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## LEADERSHIP AND MANAGEMENT

## Task shifting: A key strategy in the multipronged approach to reduce maternal mortality in India

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## ABSTRACT

Task shifting from specialist to nonspecialist doctors (NSDs) is an important strategy that has been implemented in India to overcome the critical shortage of healthcare workers by using the human resources available to serve the vast population, particularly in rural areas. A competency-based training program in comprehensive emergency obstetric care was implemented to train and certify NSDs. Trained NSDs were able to provide key services in maternal health, which contribute toward reductions in maternal morbidity and mortality. The present article provides an overview of the maternal health challenges, shares important steps in program implementation, and shows how challenges can be overcome. The lessons learned from this experience contribute to understanding how task shifting can be used to address large-scale public health issues in low-resource countries and in particular solutions to address maternal health issues.

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## 1. Overview of maternal healthcare challenges in India

India, with a population of 1.2 billion, is the second most populous nation in the world [1]. Significant differences between richer and poorer nations exist in the availability of healthcare workers as a percentage of the population [2]. If healthcare worker density levels are insufficient or there is a critical shortage, it is unlikely that the population will receive high coverage of essential medical interventions. Given that healthcare worker numbers and quality of services are positively associated with maternal survival, critical shortages affect coverage and quality of service delivery [3].

In India, access to health care remains a challenge given that 69% of the population resides in rural areas and there is a critical shortage of healthcare workers. The 2006 family welfare statistics showed that 49% of community health centers (CHCs) and 29% of first referral units (FRUs) did not have an obstetrician; and 63% of CHCs and 31% of FRUs did not have an anesthetist [4]. These shortages affected delivery of health care as only approximately 47% of deliveries were conducted by health personnel, only 39% of women delivered in a health facility, and 58% of mothers did not receive postnatal care within two months of delivery [5]. In addition, 12% of CHCs did not have an operating theatre, 69% did not have a separate aseptic labor room, and 90% did not have regular blood supplies [4].

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Although services were affected by a critical shortage of specialists, 87% of primary health centers had a nonspecialist doctor (NSD) [6,7]—a legally qualified and licensed practitioner of medicine. However, the policy of the Government of India (GOI) encouraged only qualified postgraduate obstetricians to perform cesarean deliveries. NSDs, who obtain a basic medical degree after 5.5 years of medical education, were unable to perform cesarean deliveries or any other emergency surgery [8]. Furthermore, confidence in the public sector to deliver health services was abysmally low owing to the quality of services and lack of availability of a nearby facility [5]. Therefore, approximately 65% of all households sought health care from the private medical sector. Critical shortages in personnel, lack of quality, and lack of infrastructure contributed to high dependency on the private sector; a high maternal mortality ratio (MMR) of 301 per 100 000 live births; and hemorrhage, anemia, sepsis, abortion-related complications, and hypertensive disorders, which are the leading causes of maternal death and all preventable through simple measures [9].

## 2. Impact of the National Rural Health Mission

The GOI launched the National Rural Health Mission (NRHM) in 2005. Its objectives included enhanced focus on reproductive and child health, augmented human and financial resources and local flexibility, focus on health systems strengthening, and emphasis on decentralization [10]. The key strategies that were implemented under the NRHM had a significant impact on improving service delivery.

The years following implementation of the NRHM showed improvements as reported in the Rural Health Statistics 2014 [11] and Health and Family Welfare Statistics 2013 [6]. The health infrastructure comprising sub-health centers, primary health centers (PHCs), and CHCs increased by 4.3%, 7.6%, and 6.0%, respectively. Human resources in terms of doctors at PHCs, and nursing staff and obstetrician – gynecologists (ob/gyns) at CHCs increased by 35%, 120%, and 6%, respectively, thereby improving the presence of staff to 109%, 102%, and 37% of the sanctioned staff numbers at these locations. In addition, 83% of deliveries were attended by health personnel; postnatal care of women within 48 hours of delivery increased to 67% of the total women who delivered; output from medical colleges increased from 30 290 to 51 979 graduates; and availability of blood storage facilities at CHCs increased to 15%. An operating theatre and aseptic labor room were available in 82% and 92% of CHCs, respectively. Some 93% of CHCs were functioning 24 hours a day, seven days a week and 42% of FRUs had a blood storage facility—these facilities were also operational 24–7 and were able to provide healthcare services including cesarean delivery. Janani Shishu Suraksha Karyakram—a scheme to offer cashless maternity services to mothers—and training programs in comprehensive emergency obstetric care (CEmOC) to increase trained nonspecialist medical doctors at 2000 first referral units, plus 24–7 PHCs and CHCs, dramatically increased institutional deliveries from a mere 0.7 million in 2005–06 to 16.7 million in 2012–13.

The national MMR reduced to 178 per 100 000 live births in 2013 [12]. However, India has to accelerate the pace of decline before it will meet Millennium Development Goal 5, which sets out to reduce MMR to 150 by 2015 [13], or the national 12th Five Year Plan of India, which sets out to reduce MMR to 100 by 2017 [14].

### 3. Task shifting initiative to train nonspecialist doctors

Although the GOI initiated several steps to bring about a positive change in the health indicators of India, the present article focuses on task shifting. Task shifting describes a process of delegation whereby tasks are moved, where appropriate, to less specialized health workers. By reorganizing the workforce in this way, task shifting can make more efficient use of the human resources currently available [15].

Task shifting or sharing has been highlighted as an important strategy to optimize health worker performance in resource-poor settings [16] and provide the right mix of skills required to undertake the activities necessary for the service [17]. Task shifting through training, certification, and support frees up specialists to provide more complex care and reduces the patient load on higher centers involved in critical care of patients.

In 2006, the GOI initiated task shifting through training of NSDs in CEmOC as a way forward to operationalize its FRUs, CHCs, and 24–7 PHCs to allow them to provide key services in maternal health that were otherwise dependent on specialists.

### 4. Broad CEmOC program implementation goal

The overall goal of the program was to operationalize health facilities in underserved areas by ensuring increased availability of NSDs who would be able to provide high-quality CEmOC and contribute toward the reduction of maternal mortality and morbidity.

### 5. Program implementation (2006–2013)

#### 5.1. Task shifting policy

The CEmOC task shifting policy, training curriculum for trainers and trainees, and the operational plan were approved for implementation at the national level. NSDs who successfully completed the CEmOC competency-based certificate training program were allowed to manage emergencies including cesarean deliveries at FRUs. To create an enabling environment, FRUs were equipped with an operating theatre, blood storage bank, nursing staff, and an anesthesiologist.

#### 5.2. Building partnerships

Task shifting from specialists to NSDs required that specialists were in complete agreement with the GOI's vision of improving maternal health outcomes in India. To take the program to scale, the GOI developed partnerships with the Federation of Obstetric and Gynaecological Societies of India (FOGSI)—one of the world's largest bodies of ob/gyn specialists—and the Indian College of Obstetricians and Gynaecologists (ICOG)—the academic wing of FOGSI. Together this strong partnership designed the curriculum for master trainers and trainees and developed the certification, implementation, mentoring, and monitoring processes for program scale-up across India.

#### 5.3. Setting up a program management unit

GOI and FOGSI agreed that for task shifting to be successful it was important that the program planning, management, implementation, and financial processes were followed according to the operational plan by all those involved in training, certification, implementing, mentoring, and monitoring. Instead of doing these activities themselves, FOGSI and GOI partnered with the Avni Health Foundation (AVNI)—an organization of professionals specializing in program management and scale-up. AVNI designed the operational plan; defined the roles and responsibilities; fixed the certification, financial, and program reporting norms; and implemented a real-time web-based program management tool to track the progress of the program. AVNI provided operational and troubleshooting support on a day-to-day basis, ensured appropriate communications with all the stakeholders, and maintained databases of trainers, trainees, logbooks, certification, documentation, and financials across the 34 training centers located in 21 States of India.

#### 5.4. Nodal training sites

Nodal training sites for developing ob/gyn master trainers were set up in leading medical colleges. All trainers from the nodal centers were trained in standardized modules of clinical skills and the program also addressed the softer issues such as communication skills, managing difficult participants, time management, supportive supervision, monitoring, and mentoring.

#### 5.5. Set up tertiary training sites

Housed within the medical college, one to two sites per State were strengthened by training ob/gyn master trainers, providing them with training infrastructure, anatomical models, drills for implementing best practices of training, and administrative support manpower for record keeping and smooth program implementation. Trainers from the nodal centers visited the tertiary sites to mentor them and provide technical updates.

#### 5.6. Set up district hospital training sites

In phase one, eight district sites with 1500–2000 deliveries per year, and those that had motivated ob/gyns interested in the program were selected. In phase two, more ob/gyns from the same facility and subsequently from newer facilities were selected. A tertiary center master trainer visited each of these sites before and during the training program to prepare the sites to receive the trainees, to conduct certification exams, and for mentoring and monitoring.

#### 5.7. Curriculum and course framework for task shifting from specialists to NSDs

The curriculum was 16 weeks long, with six weeks conducted at the tertiary training centers where illustrated lectures, role plays, demonstrations and practice on anatomical models, and emergency drills were

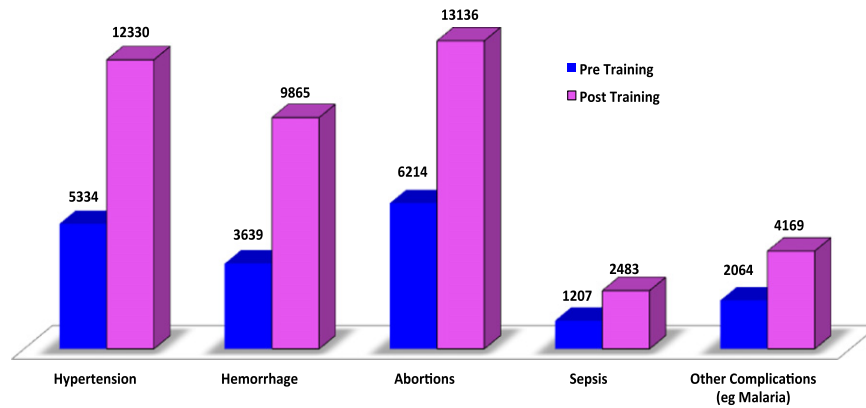


Fig. 1. Number of cases identified, managed, and treated at the facilities by nonspecialist doctors trained during 2006–2013.

conducted. Broadly the curriculum covered early recognition of obstetric emergencies and their management, administration of oxytocic drugs and parenteral anticonvulsants, normal childbirth and newborn care, prevention of infection, intravenous therapy including fluid replacement and blood transfusion, emergency medical treatment (sepsis, eclampsia, severe anemia), emergency surgical procedures, contraception, postpartum care, safe abortion, resuscitation of newborns, prenatal diagnostic techniques, and acts governing medical termination of pregnancy. Nine weeks of self-directed clinical practice at a district training site was conducted. Each NSD had to maintain a logbook, and independently and under supportive supervision manage 120 normal deliveries, 15 cesarean deliveries, 7 vacuum extractions, 5 forceps delivery, 50 episiotomy/perineal tear repairs, and 10/15 induction/augmentation of labor. In the final week the NSD returned back to the tertiary training center for further mentoring, coaching, and examination.

5.8. Three-tier certification process

Tier I was conducted during the first six weeks, tier II was conducted during the following nine weeks, and tier III was completed during the final week. Objective Structured Clinical Examination (OSCE) was used in tier III to evaluate trainees in clinical skill performance and competence. NSDs had to obtain a score of 85% or higher in all three tiers to qualify for certification. Course duration for NSDs who scored less than the qualifying scores was extended by 1–2 weeks for extra guidance and to ensure acquisition of skills following which tier III was repeated.

5.9. Operational plan

A detailed operational plan (OP) was framed to ensure successful implementation of the task shifting program. The OP gave guidelines on the flow of the program implementation; roles and responsibilities

of all the stake holders; selection criteria for NSDs; identification of nodal centers, tertiary centers, and district centers and their trainers; certification norms and process; batch sizes and placement of NSDs at training sites; monitoring, evaluation, and reporting norms; and program budget norms.

6. Program achievements (2006–2013)

Four nodal master training centers, 34 tertiary training centers with 221 master trainers, and 253 district hospital training sites with 385 master trainers spread across 21 States of the country were set up. A total of 1500 NSDs successfully completed the 16-week CEMOC competency-based training program.

Analysis of 178 trainee records from 12 States comparing the one-year pre-training and post-training achievements have shown that:

- (1) Availability of trained NSDs improved antenatal care coverage by 43%, 44%, and 58% during the first, second, and third trimesters, respectively. Identification, management, treatment, and referral of hypertension, hemorrhage, abortions, sepsis, and miscellaneous cases increased (Fig. 1), contributing to the overall decline in maternal deaths by approximately 50% at these facilities.
- (2) Trained NSDs were able to identify complications and ensure timely referral (Fig. 2).
- (3) The number of women referred for treatment as a percentage of total antenatal care in the respective trimesters showed a decline in the first trimester and an increase in the second and third trimesters. This is because the trained NSDs are able to manage the cases at the facility and ensure proper referral (Fig. 3).
- (4) Absolute numbers of complications managed by the NSDs increased. All percentages increased when specific complications were looked at individually (Fig. 4).

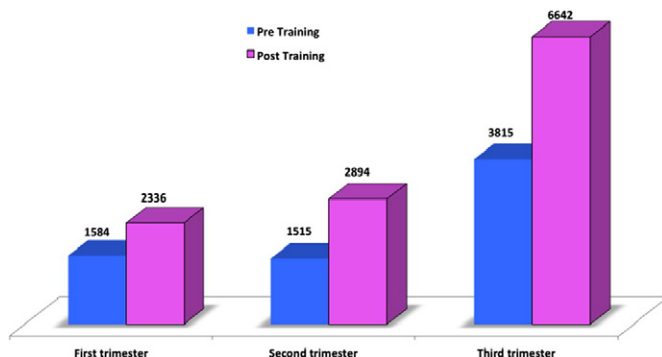


Fig. 2. Number of cases referred out from the facilities during the three trimesters by nonspecialist doctors trained during 2006–2013.

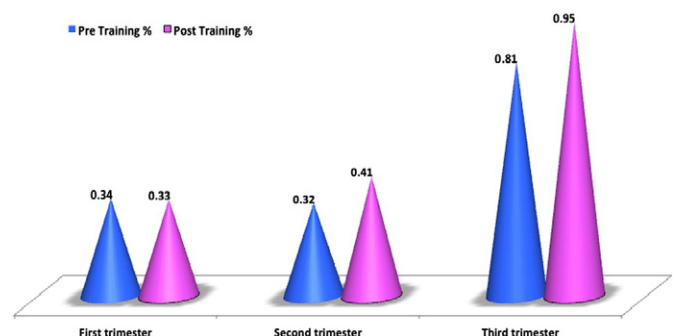


Fig. 3. Percentage of all complicated cases referred out from the facilities during the three trimesters by nonspecialist doctors trained during 2006–2013.

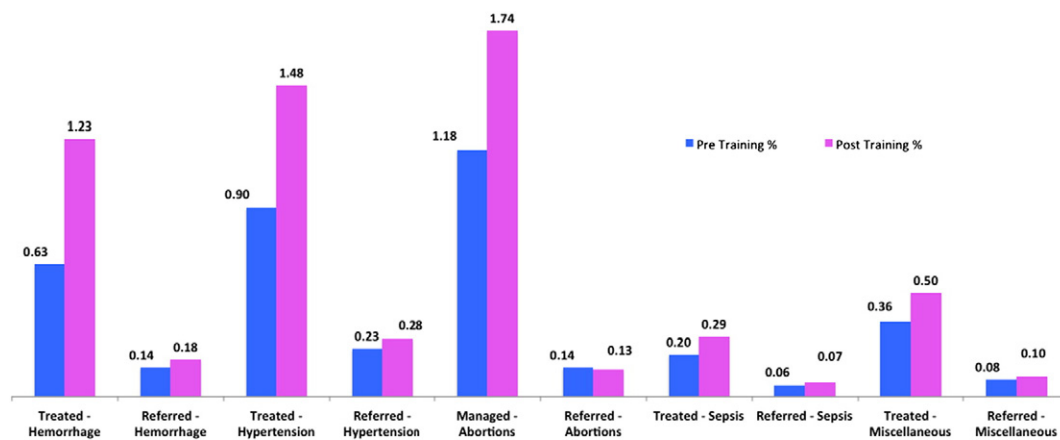


Fig. 4. Percentage breakdown of all cases treated/managed and referred out from the facilities during the three trimesters by nonspecialist doctors trained during 2006–2013.

## 7. Challenges and solutions during program implementation

Trainer burnout, retirement, and transfers posed challenges. A pool of additional trainers was created. While transfers and retirement of trainers is State government policy, this was limited by dialogue with officials so that trainers were not transferred during the training program. Over the years a critical mass of additional trainers was reached and thus the program continued smoothly.

Other challenges were training quality, lack of motivation to attend training away from home, underutilization of the centers' training capacity, and delay in placement of trained NSDs leading to skills decay. Monitoring visits during each and every batch were undertaken for each NSD placed at the district training site and a three-tier certification process was implemented for each segment of the training. More district training sites were created closer to the homes of the NSDs, and NSDs awaiting postings were placed at the district hospitals so that they could continue practicing their skills and those who could not be posted were recalled for a few weeks at the tertiary center for practice before posting.

## 8. Lessons learned

Task shifting was a success in India owing to the program ownership by GOI, its leadership, and the presence of a dedicated team of officials who began the program and continued to support the program for its entire duration of implementation. Partnering with organizations like FOGSI and ICOG comprising ob/gyn specialists ensures its quality and success. Involving an independent program management unit like AVNI comprising program management specialists ensures regular and timely administrative support, adherence to the program guidelines, timely communication, understanding and providing quick resolution to the issues, database management, monitoring, and overall programmatic control to ensure the program is on track.

## 9. Way forward

Owing to the successful implementation and positive outcomes of the task shifting training program, the CEmOC program has been extended until 2017. As a policy, the GOI is pursuing implementation of similar task shifting initiatives in other disciplines; for example, in the field of nursing and midwifery, pre-service and in-service task shifting program policy is being implemented.

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## Conflict of interest

The authors have no conflicts of interest.

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