseline intervention areas in Uttar Pradesh, India.

Enhancing interactions in Uttar Pradesh, India

In Uttar Pradesh a combination health facility based and community based frontline workers provide routine MNH services along the continuum of care. Pregnancy and intra-partum care are provided predominantly by health facility staff, and community workers support this through identification of pregnant women and making home visits.

In communities, the tasks that ASHA (Accredited Social Health Activists) undertake in MNH include visiting women during pregnancy, motivating them to give birth in health facilities, to have children immunised, and encouraging family planning. The tasks that Anganwadi workers undertake in MNH include providing basic health care at village level as part of the Indian public health-care system, providing contraceptives and counseling, immunisations, referral services, and nutrition education and supplementation.

At facilities, Community Health Centres (CHCs) (typically staffed by nurses, midwives and doctors) provide services to people referred up from sub-posts and primary levels. Here, antenatal and intra-partum care are available, and complications arising during pregnancy through to the newborn period are managed. Primary Health Centres (PHCs) (typically staffed by nurses and midwives) provide antenatal care, sometimes provide intra-partum care, and conduct post-partum and post-natal checks. Sub-posts (typically staffed by auxiliary nurse midwives) provide pregnancy care, post-natal care, counselling services, and provide a base for village health nutrition day events, and for making home visits.

At the time of this baseline survey in Uttar Pradesh three foundation grantees were operating with the aim to implement a range of demand and supply side innovations to enhance interactions between families and frontline workers, and increase intervention coverage.

1. Manthan
(a grant to Intrahealth International Inc.)
The Manthan project started in 2010. It provides technical assistance to the Department of Family Welfare, Government of Uttar Pradesh, to implement evidence-based maternal and newborn health interventions during antenatal, delivery and the immediate post-partum period, and the first twenty-eight days of life. Innovations include training auxiliary nurse midwives (ANM) in skilled birth attendance, an emergency medical transport scheme, mother and child tracking system, and a home based maternal and newborn care phone application.

2. Better Birth
(a grant to Harvard School of Public Heath, USA, in collaboration with World Health Organization, Population Services International, India, and Community Empowerment Lab@ Shivgarh)
The Better Birth project started in 2012 and implementation is due to start in 2013. It will test whether adoption of the WHO Safe Childbirth Checklist programme in birth facilities in Uttar Pradesh, India, improves health outcomes for mothers and

Figure 1 – Bill & Melinda Gates Foundation Theory of Change to improve maternal and newborn survival

newborns. The programme was developed by the World Health Organisation (WHO) and Harvard School of Public Health over the past three years. It builds upon the success of a pilot study in South India that demonstrated dramatic improvement in health workers' adherence to essential childbirth practices.

3. Community Mobilisation and Behaviour Change grant
(to a five-partner consortium led by the Public Health Foundation of India[3])
The Community Mobilisation and Behaviour Change project started in 2012 and implementation is due to be phased in during 2013. It seeks to develop and scale up a package of family health interventions using the behaviour change management approach through social platforms comprising an institutionalized self-help group model in Uttar Pradesh towards reducing neonatal mortality and improving family health behaviors.

A fourth foundation funded project in Uttar Pradesh, Sure Start (run by PATH), had completed its active phase at the time of the baseline survey.

Further detail about the work of these grantees can be found at the IDEAS website: http://ideas.lshtm.ac.uk/.

Photo above: Children in village, Uttar Pradesh, India. Courtesy of Manthan project. © Agnes Becker/IDEAS
Photo right: Woman with newborn baby. Courtesy of Manthan project. © Agnes Becker/IDEAS

Organisation of survey findings

The report presents data collected in 2012. The results are organised in chapters for each stage along the continuum of care: pregnancy, intra-partum, post-partum, and post-natal periods. Within each chapter, the number, quality, and equity of interactions between families and frontline workers are presented, and the coverage of critical interventions that save lives at each stage. A summary paragraph is included for each stage to link data from households, primary care facilities, and frontline workers where possible.

This forms the basis for meeting one of the IDEAS' goals which is to investigate whether foundation funded projects that aim to enhance interventions do lead to more frequent, better quality, and more equitable interactions between families and frontline workers, and whether the coverage of critical interventions for mothers and newborns increase as a result. ■

Methodology

Timeline

The surveys were implemented in November 2012. Household interviews with all women aged 13-49 refer to their contact with frontline workers during the six months prior to survey (May – October 2012). Household interviews with ever married women aged 13-49 who had a live birth refer to births that occurred in the 12 months preceding survey (November 2011 – October 2012). Facility assessments refer to availability

of equipment and supplies on the day of survey (November 2012), and data extracted from facility registers for the six month period prior to survey (May – October 2012). Frontline worker interviews refer to their career as a frontline worker, and to the last birth that they attended.

Survey modules

The survey design uses population level probability sampling to select household clusters, and then also surveys the primary health centres (PHC) and community health centres (CHC), and the frontline workers, assigned to provide maternal and newborn care services to those household clusters.

The **household survey** comprised of three modules. (1) A household module asked all household heads about characteristics of the household, ownership of commodities, and registered all normally resident people in the household. (2) A women's module asked all women aged 13-49 years and normally resident in the household about the health care available to them, their recent contact with frontline workers, and their birth history in the two years preceding the survey. (3) A mother's module asked all ever married women who reported a birth in the last two years (identified in the women's module) a detailed set of questions about their contact with health services across the continuum of care from pregnancy to post-natal care.

The **facility survey** comprised of four sections. (1) An inventory of equipment and supplies that were available and functioning on the day of survey. (2) An inventory of staff employed at the facility, their cadre, training and whether they were present on the day of survey. (3) An interview with the in-charge of the facility about the

services available at that facility, and about recent supervision visits they had received. (4) Data extraction from facility registers recorded the number and outcomes of all births at the facility during the previous six months.

The **frontline worker survey** comprised of four sections. (1) The services provided by the frontline worker and the amount of time they typically spend on each service. (2) The training and supervision the frontline worker had received to provide those services. (3) The workload of the frontline worker during the month preceding survey, and their recall of activities that took place during the last delivery they attended. (4) An interview comprising unprompted questions about knowledge of appropriate care for mothers and newborns.

The content of each survey module or section was informed by existing large scale survey tools such as the Demographic and Health Surveys, the Service Provision Assessment, Averting Maternal Death and Disability, Safe Motherhood, and the Indian National Family Health Survey. All questionnaires were extensively pre-tested prior to survey implementation.

Sample size and selection

A map of the state of Uttar Pradesh relative to the rest of India is shown in figure 2, and a map of the sampled households, facilities and frontline workers in figure 3. The baseline survey sampled 40 intervention clusters from eight blocks spread over six districts (Hardoi, Jhansi, Sultanpur, Maharanjganj, CSM Nagar, Raebarailly) where foundation funded grantees implement a combination of demand and supply side innovations. We also sampled and surveyed 40 comparison clusters from the remaining 44 blocks (where there is no foundation funded

> The baseline survey sampled 40 intervention clusters from eight blocks spread over six districts (Hardoi, Jhansi, Sultanpur, Maharanjganj, CSM Nagar, Raebarailly)."

Photo above: Health records.
© Dr Meenakshi Gautham

Photos above:
Above left: An ASHA, a frontline health worker, with baby, Uttar Pradesh, India. Courtesy of Manthan project.
© Agnes Becker/IDEAS
Above right: Posters outside expectant mother's house, Uttar Pradesh, India. Courtesy Manthan project.
© Agnes Becker/IDEAS

activity) in the same six districts. The purpose of data collected from comparison areas is to estimate the magnitude of change in outcomes between baseline and endline using a 'difference-in-differences' approach.

Household clusters were selected for survey using probability proportional to size of the cluster. A cluster was defined as a village and all households in each selected village were surveyed (or in a segment of 75 households from the selected village if the village had more than 75 households). In addition, the PHC or CHC assigned to provide primary level care to those households was visited, and any frontline workers providing maternal and newborn health services to the households were identified and interviewed.

The minimum target number of households per cluster was set at 75, meaning a minimum total number of 3000 households in both intervention and comparison areas.. In this fertility setting (the National Family Health Survey in 2005-6 estimated the total fertility rate to be 3.8), this number of households would result in a minimum number of 200 women with a live birth in the previous 12 months (i.e. one in every fifteen households surveyed). This size of sample was sufficient to measure as statistically significant, and with 90% power, changes of 20 or fewer percentage points in a range of interaction and intervention coverage indicators across the continuum of care.

Survey implementation

The survey was implemented by Sambodhi (www.sambodhi.co.in). Questionnaires were written to handheld digital devices using CS Pro software. Interviewers from Uttar Pradesh were recruited and trained.

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A cluster was defined as a village (or segmented sub-village) and all households were surveyed. In addition, the PHC or CHC providing primary level care to those households was visited, as were the frontline workers."

There were eight survey teams, each comprised of one supervisor, five household interviewers, one facility and frontline worker interviewer who was medically trained, one mapper who listed households and segmented as necessary, and one data support person. Each team aimed to complete one cluster every two days.

The survey teams were trained in-house for five days to familiarise themselves with the questionnaires and procedures, followed by a full pilot (including a review of data downloads) in two clusters (not included in the final survey).

In addition to pre-testing the questionnaires, training interviewers, and pilot testing all protocols, during field work supervisors carried out at least three re-interviews a day and observed each interviewer in his team each day of data collection. These re-interviews and observations were used as a means of providing feedback to interviewers, ensuring consistency between interviewers, and continuously improving the standard of work.

Data management and analysis

Every day, data were synchronised from the interviewer devices to the supervisor's laptop: these daily downloads were then burned to a labelled and securely stored compact disk. In addition, when the team had internet connectivity, data were uploaded from the laptop to a secure, dedicated server which senior supervisors checked for completeness and consistency.

Data modules were linked using a set of automatically generated unique identifiers and data tables for analysis constructed. Data were analysed using STATA 12. Clustering was adjusted for using svy commands when tabulating single percentages or calculating means.

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Research ethics

This work obtained ethical approval in India from SPECT-ERB, an independent Ethical Review Board, and written permission from the National Rural Health Mission of Uttar Pradesh. A submission was also made to the Health Ministry Screening Committee's (HMSC) Indian Council for Medical Research (ICMR), and a decision is anticipated by Q2 2013. Ethical approval was obtained from LSHTM (reference 6088). ■

Photo below: Baby with grandmother after an immunisation session.
© Dr Meenakshi Gautham

Figure 2 – Map of India showing location of the state of Uttar Pradesh
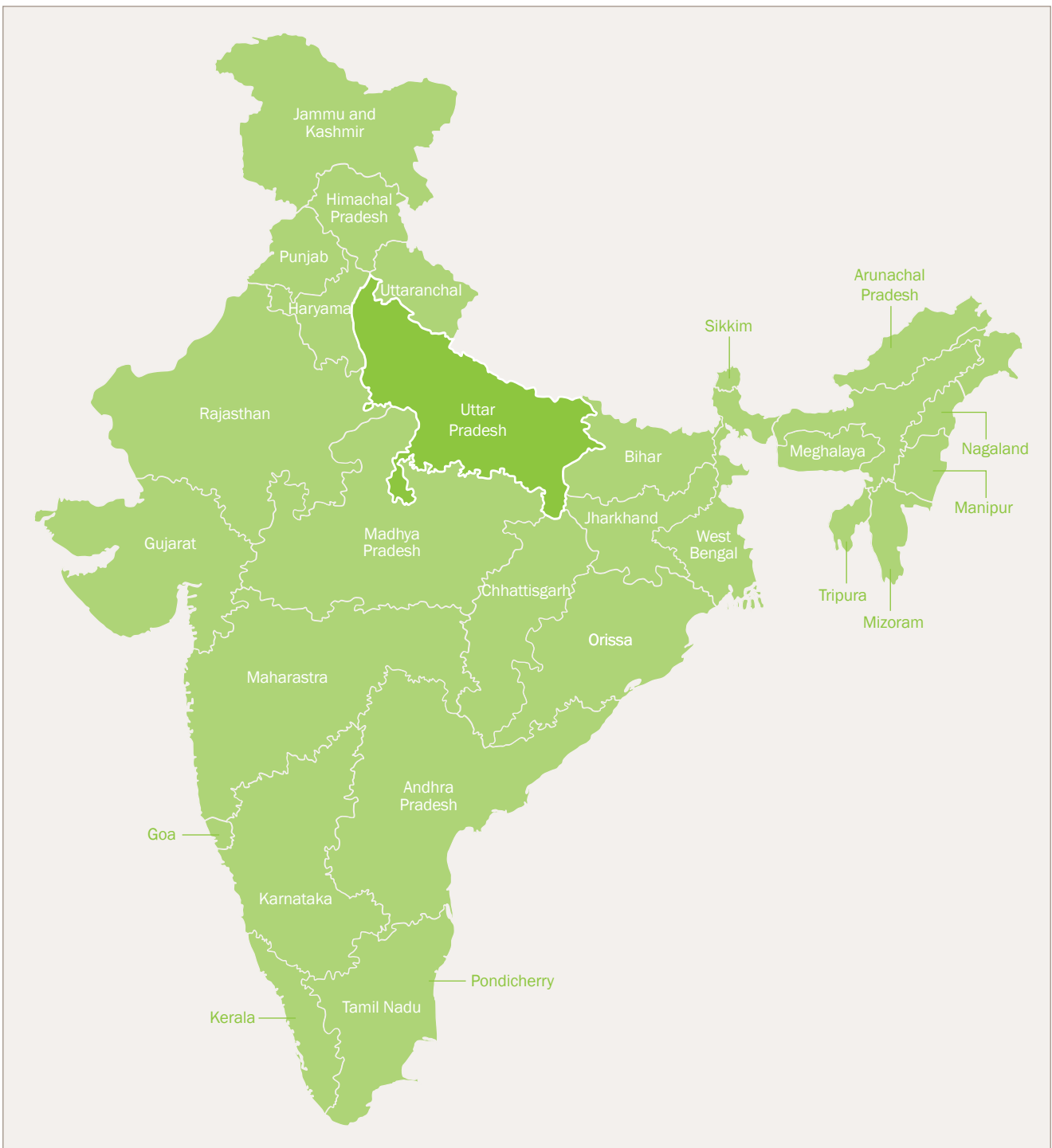
Figure 3 – Map of the state of Uttar Pradesh showing household cluster locations (purple dots), and the location of the surveyed primary health facilities assigned to household clusters (orange dots), and the location of interviewed frontline workers providing services to household clusters (red dots)
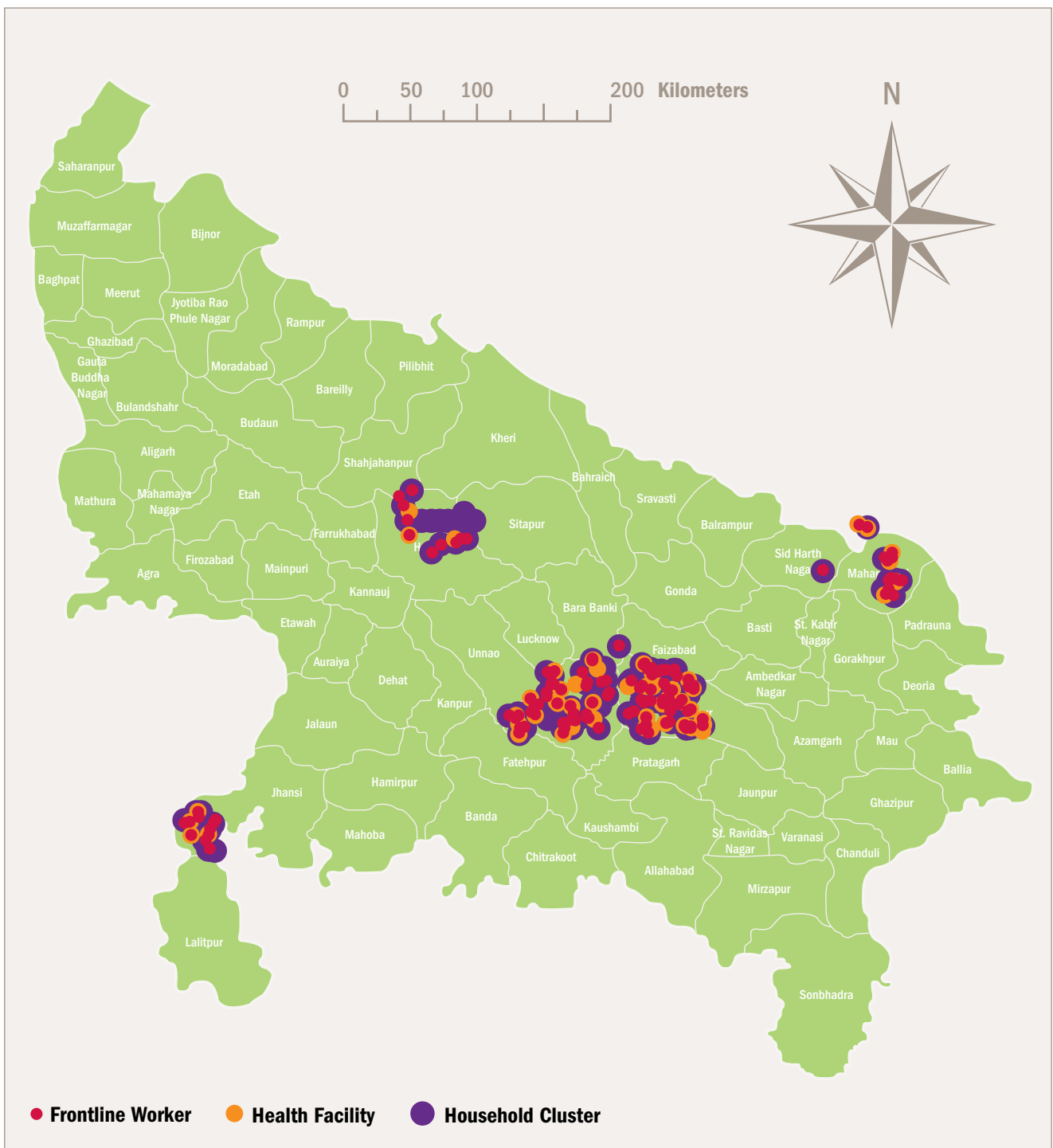
Characteristics

Characteristics of the health facilities surveyed

Photos above: Hospital beds in a Community Health Centre facility. Courtesy of the Manthan project. © Agnes Becker/IDEAS
Above left: Hospital beds in a Community Health Centre facility. Courtesy of the Manthan project. © Agnes Becker/IDEAS

Sample selection and maternal and newborn health services provided

Some household clusters shared a PHC or CHC facility so the total number of facilities surveyed in intervention areas (n=15 PHC and n=4 CHC) is fewer than the total number of clusters in intervention areas (n=40). All surveyed facilities were government led, with the exception of two PHCs that were led by missions. The number of facilities and number of deliveries they conducted in the six months preceding survey is shown in table 1.

Most facilities surveyed provided the full range of basic maternal and newborn health care services. All four CHCs and just two of the 15 PHCs were open seven days per week. Some services that were part of the routine service provided by the facility were not available on the day of survey, particularly evident for vaccination services (figure 4).

Infrastructure and availability of basic equipment and supplies in primary health facilities

There were many gaps in the basic infrastructure of health facilities (table 2). Three quarters of health facilities were connected to electricity (15/19) but just over half of facilities had electricity on the day of survey (9/19), and one quarter (5/19) had a functioning light source. Four facilities had motorised transport for referral, all present on the day of survey. Each facility in-charge was asked which transport was used the last time obstetric referral out of the facility was needed. Three reported

Table 1 – Facilities surveyed and number of deliveries recorded in the six months preceding survey

Facility type	N	Total number of deliveries in last six months	Mean number of deliveries per facility, per month	Percent of deliveries ending in a live birth
PHC	15	2633	29	98.3
CHC	4	1314	55	97.8
All facilities	19	3947	35	98.1

> **"**
>
> Three quarters of health facilities were connected to electricity but just over half of facilities had electricity on the day of survey, and one quarter had a functioning light source."

Figure 4 – Services provided at health facilities and services available on the day of survey
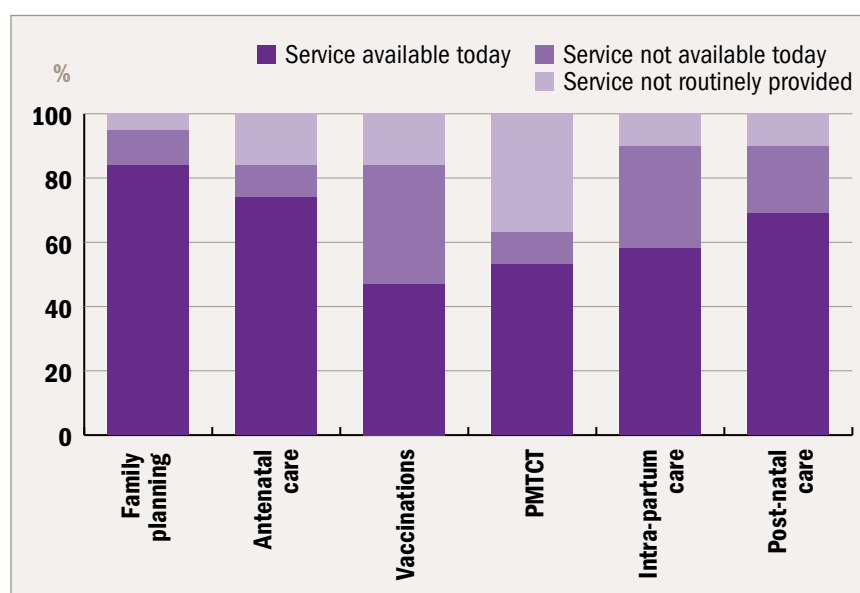
using a facility-owned vehicle, 15 reported that the woman used public transport, and one reported that non-motorised transport was used. Just over half of facilities had any means of telephone communication, and one third of these were mobile phones owned by facility staff.

Equipment and supplies to provide basic maternal and newborn health care were checked for availability and functionality in the health facilities surveyed and are shown in table 3. The list of items recorded was synthesised from existing large-scale facility-based data collection tools including the Averting Maternal Disability and Death needs assessment[4], the Measure DHS Service Provision Assessment[5] , and the WHO Safe Motherhood Needs Assessment[6].

[4] AMDD. EmONC Needs Assessment. Available from: http://www.amddprogram.org/d/content/needs-assessments

[5] Measure-DHS. SPA overview. http://www.measuredhs.com/about surveys/spa/start.cfm.

[6] WHO. Safe Motherhood. Needs Assessment, 2001; Available from: http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/rht_msm_96_18/en/index.html

Table 2 – Infrastructure of primary care facilities, Uttar Pradesh

Item	Health facilities with item (N=19) % (95% CI)
Toilet for facility users	95% (69-99)
Electricity supply (usual)	79% (56-92)
Functional steriliser or stove	79% (54-92)
Running water	63% (40-81)
Room providing physical privacy	58% (35-78)
Any means of telephone communication	58% (33-79)
Newborn care corner	47% (24-72)
Functional fridge	42% (24-63)
Motorised transport for referral	26% (9-51)
24 hr light source	26% (11-50)

Table 3 – Essential equipment and supplies to provide basic maternal and newborn health care at health facilities

Item	Health facilities with item (N=19) % (95% CI)
General items for basic MNH	
Soap	100
Single use syringes/needles	95% (69-99)
Blood pressure cuff	95% (69-99)
Thermometer	95% (69-99)
Sterile scissors or blade	95% (69-99)
Disinfectant	95% (69-99)
Stethoscope	89% (65-98)
IV fluids with infusion set	89% (65-98)
Suture material with needle	89% (65-98)
Infant weighing scale	84% (61-95)
Disposable gloves	84% (61-95)
Needle holder	84% (61-95)
Waste receptacle with lid	84% (61-95)
Watch/timing device	84% (61-95)
Speculum	74% (50-89)
Bag and mask for resuscitation	58% (37-76)
Disposable clamp/umbilical tie	53% (32-72)
Oxygen	53% (32-72)
Sharps container	53% (32-72)
Blanket for newborn	53% (32-72)
Suction bulb for mucus extraction	47% (26-69)
Disposable paper towels	47% (26-69)
Vacuum extractor	32% (14-57)
Baby warmer	32% (14-57)
Fetal stethoscope	26% (10-55)
Manual vacuum aspirator	16% (5-39)
Phototherapy	0

Item	Health facilities with item (N=19) % (95% CI)
Diagnostics for MNH	
Pregnancy test kit	68% (47-84)
Malaria rapid test kits	53% (33-72)
Haemoglobin test	47% (26-69)
Urine dipstick	32% (14-57)
Partographs	16% (5-39)
Syphilis test kit*	5% (1-31)
HIV rapid test kits*	0
Medications for MNH	
IV gentamycin	95% (69-99)
Ferrous sulphate and folic acid	95% (69-99)
Oral antibiotics	84% (61-95)
IV metronidazole	79% (56-92)
Cotrimoxizole	63% (40-81)
Uterotonics	37% (20-58)
Corticosteroids	37% (20-58)
IV ampicillin	37% (20-58)
Local anaesthetics	32% (14-57)
Diazepam	32% (14-57)
Vitamin K	21% (9-42)
Sulphadoxine pyrimethamine	21% (9-42)
Tetracycline/eye ointment	16% (5-39)
Vaccinations for MNH:	
Bacille Calmette Guerin (BCG)	63% (40-81)
Tetanus toxoid vaccines	58% (37-76)
Oral Polio Vaccine (OPV)	58% (37-76)

* Just 1/19 facilities provided syphilis testing on site; no facilities provided HIV testing on site

Staff employed and at work in health facilities

Staff employed across the health facilities, broken down by cadre, is shown in figure 5. The largest group employed were staff with no medical training who provided patient care (36%), followed by auxiliary nurse midwives (26%), and clinicians (19%). At least one clinician was employed in all facilities, and at least one registered nurse or midwife was employed in 32% of facilities, and at least one auxiliary nurse midwife was employed in 84% of facilities. Eighty seven percent of employed staff were at work on the day of survey, with the biggest absenteeism observed amongst clinicians (76% of those employed were at work), followed by registered nurses/midwives (88% at work) and auxiliary nurse midwives (87% at work). The lowest absenteeism was observed amongst non-clinical patient support staff (92% of those employed were at work on the day of survey).

Supervision at health facilities

All facilities had received a supervision visit in the six months preceding survey, the median time between survey date and last supervision visit being 46 days (inter-quartile range 16-93 days). Ninety percent of supervision visits were made by the district or state government health teams. ■

> "
> Eighty seven percent of employed staff were at work on the day of survey, with the biggest absenteeism observed amongst clinicians"

Photo above: Mother and baby, Uttar Pradesh, India. © Bill & Melinda Gates Foundation

Figure 5 – Staff employed at health facilities, by cadre
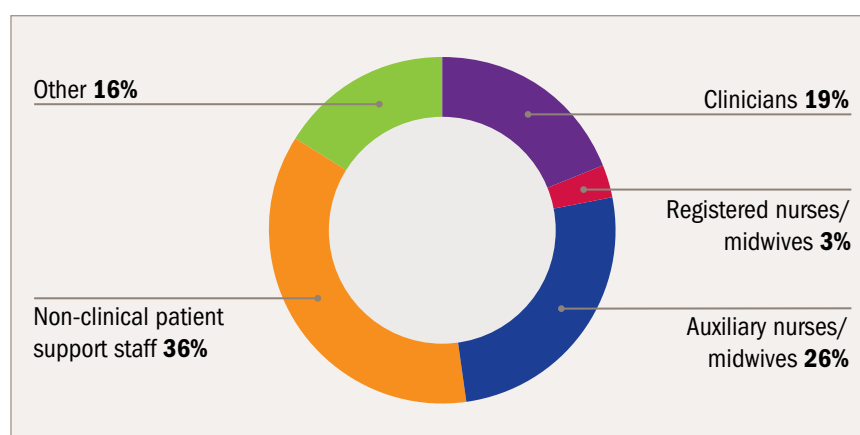
Other **16%**

Clinicians **19%**

Registered nurses/midwives **3%**

Non-clinical patient support staff **36%**

Auxiliary nurses/midwives **26%**

Characteristics

Photo above: An ASHA, a frontline health worker, using a mobile phone application to give health messages to a new mother and her mother-in-law. Courtesy of the Manthan project. © Agnes Becker/IDEAS

Sample selection

A total of 96 frontline workers providing maternal and newborn care were interviewed across the 40 intervention area household clusters: 39 ASHA (all working in communities), 40 Anganwadi workers (all working in communities), three nurses (one working at a sub-centre, two working at CHC facilities), 14 auxiliary nurse midwives (two working at a sub-centre, 12 working at PHC facilities (table 4).

Services provided by frontline workers

Frontline workers were asked to estimate the number of hours they spend in a typical week on service provision for mothers and newborns. While the responses given do not triangulate well with a review of the work books (table 4), it was interesting to see how they perceived their time to be allocated. The relative distribution of time estimated by different cadre of frontline worker (but not the absolute number of hours) is shown in figures 6-8 below. ASHA reported spending over three quarters of their time on providing post-natal and post-partum care, and encouraging immunisation of children. Anganwadi workers reported spending just over half of their time on post-natal care and immunisations, the remainder of their time being split between community mobilisation, family planning, and HIV education.

Table 4 – Frontline workers interviewed who provide maternal and newborn health services to the selected household clusters and their volume of work in the last month, by cadre

Frontline worker type	N	Years worked (median)	Number of women seen for pregnancy care in last month (median)	Number of deliveries attended in last month (median)*	Number of post partum visits in last month (median)	Number of post natal visits in last month (median)
Nurses/ANM working in facilities	17	24	15	1	7	7
ASHA	39	6	7	0	3	3
Anganwadi workers	40	11	4	0	2	2

* 16/17 nurses or ANM, 30/38 ASHA, and 9/40 Anganwadi workers had ever attended a delivery

Nurses and auxiliary nurse midwives working in health facilities reported spending the largest portion of their time attending deliveries, followed by provision of post-partum and post-natal care. Surprisingly, pregnancy care did not feature as a prominent work activity for any cadre of frontline worker. Note that the term 'pregnancy care' is used throughout this report to describe antenatal care delivered in health facilities as well as care of pregnant women delivered in communities.

Training and supervision of frontline workers

During the 12 months preceding survey, 16% (95% CI 9-25) of the frontline workers interviewed had received training in pregnancy care, 8% (95% CI 4-15) in clean and safe delivery, 15% (95% CI 8-25) in post-partum care and 13% (7-22) in topics of post-natal care.

Almost all frontline workers reported having a supervision visit in the last six months (97% (95% CI 90-99), most often by a more senior member of staff from their attached health facility. ASHA and staff in health facilities reported the median time since last supervision visit to be 12 days, 24 days for Anganwadi workers. At that last supervision visit, the three most common activities reported included (1) record keeping (86% of frontline workers), (2) checking supplies (69% of frontline workers), and (3) observing client interactions (53% of frontline workers). ■

"Surprisingly, pregnancy care did not feature as a prominent work activity for any cadre of frontline worker."

Figure 6-8 – Estimated relative time allocation to specific activities in a typical week, ASHA, Anganwadi worker and Facility staff

Figure 6
Estimated relative time allocation to specific activities in a typical week, ASHA

Figure 7
Estimated relative time allocation to specific activities in a typical week, Anganwadi worker

Figure 8
Estimated relative time allocation to specific activities in a typical week, Facility staff

- Post-natal care
  - Thermal care
  - Care of low birth weight babies
  - Breastfeeding counselling
- HIV education
- Family planning education
- Pregnancy care
- Deliveries
- Post-partum care
- Community mobilisation
- Immunisation

Characteristics

Characteristics of households and women interviewed

Photo above: Patients waiting for clinic appointments, Uttar Pradesh, India. © Dr Meenakshi Gautham

Sample selection

A total of 2818 household heads from the 40 clusters were invited to participate in the survey, 2621 of whom agreed. The average household size was 5.8 people. The total number of women aged 13-49 years living in surveyed households was 4307, 93% (4062) of whom were interviewed in detail about their recent fertility history. Amongst these 4062 women, 308 had a live birth in the 12 months preceding survey and completed a detailed module about that birth. Of these, one percent were aged

Figure 9 – Characteristics of building materials and ownership of assets in the most poor (Q1) and the least poor (Q5) households surveyed
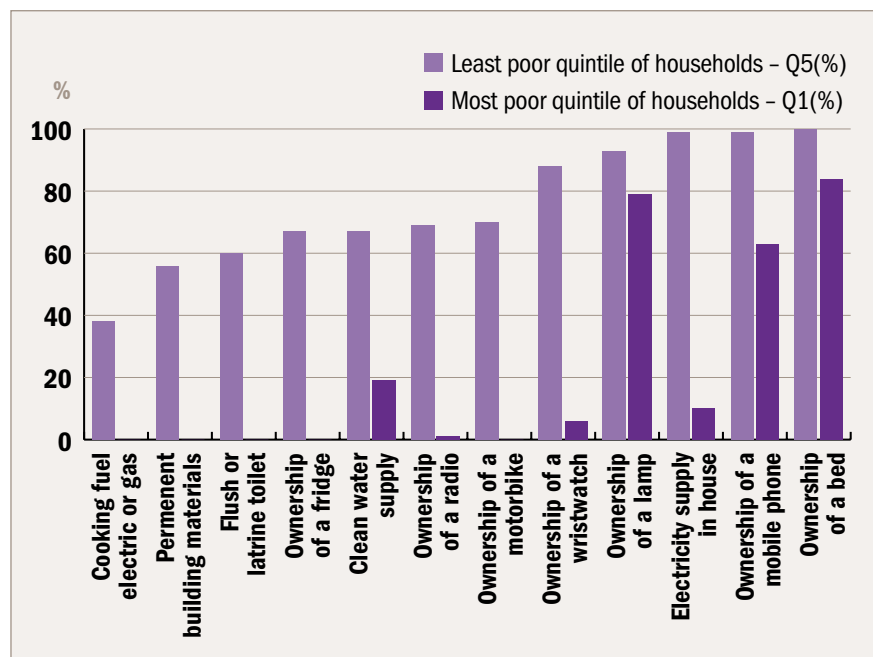
13-14years, 6% aged 15-19years, 71% 20-29 years, 22% 30-39 years, and one percent were aged 40-49 years.

Equity measures

Socio-economic status of households
The household module asked questions about household building materials (walls, roof, floor), utilities (water, sanitation, cooking fuel, electricity), and assets (radio, bicycle, fridge, television, mobile phone, bed, kerosene or pressure lamp, wrist watch, motorcycle, tractor, fan).

In order to examine the relationship between key coverage outcomes and socioeconomic status, an index of socioeconomic status was constructed for each household using principal components analysis. The continuous index variable produced by the principal components analysis was divided into five equal sized groups (quintiles) of households from quintile 1 (most poor) to quintile 5 (least poor). Characteristics of households in the most poor and the least poor quintiles are demonstrated in figure 9.

Gender of newborns
Post-natal care indicators are disaggregated by gender of the newborn child in order to examine whether or not there is evidence of difference in life saving behaviours for newborn girls or boys.

Characteristics of individuals interviewed

The characteristics of individuals interviewed in the households are shown in Table 5. The sample comprised a predominantly married and Hindu population from a large mix of ethnic groups, approximately 40% of whom had no formal education. ■

Table 5 – Characteristics of household survey respondents

Characteristic	Household heads N=2621	Women aged 13-49 yrs N=4062	Women with a live birth in the 12 months preceding survey N=308
Ethnicity			
Chamar	13%	15%	15%
Pasi	6%	8%	8%
Yadav	7%	8%	8%
Rajput	9%	6%	6%
Brahmin	7%	5%	5%
Kurmi	6%	5%	5%
Kori	5%	5%	5%
Other (75 groups)	47%	48%	48%
Religion			
Hindu	93%	93%	93%
Muslim	7%	7%	7%
Socio-economic status			
Q1 (most poor)	20%	19%	21%
Q2	19%	18%	18%
Q3	19%	18%	16%
Q4	21%	22%	24%
Q5 (least poor)	21%	24%	21%
Marital status			
Married	65%	68%	100%
Education level			
None	38%	39%	40%
Primary	21%	20%	23%
Secondary	40%	40%	38%
Mean age (yrs)	47 years	28 years	26 years

"

The sample comprised a predominantly married and Hindu population from a large mix of ethnic groups, approximately 40% of whom had no formal education."

Pregnancy Care

Photo above: An Anganwadi worker, a frontline health worker, leading a mother's group meeting using a flip chart to give health messages about breastfeeding. Courtesy of Sure Start project. © Agnes Becker/IDEAS

This chapter presents results on the frequency of interactions, the quality of those interactions, and the coverage of critical interventions. Interaction frequency and intervention coverage are also broken down by socio-economic status of households.

Antenatal care provided in health facilities is described under the label 'pregnancy care' which includes care delivered to pregnant women by different cadres of frontline worker.

Frequency of pregnancy care interactions

On average, women in the Uttar Pradesh sample who had a live birth in the 12 months preceding survey had 2.6 (95% CI 2.1-3.0) pregnancy care interactions during the pregnancy leading to that live birth (2.1 (95% CI 1.6-2.5) at a health facility and 0.4 (95% CI 0.2-0.6) at home). Overall, 75% (95% CI 65-83) had at least one pregnancy care interaction and 29% (95% CI 23-36) had the recommended four interactions.

Women who went to a health facility at least once for pregnancy care went on to have an average of 4.1 pregnancy care interactions in total (95% CI 3.5-4.6), compared to women who never attended a facility for pregnancy care who had an average of 1.0 interactions (95% CI 0.7-1.4). Sixty-five percent of women (95% CI 55-72) saw a doctor or a nurse or auxiliary nurse midwife at least once during pregnancy.

Nineteen percent of women (95% CI 14-27) had at least one home visit for pregnancy care, having 2.2 (95% CI 1.7-2.6) home visits on average. The frontline health workers to make the first home visit for pregnancy care were ASHA (68%, 95% CI 51-82),

Figure 10 – Percent of women who had at least four pregnancy care interactions, by socio-economic status of household
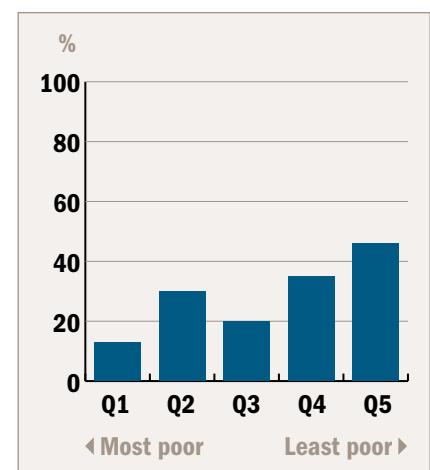
Box 1 – Perspectives of quality of pregnancy care and their justification

	Quality perspective	Justification
1	Women's knowledge of danger signs in pregnancy[1]	Frontline workers aim to counsel women about danger signs: retention of this knowledge is one perspective of the quality of that counselling
2	Women's preparations for delivery[1]	Frontline workers aim to counsel women about the preparations needed for a safe delivery: taking action on this is one perspective of the quality of that counselling
3	Median gestation at first pregnancy interaction[1]	High quality care should encourage pregnancy visits to be made in a timely way, usually recommended for first visit to occur before 16 weeks of gestation
4	Components of pregnancy care by the end of pregnancy[1]	Women come into contact with a range of frontline worker cadres throughout pregnancy, but by the end of pregnancy all women should have had a core set of pregnancy health care (weight, height and blood pressure measured, urine and blood tested, counselled on birth preparedness, danger signs, and breastfeeding)
5	Frontline worker knowledge of the elements of focussed pregnancy care[2]	The knowledge that frontline workers have about recommended pregnancy care could influence the quality of care that they are able to deliver
6	Availability of essential commodities to provide basic pregnancy care at primary health facilities[3]	The quality of pregnancy care delivered to women is influenced by the availability of essential commodities to provide that care (stethoscope, blood pressure cuff, thermometer, adult scale, fetal stethoscope, timing device, disposable gloves, urine protein test kit, single use syringes, tetanus toxoid vaccines, ferrous/folate)

auxiliary nurse/midwives (19%, 95% CI 8-39), and anganwadi workers (6%, 95% CI 3-15).

Inequities in frequency of interactions
While inequity was observed in the number of women receiving pregnancy care at least once (coverage of at least one pregnancy care interaction was one and a half times higher amongst women from the least poor households compared to the most poor), it was much more pronounced for the number of women receiving at least four pregnancy care interactions (being three and a half times higher amongst the least poor (46%) compared to the most poor (13%), figure 10).

Quality of pregnancy care interactions

The quality of pregnancy care interactions was evaluated from six different perspectives (box 1).

1. Women's knowledge of danger signs in pregnancy
Eighty-five percent of women (95% CI 77-90) were able to state at least one danger sign, with each woman stating an average of 2.9 pregnancy danger signs (95% CI 2.5-3.2) without any prompting from the interviewer. A breakdown of the frequency with which different danger signs were mentioned by women is provided in figure 11.

[1] Measured during the household survey: women with a live birth in the 12 months prior to survey

[2] Measured during the frontline worker survey: frontline workers who have pregnancy care interactions with women in the household survey location or nearest health facility

[3] Measured during the primary health facility survey: health facilities allocated to provide pregnancy care to the household survey location

"

The percent of women having at least four pregnancy care interactions was three and a half times higher amongst the least poor (46%) compared to the most poor (13%)."

Figure 11 – Unprompted knowledge of danger signs in pregnancy amongst women with a live birth in the 12 months preceding survey
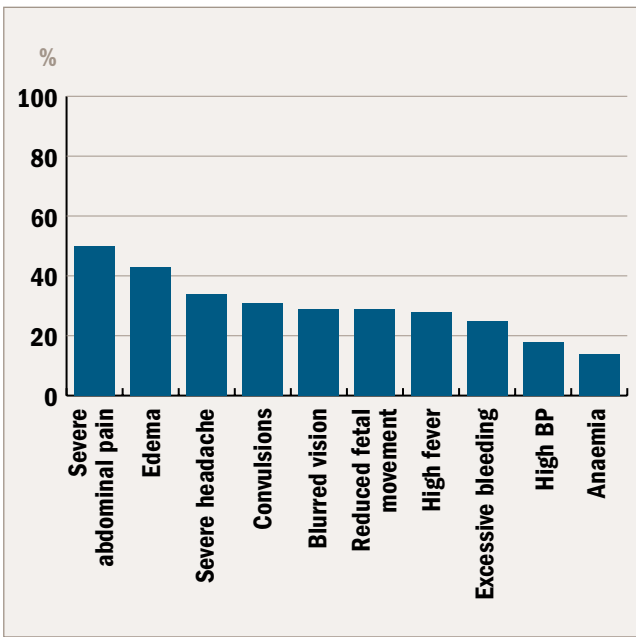

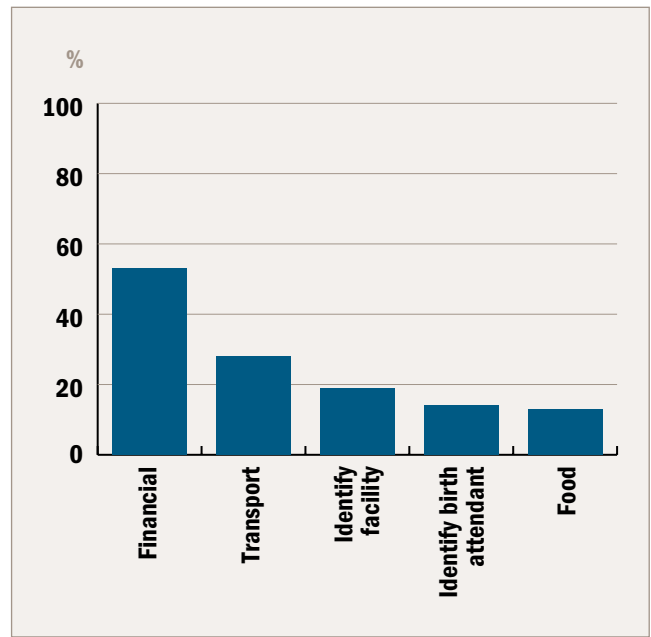Figure 12 – Preparations made for delivery by women during pregnancy

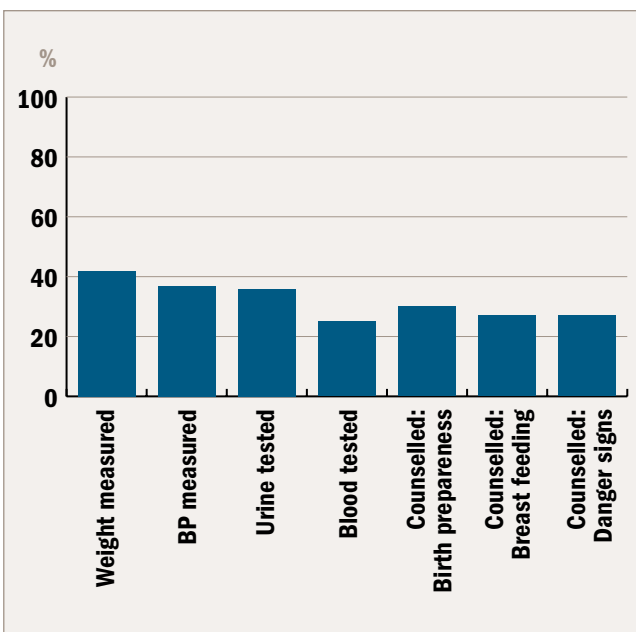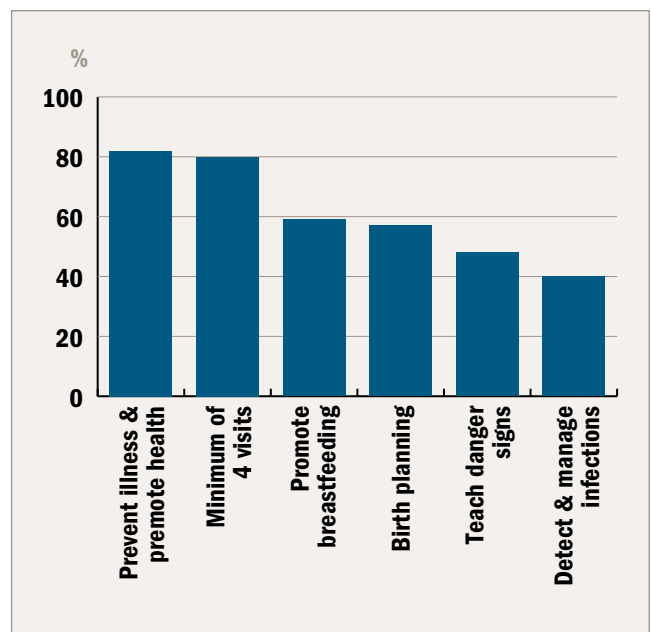Figure 13 – Coverage of core components of good quality pregnancy care by the end of the pregnancy period

Figure 14 – Knowledge of the elements of focussed pregnancy care amongst all frontline workers

2. Women's preparations for delivery
Counselling during pregnancy care interactions includes advising women to make preparations for their delivery namely: to put aside some money, to plan transport and food requirements, and to identify a birth attendant and a health facility. In the Uttar Pradesh sample, 56% (95% CI 49-62) reported making any preparations for delivery, but just four percent (95% CI 2-8) prepared all five things (figure 12).

3. Median gestation at first pregnancy care interaction
The median gestation at first pregnancy interaction was 16 weeks (inter-quartile range 12-20).
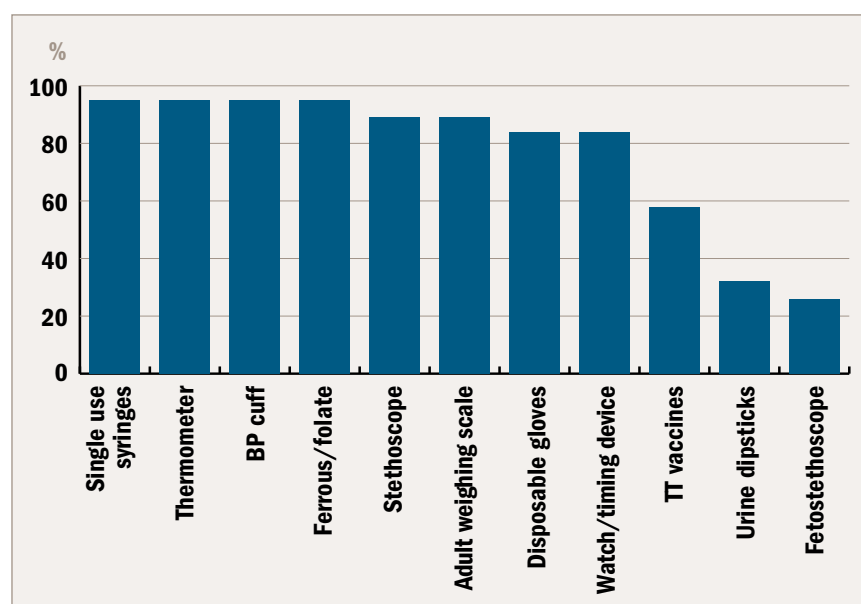
4. Components of pregnancy care received by women by the end of pregnancy
Good quality pregnancy care includes a minimum of seven core components, including checks on the health of the pregnant woman and providing life saving counselling. Seven percent of women (95% CI 5-11) who had a live birth in the 12 months preceding survey reported having received all seven components by the end of their pregnancy (figure 13). Seventeen percent of women (95% CI 12-24) received the four medical components that involve physical measurement and testing.

5. Frontline worker knowledge of the elements of focussed pregnancy care
Sixteen percent (95% CI 8-28) of frontline workers had unprompted knowledge of all six elements of focussed pregnancy care (figure 14). By cadre of frontline worker, nursing staff at health facilities and ASHA both had the highest level of comprehensive knowledge (18% of each cadre knew all six elements), followed by anganwadi workers (13%). The least

well known elements were to teach women about danger signs during pregnancy, and to detect and manage infections (both cited by fewer than 50% of frontline workers).

6. Availability of essential commodities to provide basic pregnancy care at primary health facilities
On the day of the survey, 11% (95% CI 2-35) of primary health facilities had all essential commodities required to provide pregnancy care. The item most frequently missing was a fetal stethoscope: just 26% (95% CI 10-55) of facilities had one available (figure 15).

Coverage of pregnancy care critical interventions

The coverage of pregnancy care interventions that can be delivered at community or primary level of

Figure 15 – Availability of commodities to provide pregnancy care in primary health facilities

Photo above: An ASHA, a frontline health worker, using a mobile phone application to give health messages to an expectant mother and local children. Courtesy of Manthan project. © Agnes Becker/IDEAS

Table 6 – Coverage of pregnancy care critical interventions amongst women with a live birth in the 12 months preceding survey

Critical intervention	Coverage amongst women with a live birth in the 12 months preceding survey (N=308) % (95% CI)
Iron supplementation: received	57% (50-65)
Iron supplementation: used	49% (42-57)
Tetanus toxoid protection	86% (80-91)
Syphilis prevention*	5% (3-8)

* Women receiving a test result for syphilis during ANC

health care is presented in table 6. Although 57% of women with a live birth in the 12 months preceding survey reported that they received iron supplementation when pregnant, 49% (95% CI 42-57) reported using the supplement, the median days of use being 50 days (inter-quartile range 30-60). Coverage of tetanus toxoid protection (received at least two doses of the vaccine in the last three years) was high at 86% (95% CI 80-91). Only five percent of women (95% CI 3-8) reported receiving a test result for syphilis while pregnant.

Triangulation of data sources on pregnancy care

Three-quarters of women had at least one pregnancy care interaction and 29% had at least four pregnancy care interactions, although there was considerable inequity in this indicator being just 13% amongst women from the poorest households but 46% amongst the least poor women. Two-thirds of women saw a skilled attendant for pregnancy care during their last pregnancy, and one-fifth reported having a home visit for pregnancy care (predominantly being visited by an ASHA).

Just 16% of frontline workers had knowledge of the six core elements of focussed pregnancy care, knowledge about birth planning, teaching danger signs, and detection of infections being lowest.

Photo left: © Dr Bilal Avan

Birth planning

Thirty percent of women reported being counselled about birth preparations by a frontline worker, and approximately fifty percent of women reported making some preparations for their delivery (although just four percent made preparations for all five basic items (finances, transport, food, health facility, birth attendant).

Danger signs

The majority of women knew some danger signs in pregnancy (2.9 on average), but few women cited high blood pressure or anaemia. Fewer than half of health facilities had a means of testing haemoglobin, and only around one third of women reported having their blood pressure measured during pregnancy.

Detecting infections

Just five percent of facilities had syphilis test kits in stock, none had HIV test

> "Only 11% of facilities surveyed were providing pregnancy care on the day of survey and had all the basic essential supplies needed, and just seven percent of women received good quality pregnancy care."

kits. One quarter of women reported giving blood for tests while pregnant, and just five percent reported receiving a test result for syphilis.

Overall, only eleven percent of facilities surveyed were providing pregnancy care on the day of survey and had all the basic essential supplies needed (see Annex figure A.3), and just seven percent of women received good quality pregnancy care (in that they had their weight and blood pressure measured, their urine and blood tested, and were counselled about birth preparedness, breastfeeding and danger signs). Nonetheless, over half of women received iron prophylaxis, and more than three quarters had tetanus

toxoid protection, with little evidence of any inequity in coverage of these critical interventions. ■

Photo above: Primary Health Care facility © Dr Meenakshi Gautham

Figure 16 – Coverage of iron prophylaxis and of tetanus toxoid protection in pregnancy, by socio-economic status of household
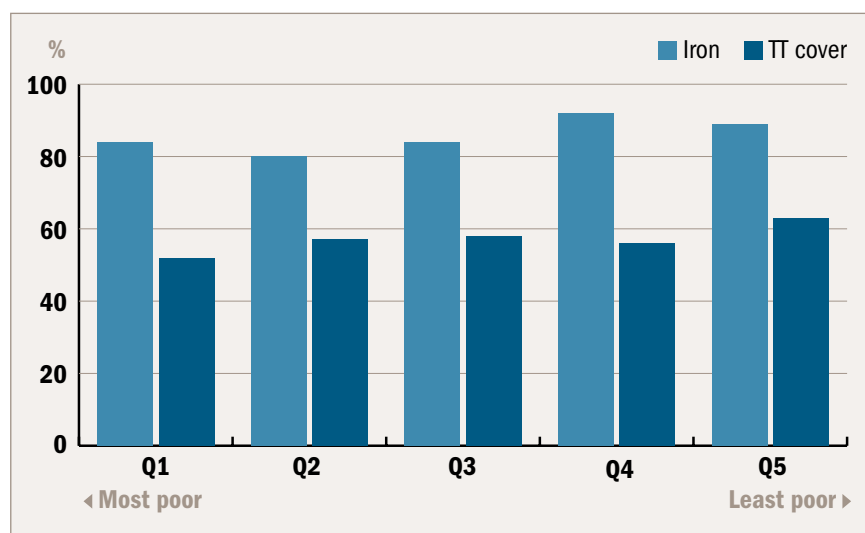
Intra-partum Care

Photo above: © Bill & Melinda Gates Foundation

This chapter presents results on the frequency of interactions, the quality of those interactions, and the coverage of critical interventions. Interaction frequency and intervention coverage are also broken down by socio-economic status of households.

Frequency of intra-partum care interactions

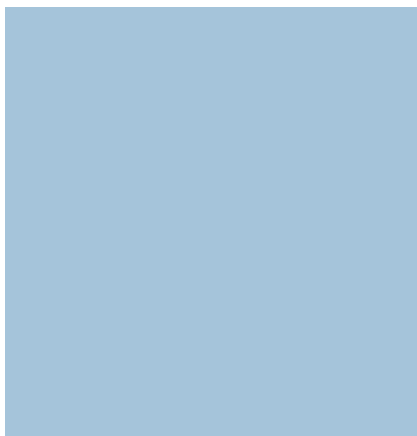Three-quarters (76%, 95% CI 68-82) of women who gave birth between November 2011 and October 2012 in this sample from Uttar Pradesh did so in a health facility, and 76% (95% CI 69-81) were attended by a skilled attendant (doctors and

Figure 17 – Percent of women who had a skilled attendant at birth (doctor, registered nurse/midwife or auxiliary nurse/midwife), by household socio-economic status quintile

Table 7 – Frequency of intra-partum interactions between women and frontline workers during the intra-partum period

Interaction type	Coverage amongst women with a live birth in the 12 months preceding survey (N=308) % (95% CI)
Births in a health facility	76% (68-82)
Births attended by a skilled attendant (doctor, registered or auxiliary nurse or midwife)	76% (69-81)
Births by caesarean section	10% (6-15)
Women advised to seek extra care who did seek extra care (home – facility; intra-facility)*	54% (24-81)

*   13 women reported that they were advised to seek extra care during the intra-partum period

"

There was inequity in skilled attendance at birth, coverage being approximately one third higher amongst women living in the least poor households compared to the most poor."

registered or auxiliary nurse/midwives) during birth (table 7). Two percent of women gave birth alone (95% CI 1-5), 8% (95% CI 4-15) were attended by an ASHA, and 11% (95% CI 8-15) of women were attended by friends or family.

In the household survey, ten percent (95% CI 6-15) of women reported that their baby was delivered by caesarean section.

Inequities in frequency of interactions
There was some inequity in the percent of women having a skilled attendant at birth, coverage amongst women in the least poor households being approximately one third higher than for women in the most poor households (91% vs. 59%, figure 17).

Quality of intra-partum care interactions

The quality of intra-partum care interactions was evaluated from four different perspectives (box 2).

1. Women's knowledge of intra-partum danger signs
On average, women who had a birth in the 12 months preceding survey were able to cite 2.1 intra-partum danger signs (95% CI 1.8-2.5). A breakdown of the frequency that each danger sign was cited is provided in figure 18.

Box 2 – Perspectives of quality intra-partum care and their justification

	Quality perspective	Justification
1	Women's knowledge of intra-partum danger signs[1]	Women who are better informed about intra-partum danger signs will be better placed to seek quality care
2	Frontline worker's knowledge of actions to take when a woman bleeds heavily during labour[2]	The knowledge that frontline workers have about recommended care could influence that quality of care that they are able to deliver
3	Frontline workers have all the essential items they need to provide good quality care[2]	The quality of intra-partum care delivered to women is influenced by the items that frontline workers have access to during delivery (sterile gloves, disinfectant, gauze, clean cloths, sterile cord cutter, cord ligature, uterotonic, eye ointment)
4	Availability of essential equipment to provide basic intra-partum care at health facilities[3]	The quality of intra-partum care delivered to women is influenced by the availability of essential equipment to provide that care (stethoscope, bp cuff, infant weighing scale, fetal stethoscope, sterilizer, thermometer, manual vacuum aspirator, speculum, vacuum extractor)

[1] Measured during the household survey: women with a live birth in the 12 months prior to survey
[2] Measured during the frontline worker survey: frontline workers who have intra-partum care interactions with women in the household survey location or nearest health facility
[3] Measured during the primary health facility survey: health facilities allocated to provide intra-partum care to the household survey location

Figure 18 – Unprompted knowledge of intra-partum danger signs amongst women interviewed in the household survey who had a live birth in the 12 months prior to survey
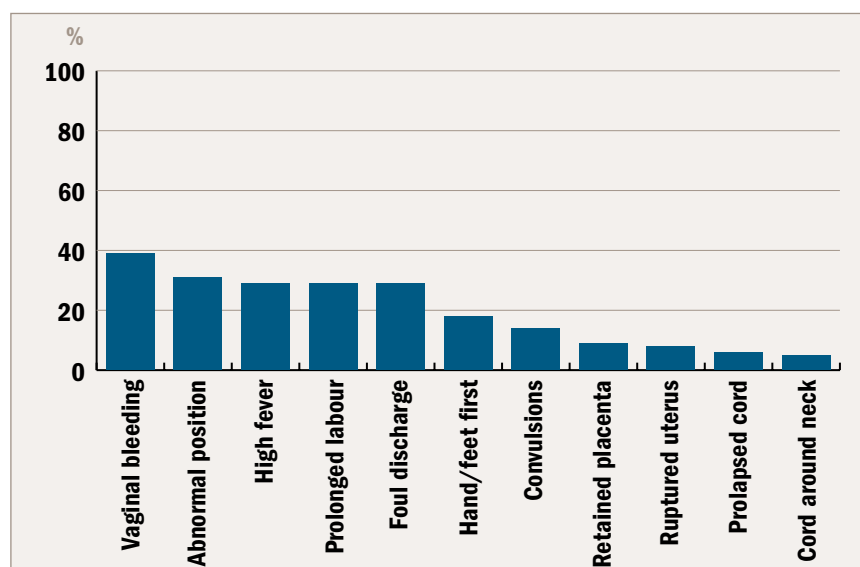
Photo above:
Photo left: Materials for a capsular training program aimed at auxiliary nurse midwives and run by the Manthan project. © Agnes Becker/IDEAS
Photo right: Woman and baby waiting for a clinic appointment.
© Dr Meenakshi Gautham

2. Frontline worker knowledge of actions to take when a woman bleeds heavily during labour
No frontline workers, including primary level health facility staff who had ever attended a birth, stated all eight possible responses for actions to take when a woman bleeds heavily during or immediately after labour: health staff stated 1.6 responses on average. Amongst ASHA who had ever attended a birth, the only action cited was to refer the woman to the next level of care. The frequency with which

Figure 19 – Health facility staff (registered or auxiliary nurse/midwives) knowledge of actions to take when a woman bleeds heavily during labour
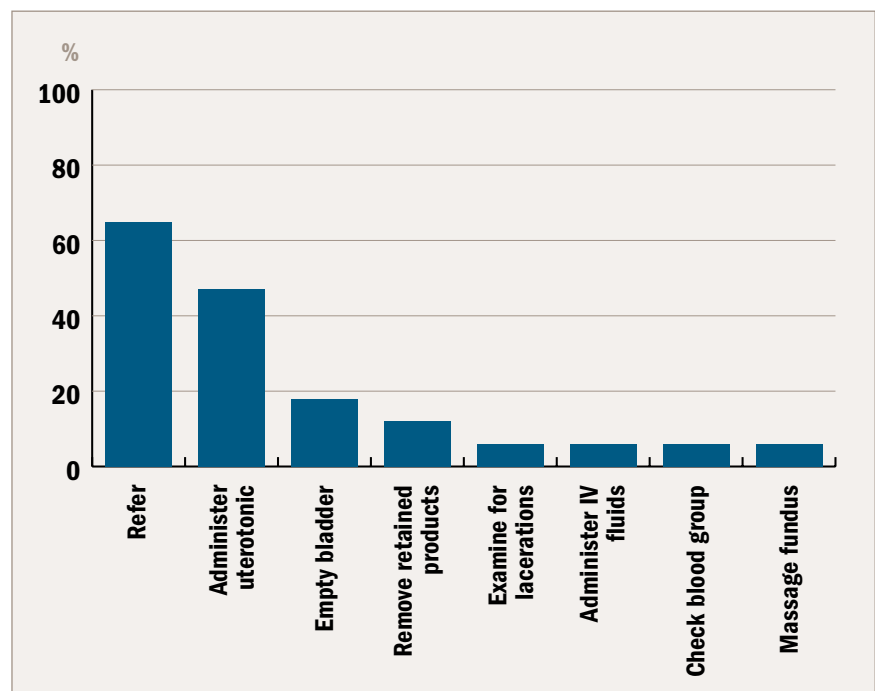
each possible response was stated by health facility based frontline workers is shown in figure 19. Around two-thirds of facility staff said that a woman with heavy bleeding should be referred to the next level of care.

3. Frontline workers have all the essential items they need to provide good quality care

A breakdown of responses by primary health facility staff (registered or auxiliary nurse/midwives) about the items they had been able to prepare for the last birth they attended is provided in figure 20. On average, staff were able to prepare six of the eight items, items most frequently reported as not available were a uterotonic for the mother, gauze, and eye ointment for the newborn.

By linking the frontline worker and household survey data at the level of the cluster we observed that just 10% (95% CI 2-33) of women gave birth in a cluster where the frontline worker providing intra-partum services to that cluster had been able to prepare all essential items at the last birth attended.

4. Health facilities have the equipment needed for basic intra-partum care

An inventory of equipment available in the primary health facilities surveyed indicated that just one of the 17 facilities providing intra-partum care had all the equipment required to provide basic intra-partum care (figure 21).

Coverage of intra-partum care interventions

Four intra-partum critical interventions amenable to delivery by frontline workers are presented. In this sample of frontline workers, nurses and auxiliary nurse/midwives provided

Figure 20 – Frontline worker preparations at the last birth attended, amongst health facility staff who were able to recall the last birth they attended
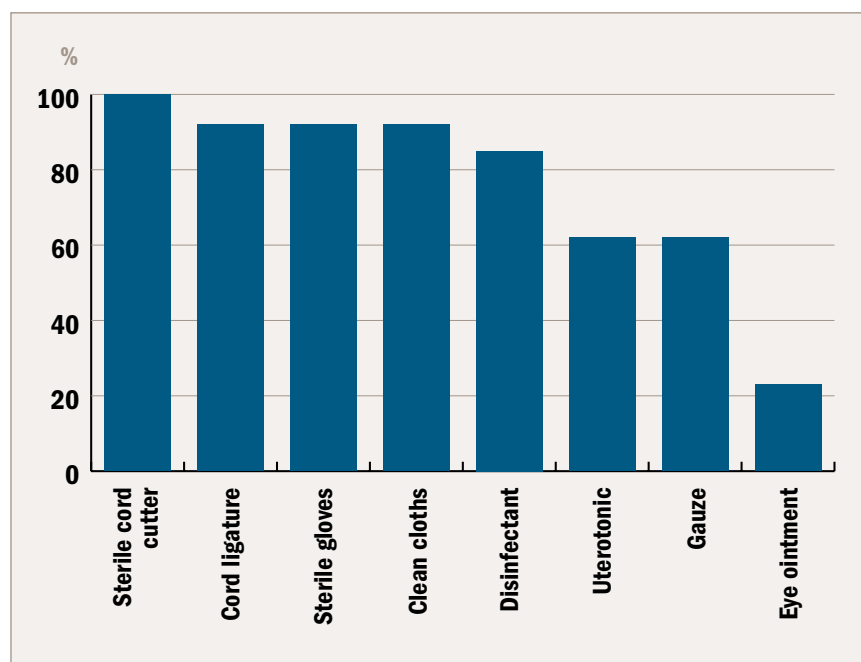

Figure 21 – Primary health facility equipment for basic intra-partum care
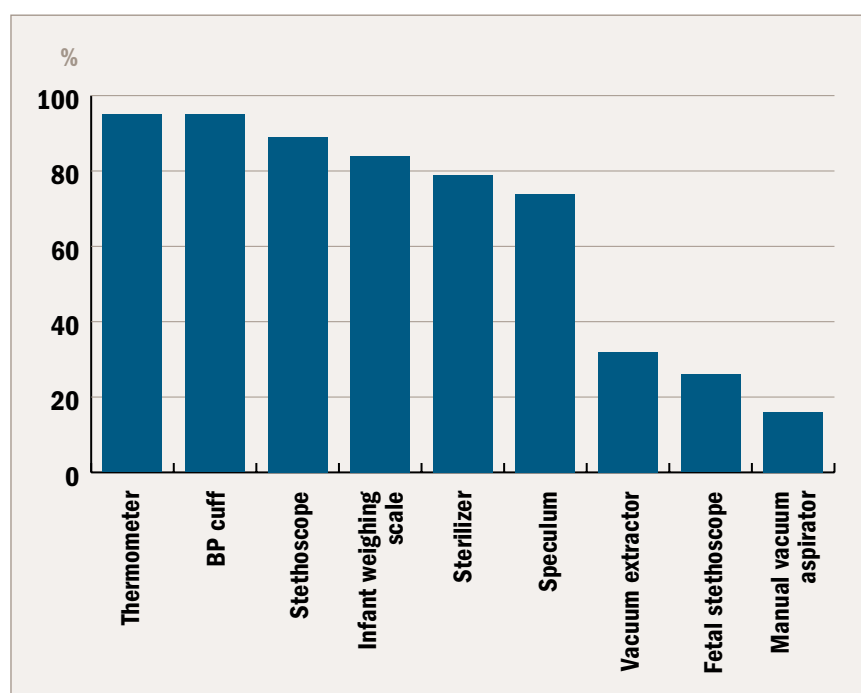
Photo above: Auxiliary nurse midwife's record book of all mothers she has seen with thumbprints and pictures of mother with newborn. © Dr Bilal Avan

Figure 22 – Frontline worker (nurse/ auxiliary nurse/midwife) reported behaviour with regard to components of active management of the third stage of labour at the last delivery attended
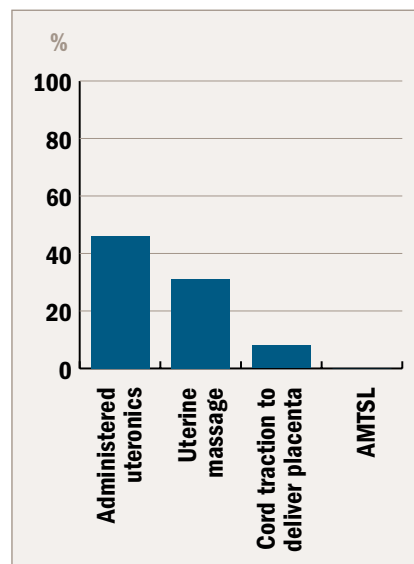
the majority of intra-partum care, but both the household survey and the frontline worker survey indicated that a small proportion of births were attended in the community by ASHA.

The intra-partum interventions (1) administration of prophylactic uterotonics to prevent post-partum haemorrhage and (2) active management of the third stage of labour (AMTSL, administration of prophylactic uterotonic and uterine massage and controlled cord traction) were measured through interviews with frontline workers who attend deliveries (figure 22), and these estimates subsequently applied to household survey responses about the birth attendant for individual women. A very small minority of nurses reported that they practised controlled cord traction during the last birth attended, meaning that estimate for coverage of AMTSL was zero. No ASHA

attending births reported carrying out any of these behaviours.

In order to estimate coverage of these interventions amongst recently delivered women who delivered with a frontline worker, we adjusted the frontline worker reports by the volume of births each cadre of frontline worker had attended in the month prior to survey.

In Box 3 we observe that the expected percent of women who were attended by a frontline worker to have received prophylactic uterotonics was 31% (95% CI 23-39). To extrapolate this to the population level it is necessary to adjust for the 13% of women who did not deliver with a frontline worker (2% delivered alone and 11% of women delivered at home with family or friends). Thus we estimate the population level coverage of prophylactic uterotonics during delivery to be 31*(1.0-0.13) = 27% (table 8).

In Box 4 we observe that no women who were attended by a frontline worker are expected to have had active management of the third stage of labour, mainly due to the very low reported practise of controlled cord traction (table 8).

The intra-partum interventions (3) hand-washing with soap and (4) use of gloves by the delivery attendant were measured in the household survey interview with women with

Box 3 – Expected percent of women who were attended by a frontline worker to have had prophylactic uterotonics administered during their delivery.
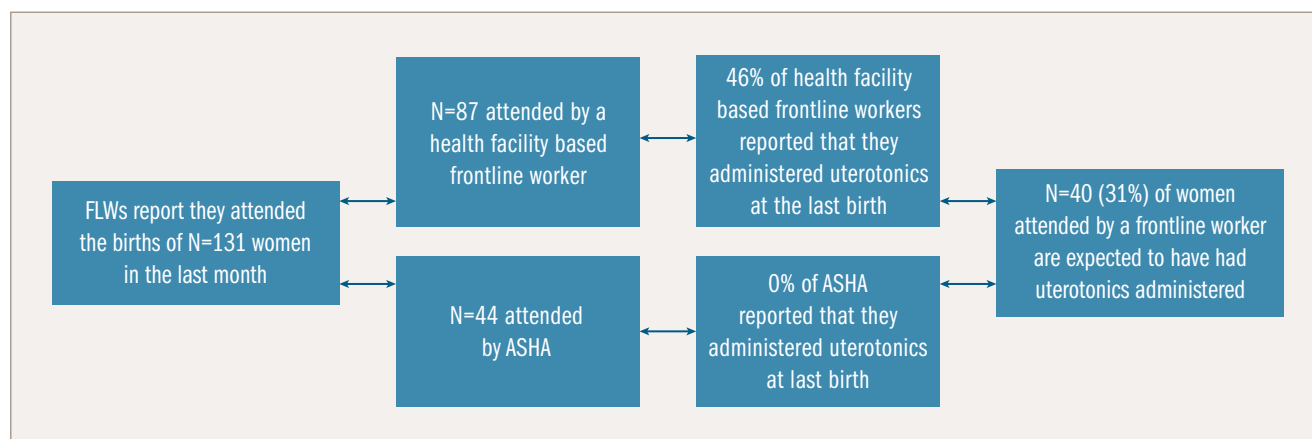
Box 4 – Expected percent of women in the study area who were attended by a frontine worker to have had Active Management of the Third Stage of Labour during their delivery.
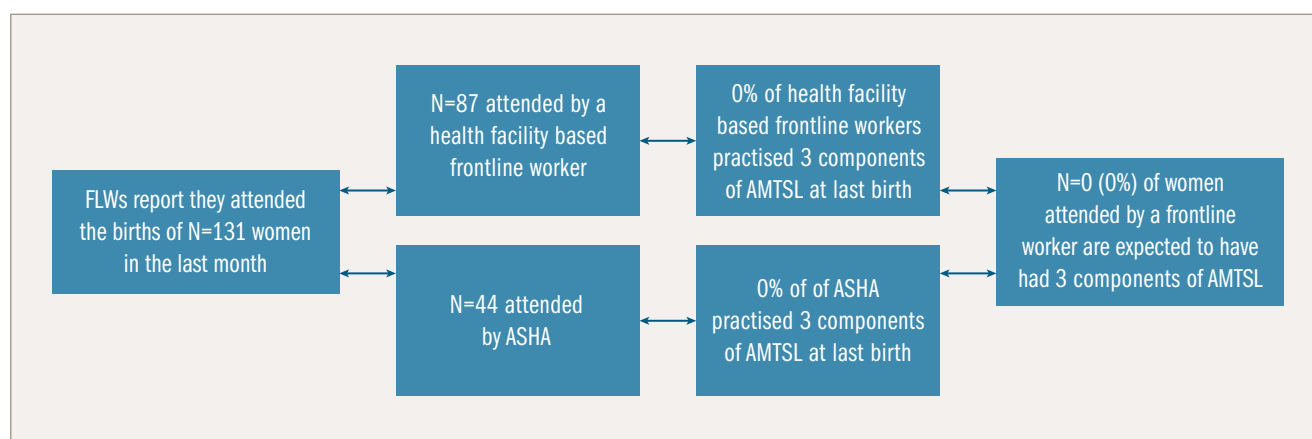
Table 8 – Estimated coverage of intra-partum care critical interventions (1-2)

Critical intervention	Estimated population level coverage[1]
Administration of prophylactic uterotonics	27%
Active management of the third stage of labour[2]	0%

Table 9 – Coverage of intra-partum care critical interventions (3-4) measured through interviews with women with a live birth in the 12 months preceding survey

Critical intervention	Coverage amongst women with a live birth in the 12 months preceding survey (N=308*) % (95% CI)
Hand washing with soap by the delivery attendant	
Health facility delivery	98% (94-100)
Home delivery	78% (62-88)
Use of gloves by the delivery attendant	
Health facility delivery	98% (95-99)
Home delivery	43% (26-62)

* Don't know responses excluded from denominator. Number of missing observations for both hand washing with soap and wearing gloves: facility 2/232; home 10/76.

Figure 23 – Coverage of critical interventions in the intra-partum period, by socio-economic status of households

[footnotes column]
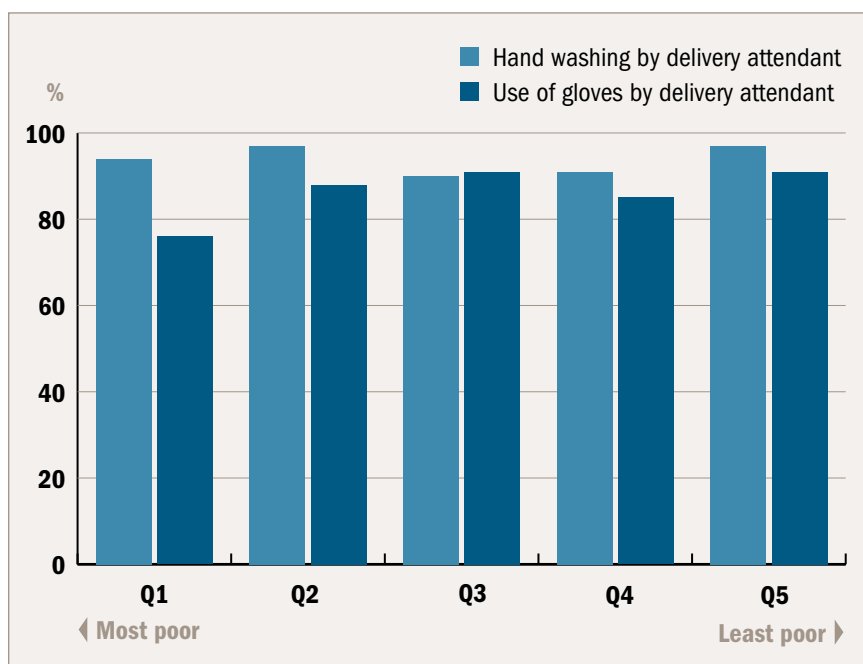
[1] Based on frontline worker reports about volume of deliveries in the month preceding survey and the actions taken at the last delivery attended (frontline worker survey), and the birth attendant reported by women who had a live birth in the 12 months preceding survey (household survey)

[2] Active management of the third stage of labour (AMTSL) includes administration of prophylactic uterotonics, uterine massage, controlled cord traction to deliver the placenta

a live birth in the 12 months preceding survey, and estimated separately for women who delivered in a health facility or at home (table 9). Ninety four percent of women reported that their delivery attendant washed hands with soap, and 86% of women reported that their delivery attendant wore gloves. Coverage of both these interventions was considerably higher amongst women who delivered in health facilities compared to those who delivered at home.

Inequities in coverage of critical interventions in the intra-partum period
No clear pattern of socio-economic inequality was observed in the coverage of hand washing with soap or of glove wearing by the delivery attendant (figure 23).

Triangulation of data sources on intra-partum care

Three quarters of women gave birth in a health facility with skilled attendance at birth and there was evidence to suggest that, when broken down by socio-economic status of households, just over half of the poorest women had skilled attendance compared to almost all of the least poor women.

Although ASHA do not have a remit to attend births (and as such do not have access to necessary basic equipment and supplies), eight percent of women in the household survey reported an ASHA to be the primary birth attendant during their most recent birth. Indeed, some ASHA reported attending births, accounting for three percent of the births attended during the month before survey by this sample of frontline workers.

Amongst frontline workers attending births, the most frequently cited action to take when a woman began bleeding heavily during or immediately after birth was to refer her to the next level of care, and just under half of health staff cited administration of a uterotonic as an appropriate action. No ASHA reported having uterotonic available – or using a uterotonic – at the last birth attended. Approximately two-thirds of health staff reported having a uterotonic available, just under half of staff reporting that they used it. After adjusting for population level reports about birth attendants, we estimated that 27% of all women received a uterotonic at their last birth.

The critical intra-partum interventions use of gloves and hand washing with soap by the birth attendant had high coverage, especially for facility births. This triangulates well with supplies available to frontline workers in health facilities with soap being present in 100% of facilities and disposable gloves available in 84% of facilities on the day of survey. No clear picture of inequity emerged for either of these interventions.

Despite the high percentage of women reporting skilled attendance at birth (defined by the cadre of the primary birth attendant), this is in the context of health facility findings that just over one half of facilities had a functioning electricity supply on the day of survey, and only one quarter had a 24 hour light source. In Annex 3, where the percent of facilities able to provide signal functions for basic intra-partum care is calculated, we observe that just 16% of facilities in this sample were providing intra-partum services on the day of survey and had all the items required to monitor labour using a partograph (figure A3). ■

Post-partum care

This chapter presents results on the frequency of interactions, the quality of those interactions, and the coverage of critical interventions. Interaction frequency and intervention coverage are also broken down by socio-economic status of households.

Frequency of post-partum care interactions

Just over half of women in the household survey reported having a post-partum check in the first 48 hours after birth (56% (95% CI 49-63), and 59% (95% CI 53-66) in the first seven days after birth (table 10). A large difference by place of birth was observed for post-partum health checks. For example, 69% of women who had a facility birth but just 17% of women who had a home birth had a post-partum check within 48 hours of birth. The first health check received by women was carried out predominantly by doctors or nurses (83%), followed by auxiliary nurse/midwives (16%) and ASHA (1%). Consistent with this, 88% of post-partum checks took place in a health facility (including 17% at private facilities), 3% at sub-centres, and 8% at home.

Inequities in interactions

Any post-partum check in the first seven days after birth occurred least frequently amongst women living in the most poor households in the sample (53%, 95% CI 38-68), and most frequently amongst women living in the least poor households (69%, 95% CI 59-78), figure 24.

Quality of post-partum care interactions

The quality of post-partum care interactions was evaluated from one perspective (box 5).

1. Components of post-partum care received by women in the first week after birth

A good quality post-partum check should include physical examination of the women to check her breasts, and extent

Box 5 – Perspective of quality post-partum care and its justification

	Quality perspective	Justification
1	Components of post-partum care received by women in the first week after birth[1]	Good quality post-partum care includes the following five core elements: breasts and bleeding checked, counselled on danger signs, family planning, and nutrition

[1] Measured during the household survey: women with a live birth in the 12 months prior to survey

Photo left: Primary Health Care facility © Dr Meenakshi Gautham

of bleeding, plus counselling on danger signs that might occur post-partum, use of family planning, and nutrition. Amongst women who had a birth in the 12 months preceding survey, four (1%) received all five components of post-partum care in the first week after birth: a breakdown of the frequency of each component is provided in figure 25.
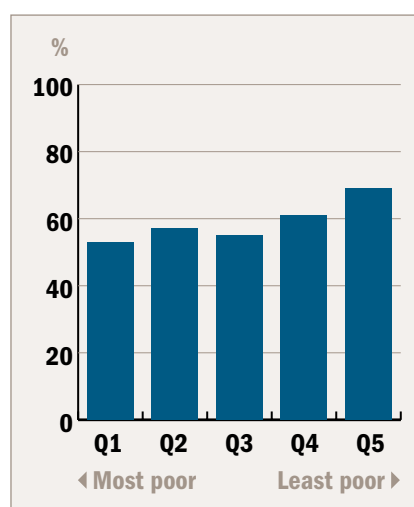
Coverage of post-partum care interventions

The post-partum care interventions amenable to delivery by frontline workers are detection and treatment of anaemia, and detection and treatment of post-partum sepsis. In this survey, no women with a live birth in the 12 months preceding survey reported having these complications and no women reported seeking advice for any adverse health conditions during the post-partum period.

Triangulation of data sources on post-partum care

Almost 60% of women reported having a post-partum check in the first week after birth, but there was a large difference by place of birth with just 20% of women who gave birth at home having a post-partum check within seven days. Only eight percent of post-partum checks took place at home, the vast majority being conducted by facility staff at a health facility. However post-partum checks lacked content, and only four women in the household sample had their breasts and bleeding checked, and were counselled about danger signs, family planning, and nutrition during the post-partum visit. ■

Figure 24 – Percent of women who had any post-partum check in the first week after birth, by household socio-economic status

Figure 25 – Coverage of core components of good quality post-partum care checks in the first week after birth
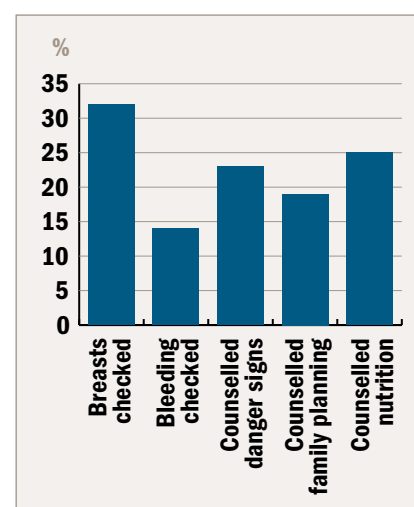
Table 10 – Frequency of post-partum interactions between women and frontline workers during the first week after birth

Interaction type	Coverage amongst women with a live birth in the 12 months preceding survey (N=308) % (95% CI)
Post-partum check within 2 days of birth (all women)	56% (49-63)
Facility birth	69% (60-76)
Home birth	17% (9-29)
Post-partum check within 7 days of birth (all women)	59% (53-66)
Facility birth	72% (64-79)
Home birth	20% (11-32)
Provider of all first post-partum checks (within 7 days)*	
Doctor	30% (22-38)
Registered nurse	53% (44-63)
Auxiliary nurse/midwife	16% (10-24)
ASHA	1% (0-4)

*183 women reported that they received any post-partum care

Post-natal care
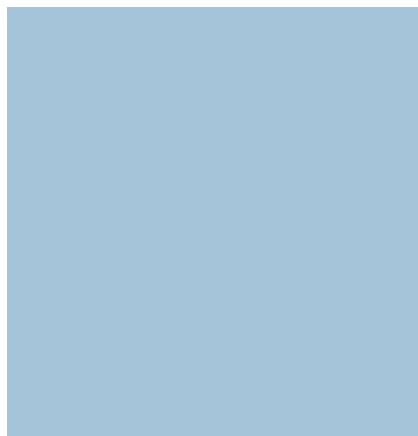
Photos above:
Photo right: Primary Health Care facility © Dr Meenakshi Gautham
Photo far right: An ASHA, a frontline health worker, at a village meeting. © Dr Neil Spicer

This chapter presents results on the frequency of interactions, the quality of those interactions, and the coverage of critical interventions. Interaction frequency and intervention coverage are also broken down by socio-economic status of households.

Frequency of post-natal care interactions

In the household survey, 18% of mothers (95% CI 13-25) reported that their newborn had a post-natal check during the first 48 hours of life, 19% (14-26) in the first seven days (table 11). Seven percent had more than one post-natal check in the first month. As for post-partum checks, there were large differences by place of birth, with 23% of newborns born in a health facility having at least one post-natal check in the first week of life compared to seven percent amongst those born at home.

However, the distribution of frontline workers providing the first post-natal check was different to that observed for post-partum care. Most first checks on newborns were carried out by doctors or registered nurses (51% of first post-natal checks), but a large number were carried out by ASHA (41%), then auxiliary nurse/midwives (5%), and anganwadi workers (2%). Fifty five percent of first checks took place in a health facility (17% of which were private facilities), and 44% took place at home.

Only 17 mothers reported that their newborn experienced at least one danger sign in the first month of life, and 71% (95% CI 52-84) were taken outside the home to seek health care.

Table 11 – Frequency of post-natal interactions between newborns and frontline workers during the first days after birth

Interaction type	Coverage amongst women with a live birth in the 12 months preceding survey (N=308) % (95% CI)
Post-natal check within 2 days of birth (all births)	18% (13-25)
Facility birth	22% (16-30)
Home birth	5% (1-17)
Post-natal check within 7 days of birth (all births)	19% (14-26)
Facility birth	23% (17-32)
Home birth	7% (2-18)
Provider of all first post-natal checks[1]	
Doctor	20 (12-33)
Registered nurse	31% (17-49)
Auxiliary nurse/midwife	5% (1-18)
ASHA	41% (25-59)
Newborns with ≥1 danger sign in the first month of life for whom care was sought outside the home[2]	71% (52-84)

[1] 59 mothers reported that their newborn had a post-natal check in first 7 days of life
[2] 17 mothers reported that their newborn had at least one danger sign in first 30 days of life

Although the numbers are very small it was interesting to observe that 86% (95% CI 32-99) of sick male newborns were taken for extra care, and 60% (95% CI 35-81) of sick female newborns were taken for extra care.

Coverage of post-natal checks within seven days of birth was approximately double amongst newborns born in the least poor households (29%) compared to newborns in other households (approximately 16%) (figure 26).

There was no evidence of difference in the percentage of newborns having a post-natal check in the first week of life by gender (male newborns 17%, 95% CI 10-25; female newborns 21% (95% CI 15-32, p=0.2).

Quality of post-natal care interactions

The quality of post-natal care interactions was evaluated from two perspectives (box 6).

1. Components of post-natal care received by newborns in the first week of life
A good quality post-natal check should include physical examination of the newborn to check weight and the umbilical cord, plus counselling the caregiver on newborn danger signs, breastfeeding, and newborn thermal care. All components were universally low at the population level and no newborns received all five components of post-natal care: a breakdown of the frequency of each component is provided in figure 27.

Figure 26 – Percent of newborns who had a post-natal check in the first seven days after birth, by household socio-economic status quintile.
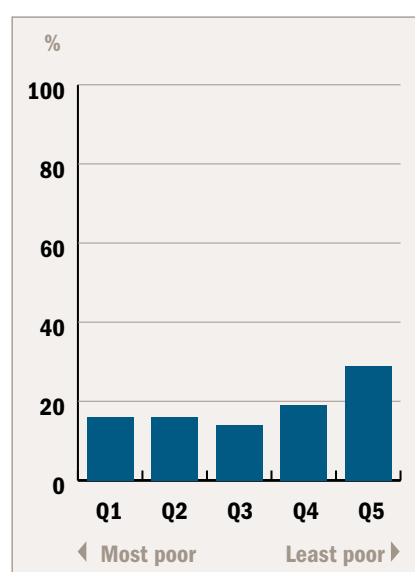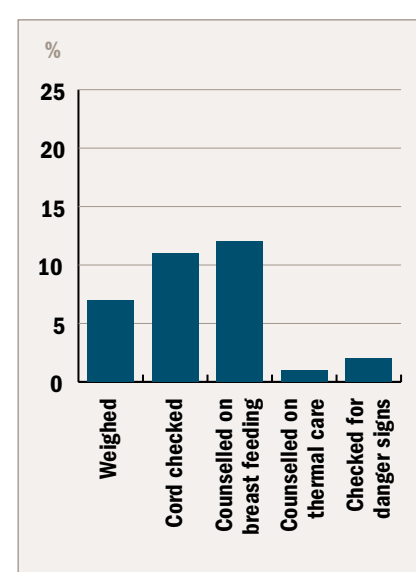

Figure 27 – Coverage of core components of good quality post-natal care checks in the first week of life

Box 6 – Perspectives of quality post-natal care and their justification

	Quality perspective	Justification
1	Components of post-natal care received by newborns in the first week of life[1]	Good quality post-natal care includes the following five core elements: physical examination of the newborn to check weight and the umbilical cord, plus counselling the caregiver on newborn danger signs, breastfeeding, and newborn thermal care
2	Frontline worker knowledge of actions to take for the low birth weight newborn[2]	The knowledge that frontline workers have about the recommended actions to take for low birthweight newborns could influence the quality of care that they are able to deliver.

[1] Measured during the household survey: women with a live birth in the 12 months prior to survey

[2] Measured during the frontline worker survey: frontline workers who deliver services to women and newborns in the household survey location or nearest health facility.
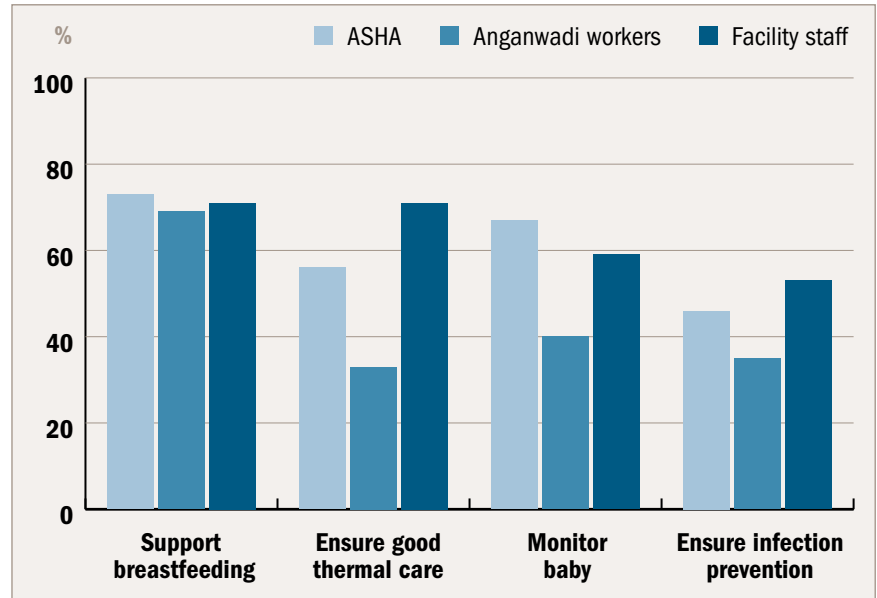
" No newborns received all five components of post-natal care"

Photo left: Health project worker
with baby © Dr Meenakshi Gauthm

Figure 28 – Unprompted knowledge of the actions to take for the low birth
weight newborn, by cadre of frontline worker

2. Frontline worker knowledge of actions to take for the low birth weight newborn

Twenty-nine percent (95% CI 12-57) of staff in health facilities, 23% (95% CI 12-40) of ASHA and 15% (95% CI 7-30) of anganwadi workers had unprompted knowledge of at least four actions to take for low weight newborns (ensure good thermal care, support breastfeeding, try to prevent infections, and monitor the newborn closely). The frequency with which each action was cited is shown in figure 28.

Coverage of post-natal care interventions

Life saving interventions for the newborn that can be delivered at community or primary health facility level predominantly focus on three sets of behaviours: clean cord care, thermal care, and breastfeeding: a breakdown of these is shown in table 12.

Over 90% of newborns had their umbilical cord cut with a new blade, similarly high for the number whose cord was tied with a new or boiled string, and 70% had nothing put on the cord in the first days after birth. However, just half of newborns had all these elements of clean cord care (49%, 95% CI 42-56). There was no statistical evidence of difference in the percent of newborns with clean cord care by place of birth (50%, 95% CI 43-58 amongst babies born in a facility and 45%, 95% CI 32-58 amongst those born at home, p=0.4).

Coverage of the live saving thermal care behaviours immediate drying and immediate wrapping were high at over 75%, but the practise of delayed bathing was low with just one quarter of newborns benefiting from this life saving behaviour (24%, 95% CI 18-31). Not delaying the first bath was strongly associated with facility birth (18%, 95% CI 13-24 amongst babies born

in a facility and 43%, 95% CI 31-57 amongst those born at home, p<0.001).

Fifty-one percent (95% CI 44-58) of newborns were breastfed immediately at birth, and 61% (95% CI 53-69) were breastfed exclusively for the first three days of life. Both breastfeeding indicators were higher for babies born in a facility compared to those born at home (immediate breastfeeding: 56%, 95% CI 47-64, vs. 38%, 95% CI 26-52, p=0.01; exclusive breastfeeding: 69%, 95% CI 61-75, vs. 38%, 95% CI 25-54, p=0.002). Other liquids given to newborns in the first three days were other types of milk (30% of newborns), plain water (11%), glucose solutions (2%), and tea (1%). Twenty-six percent

(95% CI 20-34) of mothers reported that they discarded their milk in the first days after birth.

Inequities in coverage of critical interventions for newborns
There was statistical evidence of difference in newborn life saving behaviours by socio-economic status of households for exclusive breastfeeding only, being 55% amongst newborns in the most poor households compared to 72% amongst newborns in the least poor households (p=0.03, figure 29). The other difference in point estimates was delayed bathing, observed amongst 28% of the poorest newborns compared to 18% of the least poor

newborns, but with no evidence of statistical significant (p=0.3).

Coverage of exclusive breastfeeding for the first three days of life had borderline statistical evidence of difference by gender of the newborn, being 66% (95% CI 57-73) amongst males and 56% (95% CI 45-67) amongst females, p=0.09. No other differences in intervention coverage by gender were observed.

Finally, vaccination coverage amongst live infants who were born six to 12 months prior to survey is presented in table 13. Approximately three quarters of infants had received BCG, OPV 0 and DPT1 vaccine.

Table 12 – Coverage of post-natal critical interventions: behaviours that save newborn lives

Critical intervention	Coverage amongst newborns born to women with a live birth in the 12 months preceding survey (N=308) % (95% CI)
Clean cord care	
Cutting using a new blade	92% (86-95)
Tying cord with new or boiled string*	99% (95-100)
Nothing put on the cord	70% (63-77)
Newborns with clean cord care*	49% (42-56)
Thermal care	
Immediate drying (<30 minutes)*	88% (83-92)
Immediate wrapping (<30 minutes)	78% (71-84)
Delayed bathing (>6hrs)	24% (18-31)
Breastfeeding	
Immediate (<1hr)	51% (44-58)
Exclusive (first 3 days of life)	61% (53-69)

* Don't know responses excluded from denominator: tying N=265; drying N=272;

Table 13 – Vaccination coverage amongst infants born six to 12 months prior to survey

Vaccination coverage	Coverage amongst infants alive on the day of survey who were born in the 6-12 months preceding survey (N=141) % (95% CI)
BCG	87% (79-92)
OPV 0	71% (62-78)
OPV 1	70% (61-77)
OPV 2	69% (59-78)
DPT 1	81% (71-88)
DPT 2	70% (60-79)
DPT 3	48% (37-59%)

"

Fifty-one percent of newborns were breastfed immediately at birth and 61% were breastfed exclusively for the first three days of life."

Figure 29 – Percent of newborns who received a life saving behaviour, amongst those born in the most poor quintile and the least poor quintile of households

Legend:
- Newborns in most poor households (Q1)%
- Newborns in least poor households (Q5)%

(Bar chart, y-axis labeled %, values 0, 20, 40, 60, 80, 100; categories: Immediate breastfeeding, Exclusive breast feeding, Clean cord care, Delayed bathing)
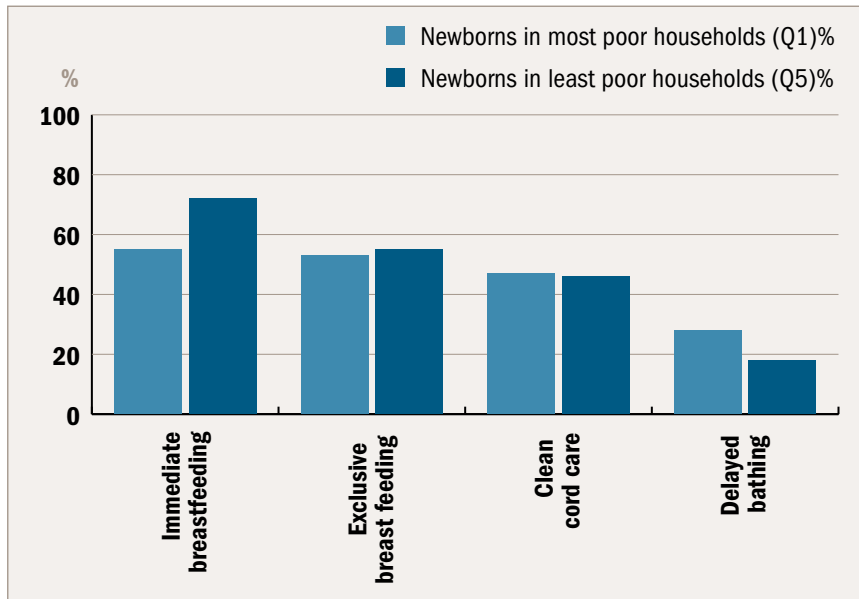
Triangulation of data sources on post-natal care

Some of the life saving newborn care interventions occur at birth (cord cutting and tying, immediate drying and wrapping, immediate breastfeeding), while others depend on behaviours that take place in the first days after birth (not putting anything on the cord for cord care, and exclusive breastfeeding for the first three days, plus care seeking for danger signs (which may lead to a treatment intervention). Delayed bathing depends on usual facility practise, and the duration of facility stay after delivery.

Population level coverage of newborn interventions that occur at birth was highest for clean cord cutting and tying (both over 90%), followed by

Photo above: Rural village, Uttar Pradesh © Dr Meenakshi Gautham

“

Forty eight percent of facilities were prepared for provision of newborn clean cord care on the day of survey”

immediate drying and wrapping (both over 75%) and lowest for immediate breastfeeding (51%). From the facility survey, we observed that 37% of facilities surveyed could provide the basic newborn thermal care signal function on the day of survey, and 48% could provide the basic newborn clean cord care signal function. Fifty-nine percent of facilities were prepared for basic infection prevention on the day of survey (Annex 3).

Population level coverage of newborn interventions that occur in the first days after birth was highest for not putting anything on the cord (70%), followed by exclusive breastfeeding (61%). There was statistical evidence that breastfeeding indicators were higher amongst newborns born in a facility compared to those born at home (immediate breastfeeding 56% vs. 38%; exclusive breastfeeding 69% vs. 38%); that exclusive breastfeeding was highest for the least poor newborns compared to the poorest (72% vs. 55%), and was more prevalent amongst male compared to female newborns (66% vs. 56%). There was also statistical evidence that newborns born in a facility were less likely to benefit from delayed bathing than newborns born at home (18% vs. 43%). No other statistical evidence of differences in coverage of newborn critical interventions was apparent by household socio-economic status, place of birth or gender of the newborn.

Post-natal care checks – where life saving newborn behaviours in the first days after life can be reinforced – were also more prevalent for newborns born in a facility than those born at home. However, unlike post-partum care, many newborn checks were taking place in the home, conducted by ASHA (consistent with ASHA estimation that newborn care checks constitute a large proportion of their working time, see figure 6). However, the content of post-natal checks by any cadre of frontline worker was poor and no newborns in the household sample had their weight and cord checked, and caregiver counselling for breastfeeding, thermal care, and danger signs.

Care outside the home was sought for 71% of the 17 newborns whose mothers reported experiencing a danger sign in the first two months of life. Approximately 20% of frontline workers had good knowledge about the actions to take for low birthweight newborns: knowledge about the need to establish and support breastfeeding was high amongst all cadre, but knowledge about infection prevention and thermal care were less high.

All newborns should receive two vaccinations in the first two weeks of life, BCG and OPV. Both vaccines were received by 71% of newborns; BCG was in stock in two-thirds of facilities, OPV in approximately one half of facilities. ■
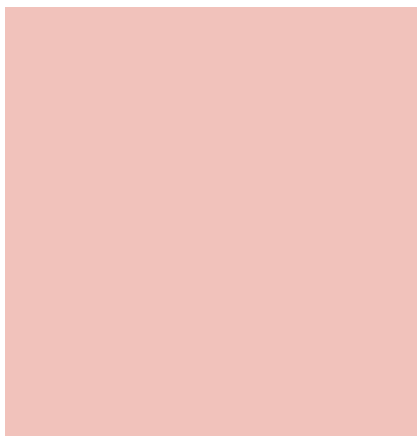

Photos below:
Below left: © ASHAs, local frontline health workers, with Dr Meenakshi Gautham © Dr Meenakshi Gautham
Below: An ASHA, a frontline health worker, with child showing ragi, a local millet. © Dr Meenakshi Gautham

Frontline worker contact with families

Photo above: Mother with child, Uttar Pradesh, India. Courtesy of Manthan project. © Agnes Becker/IDEAS

In the household survey, 4027 women aged between 13-49 years were asked about the contact that they and their families have with frontline workers.

Contact with frontline workers at primary health facilities

The median time to travel from the household to the nearest primary level health facility was estimated to be 30 minutes (inter-quartile range 15-60); 38% of women said they walked to the facility the last time they went, 35% travelled by bicycle, 26% by motorised transport, and 0.5% by horse cart. Fourteen percent of women (n=587) had visited a primary health facility at least once in the six months preceding survey. Women were invited to give multiple reasons for not attending a health facility recently and 49% said they had had no reason to attend, 45% said the services were too poor to motivate them to go, 43% said the facility was too far away, 28% said they didn't have enough time to go to the

facility, 25% said it was too expensive, 24% said the health staff didn't behave appropriately, and 17% said they had problems getting permission to go to the facility.

Amongst the 587 women who had visited a primary health facility in the last six months, 44% said that treatment seeking was the primary reason for their last visit, 21% for child immunisation or routine child health checks, 12% to attend a health campaign, four percent for pregnancy care, eight percent for intra-partum care, and two percent for family planning.

Contact with frontline workers at home

Twenty six percent of women aged 13-49 (n=1067) reported having a home visit by a frontline worker in the previous six months, 84% (n=900) saying that the frontline worker came to speak to her personally, 12% to the household head or another adult male. The most commonly reported frontline worker cadre to visit were ASHA (making 76% of home visits in the last six months), anganwadi workers (making 14% of visits in the last six months) and auxiliary nurse midwives (making 9% of visits in the last six months). The 900 women who had been visited by a frontline worker

" Twenty six percent of women aged 13-49 reported having a home visit by a frontline worker in the previous six months, the most commonly reported cadre to visit being ASHA."

reported that the most common topics of conversation with the frontline worker at the last visit were: child nutrition and immunisation (56%), maternal and newborn health care (22%), water, sanitation and hygiene (13%), and sexual health (9% of visits).

### Contact with frontline workers in community meetings

Two percent of women (n=65) had attended a community meeting to discuss health issues in the previous six months. These meetings had been organised by self-help groups (38%), community health volunteers (32%), primary health facility staff (10%), panchayat (3%), faith based groups (3%) or by independent projects (5%, naming UNICEF and Jivan Prabhawan Mahi). These 65 women reported that the most common topics of conversation with the frontline worker at community meetings were maternal and newborn care (37% of meetings), child nutrition and immunisation (28%), water, sanitation and hygiene (23%), and sexual health (12% of meetings). ■

Photo below: Women in Lucknow, Uttar Pradesh, India © Dr Neil Spicer
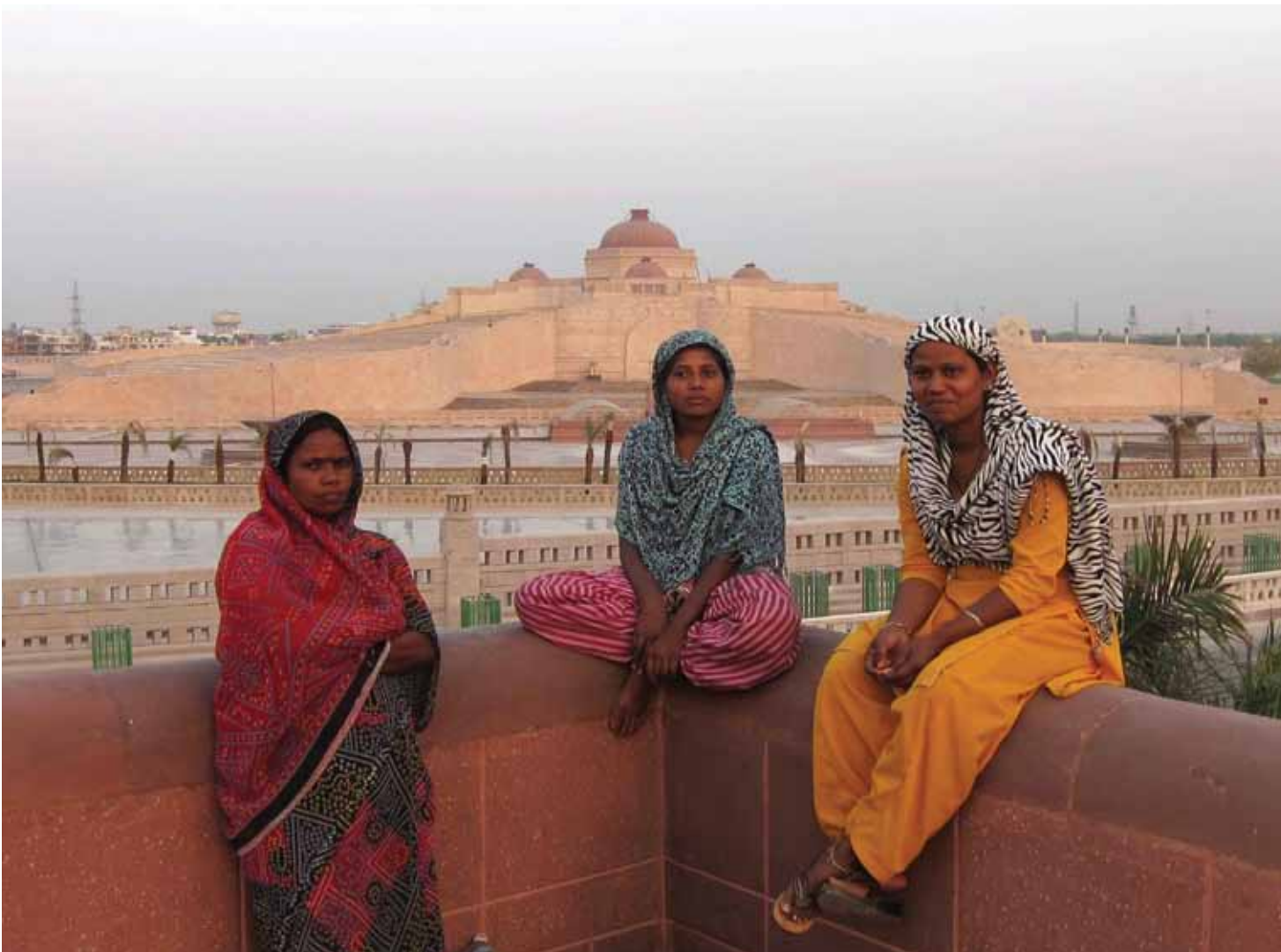
Discussion
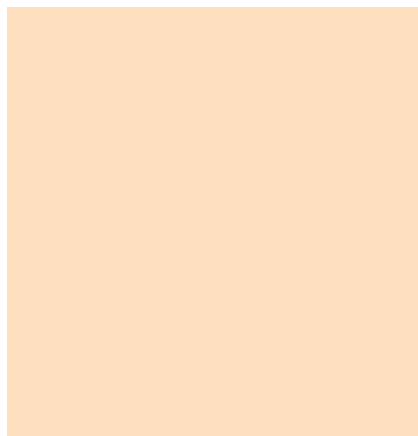
Photo above: An ASHA, a frontline health worker, using a mobile phone application to give health messages to an expectant mother and local children. Courtesy of Manthan project.
© Agnes Becker/IDEAS

This report has presented intervention area findings from the baseline 2012 Uttar Pradesh survey of interactions between families and frontline workers, and coverage of critical interventions for mothers and newborns. For each stage along the continuum of care between pregnancy and the newborn period, the number and quality of interactions has been described, and the coverage of critical interventions at the population level estimated. Where possible, number of interactions and coverage of interventions has also been disaggregated by indicators of equity.

Overall, the survey results present a detailed insight into different elements of maternal and newborn care in Uttar Pradesh, and a review of these findings in light of previous survey results from the state is planned.

Amongst women who had a live birth in the 12 months preceding survey, three quarters had accessed pregnancy care at least once, and almost one third did so at least four times. However there was some inequity by socio-economic status of households and just 13% of the poorest women had four or more pregnancy interactions compared to 46% of the least poor women. It was apparent that many interactions lacked content however, and only seven percent of women had received the core components of focussed pregnancy care by the end of their pregnancy period. Nonetheless, over half of women received iron prophylaxis and tetanus toxoid protection, and there was little evidence of inequity for these critical interventions.

Three quarters of women also had a skilled attendant at their birth, although when disaggregated by socio-economic status of households it was apparent that only around half of women from the poorest households had skilled attendance compared to almost all of women in the least poor households. The practise of hand washing with soap was universally high, and use of gloves was high in facilities, less so for home births. But it was apparent that there were areas where skilled attendants could improve practise. For example, fewer than half reported use of uterotonics at the last birth attended, and practise of active management of the third stage of labour was low. Further, we observed from the facility survey that just 16% of facilities were providing intra-partum services on the day of survey and had all the items required to monitor labour using a partograph.

Post-partum care was highly concentrated amongst women who

gave birth in a health facility, was provided almost exclusively at a facility, and appeared to be delivered to a very low quality. Post-natal care was also most prevalent amongst newborns born in a health facility, but unlike post-partum care these interactions took place at home as well as in facilities. However, again the quality of care appeared to be low and in this sample no newborns were reported to have had the basic minimum set of checks and caregiver counselling in the first days after birth. Encouragingly though, around half or more newborns had clean cord care, appropriate breastfeeding, and good thermal care, although delayed bathing was very low for newborns born in a facility, and exclusive breastfeeding was lower for newborns born at home.

Limitations

A number of limitations are present. First, survey data collection approaches to measure behaviours that occur during pregnancy, intra-partum and newborn periods may be susceptible both to recall error and to recall bias. We tried to limit recall error by only analysing data on births from the last 12 months in the household survey, and the last birth attended by frontline workers. Recall bias is harder to control (for example a frontline worker may strongly prefer to report that she had used uterotonics at the last birth attended, even if she had not), but by triangulating data from different sources we have tried to understand whether the story of maternal and newborn health was coherent and consistent, and to highlight areas where it was less clear. Second, estimating population level coverage of some intra-partum interventions is problematic: frontline workers cannot provide population level estimates where the large majority of women have no skilled

attendance at birth, and women cannot reliably answer questions about the drugs or medical behaviours they received during labour. Therefore, for two intra-partum life saving interventions we have attempted to combine frontline worker reports about behaviours together with population level reports about who attended births. It will be interesting to repeat this analysis with other data sources to see how well it translates to other settings. Third, this analysis has presented binary associations throughout. It is likely that analysis that adjusts for education level or age of women will also be important: this will be carried out in the next phase of work. Finally, this survey had a relatively small sample of facilities and frontline worker interviews: the survey was powered to calculate a range of outcomes measured from the household survey. It was unknown before going to field how many primary level facilities

or frontline workers would be present in the household clusters sampled.

Next steps

The next step will be to repeat the household, facility and frontline worker survey in Uttar Pradesh at least two years after the baseline: IDEAS remains in close contact with the foundation grantees operating there to understand the extent to which their innovations are implemented in the study setting. At the time of that endline survey, an analysis of change between baseline and endline indicators in interactions and coverage of critical interventions will be made, adjusting for important contextual factors. ■

Photo below: ASHA, a frontline health worker, with women in an Uttar Pradesh village, India. Courtesy of Manthan project. © Agnes Becker/IDEAS

Abbreviations and acronyms

Acronym	Meaning
95% CI	95% confidence interval
AMTSL	Active management of the third stage of labour
ANC	Antenatal care
ANM	Auxiliary nurse midwife
ASHA	Accredited Social Health Activist
BCG	Bacille Calmette Guerin
BP cuff	Blood pressure monitor
CHC	Community Health Centre
DHS	Demographic and Health Survey
DPT	Diptheria, pertussis, tetanus vaccination
IDEAS	Informed Decisions for Action in maternal and newborn health
IPTp	Intermittent presumptive treatment for malaria
LBW	Low birth weight
LSHTM	London School of Hygiene and Tropical Medicine
MNH	Maternal and newborn health
OPV	Oral polio vaccine
PHC	Primary Health Centre
PMTCT	Prevention of mother to child transmission of HIV
TT vaccines	Tetanus toxoid vaccination
UNICEF	United Nations Children's Fund
WHO	World Health Organisation

Annex 1

Critical interventions for mothers and newborns.

Interactions between families and frontline workers target the delivery of *critical interventions*[1] for mothers and newborns, as summarised in table A1

[1] Adapted from "Partnership for Maternal Newborn & Child Health, Essential Interventinos, Commodities and Guidelines for Reproductive, Maternal, Newborn and Child Heallth. A Global Review of the Key Interventions Related to Reproductive, Maternal Newborn and Child Health (RMNH), 2011."

Table A1 – Critical interventions for mothers and newborns along the continuum of care that are amenable to be delivered by frontline workers

Pregnancy care	Intra-partum care	Newborn immediate and post-natal care	Maternal post-natal care
1. Tetanus toxoid vaccine (effective protection being at least two doses in last three years or five in a lifetime)	1. Prophylactic uterotonics to prevent post-partum haemorrhage	1. Clean cord care (cutting, tying, nothing put on cord)	1. Detection and treatment of maternal anaemia
2. Iron supplementation	2. AMTSL (above + uterine massage + controlled cord tractin)	2. Breastfeeding (immediate (<1hr) and exclusive (3 days))	2. Detection and treatment of post partum sepsis
3. Syphilis prevention and management	3. Hand washing with soap by delivery attendant	3. Thermal care (immediate drying, wrapping, immediate skin to skin, delayed bathing)	
	4. Use of gloves by delivery attendant	4. Detection and appropriate management of complications (infection, respiratory, low birth weight, preterm)	

Annex 2

Indicators for enhanced interactions (more and better) between families and frontline workers across the continuum of care

Table A2 – Indicators for enhanced interactions (more and better) between families and frontline workers across the continuum of care

Stage	Indicator
More pregnancy care interactions	
1	Mean number of pregnancy interactions per woman[1]
2	Percent of women who had any pregnancy care[1]
3	Percent of women who attended a health facility at least once for pregnancy care[1]
4	Percent of women who had a least one pregnancy care interaction with a skilled provider[1]
5	Percent of women who had a least four pregnancy care interactions (with any provider)[1]
Better pregnancy care interactions	
1	Percent of women who had (unprompted) knowledge of at least one danger sign in pregnancy (valid responses included: severe headaches, blurred vision, reduced foetal movement, high blood pressure, convulsions, excessive bleeding, severe abdominal pain, high fever, anaemia)[1]
2	Percent of women who reported having made any preparations for delivery (Components included preparing finances, transport, food, and identification of a birth attendant and a facility)[1]
3	Median gestation at first pregnancy care interaction[1]
4	Percent of women who reported having received good quality pregnancy care (components included weight and blood pressure measured, urine and blood tested; counselled for breastfeeding, danger signs, birth preparedness)[1]
5	Percent of frontline workers who have knowledge of focussed pregnancy care[2]
6	Percent of primary level facilities with all essential commodities needed to deliver pregnancy care[2]
More intra-partum interactions	
1	Percent of women who delivered in a health facility[1]
2	Percent of women who were attended by a skilled attendant during last birth[1]
3	Percent of women who were advised to seek extra care during intra-partum period who did seek extra care[1]
4	Percent of births delivered by caesarean section[1, 2]
Better intra-partum interactions	
1	Women with (unprompted) knowledge of at least one intra-partum danger sign (valid responses included: vaginal bleeding, foul discharge, high fever, foetus hand or feet present first, foetus in abnormal position, prolonged labour, retained placenta, ruptured uterus, prolapsed cord, cord around newborns neck, convulsions)[1]
2	Percent of frontline workers with knowledge of actions to take when a women bleeds heavily in the intra-partum period[2]
3	Percent of frontline workers who have the essential items they need to provide good quality care
4	Percent of health facilities with essential commodities needed for intra-partum care[2]

Stage	Indicator
More postpartum interactions	
1	Percent of women who had at least one postpartum check within two days of birth[1]
2	Percent of women who had at least one postpartum check within seven days of birth[1]
Better postpartum interactions	
1	Percent of women who reported receiving good quality postpartum care (breasts checked, bleeding checked, counselled for: danger signs, family planning, nutrition)[1]
More postnatal interactions	
1	Percent of newborns who had at least one postnatal check within two days of birth[1]
2	Percent of newborns who had at least one postnatal check within seven days of birth[1]
3	Percent of mothers whose newborn had at least one danger sign in the first 28 days of life who sought care for that danger sign outside the home[1]
Better postnatal interactions	
1	Percent of newborns receiving good quality postnatal care (components include newborn weighed, cord checked, mother counselled on breastfeeding, thermal care, and newborn danger signs) [1]
2	Percent of frontline workers with knowledge of actions to take for low birth weight newborns[2]

[1] Measured through household surveys, interviewing women with a live birth in the 12 months preceding survey

[2] Measured through health facility and frontline worker surveys, recording availability of supplies on the day of survey

Annex 3

Routine obstetric and newborn signal functions for all mothers and babies

The basic care requirements for all mothers and newborns include the following signal functions[1]: (1) monitoring and management of labour using partograph, (2) infection prevention measures (hand-washing, gloves), (3) active management of third stage of labour (AMTSL), (4) thermal protection of the newborn, (5) infection prevention including hygienic cord care, (6) immediate and exclusive breastfeeding. In addition, basic pregnancy care includes checking temperature, weight, blood pressure, foetal heartbeat, testing urine for protein, providing tetanus toxoid protection, and iron prophylaxis. Detecting syphilis infection should also be included but availability of test kits is currently very low in Uttar Pradesh.

In Figure A3 right we present facility readiness to provide each of these functions (excluding AMTSL since the commodity required, a uterotonic drug, is included in monitoring and management of labour using a partograph, and immediate and exclusive breastfeeding since these do not require commodities under normal circumstances).

[1] Gabrysch et al (2012) New Signal Functions to Measure the Ability of Health Facilities to Provide Routine and Emergency Newborn Care. PloS Med 9(11)

[2] Stethoscope, BP cuff, thermometer, adult scale, fetal stethoscope, timing device, disposable gloves, urine protein test kit, single use syringes, tetanus toxoid vaccines, ferrous/folate

[3] Partograph, BP cuff, urine dipstick, fetal stethoscope, thermometer, oxytocin

[4] Disinfectant, disposable gloves, soap

[5] Towel to dry the newborn, blanket to wrap the newborn

[6] Sterile cord cutter, cord tie

Figure A.3 – Facility readiness (services provided and commodities available) to provide focussed pregnancy care and four basic obstetric and newborn signal functions to all mothers and newborns (excluding the third signal function, AMTSL, which overlaps with monitoring and management of labour using a partograph, and the sixth signal function: immediate and exclusive breastfeeding which has no essential commodity)
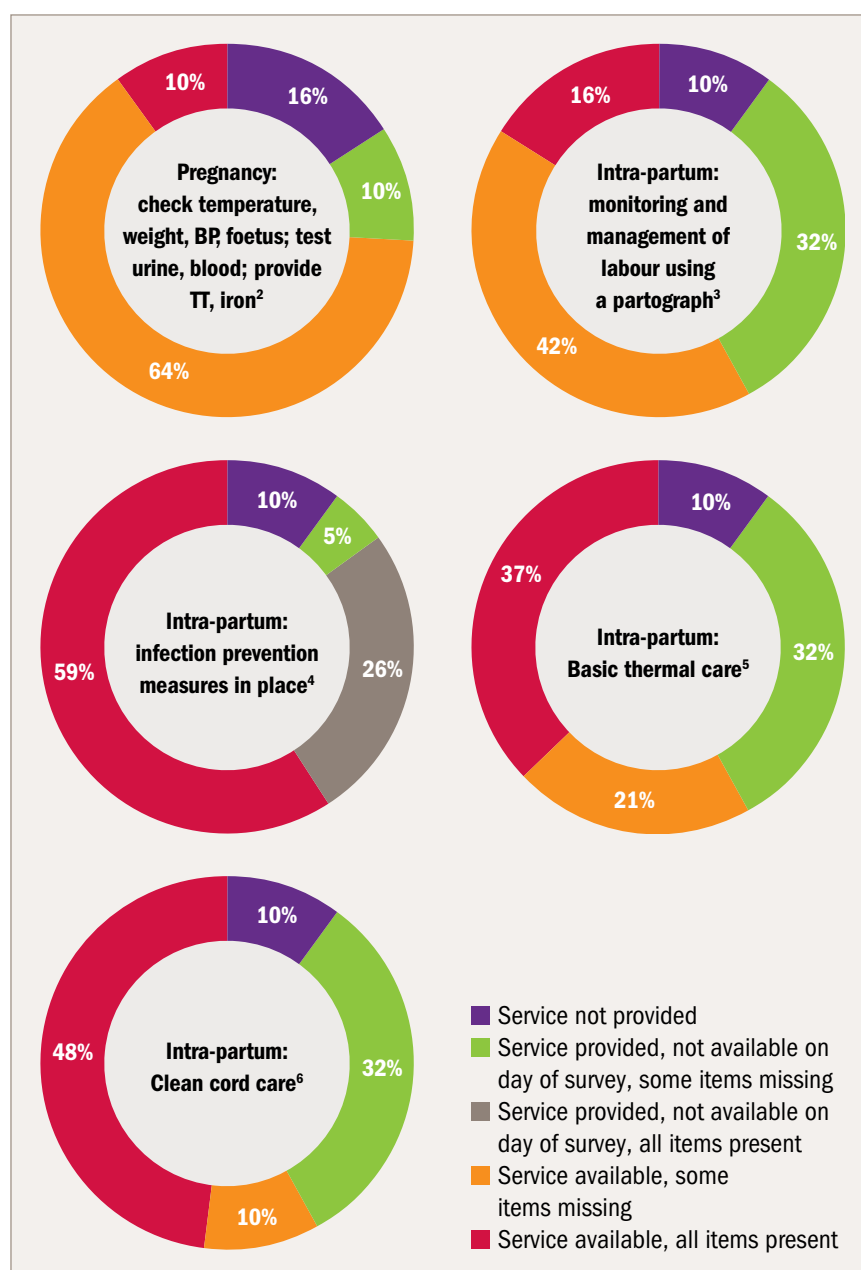
Photo: An ASHA, a frontline health worker, (left) checking up on a new mother and her baby, Uttar Pradesh, India. Courtesy of Manthan project © Agnes Becker/IDEAS