Chapter 17: Workforce Innovations to Expand the Capacity for Surgical Services

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Abstract

The crisis in human resources in surgical health care is a major health system challenge in low-income countries. Innovative workforce solutions offer viable options to alleviating the consequences of these staff shortages. Task-shifting is a feasible strategy that should be seriously considered to address this crisis. Nonphysician clinicians (associate clinicians) perform approximately 90 percent of major emergency obstetric surgeries at remote hospitals in two countries investigated, Mozambique and Tanzania. In Mozambique, a comparison of the quality of care provided by physicians and that provided by nonphysician clinicians demonstrates no clinically significant differences in outcomes in major obstetric surgery. Challenges continue in terms of the development and implementation of training and regulatory mechanisms, and the expansion of the capacity for skills development and improvement, and supervision. Improved accuracy in preoperative decision making by different professional categories deserves a more specific approach. Medical doctors, who often demonstrate reluctance to the task-shifting of major surgery to mid-level providers, should realize that as physicians they can play an essential role in providing quality assurance and supervision. If they accept this role, they will contribute to enhancing the survival of the poorest people in rural areas, who currently lack such life-saving care.
Introduction

Surgical interventions are often considered complex procedures to be undertaken by highly trained surgeons, but specialists are rare in many low-income country (LIC) situations. However, many common surgical problems in resource-limited settings do not require the intervention of specialized staff. There is a significant documentation on how cost-effective surgical interventions can be undertaken in LICs with the innovative use and deployment of trained staff, including emergency care for trauma and obstetrical needs. Despite this documentation, the surgical workforce innovations that utilize nonspecialized cadres often meet with resistance from established surgeons and their professional associations.

The most important barrier to the safe provision of preoperative, intraoperative, and postoperative surgical and anesthesia services in LICs is the shortage of trained staff. For example, the area of western Tanzania where one of the authors (SB) works has one medical doctor for every one million people, and one obstetrician for six to seven million people.

The well-documented reasons for this scarcity include a low number of medical school graduates [14, 15], inadequate initial and ongoing training; poor salaries and working conditions; the inability to motivate and retain staff in remote and rural areas; and staff attrition due to retirement, death, or resignation, and the consequences of the brain drain. The reluctance of governments to invest in human resources compounds the effects of these factors. Current financial constraints, for example, such as those in Tanzania, have forced governments to announce freezes in employing new human resources for health.

Sub-Saharan Africa is the region most affected by the global shortage of human resources for health [1-3]. Two countries, Mozambique and Tanzania, profiled in this chapter experienced this crisis some years ago [1, 4-6]. In other countries, despite years of interventions to overcome the scarcity of doctors, the shortage has worsened due to population growth, presenting a major challenge to the ability of these countries to achieve the health-related Millennium Development Goals (MDGs) [4, 7] (box 17.1). Available doctors tended to concentrate and work in urban areas and in regional or even national hospitals, limiting access to rural populations, which often constitute up to 75 percent of national populations.

Box 17.1 Millennium Development Goals for Health

Goal 4: Reduce by two thirds, between 1990 and 2015, the under-five mortality rate.

Goal 5: Reduce by three quarters the maternal mortality ratio; achieve universal access to reproductive health.

Goal 6: Have halted by 2015 and begun to reverse the spread of HIV/AIDS; achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it; have halted by 2015 and begun to reverse the incidence of malaria and other major diseases.


<<end of box 17.1>>
A major reason for Sub-Saharan Africa’s high maternal mortality is that few infants are born in the presence of skilled attendants. The lack of skilled birth attendants contributes to the five to six million maternal deaths, stillbirths, and newborn deaths each year worldwide. In 19 of the 52 Sub-Saharan African countries that reported data, less than half of the births were attended by skilled health personnel. The World Health Organization estimates that 80 percent of births need to be attended by an adequately equipped and skilled birth attendant to reach the Millennium Development Goal 5 target of reducing maternal mortality by three-quarters. [http://www.undp.org/content/dam/undp/library/MDG/english/MDG%20Regional%20Reports/Africa/MDG%20report%202013%20summary_EN.pdf].

One colleague in Tanzania expressed his frustrations in the following way:

“….. [W]e are fed up with the government’s commitments and the politicians’ alleged devotion to the problem of maternal deaths in Tanzania. Our work burden is increasing tremendously, but there are no signs of real support. Imagine: If I am up during the night to make one to two cesarean sections, I have to work the full day the morning after. We are entitled to a symbolic call allowance of US$6 (six!) per night, but we do not receive even that! The government says ‘there is no money.’ This is not true.”

The AIDS epidemic in Sub-Saharan Africa may have aggravated this crisis by depriving health systems of a significant proportion of their trained staff [18]. Sub-Saharan Africa has 11 percent of the world’s population, and 24 percent of the total estimated global burden of disease; yet it has 3 percent of the global health workforce [18], only a small percentage of whom are qualified surgeons. Sub-Saharan Africa has less than one percent of the number of surgeons that the United States has, despite having a population that is three times as large [19]. Expanding the human workforce is clearly essential for improving the performance of the health system [3, 4, 8-10] and improving outcomes, even under difficult circumstances [1, 11-13].

In Mozambique, the scarcity of human resources for health 30 years ago was alarming; the country had less than five physicians per 100,000 population. Our research located 33 registered nurses and midwives per 100,000 population [20]. In Tanzania, the health workforce shortage was alarming and disastrous, according to the report of the Joint Learning Initiative (2004). Furthermore, fewer than 1,000 of 25,000 trained health workers in Tanzania are physicians; many physicians serve in nonclinical services or in administrative positions and do not directly provide patient care. A study by the London School of Hygiene and Tropical Medicine suggests that the number of health care providers would need to increase by more than 58,000 to provide necessary interventions to meet the health-related MDGs for Tanzania [21].

In most countries in Sub-Saharan Africa, the scarcity in human resources for health existed even before independence, as a result of colonial training policies and, in some cases, the massive exodus of colonial professionals after independence [22, 23, 62]. In Mozambique, a civil war provoked by neighboring South Africa in the early 1980s worsened the situation. Both Mozambique and Tanzania suffered from the consequences of the brain drain, either
externally as health professionals moved to developed countries or internally as they migrated from rural into urban areas [24-26].

**Nonphysician Clinicians**

A number of terms in the literature describe categories of health professionals who may serve as substitutes for physicians in providing health care. The most common are *nonphysician clinicians* (NPCs) and *midlevel providers* (MLPs), although others such as *substitute health workers* [17] have been used.

The terms appear to be used interchangeably, although there is inconsistency across the literature in the ways in which the terms are used. In relation to the Sub-Saharan African literature, studies generally include nontraditional cadres of health professionals that have been created as a response to physician scarcity; have a lower initial level of education; and receive a shorter period of pre-service training than physicians, with the training often limited to a specific set of clinical skills. These cadres include the Tanzanian assistant medical officers (AMOs) and the Mozambican *técnicos de cirurgia* (TCs), the experiences of whom particularly inform this chapter. Other countries use *medical assistants* (Ghana) or *clinical officers* (Kenya and Uganda) to denote similar cadres.

Studies and commentators differ in their inclusion or exclusion of traditional health professional cadres, including nurses, midwives, pharmacists, and other allied health professionals, who have distinct and complementary clinical roles to play. For example, Warringer and others [62] define MLPs as *health care providers who are not doctors, such as nurses, midwives, and doctor-assistants* in their review of the options for providing induced abortion services in South Africa and Vietnam. Similarly, the U. S.-based American Osteopathic Association (AOA) Division of State Government Affairs (2003) counts both new and traditional health professional cadres in the definition of the term NPC. In contrast, Bradley and McAuliffe [63] define MLPs as *cadres of health workers who undertake roles and tasks that are more usually the province of internationally recognized cadres, such as doctors and nurses*, implying that nurses are not included. This definition is similar to that of NPCs, according to Mullan and others [23] who list *health officers, clinical officers, physician assistants, nurse practitioners, and nurse clinicians* as the labels by which NPCs are known.

In this chapter, we are particularly concerned with the role of NPCs or MLPs in surgical services in Sub-Saharan Africa in situations characterized by physician shortages, hence our particular interest in AMOs and TCs. These cadres have been central to the debate about ensuring adequate staffing for essential surgery and other physician-delivered services in such environments, although growing interest has been expressed in the greater use of midwives and nurse-midwives in obstetric surgery, and countries have been building on their experiences in such expanded uses [62, 64].

In recent years, there has been a welcome terminological move from the NPC concept (which actually is a negation) to the concept of *associate clinician*. A growing network—the African Network of Associate Clinicians (ANAC)—has developed, based at the Chainama College of Health Sciences in Lusaka. The development of this network is significant; for the first time, differently titled midlevel providers can form a major international association from a large number of Sub-Saharan African countries. This development will facilitate the recognition of this category of key health staff for advanced care, including surgery, in rural settings without access to physicians.

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Task-Shifting and Task-Sharing

The literature indicates that informal or formal delegation of tasks from one cadre to another is not a new concept. **Task-shifting** implies the delegation of certain medical responsibilities to less specialized health workers [15]. This is the direct substitution of an existing traditional profession with new and different cadres [27, 28]. In surgery, such health workers may carry out many of the diagnostic and clinical functions usually performed by physicians. However, opinions have diverged; some experts suggest that **task-sharing** may be a more appropriate concept. These two expressions would, however, seem to signify two different realities. Where no physicians are available, the tasks of physicians must be shifted to nonphysicians. Where a few physicians are available, their range of tasks may be shared with nonphysicians.

Training for Safe and Effective Care

In most Sub-Saharan countries, the use of substitute health workers started as temporary measures until more doctors were trained. However, it has become a permanent strategy in the face of the persisting human resource crisis. More of these countries have embarked on expanded training of midlevel health professionals and nonphysician cadres to promote access to care and to contain costs [23, 27, 29].

This trend to delegate procedures to lower cadres has often met with resistance for various reasons. Surgery is considered a highly specialized field that requires several years of training; hence, it is important to define the boundaries of surgical task-shifting considered essential to ensure quality of care. The World Health Organization (WHO) has established a list of surgical procedures performed at district hospitals, which facilitates the classification of various interventions and can help training schools to establish which essential interventions could be safely shifted to NPCs [15, 30]. A “district” hospital is usually the most remote, rurally-situated hospital with in-patient care and a theatre for limited major surgery interventions such as cesarean sections, open fractures, bowel resections for strangulated hernias, etc.

In Mozambique, training of NPCs in surgery is well structured and is followed with a formal internship. The recruitment focus is on candidates with previous job experience in peripheral health units or district hospitals (Pereira and others, unpublished). Studies by some of the authors have shown that NPCs in Mozambique are well appreciated by other professionals, doctors, nurses, and midwives [31]. Approximately 90 percent of physicians and other health staff gave a positive rating with regard to their strong practical skills and their critical role in saving the lives of mothers and newborns at district hospitals. With accumulated surgical experience among these NPCs, young doctors deployed in rural areas are increasingly trained in surgery by TCs [31]. An assessment of outcomes of cesarean sections between TCs and physicians at the Maputo Central Hospital showed no clinically significant differences between the two cadres [32].

In Tanzania, AMOs are selected from among cadres designated as **clinical officers** with a minimum of three years of working experience in peripheral health units or district hospitals. Their subsequent training is for two years and includes three months each of surgery and obstetrics. Studies [24, 25] show that for major obstetric operations performed by AMOs and nonspecialized physicians, there were no significant differences in their clinical outcomes, risk indicators, or quality of care indicators. For example, despite logistic and material

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resource problems in all the hospitals, the aggregate maternal case fatality rate was acceptable at 1 percent to 2 percent.

In Ghana, the program for training medical assistants, consisting of one year of post-nursing qualification training, was initiated in 1969. It was converted in 2007 into a physician assistants program, consisting of four years of direct training after high school. Both groups were trained to perform only limited surgical procedures and tasks. A nurse anesthetist (now called anesthetist physician assistant) program has become the backbone of surgical procedures, even in regional tertiary hospitals. The surgical tasks of these cadres remain limited to performing incisions, draining abscesses, suturing wounds, and immobilizing fractures. Most obstetric tasks beyond normal delivery were not part of their responsibilities.

According to the Director of the College of Health and Well-Being, a move is underway to change the procedures and allow these cadres to perform life-saving surgery and obstetric procedures. In both Mozambique and Tanzania, the real challenge in providing quality care is not primarily in the practical skills in the operating room. The difficult aspect of emergency obstetrics and surgery is rather in the decision-making process, namely, whether and how to intervene. It is easy to solve all emergency problems in obstetrics by resorting to cesarean section, a simple technique that is easy to learn. Any health worker, nonphysician clinician (assistant medical officer, clinical officer, or other category of midlevel health worker), or physician who has not been trained in properly assisting vaginal delivery in general and in vacuum extraction in particular would tend to solve many obstetric problems by performing a cesarean section. Most often—in practice—no one would blame a health care provider for having performed a cesarean section; however, health care providers would be blamed for not having performed a cesarean section if the mother or the baby suffered death or a serious complication. This reality increases the number of cesarean sections performed that are not medically necessary.

Treatment Areas for Task-Sharing or Task-Shifting

Our studies and other literature show that midlevel health professionals carry out the majority of surgical procedures outside of urban areas in a number of Sub-Saharan African countries and can be indispensable when physicians are scarce [3, 15, 23, 29, 33]. Our studies indicate that TCs in Mozambique performed 92 percent of cesarean sections in district hospitals [26]; in Tanzania, AMOs performed 85 percent of cesarean sections, 94 percent of repairs of ruptured uterus, 86 percent of removals of ectopic pregnancy, and 70 percent of hysterectomies in the Mwanza and Kigoma regions in Tanzania [24].

Acceptance of Mid-Level Providers for Major Surgery

The literature highlights the problem of reluctance and even resistance among doctors and other professionals to consider task-shifting in surgery [15, 30]. Since the 1984 inception of training of TCs in Mozambique, this reluctance has gradually disappeared; members of this cadre are now well-accepted and recognized among physicians. They are also acknowledged to be important for the training and support of recently graduated and inexperienced physicians assigned to district hospitals. One physician in our research in Mozambique expressed his opinion as follows:

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"...our TC is good, because without him I don't know what would be in terms of the rural hospital [where] he is the surgeon; here in the provincial hospital he works in shifts in equal terms with the other specialists [surgeon, obstetrician, and orthopedist]; when one specialist goes on vacation, she or he is replaced by the TC. At rural hospital level, they [TCs] provide all [types of] care and they decrease the provincial hospital workload, [can you] imagine without their presence [in the districts], what would be the workload at the provincial hospital?"

The TCs have been trained and deployed for a quarter of a century, and the young physicians are taught in school to respect these cadres, since new physicians themselves have limited exposure to surgical interventions.

In Tanzania, this issue has not yet been studied scientifically. Forthcoming research into attitudinal problems related to perceived threats to conventional areas of professional competence in surgical practice by task-shifting will be useful. In Ghana, physician assistants were, until recently, not under any regulatory authority, which may have contributed to their lack of acceptance by physicians and the reluctance to shift certain tasks to them to perform. Associate physicians in Ghana are registered and regulated by the Medical and Dental Council and may soon be permitted to perform life-saving surgical procedures.

**Improving Working Conditions and Promoting Retention of Midlevel Providers**

The need to develop policies and programs to improve health worker motivation and retention in rural locations constitutes a crucial area in addressing the health resource crisis, especially in low- and middle-income countries [1, 34]. Both motivation and retention are directly influenced by poor remuneration and working conditions, suboptimal management of human resources, and limited opportunities for career progression [35]. These challenges are issues for both physicians and NPCs.

In Mozambique, the same factors resulting in poor motivation also prevail [20]. A key problem of the dissatisfaction that TCs express is the heavy workload; they can rarely leave the workplace to attend training in referral hospitals or attend specific seminars to enhance their knowledge. In addition, the scarcity of surgical specialists at the provincial level limits the capacity to provide and receive adequate supervision [31].

The NPCs in Ghana and Tanzania face a similar situation, with motivation reportedly weak [36]. AMOs are overworked, face poor working conditions, and experience a lack of supervision. Unlike nurses and midwives, they are rarely invited to attend professional meetings and workshops, despite their crucial roles. They are seldom moved to referral hospitals for job training to improve their skills and performance. Limited career prospects and opportunities for upward mobility increase their level of dissatisfaction (Pereira and others, unpublished data).

**Financial Incentives**

In Mozambique, the lower salary level for TCs than for other midlevel professionals has been a significant cause of dissatisfaction. The training of TCs was initially controversial, largely due to physician resistance, resulting in the unclear definition of career paths by the Ministry of Health, since TCs were considered midlevel professionals without specialization. This

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designation affected their position on the salary scale, which had a significant impact on their motivation [31]. During the past decade, the salaries of TCs have improved.

### Nonfinancial Incentives
#### Improving Supervision
Initiatives to improve the capacity to provide adequate supervision and management can improve work satisfaction, performance, and quality of work in remote settings [28, 39, 40]. Our studies did not specifically address supervision, but the literature reviewed indicates that supervision is irregular or nonexistent in most districts in the two countries [20, 21]. In Ghana, annual meetings have become popular and important sources of updating skills and providing forums for professional networking (Dovlo, unpublished).

#### Improving Working and Living Conditions
Working and living conditions are important determinants of motivation and retention in high-income countries (HICs) and LICs [28, 41-43]. Our studies did not address these issues further, since in the majority of districts, the housing for TCs had been assessed beforehand, a prerequisite to deployment of these cadres at district hospitals. In Mozambique, the government is in the process of implementing a decentralization program to partner with local authorities and communities to better respond to the health resource problems in remote areas. This consultative process is expected to generate better accommodations for staff, more electricity, better roads, and the improvement of health and educational facilities [44]. The impact of this program has not yet been evaluated.

In Tanzania, the health sector reform strategy, which aims to influence changes in the health system to improve health status for all citizens, has focused on district decentralization, improvement of health system, health management, and financing and human resource development [45, 46]. An evaluation reveals that the impact on the general health status of the population was unsatisfactory [47].

#### Improving Staff Satisfaction
Staff satisfaction largely influences motivation, which affects the performance and retention of health workers [48]. Training, study leave, the opportunity to work in a team, support from supervisors, and provision of housing and transport increase staff satisfaction and consequently motivation [48-50]. In both Mozambique and Tanzania, a widespread opinion among health workers is that the situation is difficult, because their salaries do not adequately cover the cost of living. The health workers consider the administrative management to be weak [20, 21, 51].

#### Improving Retention
According to the literature, the retention of human resources for health, particularly in rural areas, is a major and complex problem in most LICs [28, 52-54], and no single solution applies in all settings. Comparatively low salaries are the primary source of dissatisfaction. However, socioeconomic status—implying a set of appreciating and depreciating
circumstances—such as access or lack of access to housing, positive or negative working conditions, an enabling or disabling work environment, and the availability or lack of availability of further training are the decisive factors in whether to stay in or leave remote areas.

Our results in Mozambique show that 88 percent of TCs remained in rural areas seven years after graduation, while none of the physicians remained after that period [26]. Another study indicates that retention may be related to the recruitment system. If candidates are selected from each region of the country, are mainly from rural areas, and are integrated into scholarship schemes at the provincial level with commitment to return after completion of training, then the distribution of cadres and their retention may be improved (Pereira and others, unpublished).

Retention is also a major issue in Tanzania [21, 51], with migratory flows from rural to urban areas and from the public to the private sector. Most of the skilled health workforce, particularly physicians and specialists, are concentrated in urban areas where only 20 percent of the population lives. As early as 1982, Tanzania started a decentralization reform that was designed to empower local authorities in the process of recruiting health workers. Decentralized recruitment was supposed to be effective in improving retention, as the responsibility of hiring was transferred to the local governments. The assessment of the potential impact of this decentralization program is underway, but the first findings reveal that the decentralization enhanced the retention of the lower cadre health workers in the districts [55-58]. In Ghana, approximately 75 percent of MA and PA currently work in rural areas (Dovlo, unpublished).

Cost-Effectiveness of Surgical Training of Midlevel Providers

Few studies have addressed the issue of cost-effectiveness of training NPCs, ACs, GPs, and specialists [29]. In Burkina Faso, NPC is trained for two years in surgery (attachés de santé), and general practitioners receive six months of training to perform emergency surgery in rural areas. They are cost-effective compared to specialists [29]. In Mozambique, we did not address the cost effectiveness of general practitioners, since this cadre does not receive additional years of training in surgery. Such a scheme would increase the training of general practitioners to a total of nine years after secondary school, which the Ministry of Health did not deem advisable. In Mozambique, most physicians, after initial rural assignments for a few years, move to urban areas to meet administrative commitments or to start their specialization at teaching hospitals [59]. In Tanzania, the literature reviewed shows that training AMOs is less expensive than training physicians [21].

Establishing Enabling Environments

The governments of Mozambique and Tanzania have made a strong commitment in recent decades to address the crisis in human resources for health. Solving the problem of inadequate numbers of health professionals is, however, not a panacea for improving access to health care. Other problems have to be addressed simultaneously. An environment conducive to quality surgical care, as perceived by the health workers, implies that trained NPCs can execute their skills in settings that foster and value their professional work. This environment, which is required for well-trained health workers in sufficient numbers to
perform optimally, is needed both at the central (Ministry of Health) and at the provincial and district levels.

Mozambique

In Mozambique, the Instituto Superior de Ciências de Saúde (Higher Institute of Health Sciences) was created to clarify the career path for TCs. The initiation of the national program of human resources is a positive step in counteracting the human resources crisis [20]. In Ghana, the corresponding school is under a medical faculty of a university, and the program has been upgraded, which has improved the environment for task enhancement (Dovlo, unpublished).

To begin to reduce the heavy workload of TCs in Mozambique, a program of training midwives to perform major obstetric surgery has been initiated recently (Enfermeiras de Saúde Materna) to strengthen the teamwork at district hospitals [60]. This new training, which results in a licentiate degree, comprises three and a half years of theoretical and practical training, in addition to six months of internship in a regional or district hospital. The training is grounded in nursing but has an emphasis on diagnostic and treatment skills, the practice of major emergency obstetric surgery, and the concept of teamwork. The Ministry of Health expects that more effective teamwork and consequently improvement of the quality of work can be achieved, as TCs will be relieved of much of the workload of obstetrical and gynecological emergency surgery. Emergency obstetrics and gynecology constitute the predominant work burden for TCs. The task-shifting scenario, however, is changing; NPCs, in all likelihood, will handle more elective surgery not only in obstetrics and gynecology but also in general surgery. Two examples are bilateral tubal ligation and a growing number of planned cesarean sections, whether clinically indicated or not. In middle-class Sub-Saharan Africa, the trend to request cesarean sections on demand is unfortunately clearly on the rise.

In Mozambique, the government plan for the five years from 2005−09 focused on capacity building, including rehabilitation of infrastructures and theaters in the whole health system, timely supply and deployment of human resources in general and in peripheral areas in particular, development of norms, guidelines for obstetric emergency care and essential care to newborn, implementation of formative system of supervision, and strengthening of the ability to communicate with radios and to transport patients [61]. The plan from 2010 onward has essentially implied strengthening of the system and the existing previous plan.

The human resource plan approved by the Ministry of Health for implementation [20] incorporates four main strategic areas:

- The organization of services and functioning system of rules
- The expanded capacity of management at different levels
- The improved distribution and retention of human resources for health
- The expansion of the institutional capacity to provide training and continuous education.
Tanzania

In Tanzania, facilitating the establishment of an enabling environment has received increasing attention. The government recognizes the importance of improving health care and expanding the supply of human resources. It has made the commitment to address the shortage of human resources for health, particularly the skilled workforce. Tanzania has established relationships with other governments, donors, and agencies who are potential partners in these approaches [21].

Conclusions

The shortage of skilled human resources in surgical health care constitutes a major health system problem in Mozambique and Tanzania, as well as other LICs. Innovative and multifaceted workforce solutions offer viable options to alleviating the consequences of the shortage and building the capacity of countries to provide skilled surgical care. Task-shifting and task-sharing are feasible strategies and should be seriously considered to address the human resource crisis in Mozambique and Tanzania, as well as in other countries facing the same human resource problems.

NPCs perform approximately 90 percent of major emergency obstetric surgeries in rural areas where most of the population live in both Mozambique and Tanzania. A comparison of the quality of care provided by medical doctors and that provided by TCs and AMOs demonstrates no clinically significant differences in outcomes in major obstetric surgery. In Mozambique, TCs and AMOs were rated positively by physicians (general practitioners and specialists), nurses, and midwives.

In Mozambique, NPCs have a high retention rate in rural areas. NPCs are cost-effective, and the training and deployment of TCs are three times more cost-effective than the training and deployment of medical doctors. Motivation is problematic among NPCs in general and among TCs in particular for multiple reasons, and programs are being developed to address some of the causes.

Challenges continue for many countries in terms of physician acceptance of midlevel clinicians; the development and implementation of training and regulatory mechanisms; the expansion of the capacity for skills development and improvement, as well as supervision; and better financial and nonfinancial compensation. Initiatives to improve accuracy in decision making in obstetric cases by different professional categories deserve a more a specific approach.
References


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