

Swaziland Ministry of Health



# Improving the Quality of Maternal and Neonatal Health Services in Swaziland: A Situational Analysis

May 2011



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# Acronyms

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AAP	Annual Action Plan	MMR	maternal mortality ratio
D&C	dilatation and curettage	MNH	maternal and neonatal health
DOCFR	direct obstetric case fatality rate	MOH	Ministry of Health
EmONC	emergency obstetric and neonatal care	MVA	manual vacuum aspiration
EMS	Emergency Medical (ambulance) Services	PMTCT	prevention of mother-to-child transmission of HIV
GDP	gross domestic product	RHM	rural health motivators
HMIS	Health Management Information System	SAM	Service Availability Mapping
HSSP	National Health Sector Strategic Plan	SDHS	Swaziland Demographic and Health Survey
HIV/AIDS	human immunodeficiency virus/acquired immunodeficiency syndrome	SRH	sexual and reproductive health
		SRHU	sexual and reproductive health unit
		TBA	traditional birth attendants





# Overview

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The Swaziland Ministry of Health (MOH) with support from the World Bank/WHO/UNICEF/UNFPA conducted a Maternal and Neonatal Health (MNH) assessment in January 2010. The objectives of the MNH assessment were (i) to provide critical information on the current status of the provision of emergency obstetric and neonatal care (EmONC) at the health facilities; (ii) to help identify deficient areas for targeted interventions to improve maternal and neonatal health outcomes in Swaziland; and (iii) provide baseline data for the EmONC component of the Ministry of Health's Swaziland Health, HIV/AIDS, and TB Project, which aims to improve emergency obstetric and neonatal care in Swaziland. Of the total of 223 health facilities in Swaziland, 59 health facilities were selected for this assessment, including the 27 identified in the 2008 Service Availability Mapping as having delivery/maternity beds.

The Kingdom of Swaziland is a lower-middle income country in southern Africa. Swaziland has a five-tier health care system: community clinics (both with and without delivery services); health centers; subregional hospitals; regional hospitals; and the national referral hospital. The 2006–07 Swaziland Demographic and Health Survey (SDHS) shows that some improvement has occurred in the past three decades in reproductive, maternal, and child health outcomes but serious challenges still remain. For instance, the survey estimated a very high maternal mortality ratio (MMR) at 589 maternal deaths per 100,000 live births, indicating that emergency obstetric care is not of optimum quality.

## Key findings

Of the 59 health facilities assessed, the government owns 29 (49 percent), 18 (31 percent) belong to religious missions, 10 (17 percent) are private, and two (3 percent) are run by non-governmental organizations. In addition to the national referral hospital

(Mbabane Government Hospital), the sample comprised all three regional hospitals, both subregional hospitals, all five health centers, and 48 clinics. Eight of the health facilities covered were in Shiselweni Region, about half the number of facilities covered in each of the other three regions, with 18 in the Manzini Region, 17 in the Lubombo Region, and 16 in the Hhohho Region. More than three-fifths of these health facilities were established prior to the year 2000.

In 2009, a total of 17,006 pregnant women registered for antenatal care (first antenatal visits) at the 50 health facilities that provided this information. A total of 33 health facilities provided delivery services but only three of them (Mbabane Government Hospital, Raleigh Fitkin Memorial Hospital, and Good Shepherd Hospital) had a neonatal intensive care unit. The national referral hospital, all five regional and subregional hospitals, all five health centers, and 22 clinics provided delivery services. However, only 14 health facilities performed more than one delivery per week (more than 52 per year). Of the 23,962

deliveries, 88 percent occurred in hospitals, 9 percent in health centers, and 3 percent in clinics. This indicates that nearly 9 in 10 pregnant women are bypassing the community clinics and health centers to deliver at the hospitals.

Raleigh Fitkin Memorial Hospital had the highest number of deliveries at 8,386 (35 percent of all deliveries in Swaziland) which was more than twice the 3,634 deliveries recorded at the national referral hospital, the second highest. A total of 1,208 births occurred before arrival at a health facility, which is 5 percent of the total deliveries.

The health centers in Swaziland are expected to provide *basic* EmONC services, while hospitals should provide *comprehensive* EmONC. A *basic* EmONC facility performs the following seven critical lifesaving procedures:

- administration of parenteral antibiotics
- parenteral oxytocics (uterotonic drugs)
- parenteral anticonvulsants for pre-eclampsia/eclampsia
- manual removal of retained placenta
- removal of retained products of conception (manual vacuum aspiration [MVA] or dilatation and curettage [D&C])
- assisted vaginal delivery (vacuum extraction or forceps delivery), and
- basic neonatal resuscitation (bag and mask).

Additionally, a *comprehensive* EmONC facility offers blood transfusion and Cesarean delivery. Of the seven *basic* EmONC procedures, assisted vaginal delivery was the least available, provided by only two health facilities (Raleigh Fitkin Memorial Hospital and Mbabane Clinic). Based on the above criteria, none of the health facilities provided the full complement of either *basic* or *comprehensive* EmONC.

### *Obstetric complications and maternal mortality*

Obstetric complications are common in Swaziland. In 2009, a total of 1,301 such complications were recorded, half of them abortion-related. Of

the 656 abortion complications, Mbabane Government Hospital alone accounted for 47 percent. This study computed MMR for 2009 using only data collected from the selected 59 health facilities. As shown in Table 6, the overall maternal mortality ratio in these 59 health facilities is 136 maternal deaths per 100,000 live births. This estimate does not cover maternal deaths that occurred at home or on the way to a health facility or even health facility-based maternal deaths that were misclassified, so it is much lower than the 2006–07 DHS estimate of 589 maternal deaths per 100,000 live births which was a population-based estimate.

Given the difficulties in measuring the maternal mortality ratio, a crude but useful measure for monitoring the quality of emergency obstetric care is the direct obstetric case fatality rate (DOCFR). The DOCFR is the number of women who died of direct obstetric complications divided by the number of women who were treated for all direct obstetric complications in the same EmONC facilities and period. The DOCFR estimated for the 59 health facilities was 1.3 percent, higher than the maximum acceptable level of one percent. The Cesarean delivery rate was 9.7 per 100 deliveries, which is within the often quoted acceptable level of 5 to 15 percent. It ranged from 7.8 percent at Raleigh Fitkin Memorial Hospital to 12.9 percent at Mbabane Government Hospital to 16.6 percent at Good Shepherd Hospital, but the rates were much higher (53–64 percent) in the four private clinics that offer this service. A national Confidential Enquiry into Maternal Deaths Committee has been formed to conduct maternal death audits, but only 16 of the 59 staff in charge of maternity wards who were interviewed knew about its existence.

### *Obstetric staff*

Across the 59 health facilities studied, 428 doctors, midwives, and general nurses were assigned to obstetric care in 2009, of which only 11 had received in-service training in emergency obstetric care. Obstetricians performing deliveries in 2009 numbered just 12, working in nine of the facilities; half of them were working in private clinics. There were 70

medical doctors, working in 25 facilities. Hlatikulu Government Hospital was the least staffed hospital, with only one medical doctor and no obstetrician. Of the 283 midwives, 15 (advanced midwives) held bachelors degrees while the remaining 268 held diplomas in midwifery. Mbabane Government Hospital had the highest number of both advanced midwives (4) and diploma midwives (24). However, Raleigh Fitkin Memorial Hospital, which performed more than a third of all deliveries in 2009, had fewer midwives assigned to obstetric care, specifically 2 advanced midwives and 14 diploma midwives. Further, of the 63 general nurses assigned to obstetric care, the Matsanjeni Health Center and the Medisun Clinic had the highest number, with 16 each. Reviewing the numbers by region, Shiselweni Region, where Hlatikulu Government Hospital is situated, had the smallest number of midwives and doctors and no obstetrician. In stark contrast, Hhohho Region, where the national referral hospital is situated, was well endowed with obstetric staff.

#### *PMTCT and family planning services*

- Of the 59 health facilities, 54 provided the following services:
- HIV testing of pregnant women
- nevirapine for prevention of mother-to-child transmission of HIV (PMTCT), and
- other antiretroviral drugs such as Zidovudine (AZT) for PMTCT.

Of the total of 21,420 pregnant women tested for HIV in 2009, 21,296 (99.4 percent) obtained their test results. Of those tested, 20 percent (4,260/21,420) were positive. However, the number of women (17,712) who received PMTCT, including antiretroviral drugs, was four times higher than the number of those who tested positive. This suggests that the majority of women who received PMTCT services had tested positive prior to antenatal care and therefore did not need further testing during pregnancy. Of the 59 health facilities, 57 provided family planning services. Two did not provide any family planning services and another two provided only female sterilization.

#### *Referral and communication system*

The Ministry of Health has recently established a functional national Emergency Medical (ambulance) Services (EMS) and an Emergency Call Centre with one toll-free number (800 7777), which operates 24 hours a day, 7 days a week. All hospitals and health centers except the Dvokolwako Health Center had an ambulance. Ambulances were available 24 hours a day, 7 days a week at 22 of the health facilities and for fewer than 24 hours a day at another six facilities. Regarding the availability of either a working phone or short-wave radio transmitter, all the hospitals and health centers and 40 clinics had such a communication resource. Altogether, 34 of the facilities reported having procedures for the emergency transfer of women to another facility. Additionally, 41 of them reported having printed referral forms. However, information on the number of referrals to health facilities in 2009 was patchy.

#### *Equipment and supplies*

While some equipment, such as weighing scales, was generally available, other equipment, such as contraceptive implant insertion and removal sets, was barely available. Sterilizers/autoclaves were available at 44 facilities, including all the hospitals (except Good Shepherd Hospital) and health centers. Long-arm gloves were used for the removal of retained placenta, preventing the transmission of infections, but they were available in only six facilities. Twenty-eight health facilities, including all hospitals and health centers except Dvokolwako Health Center, had bag and mask for the resuscitation of newborns. Radiant warmers were available in 24 health facilities including all hospitals and health centers except Emkhuzweni Health Center while 18 health facilities also reported having incubators.

#### **Policy implications and recommendations**

Based on the findings, improving maternal and neonatal health outcomes in Swaziland will entail a four-pronged approach:

- improving the provision of emergency obstetric and neonatal care
- improving post-abortion care and family planning services
- strengthening the referral system, and
- strengthening the monitoring and management of maternal and neonatal health services.

#### *Improving the provision of emergency obstetric and neonatal care*

To improve the provision of EmONC, upgrade all five health centers to provide *basic* EmONC (and, where possible, *comprehensive* EmONC) and ensure that all the six hospitals offer *comprehensive* EmONC. This will be accomplished by developing and disseminating obstetric protocols, training health personnel, and rehabilitating and equipping health facilities. Additionally, to reduce congestion at the hospitals and to reduce the numbers born before arrival at the hospitals, the community clinics should be equipped and staffed to provide normal delivery services.

#### *Improving post-abortion care and family planning services*

Considering that complications from abortion are one of the leading causes of maternal death, training must be expanded in post-abortion care (treatment of abortion complications with manual vacuum aspirator, post-abortion family planning counseling, and appropriate referral where necessary) in line with the 2008–2013 National Health Sector Strategic Plan

(HSSP), which states: *Train health workers in Post Abortion Care including management of patients presenting with incomplete or inevitable abortion.* Given the high HIV prevalence in Swaziland, expanding family planning services is a cost-effective strategy for PMTCT. In addition to the temporary methods, long-term family planning methods such as implants and intrauterine devices should be made more widely available. This will entail training of midwives

and nurses to provide long-term methods and the purchase of contraceptive implant insertion and removal sets and intrauterine contraceptive insertion and removal sets.

#### *Strengthening the referral system*

The referral system could be further strengthened by improving ambulance services, training health personnel (including rural health motivators) in appropriate referral procedures (referral protocols and recording of transfers) and establishing maternity waiting huts/homes at hospitals to accommodate women from remote communities who wish to stay close to the hospital prior to delivery. There are two concurrent ambulance services in place: the national EMS with its own fleet of ambulances and the ambulances at health facilities. In addition to dispatching its ambulances, the EMS should enlist the ambulances at health facilities so that when clients or service providers call the centralized toll-free Emergency Call Centre and make a request, ambulances based at the health facilities can be dispatched where appropriate to shorten the response time. To provide insights into the pros and cons of the EMS system versus clients' requests made directly to a local health facility, the MOH should undertake an assessment to determine, among other things, the response time, whether health facilities have used the services of EMS, management, cost-effectiveness, and clients' perspectives. This would inform the MOH on the way forward in the expansion of the EMS. In addition, the toll-free number should be more widely publicized through the mass media and at antenatal clinics.

#### *Strengthening the management and monitoring of maternal and neonatal health services*

The monitoring and management of MNH services would be strengthened by building the capacity of the Sexual and Reproductive Health (SRH) unit, expanding maternal and perinatal death reviews, and monitoring MNH outcomes.



**Table 1 ■ Swaziland at a glance**

Population, total <sup>a</sup>	1,018,449
Population growth (annual percent) <sup>b</sup>	1%
Population, ages 0–14 (% of total) <sup>b</sup>	40%
Population, ages 15–64 (% of total) <sup>b</sup>	57%
Population, ages 65 and above (% of total) <sup>b</sup>	3%
Age dependency ratio (% of working-age population) <sup>b</sup>	76%
Urban population (% of total) <sup>a</sup>	22%
GDP growth (annual %) <sup>b</sup>	2%
GNI per capita, Atlas method (current US\$) <sup>b</sup>	\$2,520
Population living below US\$1 per day (% of total population) <sup>c</sup>	69%
Health expenditure, total (% of GDP) <sup>b</sup>	6%
Health expenditure, public (% of GDP) <sup>b</sup>	4%
Health expenditure per capita (current US\$) <sup>b</sup>	\$155
Mean size of households <sup>d</sup>	4.6
Total fertility rate (births per woman) <sup>d</sup>	3.8
Adolescent fertility rate (births per 1,000 women ages 15–19) <sup>d</sup>	111
Contraceptive prevalence (% of married women ages 15–49) <sup>d</sup>	48%
Unmet need for family planning (%) <sup>d</sup>	24%
Life expectancy at birth, total (years) <sup>b</sup>	46
Infant mortality rate (per 1,000 live births) <sup>d</sup>	85
Maternal mortality ratio (maternal deaths per 100,000 live births) <sup>d</sup>	589
Prevalence of HIV (% of population ages 15–49) <sup>d</sup>	26%
Births attended by skilled health staff (% of total) <sup>d</sup>	74%
Antenatal care with health personnel (%) <sup>d</sup>	97%
Antenatal care with health personnel, 4 or more visits (%) <sup>d</sup>	79.3%
DPT immunization coverage (% by age one) <sup>d</sup>	92%
Nurses and midwives (per 10,000 population) <sup>e</sup>	17.45
Physicians (per 10,000 population) <sup>e</sup>	1.97
Literacy rate, adult female (% of females ages 15 and above) <sup>c</sup>	91%

<sup>a</sup>Census 2007 from the Central Statistics Office

<sup>b</sup>2009 World Development Indicators

<sup>c</sup>Swaziland Household Income and Expenditure Survey 2001

<sup>d</sup>2006–07 SDHS

<sup>e</sup>2008 Service Availability Mapping (SAM)

# Introduction

The Kingdom of Swaziland is a lower-middle-income country in Southern Africa. It is an absolute monarchy, currently ruled by King Mswati III, who appoints the prime minister as the head of government. The country is small (about 17,000 km<sup>2</sup>), landlocked, and mainly mountainous, and is bordered on the north, west, and south by the Republic of South Africa and on the east by Mozambique (Figure 1). It is divided into four regions: Hhohho, Lubombo, Manzini, and Shiselweni. Each region is further divided into administrative units, *tinkhundla*, of which there are 55 in the country. The administrative capital, Mbabane, is located in the Hhohho Region.

Nearly four-fifths of Swazis live in rural areas. The official languages are English and siSwati. The literacy rate among reproductive-aged women is 91 percent, with 59 percent having secondary level education or higher.

The country has experienced an economic downturn over the past decade, with the annual gross domestic product (GDP) growth rate having decreased from an average of 8.4 percent during 1981–1990 to a low of 2.6 percent during 2001–2008. The Gini coefficient of 61 percent is one of the highest in the world, indicating wide disparities in household income.

The provisional findings of the 2007 census indicate the population was then 1,018,449. The population had nearly doubled from 1976 to 1997, rising from 494,534 to 929,718 (with an annual growth rate of 2.9 percent), but the annual growth rate decreased considerably in the ensuing decade (CSO, 1997). Moreover, while life expectancy at birth had increased during the same period of 1976–1997, from 46 years to 60 years, it has since decreased to 46 years as of 2009 (CSO, 1997; World Bank, 2009).

The decline in life expectancy is attributed to the HIV/AIDS epidemic. Swaziland has the highest HIV prevalence in the world, with 26 percent of the population ages 15–49 infected with the HIV virus (CSO and Macro International Inc., 2008).

- Swaziland has a five-tier health care system, as follows:
- community clinics, some with and some without delivery services
- health centers
- subregional hospitals
- regional hospitals, and
- the national referral hospital.

Of the 223 health facilities, the government owns 44.8 percent, while the ownership of the remaining facilities is as follows: private facilities owned by doctors or nurses (22.4 percent), mission-owned facilities (14.8 percent), industrial facilities (12.6 percent), and facilities owned by NGOs (5.4 percent). The government provides subvention for the running of some private not-for-profit health facilities. There are 1.97 doctors and 17.45 nurses per 10,000 population. Swazis make up 86 percent of nurses but

only 41 percent of doctors. As there is an extensive road network, 85 percent of the population lives within eight kilometers of a health facility.

### Health sector strategic plan

The 2008–2013 National Health Sector Strategic Plan (HSSP) provides the roadmap for the implementation of the 2007 National Health Policy (MOHSW, 2009). One of the key Strategic Operational Objectives (SOO 3.1.6.1) of the 2008–2013 HSSP is *to ensure access to the widest possible package of Reproductive and Maternal Health care in order to reduce maternal and neonatal morbidity and mortality*. As shown in Annex 1, this SOO has been delineated into activities identified in the MOH April 2010–March 2013 Annual Action Plan (AAP) (MOH, 2009).

### Maternal and neonatal health status

The 2006–07 Swaziland Demographic and Health Survey (SDHS) shows that some improvement has occurred in the past three decades in reproductive, maternal, and child health outcomes, although serious challenges remain (CSO and Macro International Inc., 2008). For instance, the total fertility rate decreased between 1986 and 2006–07, falling from 6.4 births per woman to 3.8 births, and nearly half of currently married women are using modern contraceptives. Immunization coverage is high, with an estimated 82 percent of children ages 12 to 23 months having been fully immunized and 97 percent receiving BCG coverage. Nevertheless, it appears that the infant mortality rate has sharply increased, rising from 39 deaths per 1,000 live births in the early 1990s to 85 deaths per 1,000 live births in 2006–07, partly due to the HIV/AIDS epidemic. Neonatal mortality has remained stagnant at about 22 deaths per 1000 live births over the past 15 years.

Regarding obstetric care, nearly all pregnant women attend antenatal care and nearly three-fourths deliver in a health facility with the assistance of a

doctor or a nurse/midwife or a nursing assistant. Nevertheless, the 2006–07 SDHS estimated a very high maternal mortality ratio (MMR) at 589 maternal deaths per 100,000 live births, indicating that emergency obstetric care is not of optimum quality. To achieve the AAP target of 295 maternal deaths per 100,000 live births by 2013, efforts to improve maternal and neonatal health will have to be accelerated.

### Rationale

A major limitation of the 2006–07 SDHS is that it did not provide information on service provision at health facilities. The 2008 *Service Availability Mapping (SAM)*, which covered all health facilities, provided information on health infrastructure, equipment, and service provision (MOH and WHO Regional Office for Africa, 2008). Regarding maternal health, the SAM revealed that out of the 223 health facilities in Swaziland, 172 provide antenatal care services but only 27 provide delivery services. In addition, the type and quality of obstetric and neonatal services provided at these facilities are not clear. This lack of information may have significant implications for access to and quality of maternal and neonatal health services and outcomes.

### Objectives

The objectives of the Maternal and Neonatal Health (MNH) Assessment were:

- to provide critical information on the current status of the provision of emergency obstetric and neonatal care (EmONC) at the health facilities in Swaziland
- to help identify deficient areas for targeted interventions to improve maternal and neonatal health outcomes in Swaziland, and
- to provide baseline data for the EmONC component of the Ministry of Health's *Swaziland Health, HIV/AIDS, and TB Project*, which aims to improve emergency obstetric and neonatal care in Swaziland.

## Methodology

A total of 59 health facilities were included in the assessment. Twenty-seven of them were identified from the 2008 *SAM*, where they were listed as having delivery/maternity beds. The other 32 facilities, which were not included in the 2008 *SAM*, were identified through consultation with regional matrons as places that provided delivery services. A standard questionnaire was formulated, piloted, and adopted. The questionnaire focused on the following areas:

- obstetric care staffing
- services and procedures
- referral and communication systems
- equipment and supplies
- management and information systems
- complicated obstetric cases, 2008–2009
- facility-based maternal deaths, 2008–2009, and
- opinions of the respondents about obstetric care.

The Scientific and Ethics Committee of the MOH approved the study. Ten midwives were trained to conduct data collection using the standard questionnaire. Data was collected over a two-week period, between the 11<sup>th</sup> and the 25<sup>th</sup> of January 2010. The questionnaire was administered to the in-charge or next-in-charge staff of the maternity ward in each selected health facility. Respondents signed consent forms prior to the interview. Additional information was obtained from the Emergency Medical (ambulance) Services (EMS) team and the principals of the three nursing training institutions (University of Swaziland Faculty of Health Sciences, Nazarene College of Nursing, and Good Shepherd Nursing School). Epi Info statistical software was used for the data entry, and the Stata statistical package was employed to analyze the data, which primarily entailed descriptive statistics.



# Key Findings

The key findings that make up the main portion of this report are categorized under the following headings:

- characteristics of health facilities
- antenatal, delivery, and postnatal care
- capacity for emergency obstetric and neonatal care
- obstetric complications and maternal mortality
- obstetric records
- maternal death reviews
- adequacy of obstetric staff
- prevention of mother-to-child transmission
- family planning services
- referral and communication systems; equipment and supplies, and
- administrative procedures.

## Characteristics of health facilities

Of the 59 health facilities assessed, 29 (49 percent) are government-owned, 18 (31 percent) belong to missions, 10 (17 percent) are private, and two (3 percent) are run by non-governmental organizations (NGOs). In addition to the national referral hospital (Mbabane Government Hospital), the sample comprised all three regional hospitals, both subregional hospitals, all five health centers, and 48 clinics. Eight of the health facilities covered were in the Shiselweni Region, about half the number of facilities covered in each of the other three regions, with 18 in the Manzini Region, 17 in the Lubombo Region, and 16 in the Hhohho region. More than three-fifths of these health facilities were established before the year 2000.

## Antenatal, delivery, and postnatal care

This section describes the provision of antenatal, delivery, and postnatal services as well as service statistics at the selected health facilities.

### *Antenatal care*

Use of antenatal care is nearly universal, according to the 2006–07 DHS, with 97 percent of pregnant women receiving antenatal care in 172 health facilities. Of the 59 health facilities included in this study, 50 had records indicating the provision of antenatal services in 2009. In that year, 17,006 pregnant women registered for antenatal care (first antenatal visits) at these 50 facilities. Among the 11 hospitals and health centers, Good Shepherd Hospital had the fewest registrants (144) while Raleigh Fitkin Memorial Hospital had the most (3,983). The mean registrants by type of health facility are as follows: 1,627 at regional hospitals, 1,612 at subregional hospitals, 732 at health centers, and 145 at clinics. This indicates that each clinic attends to an average of about three first-visit pregnant women per week, in stark contrast to about 77 per week at Raleigh Fitkin Memorial Hospital. Regarding user fees, antenatal care was free at a third of the health facilities, another third charged 8 Emalengini (note that 7 Emalengini or 7E = US\$1) or less, and four health facilities (mostly private for-profits) charged 200E to 235E (US\$28 to US\$34) for the first antenatal visit (see Annex 2).

### Delivery settings and services

Thirty-three of the 59 health facilities provided delivery services in 2009. Each of these facilities had a labor room, with the exception of two clinics. Only one facility did not have a dedicated bed for the first or second stage of labor. Three health facilities (Mbabane Government Hospital, Raleigh Fitkin Memorial Hospital, and Good Shepherd Hospital) had neonatal intensive care units. In places where there were no cardiotocographs (for the continuous monitoring of fetal health rate and uterine contractions), labor could be effectively monitored with the use of a partograph (a simple graphic sheet for the recording of pertinent labor information). Partographs were reportedly used for the last delivery in 18 health facilities, but only seven health facilities had evidence of completed partographs at the time of the study. Obstetric protocols for managing obstetric complications, which provide step-by-step instructions to health personnel for managing major obstetric complications, were observed in only seven health facilities.

Of the health facilities studied, 24 were open seven days a week and an additional nine were open five days a week. In 20 health facilities, a midwife/nurse or doctor was present in the labor ward at all times. This included all hospitals and health centers except for the Nhlngano and Matsanjani health centers in the Shiselweni Region. Although health centers are expected to provide *basic* EmONC, these two centers were sometimes unavailable to mothers for normal delivery services. In Swaziland, it is not the norm for health personnel to deliver babies in women's homes. Only the Sithobela Health Center reported that midwives routinely assisted with home deliveries, while six health facilities attended to emergency deliveries in the community. Nineteen health facilities reported formal relationships with rural health motivators (RHMs), while five indicated the same with traditional birth attendants (TBAs).

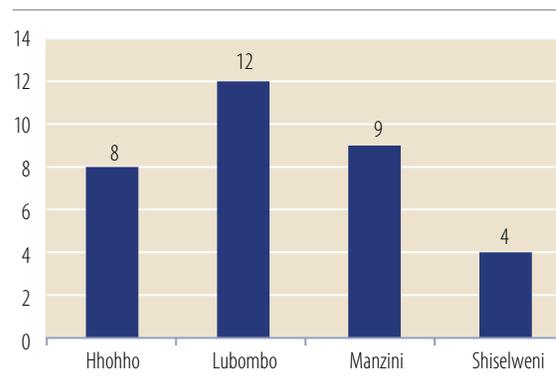
### Delivery statistics

Thirty-three of the health facilities assessed provided delivery services in 2009. Shiselweni Region

had the lowest number of such facilities (4) while Lubombo Region had the highest number (12), although most of them were small clinics (Figure 2). The 33 facilities providing delivery services include the national referral hospital, five regional or subregional hospitals, five health centers, and 22 clinics. More than half of these facilities (18) were government owned, while seven were private, seven were owned by religious missions, and only one belonged to industry (Table 2). Health facilities with less than one delivery per week perhaps handle only emergency deliveries rather than routine deliveries. As shown in Table 3, only 14 health facilities performed more than 52 deliveries during 2009 (that is, more than one delivery per week). Figure 3 shows the geographical locations of these 14 facilities.

In 2009, there were a total of 23,962 deliveries in all 33 health facilities. Figure 4 shows the regional distribution. The Manzini Region had the highest number of deliveries, 10,379, while the Lubombo Region had the lowest, 3,414. Of the 23,962 deliveries, 88 percent occurred in hospitals, 9 percent in health centers, and 3 percent in clinics. This indicates that nearly 9 in 10 pregnant women were bypassing the community clinics and health centers to deliver at the hospitals. This could partly be attributed to more reliable service availability at the hospitals. Raleigh Fitkin Memorial Hospital had the highest number of deliveries, at 8,386 (35 percent of all

Figure 2 ■ Health facilities with delivery services by region, 2009



**Table 2** ■ Ownership of health facilities with delivery services, 2009

	National referral hospital (1)	Regional hospitals (3)	Subregional hospitals (2)	Health centers (5)	Clinics (22)	Total (33)
<b>Ownership</b>						
Government	1	1	2	5	9	18
Private	0	0	0	0	7	7
Religious mission	0	2	0	0	5	7
Industrial	0	0	0	0	1	1

deliveries in Swaziland), which was more than twice the 3,634 deliveries recorded at the national referral hospital, which had the second highest number (Table 3). A total of 1,208 births took place before arrival at a health facility, which is 5 percent of the total deliveries. Raleigh Fitkin Memorial Hospital recorded the highest number of born-before-arrivals at 499 (Table 6). These born-before-arrivals could be the result of either precipitous labor or difficulty in reaching health facilities. A future study based on interviews with these women could highlight the factors involved.

### Delivery fees

User fees are cited in the literature as one of the major reasons poor women in low-income countries are unable to access delivery services with skilled health personnel (Stekelenburg et al., 2004; Mills et al., 2007). Annex 3 presents the wide range of user charges at the health facilities providing delivery services in Swaziland. Delivery is free in five health facilities. It is generally much cheaper to deliver in public facilities, where fees for normal deliveries are lowest—in the range of 5E to 33E (US\$0.70 to US\$4.70). Fees are highest in the private, for-profit clinics, with three clinics (Mbabane, Medisun, and Manzini) charging 5,400E or more (US\$770 or more). The religious mission health facilities tend to charge moderate fees, ranging from 20E (US\$2.80) in Ndwabangeni Clinic to 1,800E (US\$257) at St. Theresa's Clinic. Similarly, fees for cesarean deliveries are lowest at public facilities (25E to 50E or US\$3.60 to US\$7.10), highest at private clinics (from 877E or US\$125 at Medisun

Clinic to 10,000E or US\$1,429 at Mbabane Clinic) and intermediate at facilities run by religious missions (150E to 300E or US\$21 to US\$43). Since most of the expensive private clinics are in urban areas, where poor pregnant women also have ready access to affordable public facilities, the high charges at the private clinics do not affect service utilization by mothers there.

### Postnatal care

Of the 59 health facilities assessed, all except St. Philips and High Care Clinic provide postnatal services and 34 have postnatal beds. Protocols for neonatal care were observed in only five health facilities.

### Capacity for emergency obstetric and neonatal care (EmONC)

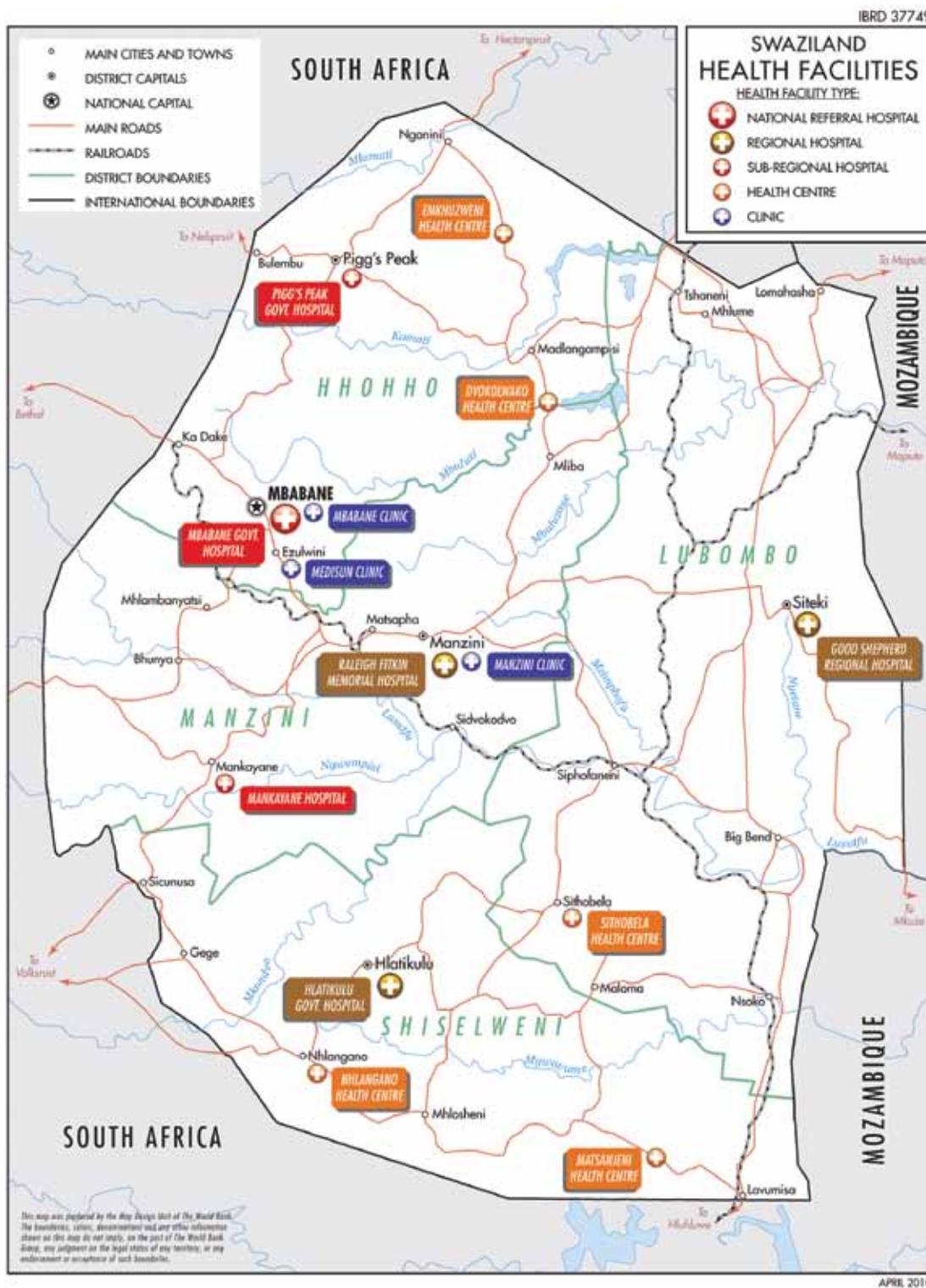
Pregnant women who develop obstetric complications must have access to health facilities that can provide critical lifesaving emergency obstetric and neonatal care (EmONC) procedures in order to avert maternal deaths or long-term disability. The health centers in Swaziland are expected to provide *basic* EmONC, while hospitals should provide *comprehensive* EmONC. A *basic* EmONC facility performs the following seven critical lifesaving procedures:

- administration of parenteral antibiotics
- administration of parenteral oxytocics (uterotonic drugs)
- administration of parenteral anticonvulsants for pre-eclampsia/eclampsia

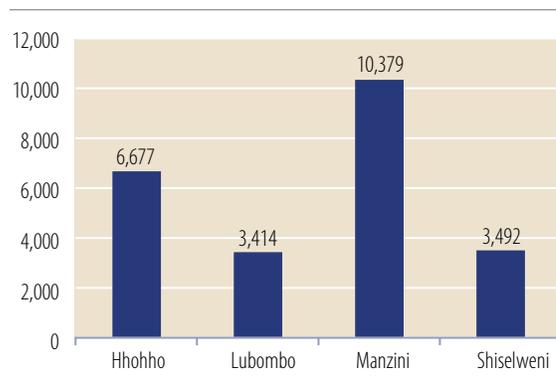
**Table 3** ■ Number of deliveries in 33 health facilities, 2009

Name of facility	Type of facility	Region	Ownership	Deliveries
Ndwabangeni Clinic	Clinic	Hhohho	Religious mission	1
Sigcaweni	Clinic	Lubombo	Religious mission	1
Bhekinkosi Nazarene Clinic	Clinic	Manzini	Religious mission	2
Gebeni Clinic	Clinic	Manzini	Government	2
Mfishane Clinic	Clinic	Shiselweni	Government	2
Shewula	Clinic	Lubombo	Government	4
Sigcineni Clinic	Clinic	Manzini	Government	6
Tikhuba Clinic	Clinic	Lubombo	Government	8
Siphofaneni Clinic	Clinic	Lubombo	Government	10
Tabankulu Clinic	Clinic	Lubombo	Private	10
Bhahwini Clinic	Clinic	Manzini	Government	12
St. Theresa's Clinic	Clinic	Manzini	Religious mission	18
Horo Clinic	Clinic	Hhohho	Government	19
Lusoti Clinic (Simunye)	Clinic	Lubombo	Private	22
Ngomane /RSSC	Clinic	Lubombo	Private	22
Lubulini Clinic	Clinic	Lubombo	Government	25
St. Phillips	Clinic	Lubombo	Religious mission	29
Mkhiwa Clinic	Clinic	Manzini	Private	32
Ubombo Ranches	Clinic	Lubombo	Industrial	47
Manzini Clinic	Clinic	Manzini	Private	107
Medisun Clinic	Clinic	Hhohho	Private	135
Mbabane Clinic	Clinic	Hhohho	Private	196
Dvokolwako Health Centre	Health center	Hhohho	Government	264
Sithobela Health Centre	Health center	Lubombo	Government	290
Matsanjani Health Centre	Health center	Shiselweni	Government	434
Emkhuzweni Health Centre	Health center	Hhohho	Government	507
Nhlangano Health Centre	Health center	Shiselweni	Government	625
Mankayane Hospital	Subregional hospital	Manzini	Government	1,814
Pigg's Peak Government Hospital	Subregional hospital	Hhohho	Government	1,921
Hlatikulu Government Hospital	Regional hospital	Shiselweni	Government	2,431
Good Shepherd Hospital	Regional hospital	Lubombo	Religious mission	2,946
Mbabane Government Hospital	National referral hospital	Hhohho	Government	3,634
Raleigh Fitkin Memorial Hospital	Regional hospital	Manzini	Religious mission	8,386

Figure 3 ■ Location of the 14 health facilities with more than one delivery per week, 2009



Source: World Bank Map Design Unit. Coordinates of health facilities were obtained from the 2008 SAM

**Figure 4** ■ Total deliveries by region, 2009

- manual removal of retained placenta
- removal of retained products of conception (manual vacuum aspiration [MVA] or dilatation and curettage [D&C])
- assisted vaginal delivery (vacuum extraction or forceps delivery), and
- basic neonatal resuscitation (bag and mask).

Additionally, a *comprehensive* EmONC facility offers blood transfusion and cesarean delivery.

Next, we describe the provision of each of these EmONC procedures in 2009, followed by a categorization of all 33 health facilities that provided delivery services as either *basic* or *comprehensive* EmONC.

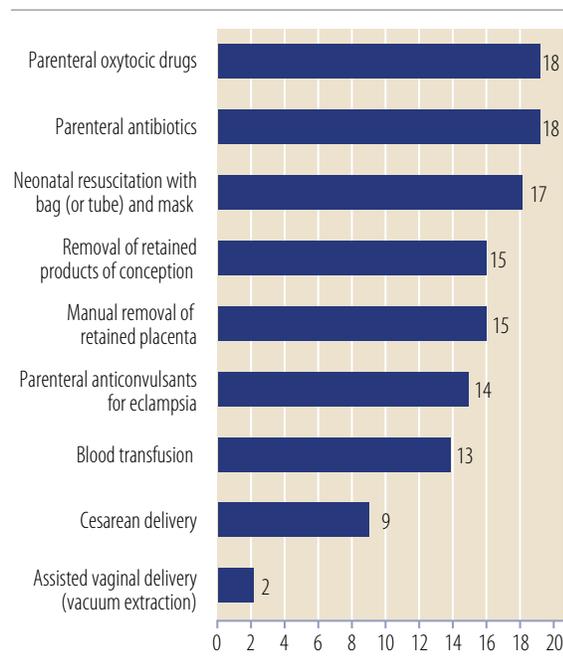
Of the 33 health facilities that provided delivery services in 2009, 18 administered parenteral antibiotics for the treatment of sepsis and an equal number also administered parenteral uterotonic drugs for the prevention of postpartum bleeding (as shown in Figure 5 and Annex 4). Anticonvulsants, which are required for the management of pregnancy-induced hypertension or eclampsia, were administered by 14 health facilities, but only 12 facilities had magnesium sulphate, the drug of choice for eclampsia, at the time of the study. All 33 facilities reported that they do active management of the third stage of labor (immediate use of oxytocin after delivery, cutting and clamping of the cord, and controlled cord traction), which is an important procedure for

the prevention of retained placenta or postpartum hemorrhage. Retained placenta after delivery is a major cause of postpartum bleeding. Fifteen health facilities, including all hospitals and three health centers, performed manual removal of retained placenta, with the exception of the Matsanjani and Emkhuzweni health centers. Retained products of conception (resulting from miscarriage or induced abortion) can be treated with either dilatation and curettage (D&C) or manual vacuum aspiration (MVA).

Of the 15 health facilities that treated abortion complications, the majority (13) used the D&C procedure while only two private clinics with obstetricians (Mbabane Clinic and Medisun Clinic) used MVA. The latter is a safer procedure during the first 10 weeks of pregnancy, but it is not widely used in Swaziland. Assisted vaginal delivery, using either vacuum extractor or forceps, is particularly useful in cases of prolonged labor when the fetal head has already passed through the pelvis and cesarean delivery is not the best option. However, only two health facilities (Raleigh Fitkin Memorial Hospital and Mbabane Clinic) provided this service in 2009. Thirteen health facilities, including all hospitals and health centers, provided blood transfusion services with the exception of Dvokolwako Health Centre. Cesarean delivery is critical in cases such as obstructed labor where women are not able to give birth on their own. All hospitals and three private clinics performed cesarean delivery services, although none of the health centers did. Further, basic resuscitation of newborns with bag and mask, which is essential to prevent neonatal death or brain damage, was provided at 17 health facilities.

Regarding the categorization of health facilities, none of the health facilities provided the full complement of *basic* or *comprehensive* EmONC. Considering that only two health facilities—Mbabane Clinic and Raleigh Fitkin Memorial Hospital—provided assisted vaginal delivery, these were the only ones that potentially could have met the criteria for *basic* EmONC. However, the former did not provide manual removal of placenta, and the latter did not offer removal of retained

**Figure 5** ■ EmONC procedures in 33 health facilities, 2009



products of conception. It was noted that health personnel are reluctant to perform instrumental delivery (vacuum extraction or forceps delivery) as a result of the high HIV prevalence in the country. We eventually categorized the health facilities as follows (as shown in Annex 4): 10 as *comprehensive* EmONC minus (provided Cesarean delivery but missed one or more of the *basic* EmONC procedures); seven as *basic* EmONC minus (provided at least four of the *basic* EmONC procedures); and 16 as “none” (provided fewer than four of the EmONC procedures).

### Obstetric complications and maternal mortality

For the findings in this section, we examined the types of obstetric complications and causes of maternal deaths and computed the maternal mortality ratio, direct obstetric case fatality rate, and cesarean delivery rate.

### Obstetric complications and causes of maternal deaths

Pregnancy-related complications are not always predictable and can occur even if a woman has had good quality antenatal care. With the availability of emergency obstetric care, these obstetric complications could be properly and promptly treated. As shown in Table 4, obstetric complications were not uncommon in Swaziland, with a total of 1,301 recorded in 2009. Nearly all were direct obstetric complications, that is, they were primarily the result of the pregnancy state (during pregnancy, delivery, or postpartum). Indirect obstetric complications arising from pre-existing disease (or diseases occurring during the pregnancy) were negligible, that is, less than 1 percent.

It is intriguing that half of the obstetric complications were abortion-related. From the data, we do not know what proportion were due to miscarriages or induced abortions. This is not easy to decipher since induced abortion is generally illegal, permitted only to save the life of the woman (Annex 5) (Population Policy Data Bank, 2010). Of the 656 abortion complications, Mbabane Government Hospital alone accounted for 47 percent (Table 5). The next most frequent obstetric complication was pregnancy-induced hypertension or eclampsia (17 percent) followed by hemorrhage (15 percent).

Some of these obstetric complications resulted in maternal deaths, as presented in Table 4. Similarly, abortion-related deaths accounted for nearly two-fifths of all maternal deaths. From this retrospective data, it was not clear whether these abortion-related deaths were due to hemorrhage, sepsis, or perforations. Pregnancy-induced hypertension/eclampsia was the second most common cause of death, at 9 percent. No maternal deaths were attributed to HIV/AIDS, a surprising fact given that Swaziland has the highest HIV prevalence rate in the world. The cause of death for 37 percent of the maternal deaths was unknown, indicating poor documentation or lack of documentation by clinicians. Some of these undefined deaths could be HIV/AIDS related. Reviewing maternal deaths by health facility,

**Table 4 ■ Obstetric complications and causes of maternal deaths in 33 health facilities, 2009**

Complication/cause of death	2009 Complications		2009 Maternal deaths	
	N	Percent	N	Percent
<b>Direct</b>				
Hemorrhage				
Antepartum	61	4.7	2	6.3
Postpartum	132	10.1	0	0
Retained placenta	27	2.1	0	0
Prolonged/obstructed labor	75	5.8	0	0
Ruptured uterus	4	0.3	0	0
Postpartum sepsis	11	0.8	0	0
Complications of abortion	656	50.4	12	37.5
Pre-eclampsia/eclampsia	220	16.9	3	9.4
Ectopic pregnancy	20	1.5	0	0
Malposition	26	2.0	0	0
Cord prolapse	56	4.3	0	0
Other direct	4	0.3	0	0
<b>Total direct</b>	<b>1,292</b>	<b>99.3</b>	<b>17</b>	<b>53.1</b>
<b>Indirect</b>				
Anemia	8	0.6	2	6.3
HIV/AIDS	0	0	0	0
Other indirect	1	0.1	1	3.1
<b>Total indirect</b>	<b>9</b>	<b>0.7</b>	<b>3</b>	<b>9.4</b>
<b>Undefined</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>37.5</b>
<b>Grand total</b>	<b>1,301</b>		<b>32</b>	

in 2009 Mbabane Government Hospital had the highest number of deaths (18) thereby accounting for 56 percent of all maternal deaths. Raleigh Fitkin Memorial Hospital was a distant second, with 8 maternal deaths.

#### *Maternal mortality ratio*

The maternal mortality ratio (MMR) is defined as the number of maternal deaths in a given area and period per 100,000 live births in the same area and period. It is most accurately estimated when the civil registration system is complete (recording all live births in health facilities and communities) and the

attribution of causes of death is reliable. Since most developing countries have deficient civil registration systems, the MMR tends to be estimated using population-based surveys, such as the Demographic and Health Surveys. These surveys tend to give imprecise estimates with wide confidence intervals, making them difficult to use to monitor the implementation of maternal health programs.

This study computed MMR for 2009 using only data collected from the selected 59 health facilities. As shown in Table 6, the overall maternal mortality ratio in these 59 health facilities was 136 maternal deaths per 100,000 live births. This estimate does

**Table 5 ■ Frequent obstetric complications by type of facility, 2009**

	National referral hospital (1)	Regional hospitals (3)	Subregional hospitals (2)	Health centers (5)	Clinics (22)	Total (33)
<b>Obstetric complication</b>						
Complications of abortion	311	237	107	0	1	656
Pre-eclampsia/eclampsia	25	173	15	2	5	220
Hemorrhage	34	145	9	3	2	193

not cover maternal deaths that occurred at home or on the way to a health facility or even health-facility-based maternal deaths that were misclassified, so as expected it is much lower than the 2006–07 DHS estimate of 589 maternal deaths per 100,000 live births, which was a population-based estimate. Reviewing maternal deaths by type of health facility, all the deaths occurred in hospitals, presumably because that is where life-threatening cases were referred. Mbabane Government Hospital had the highest maternal mortality ratio by far: 498

maternal deaths per 100,000 live births, presumably because it is the national referral center for the country.

#### *Direct obstetric case fatality rate*

Given the difficulties in measuring maternal mortality ratios, a crude but useful measure for monitoring the quality of emergency obstetric care is the direct obstetric case fatality rate (DOCFR). The DOCFR is the number of women who have died of direct

**Table 6 ■ Types of deliveries, maternal mortality, case fatality and cesarean delivery rates in 33 facilities, 2009**

	National referral hospital (1)	Regional hospitals (3)	Subregional hospitals (2)	Health centers (5)	Clinics (22)	Total (33)
<b>Services statistics</b>						
Total deliveries	3,634	13,763	3,735	2,120	710	23,962
Total assisted deliveries	0	45	0	0	8	53
Total cesarean deliveries	470	1,335	231	0	286	2,322
Total born before arrival	146	638	152	217	55	1,208
Stillbirths	74	264	38	47	7	430
Live births	3,612	13,494	3,720	2,066	685	23,577
Maternal deaths	18	11	3	0	0	32
Maternal deaths due to abortion	10	2	0	0	0	12
Maternal mortality ratio (per 100,000 live births)	498	81	81	0	0	136
Abortion ratio (per 100,000 live births)	277	15	0	0	0	51
Direct obstetric complications	393	691	169	19	16	1,288
Deaths from direct obstetric complications	10	6	1	0	0	17
Direct obstetric case fatality rate (%)	2.5	0.9	0.6	0	0	1.3
Caesarean section rate (per 100 deliveries)	12.9	9.7	6.2	0	40.3	9.7

obstetric complications divided by the number of women who were treated for all direct obstetric complications in the same EmONC facilities and period. The details of what constitutes direct obstetric complications are shown in Annex 6. The acceptable upper level is 1 percent, but DOCFRs can be as low as 0.06 percent, as is the case for the United States (WHO, UNFPA, UNICEF, and AMDD, 2009). In places where long distances and transportation difficulties contribute to pregnant women with complications arriving at facilities late, a high DOCFR does not necessarily indicate that the services provided at these health facilities are of poor quality.

As shown in Table 6, the DOCFR estimated at 1.3 percent for the 59 health facilities is higher than the maximum acceptable level. It was highest at the national referral hospital, where most severe complications tend to be referred. However, considering that Swaziland has a fairly good road network and transport is not too difficult to come by compared to most Sub-Saharan African countries, perhaps it is the quality of emergency obstetric care that is not optimal.

### *Cesarean delivery rate*

The cesarean delivery rate gives an indication as to whether pregnant women who are in need of a Caesarean section actually do receive one. It is defined as the number of cesarean sections in a given area and period per 100 deliveries (or 100 live births) in the same area and period. The often quoted acceptable level (although there is no concrete basis for this) is 5 to 15 percent. If the level is too low, it implies that women do not have access to the procedure, and if it is too high it indicates that cesarean sections are being unnecessarily employed. As shown in Table 6, the overall cesarean delivery rate in these 59 health facilities was 9.7 percent (of all deliveries). This is slightly higher than the 7.9 per 100 live births reported in the 2006–07 DHS, but both rates are within the acceptable range. There is a wide variation across health facilities, as shown in Annex 7. The rate at hospitals ranged from 7.8 percent at Raleigh Fitkin Memorial Hospital to 12.9 percent at Mbabane Government Hospital to 16.6 percent at Good Shepherd Hospital. Rates were very high at the four private clinics that offered this

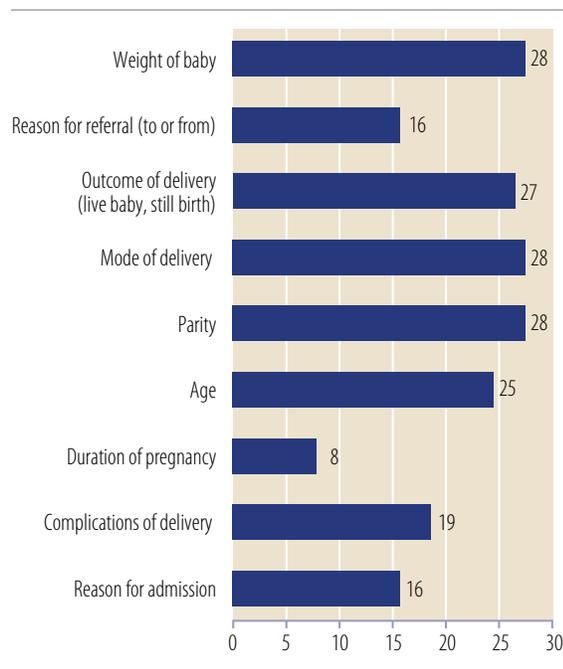
service: at Mbabane Clinic the rate was 64.3 percent; at the Medisun Clinic, 54.8 percent; at the Mkhiwa Clinic, 53.1 percent; and at the Manzini Clinic, 64.5 percent. Given that these private clinics collectively catered to fewer deliveries, this might indicate either that the doctors in these facilities were quick to perform cesarean sections or that women who required or opted for cesarean delivery tended to go to these private facilities, all of which have obstetricians. Notably, none of the health centers provided cesarean delivery in 2009.

### **Obstetric records**

Accurate and complete records on maternal and neonatal health services provide timely information for the supervision, monitoring, and evaluation of programs. The Health Management Information System (HMIS) department of the MOH is responsible for the collection, collation, and analysis of service delivery records and dissemination of the monthly disease monitoring report within the MOH and to stakeholders.

Of the 33 health facilities that provided delivery services in 2009, four clinics did not have any delivery register where client information from attended births could be recorded. As shown in Figure 6, of the 29 health facilities with delivery registers, nearly all have columns for recording weight of baby, mode of delivery (normal, assisted vaginal, or cesarean section), parity, and outcome of delivery (live baby, still birth, or maternal death). Accurate information on the duration of the pregnancy is critical when complications such as severe pregnancy-induced hypertension arise and the doctor has to make a decision about when to deliver the baby. This was the least collected information, with only eight health facilities (including four hospitals and two health centers) having the records in their delivery registers. Nevertheless, this information is in the antenatal care records of pregnant women, so it is still available to the attending health personnel. Data on the frequency and types of obstetric complications draws the attention of managers, who are responsible for taking steps to curb such complications, but only 19 health facilities recorded such information.

**Figure 6** ■ Information in delivery registers in 29 health facilities, 2009



### Maternal death reviews

A national Confidential Enquiry into Maternal Deaths Committee has been formed in Swaziland to conduct maternal death audits. The committee is expected to meet quarterly to review maternal deaths in the preceding quarter; three such meetings were held in 2009. In our study, the staff-in-charge or next-in-charge of the maternity/labor wards of the 33 health facilities that provided delivery services were asked whether to their knowledge a National Confidential Enquiry into Maternal Deaths Committee existed. It is intriguing that only 16 indicated yes, while 12 said no and five did not know. While all hospitals were aware of the existence of the committee, only one health center (the Sithobela Health Centre) had knowledge of it. Nevertheless, 13 health facilities, including all the hospitals, reported that a formal system of inquiry into maternal deaths (maternal death reviews or audit) had occurred at their health facilities. Additionally, the Mbabane Government Hospital reported conducting one community-based maternal death inquiry in 2009.

### Adequacy of obstetric staff

Adequate numbers of appropriately trained maternal and neonatal health staff are critical to the delivery of quality services to clients. There are three nurse training institutions in the country—Nazarene College of Nursing, University of Swaziland Faculty of Health Sciences, and Good Shepherd Nursing School. The first two provide training in general nursing as well as midwifery, while the third only trains nursing assistants. There is a huge backlog of general registered nurses awaiting enrollment into midwifery schools. In this section, we describe the number and category of staff routinely assigned to obstetric care and the number that received in-service training on maternal and neonatal health.

#### Staffing

There were 12 obstetricians working in 9 of the 59 health facilities that provided delivery services in 2009, half of them working in private clinics (Table 7). There were two obstetricians working at the Mbabane Government Hospital and one in each of the regional and subregional hospitals (except for Hlatikulu Government Hospital, which had none). No health center had an obstetrician, but four private clinics did: Manzini Clinic (2), Mkhiwa Clinic (1), Medisun Clinic (1), and Mbabane Clinic (2).

There were 70 medical doctors working in 25 of the 59 health facilities (Table 7). Among the hospitals, Hlatikulu Government Hospital had only one medical doctor, compared with nine at Good Shepherd Hospital. In this regard, Hlatikulu Government Hospital was the least staffed hospital—with only one medical doctor and no obstetrician. Each of the health centers had at least two medical doctors assigned to obstetric care. In the Shiselweni Region, the Nhlanguano Health Center had five medical doctors.

Of the 283 midwives, 15 held bachelors degrees (advanced midwives) and the remaining 268 held diplomas in midwifery. Mbabane Government Hospital had the highest number of both advanced midwives (4) and diploma midwives (24). By contrast, Raleigh Fitkin Memorial Hospital, which

**Table 7** ■ Staff routinely assigned for obstetric care in 59 health facilities, 2009

Qualification	National referral hospital (1)	Regional hospitals (3)	Subregional hospitals (2)	Health centers (5)	Clinics (48)	Total (59)
Obstetrician	2	2	2	0	6	12
Medical doctors (specialist, not obstetrician)	0	4	1	0	5	10
Medical doctors (general duty)	4	11	8	14	23	60
Advanced midwives	4	4	3	2	2	15
Midwives	24	35	22	46	141	268
General nurses	0	3	0	20	40	63
Nursing assistants	0	5	1	29	63	98
Anesthetists	7	12	7	0	8	34

performed more than a third of all deliveries in 2009, had fewer midwives, specifically two advanced midwives and 14 diploma midwives. Further, of the 63 general nurses assigned to obstetric care, Matsanjeni Health Center and Medisun Clinic had the highest number at 16 each. These general nurses could perform better if they received formal midwifery training. Additionally, there were 98 nursing assistants who performed deliveries in the health facilities, with 29 working at the health centers, five at the hospitals, and 63 at the clinics. Of the 34 anesthetists, three-quarters were based at the hospitals and the remainder at the clinics. No health center had an anesthetist.

The regional distribution of the various cadres in the 59 health facilities is shown in Figure 7. The Shiselweni Region had the lowest number of midwives and doctors and no obstetrician. In stark contrast, the Hhohho Region, where the national referral hospital is situated, was well endowed with obstetric staff. Additionally, the Shiselweni Region had the lowest ratio of midwives, doctors, or obstetricians to population (Table 8).

#### *In-service training in 2009*

In-service training is important to provide new skills or sharpen the skills of health personnel.<sup>1</sup> Of the 428 doctors, midwives, and general nurses who

are assigned to obstetric care, only 11 received refresher training in emergency obstetric care in 2009 (Table 9). Only four service providers received training in post-abortion care.

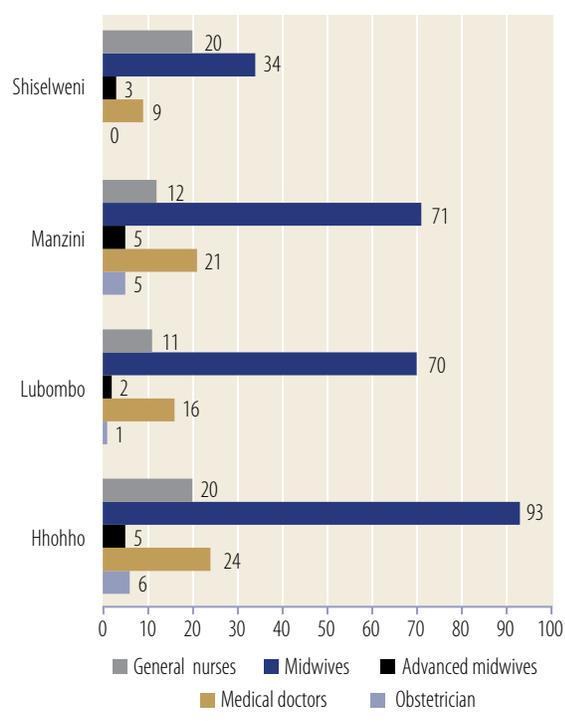
The number of obstetric care staff who received neonatal care and postnatal care was higher, at 36 and 51 respectively. However, the number of obstetric staff who were trained in focused antenatal care and family planning technology and skills was low, at 12 and 20 respectively. Training in the prevention of mother-to-child transmission of HIV (PMTCT) was the most common, with 131 health personnel trained in 2009. Training in infection prevention and health-care waste management was also more common.

#### **Prevention of mother-to-child transmission of HIV (PMTCT)**

Of the 59 health facilities, 54 provide the following services: HIV testing of pregnant women, nevirapine

<sup>1</sup> We did not analyze data from the question, “How many of the staff are able to prescribe/administer the following procedures?... list of all EmONC procedures.” This is because respondents tended to exaggerate their responses. In future, the question can be framed, “How many staff performed the following procedures ... in calendar year 2009?”

**Figure 7** ■ Number of health personnel routinely assigned to obstetric care, by region, 2009



for PMTCT, and other antiretroviral drugs such as Zidovudine (AZT) for PMTCT. Of the total of 21,420 pregnant women tested for HIV in 2009, 21,296 (99.4 percent) obtained their test results (Figure 8). Of those tested, 20 percent (4,260/21,420) were positive. The number of women who received PMTCT, including antiretroviral drugs, (17,712) was higher than the number of those who tested positive.

This suggests that a majority of women who received PMTCT services had already tested positive prior to antenatal care and therefore did not need further testing during pregnancy. About 62 percent of women went to regional hospitals for the testing or for PMTCT services (Table 10).

HIV post-exposure prophylaxis reduces the chances of health personnel getting infected when they accidentally get exposed to HIV-infected blood (eg. through needle prick). Twenty-eight of the 59 health facilities offered post-exposure prophylaxis and an additional three offered it only when the HIV status of the staff member was known. Figure 9 shows the types of the 31 health facilities that offered post-exposure prophylaxis.

### Family planning services

Access to family planning services ensures that women and men receive appropriate counseling and make informed choices to prevent unintended pregnancies and consequently unsafe abortions. Moreover, recent studies have shown that family planning is an integral part of PMTCT, particularly among women who are HIV-positive and do not want to have more children (Halperin, Stover, and Reynolds, 2009; Wilcher, Cates, and Gregson, 2009). Of the 59 health facilities, 57 provided family planning services. Two facilities did not provide any family planning services, while two provided only female sterilization. The types of family planning methods provided in the 57 health facilities are shown in Table 11.

**Table 8** ■ Ratios of obstetric staff to population in 59 health facilities, by region, 2009

Region	Population	Midwives per 10,000 population	Doctors per 10,000 population	Obstetricians per 100,000 population
<b>Total</b>	<b>1,018,449</b>			
Hhohho	282,734	3.47	0.84	0.21
Lubombo	207,731	3.47	0.77	0.05
Manzini	319,530	2.38	0.66	0.16
Shiselweni	208,454	1.77	0.43	0.00

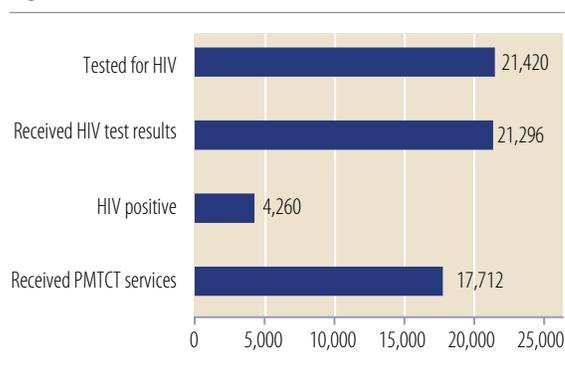
**Table 9** ■ Number of staff who received selected in-service training in 2009

Type of training	National referral hospital (1)	Regional hospitals (3)	Subregional hospitals (2)	Health centers (5)	Clinics (48)	Total (59)
Training in emergency obstetric care	0	2	0	2	7	11
Training in post-abortion care	0	0	0	0	4	4
Training in counseling and communication	0	19	0	4	64	87
Infection prevention and healthcare waste management	0	22	1	4	84	111
Prevention of mother to child transmission of HIV	15	28	0	26	42	131
Postnatal care	0	6	4	13	28	51
Neonatal care	0	9	0	13	14	36
Focused antenatal care	0	2	0	0	10	12
Intermittent preventive treatment of Malaria in pregnancy	0	7	0	14	51	72
Management skills	0	1	0	13	9	23
Family planning technology and skills	0	1	0	2	17	20
Antiretroviral therapy (ART) provision	0	18	0	16	57	91

### Referral and communication system

An effective and efficient referral and communication system is imperative for facilitating the transfer of medical emergency cases, including pregnant women with obstetric complications and road traffic accidents, from one health facility to another. It is also essential for transferring patients from a lower-level health facility to a higher-level facility for further treatment, for enabling clients to contact service providers, and for communication among service providers.

In Swaziland, the MOH recently established a functional national EMS and an Emergency Call Centre with one toll-free number (800-7777), which operates 24 hours a day, 7 days a week. When clients dial the toll-free number, the call can be directed to the appropriate health facility, to an ambulance driver to transfer a patient, or to medical advice, depending on the reason for the call. The EMS is being decentralized in all four regions, with ambulances stationed at satellite sites (instead of at hospitals) to allow quicker response to medical emergencies. Next, we describe the referral procedures at the health facilities and the availability of emergency transport and telephones at the health facilities.

**Figure 8** ■ PMTCT services in 54 health facilities, 2009

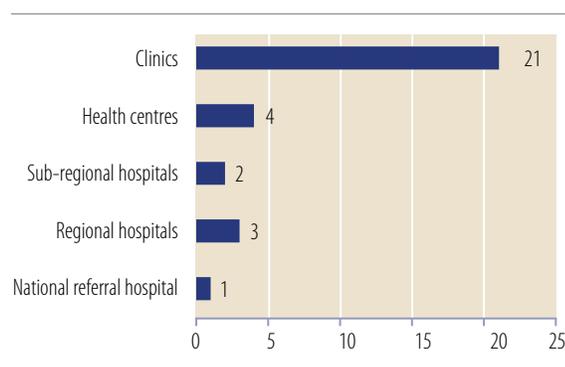
### Referral procedures

Of the 59 health facilities, 34 indicated that they have procedures for emergency transfer of women to other facilities (Table 12). Additionally, 41 reported having printed referral forms (Table 12). When women are referred to another health facility, the time it takes to actually depart the health facility plus the travel time and the waiting time at the referral facility constitute the total delay in

**Table 10** ■ HIV testing and PMTCT services in 54 health facilities, 2009

	National referral hospital (1)	Regional hospitals (3)	Subregional hospitals (2)	Health centers (5)	Clinics (43)	Total (54)
<b>Test/services</b>						
Tested for HIV	792	11,290	1,091	3,114	5,133	21,420
Received HIV test results	792	11,237	1,091	3,114	5,062	21,296
HIV positive	120	1,594	276	857	1,413	4,260
Received PMTCT services	867	9,366	762	1,664	5,053	17,712

receiving treatment. When respondents were asked how long women usually wait before leaving for a referral facility, 13 indicated less than 15 minutes, 17 indicated 15 to 29 minutes, and 14 indicated more than an hour (Table 12). Regarding the travel time to the nearest referral facility, 15 indicated that it took less than 30 minutes but 14 indicated more than an hour. For 33 health facilities, the nearest referral facility was more than 30 kilometers away. However, information on the number of referrals to health facilities in 2009 was patchy. Only three

**Figure 9** ■ HIV post-exposure prophylaxis in 59 health facilities, 2009**Table 11** ■ Family planning services in 57 health facilities, 2009

	National referral hospital (1)	Regional hospitals (3)	Subregional hospitals (2)	Health centers (5)	Clinics (46)	Total (57)
<b>Family planning method</b>						
Natural family planning	1	2	1	4	31	39
Male condoms	1	2	2	5	45	55
Female condoms	1	2	2	4	41	50
Vaginal tablets/foam	1	1	0	0	0	2
Diaphragm	0	1	0	0	0	1
Pill	1	2	2	5	45	55
Emergency contraception	1	2	2	4	38	47
Injectables	1	2	2	5	45	55
Implants	0	0	0	0	2	2
Intrauterine device (IUD)	—	2	1	2	8	14
Female sterilization	1	3	2	0	5	11
Male sterilization	1	2	2	0	3	8

health facilities had records of the number of obstetric emergency referrals they received, with a total of 17 referrals. Of all the health centers and hospitals, only Pigg's Peak Government Hospital had the records. However, information on the number of referrals *from* health facilities was available, with 30 health facilities reporting a total of 159 obstetric emergency referrals. Horo Clinic, which does not routinely provide delivery services in its relatively far-to-reach community, referred the highest number of pregnant women (21) followed by Pigg's Peak Government Hospital (15). It is intriguing that the latter referred so many cases given that it has an obstetrician and medical doctors who could handle most obstetric emergencies.

Some pregnant women from remote communities prefer to stay in a maternity waiting home/hut near a hospital just before their baby is due. In Swaziland, three hospitals had such maternity waiting homes/huts: Good Shepherd Hospital, Mankayane Hospital, and Raleigh Fitkin Memorial Hospital.

None of the health centers had a maternity waiting hut.

### *Transport and communication*

The commonest means by which women with obstetric emergencies were transported to health facilities was by private car (30 facilities) and by bus (21), while transport by a health facilities vehicle was uncommon (3). Of the 59 health facilities, ambulances were available 24 hours a day, 7 days a week in 22 health facilities and available less than 24 hours at another 6 health facilities. All hospitals and health centers, except Dvokolwako Health Center, had an ambulance (Table 13). Nevertheless, Dvokolwako Health Center called another health facility for ambulances for emergency referrals. Additionally, 24 clinics indicated that ambulances from other facilities were called for emergency referrals. Regarding the availability of a working phone or short-wave radio transmitter, all the hospitals and health centers and 40 clinics had one of these.

**Table 12** ■ Referral procedures in 59 health facilities, 2009

	National referral hospital (1)	Regional hospitals (3)	Subregional hospitals (2)	Health centers (5)	Clinics (48)	Total (59)
<b>Item</b>						
Procedures for emergency transfer in place	1	2	2	5	24	34
Printed referral forms available	1	3	1	5	31	41
Wait time (> 30 mins) before leaving for referral facility	0	0	1	0	27	28

**Table 13** ■ Availability of transport for referral and telephones in 59 health facilities, 2009

	National referral hospital (1)	Regional hospitals (3)	Subregional hospitals (2)	Health centers (5)	Clinics (48)	Total (59)
<b>Item</b>						
Ambulance	1	3	2	4	18	28
Call other facility to send emergency vehicle	0	0	0	1	24	25
Relatives make other vehicle arrangement for emergency transfers	0	0	0	2	26	28
Telephone or two-way radio	1	3	2	5	40	51

## Equipment and supplies

Skilled service providers cannot provide quality maternal and neonatal health services without essential equipment and supplies. Table 14 presents the availability of selected essential equipment and supplies in the 59 health facilities covered in this study. While some equipment, such as weighing scales, was widely available, other equipment, such as contraceptive implant insertion and removal sets, was rarely available.

Sterilizers/autoclaves were available at 44 health facilities, including all hospitals (except Good Shepherd Hospital) and all health centers. Indeed, 26 health facilities indicated that after decontaminating and cleaning, the autoclave is the most commonly used method for disinfecting medical equipment, and an additional 10 used either steam or dry-heat sterilization. However, guidelines on infection control were only observed in eight health facilities.

Birth asphyxia (inadequate oxygen) is a major cause of death in newborns. Having the essential equipment and supplies for neonatal resuscitation can avert some neonatal deaths. Bag and mask equipment for the resuscitation of newborns was available at 28 health facilities, including all hospitals and health centers (except Dvokolwako Health Center). Neonatal resuscitation trays were less available, with only 13 facilities reporting that they had one. Heating devices such as radiant warmers and incubators are necessary for preventing hypothermia in newborns (particularly low-birth weight babies). Radiant warmers were available in 24 health facilities, including all hospitals and health centers (except Emkhuzweni Health Center), and 18 health facilities also reported having incubators.

Long-term family planning methods should be available not only in hospitals and health centers but also in community clinics to expand the range of contraceptives available to women. However, only the

Medisun Clinic had a contraceptive implant insertion and removal set, while 10 health facilities had intrauterine contraceptive insertion and removal sets.

As noted earlier, abortion complications remain the major cause of morbidity and mortality in Swaziland. Use of the manual vacuum aspirator (MVA) is the recommended safe method for treating abortion complications, but only two health facilities had MVA sets. Assisted vaginal delivery is one of the critical lifesaving emergency obstetric care procedures, but only seven health facilities had vacuum extractors. Considering that only two health facilities performed assisted vaginal delivery in 2009, as noted earlier, a few health facilities do not use the vacuum extractors they do have.

All but one health facility had electricity. Concerning access to water, 71 percent (42) of the health facilities had piped water in the labor ward, 10 percent had piped water in the compound, and others obtained their sources of water from a tanker truck vendor (8 percent) or borehole (7 percent).

## Administrative procedures

For three-quarters of health facilities, the last supervisory visit took place within the prior six months, but 10 percent of facilities had never had a visit. Likewise, 75 percent of facilities indicated they had formal meetings to discuss management or administrative issues, and half of them indicated that these meetings occur at least monthly. A third of health facilities reported that community members routinely take part in these meetings. Nevertheless, only slightly more than one in five of the health facilities collected information on clients' opinions regarding service delivery. Nineteen percent of health facilities reported that during the June–December 2009 period, health education on delivery care was carried out in the community.

Table 14 ■ Essential equipment and supplies in 59 health facilities, 2009

	National referral hospital (1)	Regional hospitals (3)	Subregional hospitals (2)	Health centers (5)	Clinics (48)	Total (59)
<b>Equipment and supplies</b>						
Adult resuscitation tray	1	3	2	3	12	21
Adult weighing scale	1	2	1	3	38	45
Baby weighing scale	1	3	2	5	35	46
Bag and mask for resuscitation of newborns	1	3	2	4	18	28
Blood storage refrigerator	1	2	2	4	24	33
Blood transfusion kit	1	2	2	3	5	13
Contraceptive implant insertion & removal set	0	0	0	0	1	1
Delivery set	1	2	2	4	9	18
Dilatation & curettage set (for incomplete abortion)	0	1	0	1	3	5
Electricity	1	3	2	5	47	58
Incubators	1	3	2	5	7	18
Intrauterine contraceptive insertion & removal set	1	1	2	0	6	10
Long-arm gloves	1	1	1	0	3	6
Manual vacuum aspirator (for incomplete abortion)	1	0	1	0	2	4
Neonate resuscitation tray	1	2	2	2	6	13
Parenteral antihypertensives	1	3	2	2	7	15
Parenteral magnesium sulphate	1	3	2	1	5	12
Water piped into ward	1	2	2	4	33	42
Plasma expanders	0	2	1	2	12	17
Radiant warmer	1	3	2	4	14	24
Sterilizers/autoclave	1	2	2	5	34	44
Ultrasound	1	3	2	4	4	14
Vacuum extractor	1	1	1	1	4	7

# Policy Implications and Recommendations

This assessment has shown that delivery services are only available in some of the health facilities that are supposed to provide such services in Swaziland. Although there are 59 facilities that should be providing delivery services, only 33 conducted deliveries in 2009. Apart from the hospitals, most of the health facilities providing delivery services are not used optimally. Of the seven *basic* EmONC procedures, assisted vaginal delivery with a vacuum extractor was the least performed, an outcome attributed to the reluctance of health personnel to perform instrumental delivery due to the country's high HIV prevalence.

Although complications of abortion are the most frequent obstetric complications and the major cause of maternal mortality, the use of the manual vacuum aspirator for the treatment of abortion complication (the method of choice for the first trimester) was only available in a couple of health facilities. Moreover, the inadequate number of appropriately trained obstetric staff remains a challenge. For instance, Hlatikulu Government Hospital, which is the Shiselweni regional hospital, had only *one* doctor, and the Shiselweni Region had the highest number of general nurses working in obstetric wards without formal midwifery training. Some health facilities were poorly equipped to provide emergency obstetric care, and long-term family planning methods, such as contraceptive implants and intrauterine contraceptives were not widely available.

Based on the findings, improving maternal and neonatal health outcomes in Swaziland will entail a four-pronged approach:

- improving the provision of emergency obstetric and neonatal care (EmONC)
- improving post-abortion care and family planning services
- strengthening the referral system, and
- strengthening the monitoring and management of maternal and neonatal health services.

This is detailed below and illustrated with quotes from the service providers who were interviewed.

## Improving the provision of emergency obstetric and neonatal care (EmONC)

To improve the provision of EmONC, upgrade all five health centers to provide *basic* EmONC (and, where possible, *comprehensive* EmONC) and ensure that all the six hospitals provide the full complement of *comprehensive* EmONC procedures. This would be accomplished by developing and disseminating obstetric protocols, training health personnel, and rehabilitating

and equipping health facilities. Additionally, to reduce congestion at the hospitals and to reduce the numbers of the born-before-arrivals at the hospitals, the community clinics would have to be equipped and staffed to provide normal delivery services.

### *Expand normal delivery services at community clinics*

Identify, designate, and equip selected communities to provide normal delivery services 24 hours a day, 7 days a week. These clinics should be renovated and appropriately staffed with midwives. During antenatal care, pregnant women should be informed of the importance of delivering at a health facility and seeking prompt care for obstetric complications. The importance of generating demand for delivery services is illustrated by the following quote:

*Encourage the community on utilizing the facilities for deliveries and educate the community about risks of home deliveries.* (Religious mission clinic, Hhohho region)

Given that traditional birth attendants (TBAs) and rural health motivators (RHMs) have been integrated into the health delivery system, and given the emphasis on the use of skilled health personnel in delivery settings, it is important to emphasize the roles of TBAs and RHMs, namely to identify, counsel, and refer mothers and their children to health facilities for needed services.

### *Develop and disseminate obstetric and neonatal protocols*

Maternal and neonatal care protocols and guidelines should be developed to improve the quality of service provision. These protocols should include: use of partograph, management of second and third stages of labor, neonatal resuscitation, newborn care (including early breastfeeding), managing preterm/low-birth weight babies, postnatal care, antibiotic treatment schemes, management of major obstetric complications (antepartum hemorrhage, postpartum hemorrhage, severe pre-eclampsia/eclampsia, sepsis, obstructed labor), post-abortion care (including use of MVA kits), and indications

for cesarean sections. Printed and laminated copies should be disseminated to both public and private health facilities.

### *Train more midwives and provide hands-on training for existing staff*

It is imperative to train more midwives and deploy them to the clinics to provide maternal and neonatal health services. This could be done by expanding the training facilities (including student accommodations) of the two midwifery training institutions, the University of Swaziland Faculty of Health Sciences and Nazarene College of Nursing, and by hiring more tutors. The midwifery training curriculum will have to be revised so that midwives are trained to provide integrated care, including among other things antenatal care, delivery, postnatal care, family planning, child health, *basic* EmONC, and the prevention and treatment of HIV/AIDS. Additionally, existing obstetric staff should be provided with hands-on training in the seven *basic* EmONC procedures as well as each of the protocols noted earlier. The Nursing Council does not currently allow midwives to perform some of the *basic* EmONC procedures, and this must be discussed accordingly. The MOH, in consultation with the Medical and Dental, Nursing, Allied Health Councils, will have to issue a guidance note on assisted vaginal delivery. Regarding future employment and deployment of midwives and doctors, priority should be given to the Shiselweni Region, which has the lowest ratios of midwives and doctors to population. The following quotes highlight the acute shortage of midwives there:

*There is a shortage of staff, especially during the day, to cater for deliveries, as the other nurses that are working at the moment are delivering other health services. If the maternity unit is to function on a daily basis, more nurses would have to be posted to this facility.* (Religious Mission clinic, Hhohho Region)

*Staffing is a major problem, because currently there are two midwives and one nursing assistant, but because of workshops, annual leave and other duties, only one midwife is available to provide all the services.* (Government clinic, Shiselweni Region)

*We are no longer doing active deliveries unless it's an emergency delivery. We need to go for training and be up-to-date with new trends.*

(Private clinic, Lubombo Region)

### **Upgrade and equip health facilities**

Health centers and hospitals need to be rehabilitated and equipped to provide emergency obstetric care, and clinics need to be rehabilitated to provide normal delivery services. The surgical theaters of health centers should be renovated, equipped, and staffed with doctors, anesthetists and surgical nurses for emergency cesarean deliveries to ease the congestion in the hospitals.

### **Improving post-abortion care and family planning services**

Considering that complications of abortion are one of the leading causes of maternal death, post-abortion care (treatment of abortion complications with MVA, post-abortion family planning counseling, and appropriate referral where necessary) should be more widely available, in line with the 2008–2013 HSSP, which states: *Train health workers in Post Abortion Care including management of patients presenting with incomplete or inevitable abortion.* Given the high HIV prevalence in Swaziland, expanding family planning services is a cost-effective strategy for PMTCT (Halperin, Stover, and Reynolds, 2009). In addition to the temporary methods, long-term family planning methods such as implants and the intrauterine device should be made more widely available. This would entail training midwives and nurses in these procedures and purchasing contraceptive implant insertion and removal sets and intrauterine contraceptive insertion and removal sets.

### **Strengthening the referral system**

The referral system could be further strengthened by improving ambulance services, training health personnel (including RHMs) in appropriate referral procedures (referral protocols and recording of transfers) and establishing maternity waiting huts/homes

at hospitals to accommodate women from remote communities who wish to stay close to the hospital prior to delivery. There are two concurrent ambulance services in place: the national EMS with its own fleet of ambulances and the ambulances at health facilities. In addition to dispatching its ambulances, the EMS should enlist the ambulances at health facilities so that when clients or service providers call the centralized toll-free Emergency Call Centre and make a request, ambulances based at the health facilities can be dispatched where appropriate to shorten the response time. To provide insights into the pros and cons of the EMS system versus clients' request made directly to a local health facility, the MOH should undertake an assessment to determine, among other things, the response time, whether health facilities have used the services of EMS, management, cost-effectiveness, and clients' perspectives. This would inform the MOH on the way forward in the expansion of the EMS. In addition, the toll-free number should be more widely publicized through the mass media and at antenatal clinics. The following quotes indicate service providers' views of the current referral system:

*Improve transport system / introduce transport system for transferring patients. Presently we use public or private transport, yet patients require monitoring along the way, e.g. bleeding heavily, labour pains.* (Government clinic, Manzini Region)

*Proper procedure for referral of obstetric emergencies should be in place.* (Religious mission clinic, Lubombo Region)

*Waiting huts must be officialized, upgraded, and be monitored as a hospital unit because most clients from remote areas have difficulty in accessing services.* (Government subregional hospital, Manzini Region)

### **Strengthening the monitoring and management of maternal and neonatal health (MNH) services**

The monitoring and management of MNH services should be strengthened by building the capacity of

the Sexual and Reproductive Health (SRH) unit, expanding maternal and perinatal death reviews, and monitoring MNH outcomes.

#### *Improve management of MNH services*

The capacity of the SRH unit should be strengthened to adequately monitor and manage reproductive health services. The SRH unit should work closely with the four Regional Health Management Teams to monitor the monthly summary reports from the health facilities and provide feedback to these teams and the health facilities. Regular, supportive supervision of the health facilities should be undertaken to improve the delivery of MNH services. Chiefs and community leaders should also be engaged to generate demand for services and incorporate their views in improving service delivery.

*At the regional level it can only improve if the staff at the grassroots level can be involved in the planning, procurement and implementation of the obstetric programme. There must also be responsible personnel that ensure that obstetric care is done correctly, equipments are available, staff is not overstretched and address the complaints of the clients. (Government clinic, Hhohho Region)*

#### *Expand maternal and perinatal death audits*

In addition to the national Confidential Enquiry into Maternal Deaths Committee, establish maternal and perinatal death review committees at hospitals and health centers, develop review guidelines, and train the committee members. The Regional Health Management Teams should regularly supervise and provide feedback to the review committees and ensure implementation of the committees' recommendations.

#### *Improve monitoring of MNH outcomes*

Review the registers for the recording of maternal and neonatal services at the health facilities as well as the monthly summary sheets submitted by the health facilities to the Regional Health Information System to ensure that appropriate data are collected for the generation of indicators for the monitoring of MNH services. Accordingly, update these registers and summary sheets, as necessary, in consultation with the Health Information System committee. For instance, data on the frequency and types of obstetric complications and duration of pregnancy need to be adequately captured. Additionally, train health personnel in recordkeeping, analysis, interpretation of the findings (such as graphic displays representing key MNH indicators), and use of the information for decision-making.

# Development Partners support for Maternal and Neonatal Health



**D**evelopment partners have been providing support to the MOH in the implementation of reproductive and child health programs. Listed below are expected sources of support from development partners during 2010–2015.

## **World Bank/European Commission**

Improving reproductive, maternal, and neonatal health care focused on EmONC accounts for at least US\$9 million of the US\$41 million *Swaziland Health, HIV/AIDS, and TB Project* (2010–2015). The two main subcomponents are: (i) increasing the availability of *basic* EmONC and *comprehensive* EmONC in public and private health facilities and (ii) increasing the capacity for monitoring maternal and newborn health outcomes. Subcomponent (i) comprises developing and disseminating EmONC guidelines, standards, and protocols; hands-on training of health personnel in lifesaving EmONC procedures; upgrading maternity wards and EmONC equipment and supplies; and strengthening the referral and transport system. Subcomponent (ii) entails strengthening the Health Management Information System to provide routine data for the monitoring of MNH outcomes; strengthening maternal and perinatal death reviews; and improving the management of MNH services.

Additionally, there is a separate US\$2.57 million *Delivering Maternal and Child Health Care to Vulnerable Populations* project funded by the Japan Social Development Fund and administered by the World Bank.

## **WHO**

The WHO Reproductive Health strategic objective is to reduce morbidity and mortality and improve health during the key stages of life, including pregnancy, childbirth, the neonatal period, childhood, and adolescence, and to improve sexual and reproductive health and promote active and healthy aging for all individuals. It is aimed at strengthening the core service components of primary health care and reducing the burden of disease while intensifying action aimed at reaching key health-related Millennium Development Goals—especially MDG 4, MDG 5 and MDG 6—and at meeting other international commitments, such as universal access to sexual and reproductive health care.

All aspects of Reproductive Health are supported to ensure well integrated and linked sexual and reproductive health services, such as those needed for family planning, maternal health, and HIV prevention and care. This process includes scaling up access to essential interventions to reduce maternal and newborn morbidity and mortality and improve women's and children's health, supporting the country to accelerate its progress in achieving international development goals and targets related to reproductive health, and pursuing evidence-based strategies in order to reduce health risks, morbidity, and mortality along the life course.

### UNFPA

The UNFPA Reproductive Health and Rights sub-program focuses on preventing HIV, mitigating HIV's impact, and providing high-quality reproductive health services, including essential obstetric care, in intervention areas. The sexual and reproductive health (SRH) Program is supported to improve the national capacity for Reproductive Health Commodity Security by procuring reproductive health commodities and training and monitoring health care workers in logistics management in order to monitor stock levels for realistic forecasting. Maternity units are equipped and health care workers are trained to manage maternal and newborn health emergencies. Skill building is also provided in reproductive health and HIV prevention for service providers in the Uniformed Service Alliance and for peer educators in the youth projects. UNFPA also supports mobile clinic services for vulnerable and underserved groups in textile industries and in rural areas. SRH related

research is supported, including campaigns targeting youth, men, and women; health care workers were also supported in their work to reduce maternal mortality.

### UNICEF

In its current program of support to the Government of Swaziland, UNICEF is providing technical and financial support to increase the uptake of PMTCT and pediatric AIDS care services, improve infant feeding practices, improve the treatment of children suffering from acute malnutrition, improve the capacity of midwives to care for neonates, and enhance girl education.

Over the next five years, the organization plans to support the Government of Swaziland to improve maternal health and child survival by providing technical and financial support for preventive and curative health and nutrition for mothers, newborns, and children. Support for prevention will be for quality PMTCT, nutrition, safe water, and basic sanitation and hygiene interventions, with a focus on the worst-affected regions. Support for curative services will focus on improving the coverage and quality of maternal and neonatal care services and pediatric AIDS care and treatment and on the management of common childhood illnesses like diarrhea, acute malnutrition, and pneumonia.

Other areas of support are strengthening national capacity for social and behavioral change communication, research, girls' education, monitoring, and evaluation.

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# Annexes

## Annex 1 ■ MOH Annual Action Plan April 2010–March 2013 for Reproductive Health (RH)

Input / Activity <sup>a</sup>	Baseline 2009	Target 2013
Develop activities on sexual gender-based violence (SGBV)		
Establish post-rape care and trauma centers		
Develop adolescent and youth-friendly RH activities	Teenage pregnancies 25%	Teenage pregnancies 15%
Establish youth-friendly centers		
Establish national RH centre		
Develop communication strategy and IEC materials for men/women		
All HF to provide ANC services	Coverage 98%	Coverage 99%
All HF to provide PNC services	Coverage 22%	Coverage 50%
Expand PMTCT; link with ART, FP and care	%HIV+ under PMTCT: 73%	%HIV+ under PMTCT: 90%
Capacitate HC to provide BEmOC and newborn care services (all HF)		
Capacitate hospitals to provide CEmOC / newborn care services		
Develop training program in critical RH related skills and competencies for doctors, nurses		
Train HW in post-abortion care		
Develop training program for TBA, RHM, traditional care providers)		
Establish RH M&E/MIS framework		
Conduct relevant SRH research		

Based on 3A.2.1. Reproductive Health: To ensure access to the widest possible package of Reproductive (RH) and Maternal Health (MH) care in order to reduce maternal and neonatal morbidity and mortality

## Annex 2 ■ Antenatal care fees in health facilities in 2009

Name of facility	Type of facility	Region	Ownership	Fee for first antenatal visit (Emalangeni)
Bhahwini Clinic	Clinic	Manzini	Government	0
Bulandzeni Clinic	Clinic	Hhohho	Government	0
Bulembu Health Centre	Clinic	Hhohho	Religious mission	0
Emkhuzweni Health Centre	Health center	Hhohho	Government	0
High Care Clinic	Clinic	Manzini	Private	0
Hlatikulu Government Hospital	Regional hospital	Shiselweni	Government	0
Horo clinic	Clinic	Hhohho	Government	0
JCI Clinic	Clinic	Shiselweni	Government	0
Lubulini Clinic	Clinic	Lubombo	Government	0
Mankayane Hospital	Subregional hospital	Manzini	Government	0
Matsanjani Health Centre	Health center	Shiselweni	Government	0
Ndzevane Clinic	Clinic	Lubombo	Government	0
Nhlangano Health Centre	Health center	Shiselweni	Government	0
Nkalashane	Clinic	Lubombo	Government	0
Pigg's Peak Government Hospital	Subregional hospital	Hhohho	Government	0
Sigcineni Clinic	Clinic	Manzini	Government	0
Siphofaneni Clinic	Clinic	Lubombo	Government	0
Tikhuba Clinic	Clinic	Lubombo	Government	0
Vuvulane Clinic	Clinic	Lubombo	Government	0
Nkwene	Clinic	Shiselweni	Government	1
Mangweni Clinic	Clinic	Hhohho	Government	2
Mfishane Clinic	Clinic	Shiselweni	Government	2
Mpuluzi clinic	Clinic	Manzini	Government	2
Sappi Usuthu	Clinic	Manzini	Private	2
Sithobela	Health center	Lubombo	Government	2
Gebeni clinic	Clinic	Manzini	Government	3
Dvokolwako Health Centre	Health center	Hhohho	Government	4
Hlane Clinic	Clinic	Lubombo	Government	4
Zombodze Clinic	Clinic	Shiselweni	Government	4
Musi Clinic	Clinic	Manzini	Government	5
Sigombeni Red Cross Clinic	Clinic	Manzini	NGO	6
Good Shepherd Hospital	Regional hospital	Lubombo	Religious mission	7
Bhalegane Clinic	Clinic	Hhohho	Religious mission	8
Mliba Nazarene Clinic	Clinic	Manzini	Religious mission	8
Mshingishingini	Clinic	Hhohho	Religious mission	8
Ngculwini Nazarene	Clinic	Manzini	Religious mission	8

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**Annex 2 ■ Antenatal care fees in health facilities in 2009** *(Continued)*

Name of facility	Type of facility	Region	Ownership	Fee for first antenatal visit (Emalangen)
Peak Nazarene	Clinic	Hhohho	Religious mission	8
Raleigh Fitkin Memorial Hospital	Regional hospital	Manzini	Religious mission	8
Shewula	Clinic	Lubombo	Government	8
Bhekinkosi Nazarene Clinic	Clinic	Manzini	Religious mission	9
Sigcaweni	Clinic	Lubombo	Religious mission	9
Malandzela Clinic	Clinic	Hhohho	Religious mission	10
Ndzingeni Nazarene Clinic	Clinic	Hhohho	Religious mission	10
Siteki Nazarene Clinic	Clinic	Lubombo	Religious mission	10
Tabankulu Clinic	Clinic	Lubombo	Private	10
Bulunga Nazarene	Clinic	Manzini	Religious mission	11
Ndwabangeni Clinic	Clinic	Hhohho	Religious mission	11
Our Lady of Sorrows	Clinic	Shiselweni	Religious mission	20
St. Theresa's Clinic	Clinic	Manzini	Religious mission	20
St. Phillips	Clinic	Lubombo	Religious mission	30
Lusoti Clinic (Simunye)	Clinic	Lubombo	Private	35
Ngomane / RSSC	Clinic	Lubombo	Private	35
Siphiwo Clinic	Clinic	Manzini	Private	50
Manzini Clinic	Clinic	Manzini	Private	200
Mkhiwa Clinic	Clinic	Manzini	Private	200
Ubombo Ranches	Clinic	Lubombo	NGO	200
Medisun Clinic	Clinic	Hhohho	Private	235
Mbabane Clinic	Clinic	Hhohho	Private	—
Mbabane Government Hospital	National referral hospital	Hhohho	Government	—

## Annex 3 ■ Normal delivery fees in health facilities in 2009

Name of facility	Type of facility	Region	Ownership	Normal delivery fee (Emalangeni)
Gebeni Clinic	Clinic	Manzini	Government	0
Horo Clinic	Clinic	Hhohho	Government	0
Mfishane Clinic	Clinic	Shiselweni	Government	0
Siphofaneni Clinic	Clinic	Lubombo	Government	0
Lubulini Clinic	Clinic	Lubombo	Government	0
Shewula	Clinic	Lubombo	Government	3
Mbabane Government Hospital	National referral hospital	Hhohho	Government	5
Emkhuzweni Health Centre	Health centre	Hhohho	Government	5
Mankayane Hospital	Subregional hospital	Manzini	Government	5
Nhlangano Health Centre	Health center	Shiselweni	Government	5
Tikhuba Clinic	Clinic	Lubombo	Government	9
Dvokolwako Health Centre	Health center	Hhohho	Government	11
Matsanjani Health Centre	Health center	Shiselweni	Government	16
Ndwabangeni Clinic	Clinic	Hhohho	Religious mission	20
Sigcineni Clinic	Clinic	Manzini	Government	20
Sigcaweni	Clinic	Lubombo	Religious mission	20
Hlatikulu Government Hospital	Regional hospital	Shiselweni	Government	24
Sithobela	Health center	Lubombo	Government	26
Pigg's Peak Government Hospital	Subregional hospital	Hhohho	Government	33
Bhahwini Clinic	Clinic	Manzini	Government	35
Bhekinkosi Nazarene Clinic	Clinic	Manzini	Religious mission	35
Raleigh Fitkin Memorial Hospital	Regional hospital	Manzini	Religious mission	50
Good Shepherd Hospital	Regional hospital	Lubombo	Religious mission	120
St. Phillips	Clinic	Lubombo	Religious mission	260
Tabankulu Clinic	Clinic	Lubombo	Private	400
Mkhiwa Clinic	Clinic	Manzini	Private	600
Lusoti Clinic (Simunye)	Clinic	Lubombo	Private	695
Ngomane / RSSC	Clinic	Lubombo	Private	695
Ubombo Ranches	Clinic	Lubombo	NGO	800
St. Theresa's Clinic	Clinic	Manzini	Religious mission	1800
Mbabane Clinic Private Hospital	Clinic	Hhohho	Private	5400
Manzini Clinic	Clinic	Manzini	Private	5500
Medisun Clinic	Clinic	Hhohho	Private	5600

Annex 4 ■ Emergency obstetric and neonatal (EmONC) procedures and classification of health facilities, 2009

Name of facility <sup>a</sup>	Type of facility	Region	Removal				Assisted vaginal delivery	Blood transfusion	Cesarean section	Type of Emergency Obstetric and Neonatal Care <sup>a</sup>	
			Parenteral antibiotics	Parenteral oxytocins	Parenteral anti-convulsants	Removal of retained products of conception				Manual removal of placenta	Neonatal resuscitation
Mbabane Clinic	Clinic	Hhohho	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Comprehensive minus
Mbabane Government Hospital	National referral hospital	Hhohho	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Comprehensive minus
Medisun Clinic	Clinic	Hhohho	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Comprehensive minus
Pigg's Peak Government Hospital	Subregional hospital	Hhohho	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Comprehensive minus
Dvokolwako Health Centre	Health center	Hhohho	Yes	Yes	No	No	Yes	No	No	Yes	Basic minus
Emkhuzweni Health Centre	Health center	Hhohho	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Basic minus
Horo clinic	Clinic	Hhohho	No	No	No	No	No	No	No	No	None
Ndwabangeni Clinic	Clinic	Hhohho	No	No	No	No	No	No	No	No	None
Good Shepherd Hospital	Regional hospital	Lubombo	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Comprehensive minus
Sithobela	Health center	Lubombo	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Basic minus
Ubombo Ranches	Clinic	Lubombo	Yes	No	No	Yes	No	No	No	No	Basic minus
St. Phillips	Clinic	Lubombo	No	Yes	No	No	No	No	No	No	None
Lubulimi Clinic	Clinic	Lubombo	No	No	No	No	No	No	No	No	None
Lusoti Clinic (Simunye)	Clinic	Lubombo	No	No	No	Yes	Yes	No	No	No	None
Ngomane /RSSC	Clinic	Lubombo	No	No	No	No	No	No	No	No	None
Sigcaweni	Clinic	Lubombo	No	No	No	No	No	No	No	No	None
Shewula	Clinic	Lubombo	No	No	No	No	No	No	No	No	None
Siphofaneni Clinic	Clinic	Lubombo	No	No	No	No	Yes	No	No	No	None

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Annex 4 ■ Emergency obstetric and neonatal (EmONC) procedures and classification of health facilities, 2009 (Continued)

Name of facility <sup>a</sup>	Type of facility	Region	Parenteral antibiotics	Parenteral oxytocins	Parenteral anti-convulsants	Removal of retained products of conception	Manual removal of placenta	Neonatal resuscitation	Assisted vaginal delivery	Blood transfusion	Caesarean section	Type of Emergency Obstetric and Neonatal Care <sup>a</sup>	
												Cesarean section	None
Tabankulu Clinic	Clinic	Lubombo	Yes	No	No	Yes	No	No	No	No	No	No	None
Tikhuba Clinic	Clinic	Lubombo	No	No	No	No	No	No	No	No	No	No	None
Mankayane Hospital	Subregional hospital	Manzini	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Comprehensive minus
Manzini Clinic	Clinic	Manzini	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Comprehensive minus
Mkhiwa Clinic	Clinic	Manzini	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Comprehensive minus
Raleigh Fitkin Memorial hospital	Regional hospital	Manzini	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Comprehensive minus
Gebeni clinic	Clinic	Manzini	Yes	Yes	Yes	No	Yes	No	No	No	No	No	Basic minus
Bhahwini Clinic	Clinic	Manzini	No	Yes	No	No	No	Yes	No	No	No	No	None
Bhekinkosi Nazarene Clinic	Clinic	Manzini	No	No	No	No	No	No	No	No	No	No	None
Sigcimeni Clinic	Clinic	Manzini	No	No	No	No	No	No	No	No	No	No	None
St. Theresa's Clinic	Clinic	Manzini	No	No	No	No	No	No	No	No	No	No	None
Hlatikulu Government Hospital	Regional hospital	Shiselweni	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Comprehensive minus
Nhlangano Health Centre	Health center	Shiselweni	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	Basic minus
Matsanjani Health Centre	Health center	Shiselweni	Yes	Yes	Yes	No	No	Yes	No	Yes	No	No	Basic minus
Mfishane Clinic	Clinic	Shiselweni	No	No	No	No	No	No	No	No	No	No	None

<sup>a</sup>Comprehensive EmONC minus: provided Caesarean section but missed one or more of the basic EmONC procedures; Basic EmONC minus: provided at least 4 of the basic EmONC procedures; None: provide less than 4 of the EmONC procedures. The list of health facilities for each region are ranked by the level of EmONC and then by alphabetical order within each category of EmONC.

## Annex 5 ■ Swaziland Abortion Policy

There is no statutory law in Swaziland governing the performance of abortions. Instead, abortion is a matter of common law, which is patterned after Roman-Dutch common law. Under this law, which was also in effect in South Africa prior to the enactment of its Abortion and Sterilization Act (1975), abortion is prohibited except in cases of necessity.

Although there are no legal provisions specifying by whom or where a legal abortion must be performed or the gestational limits to be observed, practice suggests that legal abortions be performed by registered physicians in government hospitals, private clinics, or other approved institutions and may be performed at up to 20 weeks of gestation

### Grounds on which abortion is permitted:

To save the life of the woman	Yes
To preserve physical health	No
To preserve mental health	No
Rape or incest	No
Foetal impairment	No
Economic or social reasons	No
Available on request	No

Source: Population Policy Data Bank, 2010. Abortion Policies: A Global Review.  
<http://www.un.org/esa/population/publications/abortion/>

**Annex 6 ■ Operational definitions of major direct obstetric complications****Haemorrhage**

## Antepartum

- severe bleeding before and during labor: placenta praevia, placental abruption

## Postpartum (any of the following)

- bleeding that requires treatment (e.g. provision of intravenous fluids, uterotonic drugs or blood)
- retained placenta
- severe bleeding from lacerations (vaginal or cervical)
- vaginal bleeding in excess of 500 ml after childbirth
- more than one pad soaked in blood in 5 minutes

**Prolonged or obstructed labor (dystocia, abnormal labor) (any of the following)**

- prolonged established first stage of labor (> 12 h)
- prolonged second stage of labor (> 1 h)
- cephalo-pelvic disproportion, including scarred uterus
- malpresentation: transverse, brow or face presentation

**Ruptured uterus**

- Uterine rupture with a history of prolonged or obstructed labor when uterine contractions suddenly stopped. Painful abdomen (pain may decrease after rupture of uterus). Patient may be in shock from internal or vaginal bleeding

**Postpartum sepsis**

- A temperature of 38°C or higher more than 24 hours after delivery (with at least two readings, as labor alone can cause some fever) and any one of the following signs and symptoms: lower abdominal pain, purulent, offensive vaginal discharge (lochia), tender uterus, uterus not well contracted, history of heavy vaginal bleeding (rule out malaria.)

**Complications of abortion (spontaneous or induced)**

- haemorrhage due to abortion, which requires resuscitation with intravenous fluids, blood transfusion or uterotonics
- sepsis due to abortion (including perforation and pelvic abscess)

**Severe pre-eclampsia and eclampsia**

- Severe pre-eclampsia: Diastolic blood pressure  $\geq$  110 mm Hg or proteinuria  $\geq$  3 after 20 weeks' gestation. Various signs and symptoms: headache, hyperflexia, blurred vision, oliguria, epigastric pain, pulmonary oedema
  - Eclampsia
  - Convulsions; diastolic blood pressure  $\geq$  90 mm Hg after 20 weeks' gestation or proteinuria  $\geq$  2.
- Signs and symptoms of severe pre-eclampsia may be present

**Ectopic pregnancy**

- Internal bleeding from a pregnancy outside the uterus; lower abdominal pain and shock possible from internal bleeding; delayed menses or positive pregnancy test

Source: WHO/UNFPA/UNICEF/AMDD, Monitoring Emergency Obstetric Care: A Handbook (Geneva: World Health Organization, 2009).

**Annex 7 ■ Selected indicators in 14 health facilities with more than one delivery per week in 2009**

Health facility	Type of facility	Region	Level of EmONC	Expected EmONC upgrade	Cesarean delivery rate	Total deliveries
Manzini Clinic	Clinic	Manzini	Comprehensive minus	Comprehensive	64.5	107
Medisun Clinic	Clinic	Hhohho	Basic minus	Basic	54.8	135
Mbabane Clinic	Clinic	Hhohho	Basic minus	Basic	64.3	196
Dvokolwako Health Centre	Health center	Hhohho	Basic minus	Basic	—	264
Sithobela Health Centre	Health center	Lubombo	Basic minus	Basic	—	290
Matsanjani Health Centre	Health center	Shiselweni	Basic minus	Basic	—	434
Emkhuzweni Health Centre	Health center	Hhohho	Basic minus	Basic	—	507
Nhlangano Health Centre	Health center	Shiselweni	Basic minus	Basic	—	625
Mankayane Hospital	Subregional hospital	Manzini	Comprehensive minus	Comprehensive	12.7	1814
Pigg's Peak Government Hospital	Subregional hospital	Hhohho	Comprehensive minus	Comprehensive	—	1921
Hlatikulu Government Hospital	Regional hospital	Shiselweni	Comprehensive minus	Comprehensive	7.7	2431
Good Shepherd Hospital	Regional hospital	Lubombo	Comprehensive minus	Comprehensive	16.6	2946
Mbabane Government Hospital	National referral hospital	Hhohho	Comprehensive minus	Comprehensive	12.9	3634
Raleigh Fitkin Memorial Hospital	Regional hospital	Manzini	Comprehensive minus	Comprehensive	7.8	8386

\*Comprehensive EmONC minus: provided Caesarean section but missed one or more of the basic EmONC procedures; Basic EmONC minus: provided at least 4 of the basic EmONC procedures; None: provide less than 4 of the EmONC procedures

