Improving Maternal and Child Health Outcomes in Uttar Pradesh, India

In December 2016, Banadakoppa M. Ramesh and Vikas Gothalwal prepared to join a phone call with colleagues in India’s largest state, Uttar Pradesh. Gothalwal was from the Technical Support Unit (TSU) in the state capital, Lucknow, and Ramesh, from the University of Manitoba in Winnipeg, Canada. The TSU had been founded to help Uttar Pradesh reduce maternal, neonatal, and child mortality and increase modern contraceptive use. Now the Gates Foundation’s three-year grant to launch it was concluding, and the planning process for phase 2 was under way.

While quality, accessibility, and utilization of several maternal and child health interventions had improved, others, such as use of family planning and exclusive breastfeeding, were relatively stagnant—despite a USD 55 million investment in the TSU. As they planned for phase 2, Ramesh and Gothalwal wondered: What would it take to make a difference in those indicators?

Social Roles and Inequality in India

Though the national government eliminated the country’s millennia-old caste system in 1950, the hierarchical class structure continued to play a significant role in Indian society. Most Indians married within their caste and voted along caste lines.1

India, like most countries, was a patriarchal society. The primary role of women was childbearing and caregiving in the home.2 Men were the principal wage earners and cared for their aging parents. There was a fading but persistent cultural preference for sons, which sometimes led to male-biased allocation of resources and female infanticide or sex-selective abortion—particularly among poor families.3,4 In 1994, India made it illegal to disclose gender prenatally,5 though enforcement was difficult.

In 2006, almost half of women age 20–24 had married before they turned 18, the legal minimum age of marriage for women.6 One-third of men age 25–29 had married before 21, the legal minimum age for men. Girls from poor families were more likely to marry underage to relieve the financial burden on their families, and dowries often were lower for younger, less educated girls.7
Indian marriages were arranged by the groom’s parents, and newly married couples typically moved into their home. The husband’s mother managed the household and oversaw her daughter-in-law’s pregnancies. The median age at first birth for women age 25–49 in 2006 was 19.8.

Indian families across social strata placed a high value on educating their children. In 2010, 93.2% of eligible girls began secondary school, and 41.5% of university students were women.

Uttar Pradesh

Uttar Pradesh is a rural, landlocked state in northern India and the fourth-largest state in the country (243,290 km²; see Exhibit 1). In 2016, the state comprised 18 administrative divisions and 75 districts. Districts were further organized into rural and urban blocks (831 total), blocks into gram panchayats (village councils), and gram panchayats into villages (106,000 total). A democratically elected chief minister governed for a five-year term from the capital city, Lucknow.

One-sixth of Indians (199.8 million) lived in Uttar Pradesh in 2011, making it the most populous state in the country and larger than the world’s fifth-largest country, Brazil. In 2011, 78% of the population was rural, and 60% relied on agriculture for their livelihood. Twenty-nine percent of people lived on less than USD 1.90 per day; more than half the population did not have electricity; and one-third of people did not have access to toilet facilities. Inadequate roads made travel difficult in rural areas, where walking, auto and cycle rickshaws, and buses were the most common modes of transportation.

Hindi and Urdu were the official languages; five other languages also were spoken prominently. In 2011, 77% of men and 57% of women were literate. Eighty-two percent of households were Hindu, 17% Muslim, and 1% neither. Seventy-three percent of people belonged to a disadvantaged caste or class.

The Health System in Uttar Pradesh

Uttar Pradesh had some of the poorest maternal, neonatal, and child health (MNCH) outcomes in India in 2012 (see Appendix 1 for a list of acronyms and abbreviations). A government official noted:

Newborn and maternal deaths have always been high, so you get used to them. My own mother lost three children under age five—this is why people have so many kids. The deaths are seen as normal, not the result of inadequate government attention. But if an adult gets sick, goes to a hospital, and dies, then people are agitated. They say he didn’t get proper care, and they call on the government to do something.

The state government was already implementing several national MNCH programs, including free treatment at public facilities for pregnant women and infants; establishment of sick newborn care units in district hospitals; creation of nutrition rehabilitation centers in community clinics and district hospitals; free checkups, iron supplementation, and deworming services for children; and nutrition, reproductive health, and substance abuse counseling for adolescents. The programs’ impacts were not significant.

In 2011, Uttar Pradesh’s total fertility rate* was the second highest in India. An estimated 44% of married women used contraception; Muslim women and poor women were least likely to use it. Contraception use typically increased after the birth of a male child. Female sterilization—promoted by the national government—was the most common method (40%), followed by the rhythm method (24.4%), condoms (20%), withdrawal (6.7%), oral contraception (4.5%), intrauterine device (2.2%), and traditional methods (2.2%). Many public hospitals offered “sterilization camps” to mobilize women. A national male

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* Total number of children born or likely to be born to a woman in her lifetime based on the prevailing fertility rate.
sterilization campaign in the 1970s led to the sterilization of more than 6 million men—most poor and many forcibly—and 2,000 deaths, leading to public backlash. Male sterilization remained unpopular in 2012. A public health expert noted, “In India, family planning is seen as population control.”

Antenatal care (ANC) coverage was low in Uttar Pradesh: 27% of women who gave birth between 2000 and 2005 had at least three antenatal visits. Fewer than 10% of pregnant women consumed the recommended iron and folic acid (IFA) supplements; half of women aged 15–49 were anemic. In 2006, 65% of women who had given birth in the previous five years were fully vaccinated against tetanus, and 2% of pregnant women took deworming medication.

An estimated 78% of the 30,000 monthly deliveries in Uttar Pradesh took place at home in 2006. That number decreased to 43% by 2013, due in part to a national program (Janani Suraksha Yojana; JSY) that offered poor pregnant women who delivered in public health facilities 1,400 Indian rupees (INR), or USD 22. However, women delivering in facilities often declined to stay for the suggested 24 hours postpartum (48 hours for pregnancies with complications), when maternal deaths were most likely to occur.

Neonatal deaths, especially infants aged 1–3 days, made up a large share of under-5 mortality.

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<th>Uttar Pradesh Health Indicators†</th>
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<td>Children fully immunized, urban (%)</td>
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<td>Stunting under-5 (inadequate height for age; %)</td>
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Governance

The principal secretary of health led the Department of Medical Health and Family Welfare and reported to the health minister (see Appendix 2 for bios of key actors). The department’s Directorate of Medical Health and Family Welfare managed public-sector care and regulated private providers. The National Health Mission (NHM)‡ worked to increase health care access in rural and other underserved communities in the state.

Each year, the health department prepared a project implementation plan (PIP) outlining the state’s proposed health objectives, activities, and budget. Once approved by the national government, the state received its state and national budget allocations for the year. States had to cover 25% of their budgets with state taxes and user fees; the national government financed the rest through national taxes and other sources.

The principal secretary and NHM mission director belonged to the Indian Administrative Service (IAS), an elite cadre of civil servants who rotated positions every 2–3 years. The director general, who led the Directorate, was a medical or public health professional with health care administration experience.

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† Compiled by case writers using data from UNICEF, the 2011 Indian Census, and the 2012–2013 Annual Health Survey.
‡ In 2005, the national government established the National Rural Health Mission (NRHM) to expand health care access and quality for underserved populations. It changed the name to National Health Mission (NHM) in 2013 to reflect a broadening focus on underserved urban populations. Each state had its own NHM office.
**Infrastructure and Service Delivery**

The public health system consisted of sub-centers, primary health centers (PHCs), community health centers (CHCs), district hospitals, and regional and specialty tertiary hospitals (see Exhibit 2 for average population served and number of beds). Sub-centers were responsible for an average radius of 1.91 km, PHCs 4.62 km, and CHCs 9.82 km. Most tertiary hospitals were in urban areas.

Quality of care varied widely across facilities. Long wait times, overcrowding, and poor health outcomes in public facilities led many patients to seek private-sector care, though private hospitals were poorly regulated and typically cost four times more than public hospitals. Patients typically sought preventive primary care from public facilities and curative care from private facilities.

**Human Resources**

**Administrators, Physicians, and Staff Nurses**

A medical officer in charge (MOIC) at the CHC oversaw block-level facilities within his block and reported to the district chief medical officer (CMO).

Staff nurses and primary care physicians provided a majority of care in PHCs and CHCs. Some CHCs had an obstetrician-gynecologist on staff and typically had one or several female physicians. Female physicians, trained alongside male peers, were encouraged to practice general or family medicine, obstetrics, gynecology, or pediatrics and known as “lady doctors.” Only lady doctors could perform pelvic and other internal exams on women because it was considered immodest for men to do so. Female staff nurses were responsible for handling labor and delivery.

Absenteeism in public health facilities in Uttar Pradesh was common. Health workers were rarely penalized for missing shifts, and there were no incentives for attendance or performance. “Patients do not expect doctors to show up,” an international donor noted. “If a doctor arrives late for his shift at the hospital, people thank him for coming at all. In southern states, villagers call the CMO immediately to complain.”

The absence of a statewide system for tracking human resources for health made it difficult to identify and address provider shortages, though estimates suggested there were 4–6 doctors per 10,000 population and 1 lady doctor per 10,000 women. Nationally, 70% of CHC specialist positions were vacant in 2013.

Public-sector physicians typically earned lower salaries than private physicians but enjoyed greater job security and benefits. Some also appreciated the opportunity to help underserved populations. Public-sector staff nurses earned more than or the same as private nurses. Formal private providers practiced only in large cities; the market for them in Uttar Pradesh was much smaller than in other states.

Unregistered informal providers—often referred to as “quacks,” or “rural medical providers”—delivered health advice, medications, and care despite not having a license from an accredited health training institution. In 2014, they constituted an 51–55% of all health care providers in India. Families often consulted them first for childhood illnesses, including diarrhea and pneumonia. Together with formal private providers, informal providers delivered more than two-thirds of health care in Uttar Pradesh.

**Auxiliary Nurse Midwives and Anganwadi Workers**

At each sub-center, an auxiliary nurse midwife (ANM) offered basic preventive and treatment services, including ANC check-ups; home visits to new mothers; immunizations; family planning counseling; and deliveries for women unable to go to a hospital. ANMs were responsible for 8–10 villages and reported to a lady health worker, who oversaw six sub-centers. The national government paid ANMs according to
experience, ranging from USD 542–775 monthly in 2016. ANM applicants had to be female and have a high school education. Selected candidates completed an 18-month training course.

An Anganwadi worker (AWW)—hired to reduce child malnutrition by providing supplementary nutrition, preschool education, sub-center referrals, and some basic primary health care services to children under six and their mothers—ran the village Anganwadi Center. One supervisor oversaw 20–25 AWWs. In 2016, AWWs in Uttar Pradesh earned USD 59 monthly (see Exhibit 3 for qualifications and duties).

The Anganwadi Centers had made little impact on child nutrition, according to a 2005 national study. Possible reasons were poor and inequitable program administration and the inability of some states, including Uttar Pradesh, to spend their budgets. The national government increased funding for the program and set minimum standards for supplementary nutrition spending.

In 2007, the national government launched Village Health Nutrition Days (VHNDs)—hosted by sub-centers and Anganwadi Centers—to increase access to infant vaccination and the tetanus vaccine and iron and folic acid tablets for pregnant and breastfeeding women.

Accredited Social Health Activists

In 2005, the national government also launched a cadre of trained female health volunteers called accredited social health activists, or ASHAs (asha means “hope” in Hindi), to improve rural health and ease the burden on ANMs. ASHAs’ primary goal was to increase the proportion of births attended by skilled health workers to reduce maternal and neonatal mortality. ASHAs acted as liaisons between communities and the health system. Duties included counseling families on MNCH issues; promoting immunization, hygiene, and sanitation; distributing oral rehydration therapy, iron and folic acid supplements, and contraception; and referring patients to formal health providers. There was supposed to be one ASHA for every 1,000 population (roughly 200 households); however, most ASHAs’ caseloads exceeded this norm.

ASHA candidates had to live in the village they served and be recommended by a local leader, previously or currently married, educated through the 10th grade, and, preferably, 25–45 years old. An estimated 40% of ASHAs were illiterate, however.

The national government established financial incentives for ASHAs based on the tasks they completed and the behavior of their beneficiaries. States, which had limited discretion to adjust incentive rates, helped finance them. In 2016, ASHAs in Uttar Pradesh earned USD 29 per month on average, paid from the state through online bank transfers. Each ASHA also received a mobile phone from the state.

ANMs met weekly with the 4–5 ASHAs in their area to review their work and provide feedback. Monthly “cluster meetings” convened ANMs, ASHAs, and AWWs to share data and discuss challenges. In 2013, the national government introduced a new supervisory role, ASHA Sangini, to help monitor and support ASHAs.

An estimated 125,000 ASHAs, 180,000 AWWs, and 22,000 ANMs worked in Uttar Pradesh in 2013.

Financing

National health program services (e.g., HIV/AIDS, malaria), immunizations, and MNCH services were free to all Indians, and public primary care services were free for Indians living below the national poverty line. User fees applied to all other public-sector outpatient and inpatient services, as well as drugs provided by public facilities. Fees varied by state. Sometimes facilities asked patients to purchase the supplies needed for their care when there were shortages, which were common.
Some government health workers extorted payment from patients who hoped to be seen sooner or receive a higher quality of care, even if the services themselves were free.\textsuperscript{40} Per capita public health expenditure was USD 15.57 in Uttar Pradesh in 2017.\textsuperscript{41} Private out-of-pocket spending accounted for two-thirds of health expenditure and averaged 6.5% of total household spending in 2000; medicines and hospital admissions accounted for a majority of expenses.\textsuperscript{42,43} Public spending (state and national governments) accounted for one-fifth of health expenditure, and pooled insurance schemes made up the rest.\textsuperscript{44} In 2011, only 42% of poor people in Uttar Pradesh who qualified for the national health insurance scheme\textsuperscript{8} were enrolled.\textsuperscript{45} Less than 1% of the rest of the population had health insurance.\textsuperscript{18}

**Data Collection and Monitoring**

The health department used a combination of national and state data sources on fertility, mortality, nutrition, anemia, quality and use of health and family planning services, and MNCH indicators, as well as state- and district-level health service data. Data operators in PHCs and CHCs entered data from paper or electronic service registers and ANMs’ paper records into a national Health Management Information System (HMIS) monthly.

Supervisors used ASHA and AWW records to assess completion of job duties. There was no formal process for evaluating CMO performance. Computer and internet access was variable across CHCs, limited within PHCs, and rare in sub-centers.\textsuperscript{46}

The health department’s national online database of immunizations of pregnant women and infants, the Mother and Child Tracking System, was unreliable due to underreporting and duplication of entries. Maternal and neonatal deaths were underreported in HMIS as well because of “the culture of punishing failure and attributing deaths to individuals,” one health researcher noted. “Oftentimes, if a facility knows death is imminent, it refers the patient to another facility or discharges her.”

**RMNCH+A**

To accelerate progress toward achieving Millennium Development Goals 4 and 5 (see Exhibit 4 for India’s targets and progress), the national government created the Reproductive, Maternal, Newborn, Child, and Adolescent Health Program (RMNCH+A) in 2012. States could request an increase in their budgets to improve outcomes in “high-priority districts” (HPDs). The national government worked with John Snow International and USAID to identify the lowest-performing 25% of districts in each state, for a total of 184 HPDs. The 19 (eventually 25) HPDs in Uttar Pradesh comprised 294 blocks and were home to 40% of the state’s population.

The Bill & Melinda Gates Foundation offered to support RMNCH+A efforts in Uttar Pradesh and the neighboring state of Bihar. It was already funding a large MNCH project in Bihar, an eight-district project in the southern state of Karnataka called Sukshema, and a two-district pilot in Uttar Pradesh called the Manthan Project. The foundation was known nationally for Avahan, a large-scale HIV prevention program it funded in six states from 2003–2008 (see Exhibit 5 for program summary and key results). To ensure Avahan’s sustainability, the foundation designed and funded a nongovernmental Technical Support Unit (TSU) in each state to work hand-in-hand with government officials on strategy, management, and capacity building. The states maintained the same level of service, and by 2016 the national government was paying for the program with World Bank support. With the transition from foundation to national financing came challenges in disbursement and stock-outs.\textsuperscript{47,48}

\textsuperscript{8} The national health insurance program began in 2008 and covered private and public hospitalization costs for enrolled Indians living below the poverty line.
In August 2012, Bill Gates visited Uttar Pradesh to meet the newly elected chief minister, who was eager to work with the foundation. An official in the chief minister’s office explained: “Before the TSU, most projects were pilots focused on 5–10 million people at most, and they were unable to make a dent in state-level outcomes. So we asked the Gates Foundation to work to improve outcomes for the whole state.” The foundation proposed adapting the TSU model to Uttar Pradesh to help the health department: to reduce maternal, neonatal, and child mortality, and to increase the modern contraceptive prevalence rate.

The foundation’s deputy director for Uttar Pradesh, Aparajita Ramakrishnan, reflected: “We knew from our work in other states that early and systematic engagement with the government would be important. We also knew that working here and in Bihar would be more difficult than in other states because of the sheer size and relatively weak health systems, insufficient resources for health, and governance challenges.”

The Technical Support Unit

The Gates Foundation signed a memorandum of cooperation with the government of Uttar Pradesh in December 2012 and began developing a request for proposals to establish and run the TSU. The World Bank continued working on health systems–strengthening projects; the Gates Foundation met with them periodically to discuss potential overlap.

Assessing Needs

In the spring, the foundation asked its Sukshema grantee, the University of Manitoba in Winnipeg, Canada, to gather baseline data on health facilities in the state’s 25 HPDs to inform planning. The university had been working in India since 2001 and led the Sukshema project and Karnataka HIV TSU. It enlisted Sukshema Project Director Banadakoppa M. Ramesh, PhD, to take the lead. Ramesh was an HIV/AIDS and demography expert from Karnataka with extensive monitoring and evaluation (M&E) experience.

After three months of data collection via paper surveys, Ramesh and colleagues analyzed the data and produced a map detailing the infrastructure, services, and staffing available in each facility and found that Uttar Pradesh had only 50% of the human resources needed to care for its population. Sub-centers were caring for 12,000 people on average, compared with the WHO’s recommendation of 5,000, and many blocks were 60 km or more from the nearest emergency obstetric and neonatal care facility. Some facilities lacked blood supplies. Delayed payment of staff was common and contributed to turnover.

Ramesh was taken aback by the results: “So many organizations had been working hard and investing in the state over the last 40 years,” he said. “I was stunned by the severity of the gaps.”

Selecting Partners

During the mapping project (March–August 2013), the Gates Foundation issued its request for TSU proposals. Most of the large bilateral and nongovernmental agencies working in India applied. Applicants had to explain how they would “embed and integrate” their work with the state government. “A strong track record working with and transferring sustainable programs to governments was a major deciding factor,” Ramakrishnan explained, “which narrowed the list significantly.”

The foundation hired a senior program officer, Mrunal Shetye, to provide strategic support to the TSU. Shetye was a physician and public health specialist with experience designing and implementing large-scale
public health programs in India, including Avahan. He worked in Lucknow and reported to Ramakrishnan, who was based in India’s capital, Delhi.

Shetye visited health department officials to tell them about the TSU; many were skeptical. Shetye explained, “They wondered who would invest so much in something without expecting any dividends. I had to reassure them that nothing was in it for us—we only wanted healthy mothers and children.” He pointed to Avahan as an example.

Ramesh and James Blanchard, director of the University of Manitoba’s Centre for Global Public Health, worked to develop a proposal. “Our experience running the Karnataka TSU taught us how to work with government and communities, provide techno-managerial support, and set up good monitoring systems,” Blanchard noted. “We could quickly translate these competencies to analogous challenges in the MNCH sphere.” They looked at available RMNCH+A data for Uttar Pradesh and identified indicators that: (1) had the greatest potential to impact mortality and family planning, and (2) were the furthest from the state’s targets. For clarity, they differentiated “impact indicators”—maternal, neonatal, and child mortality and contraceptive prevalence—from “outcome indicators,” which were services and behaviors that could improve the impact indicators. They prioritized 21 outcome indicators and set targets to be achieved by 2016 (see Exhibit 6 for indicators, baseline data, and targets). They consulted scholarly studies for proven interventions and reflected on early successes in the Karnataka program’s mentorship of ASHAs and staff nurses, which contributed to an increase in ANC visits, institutional deliveries, and staff nurses’ knowledge and skills. “The solutions were there—they just needed to be strengthened and scaled up,” Ramesh said. Experts at the university and foundation provided technical guidance as needed.

Ramesh and the other Sukshema project leads visited Uttar Pradesh. “The trip helped us understand the conditions,” Ramesh explained, “and get an idea of what might work. For example, many ASHAs were struggling to use a mobile data collection application, and we believed the paper-based tool we were implementing in Karnataka would be easier to use and, therefore, more effective.”

The Gates Foundation selected the University of Manitoba to implement the TSU. Ramakrishnan explained, the University of Manitoba’s proposal “stood out for its ability to deliver impact at scale and work effectively with government. They were a good partner on Sukshema and Avahan, and measuring and publishing with the government was in their DNA. They produced a large number of Avahan publications, and they were just one of several Avahan grantees.” The initial contract was for three years.

Under the state’s guidance, the Gates Foundation and University of Manitoba decided to focus on 100 blocks (31 million people), where 1 million deliveries took place annually (see Exhibit 7 for a map). They chose four blocks in each HPD: two with low institutional delivery rates, where they would focus on increasing coverage, and two with a higher volume of institutional deliveries, where they would focus on improving service quality. They prioritized blocks with large populations to increase the likelihood of improving state-level impact indicators.

The foundation and university looked for an IAS officer to be the TSU’s executive director. Government officials recommended Vikas Gothalwal, a mechanical engineer with more than 20 years of local and state government experience, including managing large-scale programs. He was formal and polished; colleagues described him as pragmatic, strategic, and diplomatic. Gothalwal was excited by the opportunity to help shape and lead a project with greater flexibility and freedom to “innovate and experiment” than most government roles afforded. The foundation and university spent a few months interviewing candidates and, in October 2013, offered Gothalwal the position. He accepted but had to wait the typical eight months for the government to approve and process his transfer.
With the facility analysis complete, Ramesh and Shetye began presenting the findings to state and district officials. “They were surprised,” Ramesh said. “They were working hard—many of them 12 hours a day—but without this level of data.” At one meeting, Shetye recalled, “Some of the CMOs and state officials were in an uproar. There were accusations of, ‘You never went to the field—you were just sitting in an air-conditioned room here in Lucknow filling in your sheets!’” Shetye and Ramesh focused future presentations on how the TSU would help the government address the gaps, and meetings went more smoothly. The state obtained national government funds to map facilities in the remaining 50 districts using the TSU method.

**First Six Months**

In November 2013, the university and foundation signed a USD 21 million contract to launch the TSU. Limiting the initial grant to three years would “give us the opportunity to see how things worked with the government,” Shetye said. “Would they engage and contribute? Would they begin to take ownership of and fund some of the programs?” The foundation would evaluate the TSU’s success based on achievement of its RMNCH+A targets (Exhibit 6) in the 25 HPDs by 2016, as well the sustainability of its efforts, demonstrated by the extent to which the state took over TSU interventions operationally and financially. “We knew it would take much longer—no less than 5–8 years—to impact state-level mortality and family planning figures,” Shetye said, “and this is where that work needed to start.” A senior health department official told Ramesh, “Uttar Pradesh is the burial ground for innovations. We try everything here, but nothing changes.”

The TSU’s strategy for improving RMNCH+A outcomes mirrored that of Sukshema and the foundation’s work in Bihar: increase the frequency and quality of interactions between households and frontline health workers (namely ASHAs and ANMs), strengthen delivery and postpartum care in facilities, and support evidence-based planning and management (see Exhibit 8 for TSU theory of change). ASHAs had proven effective at behavior change communication and mobilizing beneficiaries to seek services, Ramesh explained. “We saw them as the link between the community and the health system, and we could strengthen that link by giving them the appropriate tools for outreach.”

The university made one of its two local arms, the India Health Action Trust (IHAT), responsible for coordinating technical support to the government and managing the TSU’s financial and human resources. It subcontracted John Snow International to support strategic planning and data systems. The Gates Foundation commissioned an external evaluation consortium led by Sambodhi, an Indian research and communications firm, to measure and compare outcomes in TSU and non-TSU districts.

Ramesh found office space across from the NHM. He met regularly with the mission director and worked from the NHM offices most mornings to learn more about how decisions were made. Shetye had an informal workspace at the TSU. It was atypical for a Gates Foundation program officer to be collocated with a grantee, but Shetye wanted to integrate with the project as much as possible to readily participate in planning and provide input when challenges arose.

The TSU comprised three teams: Community, Facilities, and Monitoring and Evaluation (M&E). Each team would liaise with a similarly focused unit in the state health department (see Exhibits 9a–9c for TSU organizational chart). The IHAT human resource team helped develop job descriptions and research market rates in Uttar Pradesh to inform salary decisions. “The plethora of international development agencies in Uttar Pradesh means there’s competition and high turnover in the sector, which inflates the value of labor,” Ramesh said. He ensured TSU salaries were competitive but not much higher than those of comparable government roles.

IHAT advertised TSU positions in popular newspapers and websites in northern India. Eligible candidates had to speak Hindi and, if they worked in the TSU office, live in or near Lucknow. Ramesh did
not want people commuting from Delhi (a one-hour flight), where many eligible candidates lived. Candidates took a written knowledge and skills test related to their desired position and spent a day at the TSU interviewing with university, foundation, and state health officials.

The new hires came from more than 15 states and had diverse professional backgrounds. Many left good jobs and took pay cuts to work for the TSU. The 45 TSU members who would oversee work at the state or zone level were based in the Lucknow office and participated in a one-month induction training. The rest (around 700) would support Community, Facilities, and M&E activities in the districts. This group participated in a one-week induction training. Training topics included how to build trust and effective partnerships with government staff and how to provide feedback without being condescending.

**TSU Activities**

With staff in place, the TSU’s first task was to help the health department develop a project implementation plan for fiscal year 2014–2015. Uttar Pradesh’s budgeting process “was not implemented optimally,” a government official said, because of limited planning and budgeting skills among block officials and issues of data quality and completeness. National guidelines required that plans be based on “gap analysis” of the health system. “Planning in Uttar Pradesh and many other states tends to be more funding-based than needs-based,” Ramesh noted. “The government typically looks at what it spent last year and increases it by 10–15%.” The state’s plans had been under intense scrutiny since the discovery of graft within the health department in 2010. The department anticipated the national government would cut any budget proposal to fit its standard increase.

The TSU sought input from CMOs and MOICs on how to better capture their needs in the state’s plan and developed surveys to assess resource and service gaps in each district. They suggested developing “health action plans” using the TSU’s facility mapping data and created planning templates for blocks and districts. With health department approval of the new tools, the TSU sent two-person teams to train district and block staff to use them. Block officials developed block action plans, which district officials used to inform district action plans. The TSU then helped the NHM consolidate these plans into a state action plan and budget that linked health system inputs to outputs and outcomes. The plan included the TSU’s proposal for partial funding of a staff nurse mentoring program, which the state agreed to include because a similar Sukshema program was achieving promising results (see Exhibit 10a–10c for examples).

The final state health budget represented a 20% increase over the previous year’s funding, which the chief minister and national government approved. MOICs and CMOs reported satisfaction with the new needs-based planning method; they wondered if the state was capable of executing its “aggressive” proposal.

In June 2014, Gothalwal officially assumed the TSU executive director role and began his three-year contract with the University of Manitoba, with supervision from Blanchard. Ramesh oriented and advised Gothalwal, who immediately noticed a difference between the TSU and government agencies he had worked in previously: “There is a strong hierarchical structure in the public sector,” he said. “At the TSU, the decision-making process is more open and inclusive. If you have an idea that can improve our work or move us towards achieving our targets, you can share it with anyone at any time.”

Ramesh and Gothalwal co-led the TSU: Ramesh guided RMNCH+A activities and M&E, while Gothalwal managed government relationships and daily operations. Blanchard advised on strategy and programming from Canada, visiting the TSU monthly. “Ramesh is enormously talented, learns quickly, and has a huge work ethic,” he said. “He tends to view things through a theoretical lens, whereas Gothalwal brings more of a management and systems lens. They complemented each other well.” Gothalwal reported
to the principal secretary, an IAS officer; he had interacted with him and the director general in previous roles. He began meeting with them to provide updates on the TSU. Gothalwal’s IAS title commanded respect from the outset.

**Monitoring & Evaluation Team**

The M&E team was responsible for improving government data quality, developing tools to fill government data gaps, and increasing the use of data by block and district health officials for decision making. Along with the project managers and analysts in the TSU office, 25 district M&E specialists worked in the field (see Exhibit 11 for team structure and specialist responsibilities). Ramesh, Gothalwal, and the TSU team leads helped state health officials strengthen their data analysis and planning skills through periodic training, ongoing guidance, and support for use of the planning tools developed by the M&E team.

A state health official asked the TSU to improve maternal and neonatal mortality reporting by designing a mobile phone-based program. The TSU developed the program in two weeks and piloted it in five HPDs. While the TSU saw a slight improvement in reporting, phone connectivity and distribution challenges were significant and the program was costly; it did not last beyond the pilot year.

To inform TSU programming, the M&E team developed two surveys to collect block-level RMNCH+A data. One, the Community Behavior Tracking Survey (CBTS) gathered information about community behaviors and service coverage and utilization. The TSU contracted and trained investigators to administer CBTS with a mobile application and quality supervisors to assess the work and provide feedback. Investigators submitted CBTS data electronically to the TSU, where analysts reviewed for possible outliers or errors before analyzing for investigators and supervisors. Analysts highlighted common mistakes and explained how to avoid them. “We remind them that the data will be used to improve services for their communities, and that the better the data quality, the better the services will be,” an M&E team member said. The TSU observed improvements in data quality over time.

The second TSU survey was the Rolling Facility Survey (RFS), which took place every six months and measured providers’ knowledge, skills, and practices through interviews with PHC and CHC staff and assessed facility conditions through direct observation of deliveries. The state did not have electronic systems for managing information on several input variables, including human resources and supply chain.

Following baseline surveys in 2014, the M&E team repeated the CBTS and RFS every six months. They presented their findings at TSU staff meetings in Lucknow, and Gothalwal shared findings with the mission director, director general, and principal secretary of health.

To improve government data quality, the M&E team created block and district data validation committees and data audit tools. Each committee included the CMO or MOIC, HMIS operator, data manager, and various district health officials.

The M&E team also had several projects aimed at increasing use of data by health officials, many of whom did not know what HMIS was. District M&E specialists oriented them and then demonstrated how to use the system and generate reports.

The TSU spent six months developing, testing, and implementing a five-page monthly report called the HMIS bulletin. “We had seen that CMOs were bringing raw HMIS data with them to meetings,” an analyst said, “but they didn’t have denominators for any of the numbers. For example, they knew there were 800 institutional deliveries last month, but out of how many total deliveries?” District M&E specialists used preset Excel formulas to generate the local bulletins and added recommendations before printing for their
district CMO. A few months after introducing the HMIS report, M&E specialists observed CMOs bringing the HMIS bulletins to meetings and discussing data quality and outcomes more frequently.

**Dashboards**

After being trained in Tableau, a data visualization and business intelligence software program, TSU analysts spent 3-4 months developing eight electronic RMNCH+A dashboards (see *Exhibit 12* for thematic areas and a sample dashboard). Each dashboard, based on TSU and government data, showed the outcome indicators that led to impact, and the inputs and outputs needed to generate those outcomes. Users could filter dashboard data by district, block, or facility.

The M&E team spent nine additional months refining the dashboards, with input from the Community and Facilities teams, and training government officials how to use them. Gothalwal presented the dashboards to the principal secretary and mission director, who approved implementation. The TSU hosted a workshop for NHM general managers to orient them to the tool before training CMOs in the field, followed by meetings in each district with M&E specialists and MOICs. TSU analysts saved officials time by going to them. The closest of the 100 blocks to the TSU was 25 km away, about an hour’s commute; the furthest was 450 km away, or an eight-hour drive.

CMOs’ lack of computers or computing skills slowed uptake. In the first month, CMOs in only six districts were using the dashboards. “CMOs are very busy,” an analyst noted. “We learned it was unrealistic to expect them to do the analysis on a regular basis.” The TSU made district M&E specialists responsible for preparing and analyzing the dashboards and making recommendations to CMOs. Gothalwal proposed the idea to the mission director and principal secretary; they agreed and issued a government order requiring CMOs to meet monthly with their district M&E specialists, who also sat at the hospital, to review the data, identify high- and low-performing blocks and data quality issues, and discuss actions for improvement. CMOs then were supposed to use this information in their monthly meetings with MOICs.

The TSU assessed the dashboards’ impact on processes and outcomes (see *Exhibit 13* for examples). Despite increased enthusiasm and buy-in from some CMOs, overall dashboard use was 60–70% lower than expected. Some district M&E specialists struggled to schedule CMO meetings, and CMO turnover was high.

**Sambodhi**

The TSU’s Gates Foundation–supported external evaluator, Sambodhi, measured the impact of TSU interventions by comparing TSU blocks with two control groups: non-TSU blocks in non-TSU districts, and non-TSU blocks in TSU districts. They also aimed to study and provide input on the efficiency and effectiveness of specific processes and services.

Sambodhi had an office at the TSU and regularly shared its analysis and recommendations with TSU leaders, including a one-page monthly “process learning report” detailing findings from recent field visits (e.g., proportion of VHND sessions providing hemoglobin testing and blood pressure and weight measurement). Sambodhi organized quarterly learning meetings with TSU teams to discuss progress and reflections and make recommendations. If the TSU wanted to introduce programming changes, it consulted with the Gates Foundation and Sambodhi first so they could shift the evaluation design to account for those changes (see following sections for examples).

**Community Team**

The Community team focused on improving the efficiency and effectiveness of ASHAs and, to a lesser extent, ANMs and AWWs, through training and mentorship. In May 2014, the TSU and state health officials
invited a group of ASHAs to Lucknow for a three-day meeting to discuss the challenges they were facing. Challenges included: difficulty understanding the incentives they were earning, delays in incentive payments, low pay, and the task of managing 13 different registers—each corresponding to a unique health topic, such as neonatal health—to track their activities. The paperwork took a long time to complete and was easy to misplace. The national government had developed a template for a Village Health Index Register (VHIR), but it was not in a ready-to-print format, so many states had not adopted it.

The TSU showed ASHAs the VHIR and asked for input on how to make it useful. ASHAs wanted a tool that would help them track the number of pregnant women in their area and determine which services they needed to deliver each month. The TSU took their feedback and helped the health department redesign and print the VHIR (see Exhibit 14a for cover page). The new format comprised 27 different sections, each corresponding to a health topic ASHAs promoted (e.g., family planning, antenatal care). A “due list” tracked beneficiaries and scheduled services (Exhibit 14b), and a chart at the end included all of the activities ASHAs were supposed to complete and the incentive associated with each, enabling them to track earnings (see Exhibit 14c). The latter also enabled the state to monitor blocks with low remuneration rates.

Most ASHAs reported satisfaction with the simplified and consolidated VHIR, which helped them prioritize households. Ramesh said, “We had learned we needed to make the data relevant to the ASHAs from our experience in Karnataka, where ASHAs were not reporting data accurately, in part because they didn’t understand its importance and it didn’t help them.” ASHAs spent around four hours each month updating the VHIR. The health department quickly decided to scale up the VHIR to the rest of the state, using its own funds to print and distribute it.

Community resource persons (CRPs), modeled after a similar Sukshema role were assigned to TSU blocks to support ASHAs after undergoing a 16-day training on RMNCH+A care, the communities they would serve, the ASHA role, and how to use the VHIR and other ASHA tools (see Exhibit 15 for the CRP training agenda). There were 3–7 CRPs per block; each mentored 40–60 ASHAs in data collection, reporting, home visits, and VHND interactions and lived in the same area they worked. A TSU block community specialist supervised the CRPs in a given block (see Exhibit 16 for CRP and BCS responsibilities).

CRPs entered ASHAs’ VHIR data into a tablet and typically spent most of their mentoring time discussing reporting issues flagged by district M&E specialists, who reviewed the CRPs’ monthly reports and provided them with feedback at monthly block and district meetings. Common issues included missing data—many ASHAs did not turn in their VHIR summaries, making it difficult for CRPs to prepare the reports—and use of data to fulfill reporting requirements rather than to help prioritize work.

The Community team introduced a new forum to help ASHAs update their VHIRs and prioritize for upcoming VHNDs. They called it the AAA (“triple A”) Meeting. Participants met monthly to discuss issues in their villages and share data about beneficiaries. CRPs and block community specialists attended, took notes on the challenges raised, and shared them with their district-level TSU colleagues, which reported back to Community team lead.

**Facilities Team**

The Facilities team sought to improve the quality of care at government health facilities through nurse mentoring, with a focus on making normal deliveries safer and triaging complex cases to appropriate facilities. The TSU met with district officials to explain the purpose of nurse mentors—to make facilities safer—and how they would work with staff nurses. “Some were skeptical and lukewarm about the idea,” Ramesh said. “I think many thought, Ok, these guys will come and then they’ll go away like any other partner.” The TSU recruited 100 nurse mentors and placed one in each of its target blocks. The state government
recruited 50 additional nurse mentors to work in high-volume delivery facilities in other blocks within the HPDs. The TSU hosted a series of three-day workshops for MOICs and CMOs to introduce: (1) the nurse mentoring concept, and (2) new job aids (paper “case sheets”) to help staff nurses document and determine the steps for different stages of labor, delivery, and the immediate postpartum period.

The TSU’s five-week training for nurse mentors included instruction in maternal and neonatal health, infection prevention, adult learning and mentoring, and TSU protocols and reporting requirements; counseling strategies for intrauterine contraceptive device insertion; and a five-day hospital clinical rotation. Each nurse mentor reported to a TSU district technical specialist with medical training.

Nurse mentors observed staff nurses in the delivery room and trained or retrained them in a variety of skills aimed at preventing maternal and neonatal mortality, ranging from proper sanitation practices to neonatal resuscitation (see Exhibit 16 for full list of responsibilities).

Many nurse mentors were recent nursing school graduates, and most were younger and less experienced than the staff nurses. Some staff nurses were reluctant to heed their advice, while others asked their nurse mentor to perform instead of supervise deliveries. To gauge how nurse mentors were doing, TSU district technical specialists observed nurse mentor facilities 2–3 days monthly. Common complaints included limited stocks of drugs and supplies and lack of cooperation from staff nurses. The technical specialists tried to resolve such issues with MOICs and informed the Facilities team in Lucknow. Persistent or more complex issues were relayed to higher-level government officials; for example, if staff nurses in a facility resisted following the nurse mentor’s guidance, the district CMO might be informed and decide how to address with the nurses.

Nurse mentors reviewed staff nurses’ case sheets and entered the data into a TSU tablet to generate and submit a monthly electronic report for their facility. The M&E team used the electronic summaries and Rolling Facility Survey data to track what was happening in each facility. Sambodhi surveyed facilities in non-TSU districts for comparison.

Nurse mentor turnover was around 10%, similar to the rate for contractual staff in the state government but higher than that of salaried government staff (1%). The Facilities team lead recruited around 20 new nurse mentors every quarter to keep pace with attrition. “Most of them see this as a short-term program and find higher-paying jobs in the private sector,” a TSU member said. “They tend to be young, unmarried women, so some leave because of family expectations and pressure.”

**New Grants**

As originally planned, in October 2014 the Gates Foundation awarded supplemental grants to the TSU for specific family planning services, nutrition, and demand generation. These were areas that the foundation, TSU, and state government agreed needed further funding and programmatic attention to improve outcomes.

Each grant had a project director and its own program monitoring team that collected and analyzed data on a monthly basis to enable “quick course corrections in programming when needed,” explained one project director. The TSU M&E team worked with the monitoring teams to incorporate key indicators into CBTS and RFS.

The Gates Foundation gave a separate grant (USD 13 million, October 2014–September 2017) to the Clinton Health Access Initiative (CHAI) to lower child mortality by expanding treatment for diarrhea, including provision of oral rehydration salt and zinc (ORS/zinc), and pneumonia.
Family Planning

The family planning project (USD 21 million, November 2015–October 2019) aimed to improve the availability, quality, and adoption of modern contraception methods in TSU blocks. The TSU conducted another facility mapping exercise, this time to identify gaps in family planning services, including availability of infrastructure, trained staff, and essential drugs and supplies. The TSU contracted two international organizations and one Indian organization specializing in family planning service delivery to target the identified gaps: EngenderHealth, Marie Stopes India, and Janani. The three organizations focused on increasing the number of skilled family planning providers; increasing women’s access to information and counseling; testing new family planning service delivery models; and improving the capacity of frontline workers to identify unmet needs, discuss those needs with women and families, and provide referrals and ongoing support.

EngenderHealth prepared government trainers to teach public sector physicians how to safely perform female sterilization through mini-laparoscopic and laparoscopic surgery. EngenderHealth invited MOICs and nurse mentors so they could hold staff accountable for the material.

Marie Stopes India recruited clinical outreach teams to demonstrate efficient clinic management and customer service (e.g., using patients’ names instead of calling them by number, setting fixed days for family planning services so that patients could plan, calling patients within 24 hours of receiving family planning services for follow up) at district hospitals and CHCs. “The calls make the patient feel valued and cared for,” a family planning team member said.

In addition, the TSU’s family planning partners collaborated with accredited private health facilities to designate specific days for them to offer family planning services at public facilities.” After a few months, the TSU observed that women preferred the family planning services offered by the private-sector teams.

While the TSU’s family planning efforts were focused in district hospitals, the family planning team learned early in the project that 70% of women who opted for family planning services did so at CHCs. The TSU proposed to the Gates Foundation that it serve an additional 67 CHCs—increasing coverage from 80 to 147 total facilities—and lower its original project deliverables. “This was how we and the Gates Foundation worked together,” Gothalwal said. “If the data show us something, there should be no harm in course-correcting if it still suits the overall objectives.” The foundation approved the change.

The TSU family planning team also began exploring local women’s self-help groups as potential venues for conveying family planning information. They thought group leaders might have more influence with women in their community. They also considered how to involve men in family planning outreach.

Nutrition

The objective of the nutrition grant (USD 11 million, November 2015–March 2019) was to reduce under-5 morbidity and mortality due to malnourishment and malnutrition (see Exhibit 17 for indicators and targets). The newly hired TSU team spent the first six months assessing the situation. “Our data show that you have to give people food and counsel them on healthy eating habits,” the nutrition director said. “The government and development community have been giving people food and supplements for the last 30 years and things have not changed.” They hired 25 district nutrition specialists, 6 state specialists who sat in the TSU office and 373 new nutrition-focused CRPs to supervise AWWs and help them influence household behaviors.

** In Uttar Pradesh, the health department reimbursed government-accredited private providers for delivering family planning services to uninsured patients.
Demand Generation

The TSU subcontracted BBC Media Trust and the Center for Advocacy and Research (USD 1.7 million, September 2014–October 2016) to raise awareness of RMNCH+A issues and services and promote behavior changes. Deliverables included developing an RMNCH+A advocacy agenda, encouraging the state and local media to report on RMNCH+A issues, and developing RMNCH+A-related content for media.

Communication

Gothalwal held monthly individual and group meetings with the TSU project directors to share updates and data. The RMNCH+A team leads met with each other monthly to discuss what they were working on, learning, and planning. They also met monthly and had regular phone calls with their counterparts in the health department. Gothalwal convened a quarterly TSU update meeting with state officials and TSU project directors and team leads.

Gothalwal presented a monthly report of TSU programmatic data and government data to the mission director, director general, and CMOs. When the TSU had new findings to share, it presented the results internally and then organized a workshop for government officials. Once annually, the TSU hosted a three-day review meeting with the heads of TSU partner organizations and other agencies in the state to discuss the TSU’s role and evaluate progress. “It allows us to get an external view of our programs,” Gothalwal said.

Early Impact and Challenges

TSU and Sambodhi data indicated that availability and use of ANC services remained low in TSU blocks (see Exhibit 18), ranging from 22% to 74% of women receiving any ANC. The TSU identified lack of functioning sub-centers as the major barrier and proposed expanding VHNDs—which focused on routine immunization—to include ANC checkups, nutrition counseling, and adolescent health. The health department agreed and asked for immediate and statewide implementation. The TSU helped the state create new VHND guidelines and developed a training module for state trainers. The health department funded the trainings (three days for ANMs, one day for ASHAs and AWWs) and completed them in four months. The TSU began to see improvement in the proportion of women receiving ANC. “This decision to focus on VHNDs was probably our biggest technical achievement in the first phase,” Blanchard said.

In government facilities, blood pressure assessment increased from 10% to 40% of women in labor; active management of the third stage of labor increased from less than 5% of observed deliveries to 60%; and essential neonatal care increased from 5–10% to 65%. Some improvements were greater in TSU-supported facilities than in other facilities, though there was substantial variation between TSU-supported facilities. Findings suggested that: (1) nurse mentoring could move some but not all providers to better performance, and (2) other factors were at play in facilities that were improving without nurse mentors. Other improvements were more modest (e.g., measurement of critical vital signs), and there were several areas of continued poor performance, including management of complications and postnatal care. A sharp increase in reports of birth asphyxia and deaths led the TSU to question if improving active management of third-stage labor was lowering neonatal mortality. Postnatal visits by ASHAs remained uncommon.

Eager to scale up the nurse mentor program, the health department received funding for 50 additional mentors from the national government. “When we see the state accepting the TSU’s approach and backing up its support with money, we know it makes sense to continue the work,” Shetye said. “Otherwise it’s just one-way—it’s us imposing our will, and that’s not what we or they signed up for.” Impressed by how quickly the TSU hired nurse mentors, the state government requested its help with recruitment.
Several outcome indicators were not improving, including ORS/zinc consumption, 24-hour stay post-delivery, IFA uptake, exclusive breastfeeding, and adoption of family planning methods. “For many of these,” an RMNCH+A team member noted, “we realized we might be knocking on the wrong door. Maybe women are not the primary decision makers on family planning, for example. Or maybe ASHAs are not the right ones to deliver those messages.”

**New Approach to Understanding**

The Gates Foundation recognized the need for deeper understanding of the barriers to impact and suggested inviting a new “action tank” and funder called Surgo Foundation to help. Surgo Foundation’s executive director and cofounder, Sema Sgaier, was a former Gates Foundation program officer in India and had led the foundation’s male circumcision portfolio from its US office. Before starting Surgo Foundation, she developed methods to understand why men were resisting voluntary medical male circumcision—a proven HIV prevention strategy—in several African countries. The research approaches were commonly used in the private sector to develop and test the marketability of products and services, but they were new for development challenges. “Traditional program data collection focuses on the what, where, and how much,” Sgaier explained. “We’re trying to uncover the whys and understand issues from the beneficiaries’ and providers’ perspectives.”

In August 2015, the Gates Foundation signed a memorandum of understanding with Surgo Foundation outlining two projects: one to explore why ORS/zinc uptake for the treatment of child diarrhea remained low, and the other to explore RMNCH+A behaviors the TSU was attempting to change and recommend solutions. Surgo Foundation contributed its own funding and staff to the project, while the Gates Foundation facilitated data sharing and communication between Surgo Foundation, the TSU, and CHAI.

In the fall of 2015, Surgo Foundation and its partners conducted qualitative interviews and decision-making simulations with unqualified rural medical providers—often the first providers families visited when a child had diarrhea or pneumonia—and households to understand why household use of ORS/zinc remained low. The team discovered that providers knew ORS/zinc was an effective treatment for diarrhea and had access to it; they prescribed antibiotics because caregivers expected it. “The social norm within the community is that the best treatment for diarrhea is antibiotics,” Surgo Foundation’s managing director explained, “so when a caregiver asks for them, the rural medical provider gives it to them. Otherwise, the caregiver will go to another provider. It’s a pull from the caregiver, not a push from the provider. The assumption had been that providers drive the treatment decision.” In December, Surgo Foundation shared its findings with the TSU and Gates Foundation; they then shifted the diarrhea and pneumonia grant’s focus to increasing pull for ORS/zinc from caregivers.

In December 2015, Surgo Foundation and its partners worked with the TSU to prioritize outcome indicators with the greatest potential to impact mortality, the least progress to date (indicated by difference between baseline and current data), and the most difficult-to-change behaviors. With the TSU, they developed a composite index and prioritized the top 19 indicators (see Exhibit 19).

A few months later, Surgo Foundation and the TSU established an Innovation Unit. “With everyone in the TSU running 1,000 miles per hour working on implementation, we saw a need to designate a few people within the TSU who could observe what was happening objectively, ask questions, and come up with recommendations,” Surgo Foundation’s managing director said. The foundation hired an analyst from the TSU M&E team and a program manager from Karnataka to staff the unit, and they sat with the RMNCH+A team.

**New Data**
In the summer of 2016, Ramesh moved to Winnipeg to assume a new research position with the University of Manitoba and began applying to the Gates Foundation for a second three-year grant. Gothalwal’s responsibilities expanded to overseeing the entire TSU, while Ramesh focused on the TSU’s M&E and learning activities. The TSU hired an RMNCH+ project director to oversee the team leads and Innovation Unit (see Exhibit 20 for TSU organizational chart).

Gothalwal became Surgo Foundation’s lead contact. “Any time there was a new idea,” Surgo Foundation’s managing director said, “he helped us think about how the government would react and if they would consider scaling it.” Gothalwal shared Innovation Unit ideas and data with state officials in their quarterly meetings.

In the fall of 2016, Surgo Foundation conducted in-depth interviews with households, ASHAs, and staff in CHCs and PHCs about how they made decisions and what influenced their choices. Early findings showed: (1) ASHAs did not promote family planning because households considered it a private matter; (2) many new mothers left the hospital early because staff nurses perceived their risk of complications to be low, and the community norm was that it was okay to leave following delivery; and (3) families did not necessarily view ANC visits as unimportant, as the TSU had hypothesized, but instead tended to assess in the moment whether or not they thought the mother or baby needed a checkup and weighed that against other practical constraints they faced.

Surgo Foundation identified the characteristics of poor-performing and successful ASHAs and studied the potential for ASHAs to take on additional duties. “We learned that many ASHAs in Uttar Pradesh are illiterate and from higher castes,” Ramesh said, “so their motivation and capacity to work is not the same as that of ASHAs in Karnataka. And with limited service availability and access here, it’s difficult for women to get the services ASHAs are mobilizing them to seek.” Blanchard added, “We realized we had put too much emphasis on behavior change—and a reliance on the idea that pregnant women are the primary decision makers in families and that ASHAs are the best behavior change agents—and not enough on structural barriers to access.”

Ramakrishnan reflected, “In the public health field, you often take the position that you know which levers to pull. In hindsight, if we had spent more time up front doing this work to look at things from the viewpoint of the consumer and provider, we might have designed more successful interventions from the outset and saved some money.”

**Looking Ahead**

The TSU and government used the TSU’s concurrent monitoring data, Sambodhi’s data, and Surgo Foundation’s results and recommendations to design the TSU’s second phase (January 2017–December 2019). The Gates Foundation provided a technical grant (USD 15 million) and a systems grant (USD 30 million) to fund it. Technical activities would focus on three areas: optimizing nurse and ASHA mentoring in the TSU blocks—including replacing CRPs with a new role supporting ASHA Sanginis that was less data collection-focused—and scaling up these interventions to the remaining 194 blocks in Uttar Pradesh’s HPDs; conducting “boost” initiatives in select blocks to improve interventions aimed at reducing common causes of maternal and infant mortality and increasing breastfeeding; and piloting new interventions to address persistently low indicators (e.g., IFA intake). The systems portfolio included human resources, supply chain, data management, performance management, procurement and budgeting, and other projects. For example, the TSU began development electronic databases for government health personnel and supply chain management, with technical leadership from a new partner, Johns Hopkins University. “We want to help
Uttar Pradesh access the best technical people in India and globally,” Blanchard explained, “to identify areas where we don’t have the top expertise, try to find the people who do, and bring them in.”

Surgo Foundation began conducting quantitative research “to confirm and rank the importance of our qualitative findings,” Sgaier said. “The TSU is eager to get a sense of whether our findings will hold up at a larger scale.” Surgo Foundation also had ideas for pilot interventions to be tested in phase 2. One was to create a new role in maternity wards dedicated to teaching postnatal care, such as clean cord care, delayed bathing, and breastfeeding. “No one in the system takes responsibility for postnatal support because they think someone else is doing it,” Sgaier said. “The staff nurse sees her work as finished with the delivery, and the ASHA sees the mother-in-law as responsible for counseling the new mother. Yet our research has found that it’s the mother-in-law who often does not know or perform healthy postnatal behaviors.”

On the systems grant, Surgo Foundation would support development of the state’s behavior change communication strategy and implementation plan.

The health department was pleased with the TSU’s progress to date. “The TSU has given us a lot of technical support that we don’t have,” a senior health department official said. “They are flexible and get things done quickly.” The state planned to hire another 50 nurse mentors, bringing the total to 200.

As they planned for phase 2, Ramesh, Gothalwal, and their colleagues at the university and foundation revisited the TSU’s theory of change and structure. They had done everything by the book: implemented evidence-based interventions, set up strong M&E systems, and provided technical support to frontline health workers and health leaders to ensure sustainability of any successes. How could they learn from the obstacles they had faced, and what would they need to do differently moving forward?
Exhibit 1  Map of India

Exhibit 2  India’s National Standards for Government Health Facilities: Average Population Served and Average Number of Beds, 2012

Source: GHD case writers.
Exhibit 3  Qualifications and Responsibilities of Anganwadi Workers (AWWs)

Anganwadi worker applicants had to:

• Be female
• Complete an application
• Be selected by the village
• Undergo four months of basic training in health, nutrition, and child care

The roles and responsibilities of an Anganwadi worker were to:

• Elicit community support and participation in running the Anganwadi program
• Weigh each child monthly, graph the weight on the growth card, and refer underweight cases to the sub-center or PHC with a referral card
• Organize non-formal pre-school activities in the Anganwadi Center for children ages 3–6 and help make toys and play equipment of indigenous origin for use in the Center
• Organize supplementary nutrition feeding for children (0–6 years) and expectant and nursing mothers by planning a menu based on locally available food and local recipes
• Provide mothers health and nutrition education and counseling
• Share information relating to births that take place during the month with the ANM or other official Registrar/Sub-Registrar of Births and Deaths in her village
• Educate parents during home visits on child growth and development needs
• Encourage immunization, health checkups, and antenatal and postnatal checkups
• Assist the ANM in the administration of IFA and vitamin A by keeping stock of the two medicines in the Center without maintaining a stock register
• Share information collected under the Integrated Child Development Services Scheme with the ANM
• Liaise with other institutions serving the same population, such as local women’s organizations
• Guide ASHAs engaged under the NHM in the delivery of health care services and maintenance of records under the Integrated Child Development Services Scheme
• Assist in implementation of Kishori Shakti Yojana (KSY; an adolescent health promotion program) and SABLA (girls’ empowerment program), and motivate and educate adolescent girls, their parents, and the community in general by organizing social awareness program and campaigns
• Provide storage in the Center for contraceptives and disposable delivery kits that the ANM or ASHA could distribute
• Identify children with disabilities during home visits and refer them to the nearest PHC or District Disability Rehabilitation Center
• Help organize Pulse Polio Immunization drives
• Inform the ANM of emergency cases, such as diarrhea, cholera, etc.

Exhibit 4  *Millennium Development Goals 4 and 5: India’s Baseline and Target Data for Maternal and Child Health-Related Indicators*

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<tbody>
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<td>Under-5 mortality rate (per 1,000 live births)</td>
<td>112</td>
<td>N/A</td>
<td>N/A</td>
<td>85</td>
<td>66</td>
<td>38 (target)</td>
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<tr>
<td>Infant mortality rate (per 1,000 live births)</td>
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<td>N/A</td>
<td>N/A</td>
<td>57</td>
<td>50</td>
<td>26.7 (target)</td>
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<td>Proportion of one-year-old children immunized against measles (%)</td>
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<td>N/A</td>
<td>59</td>
<td>74.1</td>
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Note: N/A means that data were not available for the given indicator and year.

Exhibit 5  *Avahan Summary and Results*

In 2003, the Bill & Melinda Gates Foundation launched an HIV prevention program called Avahan in six Indian states. The foundation selected implementing partners for each state, including the University of Manitoba in Winnipeg, Canada, for the southern state of Karnataka. Implementing partners worked with state governments to strengthen their HIV prevention response.

By the end of 2008, Avahan was delivering services through 156 nongovernmental organizations across the six states and had contacted more than 240,000 high-risk individuals through 6,200 peer educators. Avahan dramatically increased outreach and service coverage for high-risk groups and increased condom use among sex workers and their clients. Key achievements included:

<table>
<thead>
<tr>
<th>Measure</th>
<th>Outcome</th>
</tr>
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<tbody>
<tr>
<td>Consistent condom use with occasional clients among female sex workers</td>
<td>75% (49% among the rest of the population)</td>
</tr>
<tr>
<td>Percent of target population reached</td>
<td>66% of female sex workers</td>
</tr>
<tr>
<td></td>
<td>70% of men who have sex with men</td>
</tr>
<tr>
<td>High-risk individuals reached</td>
<td>159,000 female sex workers, 56,000 men who have sex with men, and 13,000</td>
</tr>
<tr>
<td></td>
<td>injecting drug users</td>
</tr>
<tr>
<td>Number of local NGOs under Avahan</td>
<td>116</td>
</tr>
<tr>
<td>Number of drop-in centers</td>
<td>520</td>
</tr>
<tr>
<td>Sexually transmitted infection clinics</td>
<td>302</td>
</tr>
<tr>
<td>HIV prevalence among female sex workers in Karnataka from 2003 to 2008</td>
<td>From 19% to 16%</td>
</tr>
<tr>
<td>Female sex workers with program exposure seeking services for</td>
<td>90% (compared to 76% without program exposure)</td>
</tr>
<tr>
<td>sexually transmitted infections</td>
<td></td>
</tr>
</tbody>
</table>

To transfer the Avahan program to complete government ownership, the Gates Foundation developed a strategy for providing “techno-managerial” support to states through Technical Support Units, or TSUs, and worked with the states and implementing partners to set up HIV TSUs. The TSUs functioned independently from but work hand-in-hand with government officials. The TSUs launched in 2008.

## Exhibit 6  
*TSU Priority Indicators (Phase 1): 2013 Baseline Data and 2016 Targets*

<table>
<thead>
<tr>
<th>Domain</th>
<th>Indicator</th>
<th>Baseline (%)</th>
<th>Target (% end of 2016)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal</td>
<td>% of deliveries in institutions</td>
<td>62</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>% of normal vaginal deliveries where active management of third stage labor was applied</td>
<td>TBD</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>% of women with major direct obstetric complications treated at EmONC facility</td>
<td>TBD</td>
<td>80</td>
</tr>
<tr>
<td>Newborn</td>
<td>% of newborns receiving clean cord care, adequate thermal care</td>
<td>TBD</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>% of newborns receiving early initiation of breastfeeding</td>
<td>33%</td>
<td>80 (F); 60 (H)</td>
</tr>
<tr>
<td></td>
<td>% of identified weak newborns managed correctly per home- and facility-based care guidelines</td>
<td>TBD</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>% of neonatal PSBI (suspected sepsis) cases initiated treatment with antibiotics as per protocol</td>
<td>TBD</td>
<td>80</td>
</tr>
<tr>
<td>Family Planning (FP)</td>
<td>% of mothers using IUD or TL by six months post-delivery</td>
<td>TBD</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>% increase in modern contraceptive prevalence rate</td>
<td>32 (use rate)</td>
<td>10 (% increase)</td>
</tr>
<tr>
<td></td>
<td>% of women with unmet need for family planning</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>% of FP acceptors with complications due to procedure</td>
<td>TBD</td>
<td>&lt; 3</td>
</tr>
<tr>
<td></td>
<td>% of FP acceptors received FP follow-up care</td>
<td>TBD</td>
<td>75</td>
</tr>
<tr>
<td>Child Nutrition</td>
<td>% of children exclusively breastfed between 0–6 months</td>
<td>18</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>% of children 12–23 months receiving age-appropriate complimentary feeding</td>
<td>TBD</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>% of children 0–5 years severely wasted and severely stunted detected with SAM who receive therapeutic feeding</td>
<td>TBD</td>
<td>50</td>
</tr>
<tr>
<td>Prevention &amp; Management of Childhood Illnesses</td>
<td>% of children 0–5 years with diarrhea treated with zinc and oral rehydration therapy</td>
<td>13</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>% of children 0–5 years with pneumonia treated with appropriate antibiotics</td>
<td>9</td>
<td>60</td>
</tr>
<tr>
<td>Immunization</td>
<td>% of children 6–11 months received DPT-3 vaccine (180–365 days)</td>
<td>56</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>% of children 12–23 months received measles vaccine</td>
<td>61</td>
<td>90</td>
</tr>
<tr>
<td>Adolescents</td>
<td>% of adolescent girls consuming at least 50% of expected doses of IFA</td>
<td>TBD</td>
<td>50</td>
</tr>
</tbody>
</table>

* Data for the 100 TSU focus blocks.

Note: EmONC: emergency obstetric and neonatal care; F: facility delivery; H: home delivery; HBNC: home-based newborn care; IUCD: intrauterine contraceptive device; TL: tubal ligation; SAM: severe acute malnutrition; DPT-3: vaccine for diphtheria, pertussis, and tetanus.

Source: TSU.
Exhibit 7  *TSU Focus Areas*

![TSU Focus Areas Diagram](image)


Exhibit 8  *TSU Theory of Change, 2014*

![TSU Theory of Change Diagram](image)

Exhibit 9a  TSU Organizational Structure, 2013

Exhibit 9b  TSU District Teams, 2013

Source: TSU.
Exhibit 9c  **TSU Reporting and Government Collaboration Structure, 2013**

<table>
<thead>
<tr>
<th>Directorate</th>
<th>TSU</th>
<th>NHM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>State</strong></td>
<td>DG: Director general</td>
<td>Team leaders: M&amp;E, Community Process, Training, Technical Intervention</td>
</tr>
<tr>
<td></td>
<td>State Program Officers (Directors)</td>
<td>Team leaders: State specialists</td>
</tr>
<tr>
<td><strong>Zone/Division</strong></td>
<td>AD: Associate director</td>
<td>Zonal specialists: M&amp;E, Community, Technical</td>
</tr>
<tr>
<td><strong>District</strong></td>
<td>CMO: Chief medical officer</td>
<td>District specialists: M&amp;E, Community, Family Planning, Pneumonia &amp; Diarrhea, Nutrition</td>
</tr>
<tr>
<td></td>
<td>MOICs/HEOs/AROs</td>
<td>Block community supervisors, Nurse mentors, Community Resource Persons</td>
</tr>
<tr>
<td><strong>Block</strong></td>
<td>MOIC: Medical officer in charge</td>
<td>BPM: Block program manager</td>
</tr>
<tr>
<td></td>
<td>HEO: Health education officer</td>
<td>BPM: Block program manager</td>
</tr>
<tr>
<td></td>
<td>ARO: Assistant research officer</td>
<td>BCPM: Block community process manager</td>
</tr>
<tr>
<td></td>
<td>Medical officer, staff nurse</td>
<td>Block MCTS operator</td>
</tr>
<tr>
<td></td>
<td>ANM (sub-center)</td>
<td>ASHA Sangini (cluster level)</td>
</tr>
<tr>
<td></td>
<td>ASHA (village level)</td>
<td></td>
</tr>
</tbody>
</table>

Note: AWWs are under the Integrated Child Development Services Scheme, which is separate from the Directorate and NHM.

Source: TSU.
**Exhibit 10a** Nurse Mentoring Program Results, Sukshema Project, Karnataka

Knowledge on AMTSL (Staff nurses)

- Know correct drug
- Know when to give oxytocin
- Know all 3 components

Newborn resuscitation skills (Staff nurses)

- All 4 steps correct
- Check chest expansion properly
- Squeeze bag properly
- Position mask properly
- Position baby’s neck properly

108 PHCs in Bellary and Gulbarga districts were randomized for intervention and control arms. All SNs in all PHCs were interviewed on both the rounds on a set of knowledge questionnaires and skill demonstration.

**Exhibit 10b** Impact of Nurse Mentoring Program on System and Supply Chain, Sukshema Project, Karnataka

Referral system (PHCs)

- Feedback system
- Referral register
- Referral sites/contacts listed
- Case sheets being used

Availability of critical drugs (PHCs)

- Mg Sulphate
- Nifedipine
- Gentamicin
- Betamethasone
- Vitamin K

Data based on two rounds of facility audits of 108 PHCs in Bellary and Gulbarga districts which were randomized for intervention and control arms.
Exhibit 10c Percent of Births Resulting in Stillborn in PHC, Sukshema Project

Source: Sukshema Project, University of Manitoba.
Exhibit 11  M&E Team Structure and M&E Specialist Responsibilities, 2016

District M&E Specialist Requirements:
- PhD/MSc in demography or statistics, a management graduate, or MBBS
- 4–6 years experience in strategic planning, M&E, and operational research
- Experience with managing implementation of M&E systems for large-scale projects
- Ability to use statistical packages such as STATA, SPSS, and GIS for data analysis and sharing feedback with program managers
- Good presentation and communication skills
- Ability to supervise and manage a team

District M&E Specialist Responsibilities:
- Support the HMIS/MCTS/HRIS interventions and TSU Monitoring, Learning, and Evaluation activities at the district level
- Coordinate with other TSU members at the district level
- Support the district CMO and other program officers
- Manage government data (e.g., HMIS, MCTC) and source documents

Source: TSU.
**Exhibit 12  RMNCH+A Dashboards: Thematic Areas and Sample Dashboard**

♦ Reproductive Health Dashboard
♦ Maternal Health Dashboards
  - Antenatal care
  - Institutional delivery
  - Postnatal care
♦ Neonatal Health Dashboard
♦ Child Health Dashboards
  - Pneumonia and diarrhea
  - Immunization
  - Nutrition

Institutional Delivery Dashboard: Sitapur District

Source: TSU.
Exhibit 13  Example of Estimated Dashboard Impact

RESULTS FROM USAGE – EXAMPLES FROM THE FIELD

Barabanki: Oct-Dec, 2015
- **Outcome**: Institutional delivery increased from 41% to 49%
- **Gaps Identified**: Lack of SBA trained staff
- **Action Planned** in Oct ’15: Training of ANMs in SBA
- **Action taken**: 1” batch of ANMs were successfully trained

Bareilly: Oct-Nov ’15
- **Outcome**: Early registration of pregnant women increased from 43% to 51% in Bhojpur block in Bareilly
- **Gaps Identified**: Poor line listing of women at ASHA level and lack of counselling on early registration
- **Action Planned**: Counselling at VHINDs and hands on support to ASHAs for better planning
- **Action taken**: Support provided and instructed ASHAs to counsel women on importance of early registration in Cluster Meetings

Note: Outcomes observed cannot be attributed solely to dashboard use; they could also be the result of other factors and/or interventions.
Source: TSU.

Exhibit 14a Cover of VHIR

Source: Photography taken in field by GHD case writers.
**Exhibit 14b List of Expected Beneficiaries and Services, or “Due List,” from VHIR**

<table>
<thead>
<tr>
<th>Remarks</th>
<th>Reason for not being able to provide services (XO/XR/XX/Others)</th>
<th>Put a (✓/✗) in case services are provided</th>
<th>Date of birth (for children)/Age in case of pregnant woman/midwife</th>
<th>Details of due services</th>
<th>Father’s/Husband’s Name</th>
<th>Name of expected beneficiary</th>
<th>Block/Sub Centre</th>
<th>Date</th>
<th>Village</th>
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</thead>
<tbody>
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</tr>
</tbody>
</table>

Page 34
### Exhibit 14c ASHA Activities and Incentives of TSU Focus, 2016–2018 /VHIR Chart

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>J.S.Y.</td>
<td>H.B.N.C.</td>
<td>N.R.C.</td>
<td>S.N.C.U.</td>
<td>VHND</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>19</td>
<td>19</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>150</td>
<td>100</td>
<td>50</td>
<td>150</td>
<td>200</td>
<td>1,000</td>
</tr>
</tbody>
</table>

#### Regular Vaccination Programme (cont.)
- For encouraging people to bring children on Vaccination Day (per session)
- For complete immunization of children in the first year
- For complete immunization of children in the second year
- Female sterilization
- On completion of treatment of new patients of TB (Category 1)
- On completion of treatment of new patients of TB (Category 2)
- For encouraging couples to keep a gap of two years for first child after marriage
- For encouraging couples to keep a gap of three years between the first and the second child
- For encouraging couple to get PPIUCD after childbirth and for taking to hospital
- On completion of treatment of new patients of TB (Category 1)
- On completion of treatment of new patients of TB (Category 2)
- For completion of treatment of MDR patients (IP-₹2,000 CP-₹3,000)
### Leprosy

- For completion of treatment of MDR patients (IP $\frac{2}{3}$ 2000 CP $\frac{1}{3}$ 2000)
- Identification of leprosy patients
- Pauci-bacillary (Complete treatment)
- Multibacillary (Complete treatment)
- Blood Platelets or Rapid Diagnostic test

### Malaria

- On getting complete treatment for confirmed case of malaria

### Black Fever

- For identification, referral and getting complete treatment of black fever patients

### Lymphatic Filariasis

- For making list of all lymphatic and hydrocele cases

### Encephalitis

- For referral of AES/JE case to nearest Community Healthcare Centre/District Hospital/Medical College

<table>
<thead>
<tr>
<th></th>
<th>Leprosy</th>
<th>Malaria</th>
<th>Black Fever</th>
<th>Lymphatic Filariasis</th>
<th>Encephalitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>For every case of death registration and obtaining certificate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Jagged border at the base of each table indicates that only an excerpt of each section has been included and the table continues. NRC: Nutrition Rehabilitation Centre; VHND = Village Health and Nutrition Day

**Source:** TSU.
Exhibit 15  CRP Training Agenda

♦ Day 1
  o  Introduction, expectations, pre-training assessment, training program overview and objectives
  o  TSU goals and objectives, theory of change
  o  Government health system and key government programs
♦ Day 2
  o  Components of the National Health Mission and RMNCH+A
  o  Key reproductive health interventions and services: family planning, safe abortion
♦ Day 3
  o  Key maternal health interventions and services
  o  Key newborn health interventions and services
♦ Day 4
  o  Key child health interventions and services
  o  Key adolescent health interventions and services
♦ Day 5
  o  Roles and responsibilities of frontline health workers and CRPs
  o  Introduction of tools and job aids: AAA forum, home-based newborn care, VHIR
  o  Orientation on field visit
♦ Days 6–11: Fieldwork
  o  CHC and PHC visits, meetings with government and TSU block and district personnel
  o  Day with ANM to understand her roles and responsibilities
  o  Day with ASHA to understand her roles and responsibilities
  o  Day with AWW to understand her roles and responsibilities
  o  Day with the ANM, ASHA, and AWW to organize sub-center forum meeting
  o  Meeting to consolidate lessons from fieldwork
♦ Day 12
  o  Fieldwork experience sharing
  o  Gender in health
♦ Day 13
  o  ASHAs in community outreach: reaching the unreached, home visits, VHNDs, village health planning
♦ Day 14
  o  ASHA support structure: AAA forum, sub-center forum
  o  ASHA process for reporting grievances
  o  ASHA resource center, block-level meetings, Village Health Sanitation & Nutrition Committees
  o  ASHA mentoring and supportive supervision
  o  Communication and counseling skills, leadership
♦ Day 15
  o  Tools and job aids for frontline health workers, especially ASHAs
  o  Introduction and practice: VHIR and the enumeration tracking tool (ETT), home-based newborn care tool, and communication tools
♦ Day 16
  o  Introduction and practice: community-based monitoring
  o  Planning for next three months, post-training assessment

Source: Adapted from the TSU.
## Exhibit 16  Responsibilities of the Community Resource Person, Block Community Specialist, and Nurse Mentors

<table>
<thead>
<tr>
<th>TSU Role</th>
<th>Responsibilities</th>
</tr>
</thead>
</table>
| Community Resource Person (CRP)       | - Support ASHAs in use of tools, job aids, and methods  
- Promote coordination among ASHAs, ANMs, and AWWs  
- Capacity building of frontline workers in effective functioning, particularly in reporting  
- Work with local leaders, especially on community-based monitoring |
| Block Community Specialist (BCS)      | - Supportive supervision and hand-holding support to ASHA Sangini and CRPs to enhance capacity of ASHAs  
- Provide support for review, implementation, and monitoring of ASHA Sangini, ASHAs, and community process activities  
- Facilitate gap analysis on social and behavior change communication, orientation on job aids, and introduction of need-based job aids for enhancing the capacity and efficiency of frontline health workers  
- Facilitate monthly ASHA meetings  
- Coordinate with other government departments such as water and sanitation, education, etc. for intersectoral coordination  
- Support ASHA Sangini and CRP to strengthen sub-center-level forum for effective coordination of ASHAs, ANMs, and AWWs  
- Facilitate development and strengthening of block-level feedback mechanism to be taken forward through ASHA mentoring group for policy decisions  
- Facilitate operationalization of ASHA redressal cell at block level  
- Support block Medical Officer in effective implementation of ASHA, village health and nutrition committees, and other related block community process activities  
- Regular field visits to supervise, document, and report on activities  
- Support any other tasks assigned by district/zonal level supervisors |
| Nurse Mentor                          | - Improve the quality of available RMNCH+A services  
- Activate the “missing” RMNCH+A services as per the district health action plan (DHAP)  
- Improve the quality of newly activated services  
- Support the MOIC in implementing the activation plan  
- Improve the quality of services in newly activated delivery points  
- Enhance the clinical skills/practices of ANMs, including identification and tracking of high-risk pregnancies  
- Support CRPs in enhancing select skills of ASHAs  
- Support the quality and use of HMIS in delivery points |

Source: Adapted from TSU.
### Exhibit 17  Nutrition Project Indicators, Targets, and Progress

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Target (March 2019)</th>
<th>Community Behavior Tracking Survey (CBTS) Indicators</th>
<th>CBTS Outcomes 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>% women who consume IFA for 90+ days during pregnancy</td>
<td>61%</td>
<td>Proportion of women who consumed at least 100 IFA during pregnancy</td>
<td>1.7%</td>
</tr>
<tr>
<td>Early breastfeeding (children breastfed within the first hour of birth)</td>
<td>93%</td>
<td>Proportion of children born in the last two months who breastfed within one hour of birth</td>
<td>38.5%</td>
</tr>
<tr>
<td>Exclusive breastfeeding (children exclusively breastfed for six months)</td>
<td>92%</td>
<td>Proportion of infants 0–5 months of age who are fed exclusively with breast milk</td>
<td>23.4%</td>
</tr>
<tr>
<td>% children fed with three infant and young children feeding practices</td>
<td>69%</td>
<td>Proportion of breastfed children 6–23 months of age who receive a minimum acceptable diet (apart from breast milk)</td>
<td>8.2%</td>
</tr>
<tr>
<td>% children received vitamin A supplements</td>
<td>86%</td>
<td>Children 6–23 months received micronutrient supplementation vitamin A in the past six months (%)</td>
<td>38.4%</td>
</tr>
<tr>
<td>% children with diarrhea given zinc supplements</td>
<td>15%</td>
<td>Children 0–23 months with diarrhea who received oral rehydration solution and Zinc</td>
<td>10%</td>
</tr>
<tr>
<td>% households consuming iodized salt</td>
<td>52%</td>
<td>% households consuming iodized salt</td>
<td>69%</td>
</tr>
<tr>
<td>% children under five with severe acute malnutrition (SAM) who were appropriately treated</td>
<td>40%</td>
<td>% of children 0–23 months with SAM referred to PHC, CHC, or nutrition rehabilitation center for treatment</td>
<td>23.7%</td>
</tr>
</tbody>
</table>

Source: TSU.
Exhibit 18 *TSU Progress Against Focus Indicators, CBTS Data for the 20 Worst-Performing TSU Focus Blocks*

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Maternal</td>
<td>♦ Recently delivered women who had the delivery at a health facility (0–729 days)</td>
<td>45.0</td>
<td>10,283</td>
<td>53.0</td>
</tr>
<tr>
<td></td>
<td>♦ Recently delivered women who received full ANC services, had institutional delivery, and received follow-up visit by ASHA at home within 24 hours after returning from the facility (0–60 days)</td>
<td>0.6</td>
<td>10,283</td>
<td>1.9</td>
</tr>
<tr>
<td></td>
<td>♦ Recently delivered women with major direct obstetric complications treated at CEmOC (0–60 days)</td>
<td>20.3</td>
<td>3,417</td>
<td>32.0</td>
</tr>
<tr>
<td>Newborn</td>
<td>♦ Newborns who did not receive any application at the stump of their cord (excluding CHX) (0–60 days)</td>
<td>37.2</td>
<td>10,029</td>
<td>36.9</td>
</tr>
<tr>
<td></td>
<td>♦ Newborns received initiation of breastfeeding within one hour of delivery (0–60 days)</td>
<td>19.5</td>
<td>10,029</td>
<td>30.5</td>
</tr>
<tr>
<td></td>
<td>♦ Weak newborns identified by ASHA or ANM (0–60 days)</td>
<td>9.2</td>
<td>10,029</td>
<td>6.7</td>
</tr>
<tr>
<td></td>
<td>♦ Newborns who were initiated skin-to-skin contact within 30 minutes of birth among low-birth-weight newborns (0–60 days)</td>
<td>N/A</td>
<td>N/A</td>
<td>21.5</td>
</tr>
<tr>
<td>Family Planning (FP)</td>
<td>♦ Recently delivered mothers who are using IUCD or TL for at least six months (181–364 days)</td>
<td>54.1</td>
<td>61</td>
<td>47.3</td>
</tr>
<tr>
<td></td>
<td>♦ Recently delivered women who prefer to use specific modern contraceptive method in the next 6 months (0–729 days)</td>
<td>N/A</td>
<td>N/A</td>
<td>31.2</td>
</tr>
<tr>
<td></td>
<td>♦ Women with unmet need for FP (0–729 days)</td>
<td>43.8</td>
<td>40,321</td>
<td>50.0</td>
</tr>
<tr>
<td>Category</td>
<td>Measure</td>
<td>G</td>
<td>N</td>
<td>CHX</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>-----</td>
</tr>
<tr>
<td>GHD RMNCH in Uttar Pradesh</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recently delivered mothers</td>
<td>who experienced complications due to IUCD/TL (0–729 days)</td>
<td>12.8</td>
<td>290</td>
<td>31.1</td>
</tr>
<tr>
<td>FP acceptors received FP</td>
<td>follow-up care within one month after acceptance (0–729 days)</td>
<td>45.5</td>
<td>290</td>
<td>34.5</td>
</tr>
<tr>
<td>Child Nutrition</td>
<td>Children 0–5 months who are currently exclusively breastfed (0–180 days)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Children 6–23 months currently receiving age-appropriate complementary</td>
<td>0.0</td>
<td>20,434</td>
<td>2.7</td>
</tr>
<tr>
<td></td>
<td>feeding (in frequency and variety plus breastfed) (180–729 days)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Children 0–23 months identified with SAM by health workers/frontline</td>
<td>N/A</td>
<td>N/A</td>
<td>1.6</td>
</tr>
<tr>
<td>Prevention &amp; Management of</td>
<td>Children 0–23 months with diarrhea who received ORS and Zinc (0–729</td>
<td>8.1</td>
<td>15,535</td>
<td>5.1</td>
</tr>
<tr>
<td>Childhood Illnesses</td>
<td>days)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Children 0–23 months with suspected pneumonia who received an antibiotic</td>
<td>64.9</td>
<td>5,641</td>
<td>58.5</td>
</tr>
<tr>
<td></td>
<td>(0–729 days)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immunization</td>
<td>Infant 6–11 months who received DPT-3 vaccine (180–365 days)</td>
<td>35.7</td>
<td>10,012</td>
<td>45.8</td>
</tr>
<tr>
<td></td>
<td>Children 12–23 months who received measles vaccine (365–729 days)</td>
<td>54.3</td>
<td>10,422</td>
<td>65.8</td>
</tr>
<tr>
<td>Adolescents</td>
<td>TSU decided not to focus on adolescent indicators</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

* Data for the 20 worst-performing TSU focus blocks.

Note: N/A: not available; CHX: Chlorhexidine, antiseptic in cord care; CEmOC: comprehensive emergency obstetric care facility; IUCD: intrauterine contraceptive device; TL: tubal ligation; DPT-3: vaccine for diphtheria, pertussis, and tetanus; SAM: severe acute malnutrition; ORS: oral rehydration solution.

Source: TSU.
Exhibit 19  *Surgo Foundation Priority Indicators*

- % of women with major direct obstetric complications treated at EmONC facility
- % of newborns receiving clean cord care, adequate thermal care
- % of newborns receiving early initiation of breastfeeding
- % of neonatal PSBI (suspected sepsis) cases initiated treatment with antibiotics as per protocol
- % of mothers using IUD or TL by six months after delivery
- % of FP acceptors experiencing complications due to FP procedure
- % of FP acceptors received FP follow-up care
- % of children 12–23 months receiving age-appropriate complimentary feeding
- % of children 0–5 years severely wasted and severely stunted detected with SAM who receive therapeutic feeding
- % of children 0–5 years with diarrhea treated with zinc and ORS
- % of children 0–5 years with pneumonia treated with appropriate antibiotics

Note: EmONC: emergency obstetric and neonatal care; PSBI: possible serious bacterial infection; IUD: intrauterine device; TL: tubal ligation; FP: family planning; DPT-3: vaccine for diphtheria, pertussis, and tetanus; SAM: severe acute malnutrition; ORS: oral rehydration solution.
Exhibit 20  *TSU Organizational Chart, Fall 2016*

Co-located support teams at different levels

Source: TSU.
Appendix 1 *Common Acronyms and Abbreviations*

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANC</td>
<td>Antenatal care</td>
</tr>
<tr>
<td>ANM</td>
<td>Auxiliary nurse midwife</td>
</tr>
<tr>
<td>ASHA</td>
<td>Accredited social health activist</td>
</tr>
<tr>
<td>AWW</td>
<td>Anganwadi worker</td>
</tr>
<tr>
<td>CBTS</td>
<td>Community Behavior Tracking Survey</td>
</tr>
<tr>
<td>CHAI</td>
<td>Clinton Health Access Initiative</td>
</tr>
<tr>
<td>CHC</td>
<td>Community health center</td>
</tr>
<tr>
<td>CMO</td>
<td>Chief medical officer</td>
</tr>
<tr>
<td>CRP</td>
<td>Community resource person</td>
</tr>
<tr>
<td>HMIS</td>
<td>Health Management Information System</td>
</tr>
<tr>
<td>HPD</td>
<td>High-priority district</td>
</tr>
<tr>
<td>IAS</td>
<td>Indian Administrative Service</td>
</tr>
<tr>
<td>IFA</td>
<td>Iron and folic acid</td>
</tr>
<tr>
<td>IHAT</td>
<td>India Health Action Trust</td>
</tr>
<tr>
<td>INR</td>
<td>Indian rupee</td>
</tr>
<tr>
<td>M&amp;E</td>
<td>Monitoring and evaluation</td>
</tr>
<tr>
<td>MNCH</td>
<td>Maternal, neonatal, and child health</td>
</tr>
<tr>
<td>MOIC</td>
<td>Medical officer in charge</td>
</tr>
<tr>
<td>NHM</td>
<td>National Health Mission</td>
</tr>
<tr>
<td>PHC</td>
<td>Primary health center</td>
</tr>
<tr>
<td>RFS</td>
<td>Rolling Facility Survey</td>
</tr>
<tr>
<td>RMNCH+A</td>
<td>Reproductive, Maternal, Newborn, Child, and Adolescent Health program</td>
</tr>
<tr>
<td>TSU</td>
<td>Technical Support Unit</td>
</tr>
<tr>
<td>USD</td>
<td>United States dollar</td>
</tr>
<tr>
<td>VHIR</td>
<td>Village Health Index Register</td>
</tr>
<tr>
<td>VHND</td>
<td>Village Health Nutrition Day</td>
</tr>
</tbody>
</table>
Appendix 2 Bios of Key Actors

Ramesh Banadakoppa, PhD

B.M. Ramesh is a social scientist, a demographer, and Assistant Professor at the University of Manitoba, Canada. Ramesh has 28 years of experience in teaching, research, program implementation, and monitoring and evaluation in the fields of demography, HIV/AIDS, and maternal, neonatal, and child health. He was one of the first coordinators of the National Family Health Survey (1992-93), one of the largest household surveys in India. He has pioneered several tools and methods for evidence-based planning, such as geographical mapping of high-risk groups, management information systems for peer educators and program managers, and polling booth surveys to measure program outcomes. Ramesh has led strategy development and staff recruitment and training for the Technical Support Unit (TSU) in Uttar Pradesh. He holds a PhD in demography from Bombay University, India.

Photo source, bio adapted from: http://www.ihat.in/ourteam/dr-b-m-ramesh/

Vikas Gothalwal

Vikas Gothalwal is an Indian Administrative Service Officer (2003, Uttar Pradesh state cadre). His primary responsibilities as executive director of the Technical Support Unit (TSU) in Uttar Pradesh include: supporting the government of Uttar Pradesh to improve reproductive, maternal and child health in line with the MDGs; liaising with the state government, NHM, and other health partners in the state to create a common, data-driven coordination and review framework; catalyzing key initiatives with state support, such as the launch of “Year of Mother and Child Health” to improve public health services for maternal and child health; driving systemic changes such as supply chain strengthening; and leading development of a scale-up and transition plan for improving government capacity, with a focus on sustainability and self-reliance. Prior to joining the TSU, Gothalwal was Mission Director for the government of Uttar Pradesh’s Skill Development Mission, a program aimed at building up skills of school dropouts from class 5–12.

Photo source, bio adapted from: http://www.safemothersandnewborns.org/participant/-/asset_publisher/pCNeMaUEIrqI/content/vikas-gothalwal

James Blanchard, MD, MPH, PhD

James Blanchard is an epidemiologist and public health specialist with a focus on global health. His research focuses on how the characteristics of individuals, communities, and large populations contribute to the local and global distribution of communicable and non-communicable diseases. Since the early 2000s, he has also provided leadership to the design and implementation of large public health programs related to HIV/AIDS and maternal, neonatal, and child health in India (including the TSU in Uttar Pradesh), other Asian countries, and Africa. He is actively engaged with policy makers and public health leaders to translate scientific knowledge and
approaches to improve the effectiveness and efficiency of public health programs, with an emphasis on improving the health of disadvantaged populations. Blanchard has an MD from the University of Manitoba and an MPH and PhD in Epidemiology from the Johns Hopkins University.

Photo source, bio adapted from: http://umanitoba.ca/faculties/health_sciences/medicine/units/chs/faculty_and_staff/fac_blanchard.html

Aparajita Ramakrishnan

Aparajita Ramakrishnan began working for the Gates Foundation in 2003. She leads its Uttar Pradesh portfolio for health (maternal, neonatal, child), nutrition, family planning, agriculture, and financial inclusion services. She also oversees the India Country Office’s new efforts in primary health care. Previously, Ramakrishnan was the Deputy Director, Strategy, Planning and Management for the foundation and helped craft the India Country Office’s first formal strategy. She was one of the first team members of the Avahan program and played many roles, including program manager of the Karnataka and the Northeast programs. In addition, Ramakrishnan led the transition of Avahan from the Gates Foundation to the Government of India. Previously, Ramakrishnan supported India’s National AIDS Control Organization to support the scale-up of high-risk group interventions. Prior to joining the Gates Foundation, Ramakrishnan was a consultant at McKinsey & Company, serving media, retail, and telecommunications clients. She has worked in corporate strategy, mergers and acquisitions, technology, consumer products, and research and development.

Photo source, bio adapted from: https://www.impatientoptimists.org/Authors/R/Aparajita-Ramakrishnan

Mrunal Shetye, MD, MPH

Mrunal Shetye works with the Gates Foundation’s Uttar Pradesh program, leading relationships with the government and the National Health Mission. Shetye has over 15 years of experience designing and implementing large-scale public health programs in India. Prior to joining the foundation, he oversaw the University of Manitoba’s Karnataka Health Promotion Trust HIV/AIDS care and support program, Spruha. He also led the launched and scale up of several KHPT initiatives, including HIV prevention and STI control programs for high-risk groups in rural and urban areas. As a member of state and national-level committees, including the Technical Resource Group on Care, he had contributed to the formulation of national guidelines, academic curricula, and training modules. He has worked with the WHO Polio Eradication Program and for India’s National AIDS Research Institute. Shetye is an assistant professor at the University of Manitoba. He has a Masters in Public Health from the Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum, and an MD from B.J. Medical College, Pune.

Photo and bio source: https://www.impatientoptimists.org/Authors/S/Mrunal-Shetye
**Sema Sgaier, MSc, PhD**

Sema Sgaier is cofounder and executive director of Surgo Foundation, where she leads a multidisciplinary team of data scientists, behavioral scientists, technologists, and development experts in solving complex human development problems. She has led several large-scale programs, as well as research and evaluation projects, and has worked with governments in India and Africa on public health policy and large-scale delivery. Prior to joining Surgo Foundation, Sgaier held several roles at the Gates Foundation. She led a portfolio on voluntary medical male circumcision for HIV prevention across eastern and southern Africa and, as part of the foundation’s India Country Office, she led the scale-up of the foundation’s HIV prevention program (Avahan) in several states, managed its transition to the government of India, and developed data platforms for decision making. Sgaier was selected as a Rising Talent by the Women’s Forum for the Economy and Society. She serves on the board of the Gates Foundation’s Alumni Network.

*Photo source:* http://surgofoundation.org/sema-sgaier/

*Bio source:* https://www.hsph.harvard.edu/sema-sgaier/

**Arun Kumar Sinha**

Arun Kumar Sinha is the principal secretary of health and family welfare, Uttar Pradesh, and a member of the Indian Administrative Services (inducted in 1983). Prior to serving in Uttar Pradesh’s health department, he held secretarial positions in India’s national Planning Department, Ministry of Labour and Employment, Ministry of Heavy Industries & Public Enterprises, and Housing and Urban Development, as well as multiple state- and district-level leadership roles. Sinha has advanced degrees in law, civil engineering, and business administration.


**Alok Kumar**

Alok Kumar is the mission director for the National Health Mission, Uttar Pradesh, and executive director of the State Innovations in Family Planning Services Project Agency. He is an Indian Administrative Services officer (1998) and has a wide range of administrative experience. Previously, Kumar served as principal staff officer to the chief secretary of Uttar Pradesh and, before that, in various roles related to district administration and land revenue management. He has a Bachelor of Technology in Civil Engineering and is trained in community mobilization and participatory management.

*Photo and bio sources:* http://www.huffingtonpost.in/author/alok-kumar/; file:///Users/AMM/Downloads/Alok%20Kumar.html
References


