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LEVELS AND TRENDS IN NEWBORN CARE SERVICE AVAILABILITY AND READINESS IN BANGLADESH, HAITI, MALAWI, SENEGAL, AND TANZANIA

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Levels and Trends in Newborn Care Service Availability and Readiness in Bangladesh, Haiti, Malawi, Senegal, and Tanzania

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Preface

The Demographic and Health Surveys (DHS) Program is one of the principal sources of international data on fertility, family planning, maternal and child health, nutrition, mortality, environmental health, HIV/AIDS, malaria, and provision of health services.

One of the objectives of The DHS Program is to provide policymakers and program managers in low- and middle-income countries with easily accessible data on levels and trends for a wide range of health and demographic indicators. DHS Comparative Reports provide such information, usually for a large number of countries, in each report. These reports are largely descriptive, without multivariate methods, but where possible they include confidence intervals, statistical tests, or both.

The topics in the DHS Comparative Reports series are selected by The DHS Program in consultation with the U.S. Agency for International Development.

It is hoped that the DHS Comparative Reports will be useful to researchers, policymakers, and survey specialists, particularly those engaged in work in low- and middle-income countries.

Sunita Kishor
Director, The DHS Program

Abstract

This study examines levels and trends in two dimensions of newborn care quality—service availability and service readiness—in Bangladesh, Haiti, Malawi, Senegal, and Tanzania, the five USAID maternal and child health (MCH) priority countries with Service Provision Assessment (SPA) surveys conducted since 2011. In each country, key services, commodities, and medicines needed for comprehensive delivery and newborn care were missing from a large proportion of facilities that offer normal delivery services. Of the three domains of service availability examined, scores for routine care availability are consistently highest, and scores for newborn signal function availability are lowest. Of the four domains of service readiness examined, scores for general requirements and equipment are consistently highest, while scores for guidelines and staffing are lowest. Both service availability and service readiness tend to be highest in hospitals and in urban areas, pointing to substantial equity gaps in the quality of newborn care. In Tanzania, where two SPA surveys were conducted recently, in 2006 and 2014-15, all measurable domains of newborn care service availability and readiness showed significant improvement between surveys, and urban-rural and public-private quality gaps narrowed. In conclusion, we found some encouraging evidence of newborn care service availability and readiness among the countries studied, but we also identified a great deal of room for improvement. The findings indicate the need for broad initiatives that improve staff competence, address systemic barriers to service provision, and promote equity in newborn care quality.

KEY WORDS: newborn care, quality of care, service provision assessment, USAID maternal and child health (MCH) priority countries

Executive Summary

This study examines levels and trends in two dimensions of newborn care quality—service availability and service readiness—in Bangladesh, Haiti, Malawi, Senegal, and Tanzania, the five USAID maternal and child health (MCH) priority countries with Service Provision Assessment (SPA) surveys conducted since 2011. First, we present current levels of newborn care quality among facilities with normal delivery services in the five countries. Next, we show trends in newborn care quality in Tanzania, the one country with two recent SPA surveys available with adequate spacing between them (of roughly five years). Finally, we examine the bivariate association between newborn care quality scores and the neonatal mortality rate in the geographic regions of three study countries with closely timed Demographic and Health Surveys (DHS) and SPA surveys.

To assess newborn care quality, the study examines three domains of service availability: basic emergency obstetric care (BEmOC) signal functions, newborn signal functions, and routine perinatal practices; and four domains of service readiness: general facility requirements, equipment, medicines and commodities, and guidelines and staffing. In accord with the WHO SARA approach, we computed composite indicators to assess overall newborn care service availability and readiness in the facilities. Indicators within each domain of service availability and service readiness were given equal weight to produce a domain score, and each domain was in turn weighted equally to produce a summary score for service availability and for service readiness.

In all five countries, key services and supplies needed for comprehensive delivery and newborn care were missing from a large proportion of facilities that offer normal delivery services. Summary scores for newborn care service availability range from 40 in Tanzania to about 60 in Malawi and Senegal. In all countries, of the three domains of service availability, scores for routine care availability are highest and scores for newborn signal function availability are lowest. Summary scores for newborn care service readiness range from 42 in Tanzania to 62 in Malawi. The coverage patterns for the four domains of service readiness are consistent across the countries, with guidelines and staffing scoring the lowest, followed by scores for medicines and commodities. Scores for general requirements and equipment are consistently similar to each other, and are higher.

The patterns in service availability and service readiness scores by facility characteristics are strikingly similar. Both service availability and readiness scores tend to be highest in hospitals and in urban areas. There is less difference in scores between public and private facilities, except for Bangladesh and Tanzania, where private facilities score notably higher for service availability and service readiness. Differentials across facility characteristics tend to be widest in Bangladesh, and are remarkably narrow in Senegal.

In Tanzania, where two SPA surveys have been conducted recently, in 2006 and 2014-15, we examined trends in a subset of indicators that were available in both surveys. All five measurable domains of newborn care service availability and service readiness showed significant improvement between surveys. The greatest improvements were made in average BEmOC availability, with notable increases in assisted vaginal delivery (a 66 percentage point increase) and removal of retained products (a 23 percentage point increase). Coverage of uninterrupted electricity availability and improved water onsite also increased substantially, with the largest gains at health centers and dispensaries/clinics, and at public rather than private facilities, indicating a narrowing of the equity gap in newborn care in Tanzania.

In our bivariate analysis of the association between neonatal mortality rates and newborn care service availability and service readiness scores in Bangladesh, Haiti, and Senegal, we found regional neonatal mortality rates to be marginally significantly ($p<0.10$) associated with service availability scores, and not with service readiness scores. The associations between neonatal mortality rates and service availability

scores are in the expected direction, with lower scores tending to be correlated with higher regional neonatal mortality rates, and are marginally significant for two of the three domains of service availability: BEmOC availability and routine perinatal care availability.

In conclusion, we found some encouraging evidence related to newborn care service availability and readiness among the countries studied, and also identified a great deal of room for improvement. Of the seven domains of service availability and service readiness studied, routine care consistently scores highest, while newborn signal functions and guidelines and staffing tend to score lowest. The results point to persistent inequities in access to high-quality newborn care between urban and rural areas and between hospitals and the more ubiquitous health centers and dispensaries/clinics. Together, the findings indicate the need for broad initiatives that improve staff competence, address systemic barriers to service provision, and promote equity in newborn care quality. The trend analysis for Tanzania provides a hopeful sign, but more studies are needed to understand the extent to which newborn care service availability and readiness is improving in other countries.

1. Introduction

1.1. Rationale for the Study

Recent gains in child survival have been concentrated in the post-neonatal period, with slower gains made in survival during the first month of life (UNICEF et al. 2015). While there is general agreement regarding the importance of essential delivery and newborn[1] care services, recent studies using household survey data have found no evidence that scale-up of facility deliveries or skilled birth attendance has been associated with reductions in neonatal mortality (Singh et al. 2012; Winter et al. 2014). These findings point to the need to supplement demand-side information on women's use of delivery and newborn services with supply-side information on the quality and content of those services. The current study examines two dimensions of newborn care quality—service availability and service readiness—in five USAID maternal and child health (MCH) priority countries with Service Provision Assessment (SPA) surveys conducted since 2011. This report is the first comparative presentation of the quality of newborn care among five countries, and the first presentation of trends in the quality of newborn care in Tanzania, with measures derived from consecutive SPA surveys.

Chapter 1 provides background information on the epidemiology of neonatal mortality, descriptions of key newborn care interventions, definitions of quality, and measurement issues. Chapter 2 describes the data and the methodology of the study and defines all variables. Chapter 3, with results, has three sections. Section 1 presents current levels of newborn care quality[2] among facilities with normal delivery services in the five study countries. This section also examines the gap between facility readiness to provide delivery care and observed service provision in Malawi, the one study country with data obtained from observations of normal deliveries. Section 2 shows trends in newborn care quality in Tanzania, the one country with two recent SPA surveys available with adequate spacing between them (of roughly five years). Section 3 examines the bivariate association between newborn care quality scores and the neonatal mortality rate in the geographic regions of three study countries with closely timed Demographic and Health Surveys (DHS) and SPA surveys. Finally, chapter 4 provides interpretation of key findings, overall conclusions, and policy implications.

1.2. Background

Nearly half of under-five mortality occurs during the neonatal period, the first 28 days of life (WHO 2015a). The *immediate* postnatal period, the first 24 hours, holds the greatest risk for neonatal mortality, from birth asphyxia, trauma, pre-term birth-related breathing difficulty, and sepsis, and is the period when the need for high-quality newborn care is paramount; the *early* postnatal period (days 2 through 7) brings risks from sepsis, malaria and other infectious diseases; and the *late* postnatal period (days 8 through 42) is when these risks gradually diminish (Kanté et al. 2015; WHO 2010). While advocacy and policy efforts have advanced the agenda for newborn health, they have not been followed by adequate investment and large-scale implementation of evidence-based interventions (Darmstadt et al. 2014). Thus, while the neonatal mortality rate has decreased everywhere over the past 15 years, the proportion of under-five deaths that occur during the neonatal period has increased, in all regions except Western Pacific (WHO 2015b).

Causes of neonatal mortality include prematurity (35%), intrapartum-related complications including birth asphyxia (24%), neonatal sepsis (15%), congenital anomalies (11%), pneumonia (7%), neonatal tetanus (2%), and other causes (7%) (WHO 2015a). The health of mothers and infants is inextricably linked during

[1] Throughout the report, the terms newborn and neonatal are used interchangeably to refer to the first 28 days of life.
[2] For simplicity, we use the word "quality," though the report measures just two dimensions of quality: service availability and service readiness.

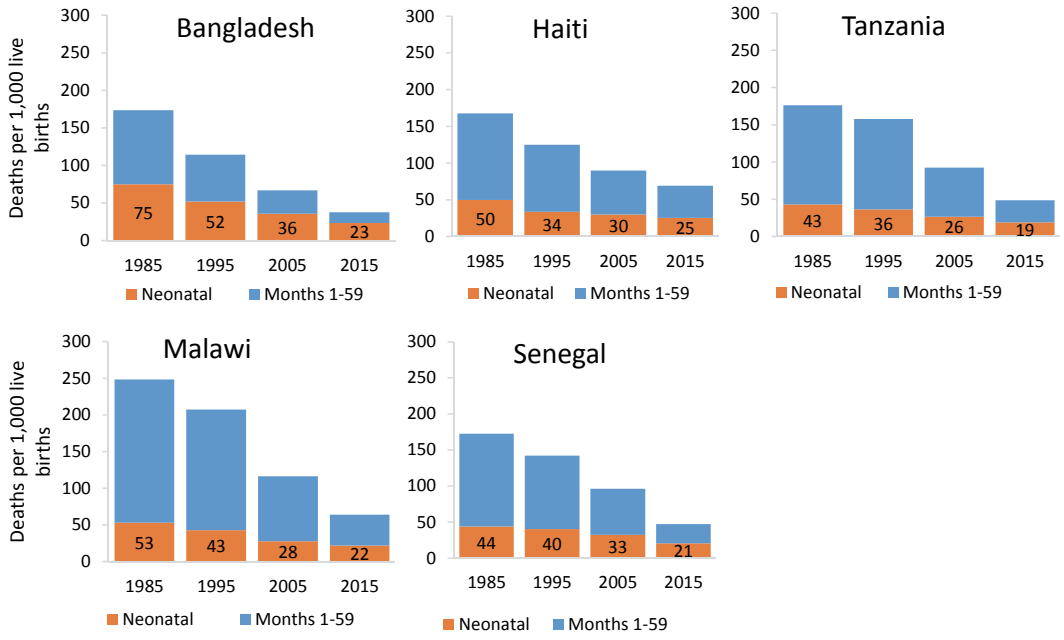
the neonatal period, and interventions to protect one can help both. Monitoring the quality and content of newborn care provides information needed to improve services to protect mothers' and infants' health.

Mothers are advised to deliver their babies in health facilities in order to protect both their own and their infants' health (Exavery et al. 2014; Tura, Fantahun, and Worku 2013). Evidence from a systematic review and meta-analysis suggests that facility delivery reduces the overall risk of neonatal mortality in low- and middle-income countries (Tura, Fantahun, and Worku 2013), but not all studies have found that to be the case (Lohela, Campbell, and Gabrysch 2012; Moyer, Dako-Gyeke, and Adanu 2013; Winter et al. 2014). The provision of newborn care in the immediate and early postnatal period depends particularly on "health-system infrastructure, capacity, and resources" (Dickson et al. 2014), and skilled health staff may be unavailable to provide immediate care to the newborn even where there was skilled attendance at birth. Thus, delivering in a facility that is ill-equipped to provide newborn care may not in fact protect the infant. It is critical to ensure an optimal standard of care for mothers and newborns in health facilities, but there is a gap in monitoring the quality of newborn care due to a lack of data (Rubayet et al. 2012).

1.2.1. Country context

Figure 1 shows the neonatal mortality rate (NMR) as a proportion of the under-five mortality rate over the past 30 years in the five countries studied. The NMR has been cut approximately in half in each country over the past 30 years, but in the past 10 years the decrease has slowed except in Senegal. While Bangladesh has seen the most dramatic decrease in NMR over the 30-year period compared with the other four countries (from 75 deaths per 1,000 live births in 1985 to 23 deaths per 1,000 live births in 2015), its NMR is still the highest proportion (more than half) of the under-five mortality rate. Visual inspection of the charts in Figure 1 makes plain the case that the dramatic decreases in under-five mortality in these five countries have not occurred among newborns to the same extent as the rest of the under-five population.

Figure 1. Decline in the neonatal mortality rate alongside decline in the under-five mortality rate, 1985-2015, Bangladesh, Haiti, Tanzania, Malawi, Senegal



Note: The orange bar shows the neonatal mortality rate, the blue bar shows the mortality rate for children age 1-59 months, and the total height represents the mortality rate for children under age 5.

Source: Data were downloaded from www.childmortality.org

Although few formal studies have been published about the status of newborn care and its association with neonatal survival in these five countries, evidence suggests that, in general, the quality of care in health facilities is lacking. A study using DHS data from Southern Tanzania found that delivery in health facilities was not associated with greater neonatal survival compared with delivery in the community in any of the three years assessed (Nathan and Mwanyangala 2012). In Malawi a major increase in facility births between 2000 and 2010 did not improve access to essential services for the majority of mother-infant dyads with complications, leaving an estimated 22% unmet need for emergency obstetric care in 2010. In addition, 75% of the facilities lacked three or more signal functions and had shortages of staff and supplies (Zimba et al. 2012). The quality of newborn care services in Malawi was consistently lower than that of other health services (Rozario et al. 2010). In Bangladesh, factors identified as favorable to newborn survival included local and global evidence from research, high-profile champions, considerable donor funding, and attention to community initiatives. Nevertheless, a notable gap remained in the quality of facility-based services (Rubayet et al. 2012).

1.2.2. Key newborn interventions and measurement of quality

1.2.2.1. Key newborn care interventions

Interventions during labor and birth, including addressing obstetric complications, have the greatest impact on neonatal survival, followed by appropriate care for small or ill newborns (Bhutta et al. 2014). Available interventions during the antenatal, labor and delivery, and postnatal periods could reduce neonatal deaths due to being preterm by 58%, intrapartum complications by 79%, and infections by 84% (Table 1) (Bhutta et al. 2014). In addition, specific interventions that have an impact on neonatal mortality include: umbilical cord antiseptics; neonatal resuscitation; hypothermia for hypoxic ischaemic encephalopathy; surfactant therapy for respiratory distress syndrome; preventive surfactant therapy for preterm neonates; topical emollient therapy; hypothermia prevention for preterm infants; Kangaroo Mother Care in preterm infants; oral and injectable antibiotics for pneumonia; and antibiotics for sepsis (Bhutta et al. 2014).

Table 1. Interventions during labor, delivery, and the immediate postnatal period (from Bhutta et al. 2014 conceptual model)

Interventions during labor and delivery	Interventions during the immediate postnatal period
Skilled birth attendance[1]	Cord care and clamping
Hygienic care at birth	Prevention of hypothermia
Emergency obstetric care	Early and exclusive breastfeeding
Management of term breech and post-term pregnancies	Provision of Vitamin K
Management of pre-term labor	For small or ill neonates[2]: resuscitation; care for babies with encephalopathy; extra thermal care and other special care for small infants; managing infections; and preventing and managing supportive hyperbilirubinaemia
Antibiotics for preterm premature rupture of membranes	

[1] Closely corresponds to facility delivery in some countries (e.g., Malawi and Tanzania), but not in others (e.g., Bangladesh) (Winter et al. 2014).
[2] Estimates suggest the greatest effect would come from interventions focusing on small or ill neonates.

1.2.2.2. Measurement of quality of newborn care

There is no single, comprehensive definition for high-quality maternal and newborn care, but there is recognition of its multifaceted nature (Raven et al. 2012). WHO defines quality of maternal and newborn care with these characteristics: safe, effective, timely, efficient, equitable, and people-centered; WHO's Quality of Care Framework emphasizes the importance of assuring quality in the provision of care as well as in the experience of care (Tuncalp et al. 2015). Addressing quality of care includes facilitating provider competencies and environments that can provide essential clinical interventions with dignity (Chou et al. 2015). Important aspects of ensuring quality include: a rights-based approach, evidence-based care, consideration of the dependency within the mother-baby dyad, and consideration of pregnancy in general as a healthy state (Raven et al. 2012).

With data from the SPA surveys, we cannot assess all aspects of the quality of newborn care. In this report we focus on two measurable dimensions of quality: service availability and service readiness. Service availability refers to the reported availability of essential newborn care services at the facility, while service readiness refers to the facility's observed capacity to provide those services (WHO 2016b). These two dimensions are necessary—but not sufficient—components of providing high-quality newborn care.

1.2.2.3. Measurement of service availability and readiness

Despite agreement on the key packages and health interventions needed to protect and save newborn lives, there is little consensus on which key indicators are needed to assess facility-level readiness to provide newborn care (Gabrysch et al. 2012). The basic and comprehensive emergency obstetric care (EmOC) signal functions, shortlists of life-saving services first introduced in 1997 by the United Nations, are widely used to assess the functionality of health facility delivery care. But these functions focus primarily on provisions to treat the main causes of maternal mortality. With the exception of one recently added signal function on newborn resuscitation (introduced in 2009), the EmOC signal functions do not gauge facility readiness to provide essential newborn care (WHO et al. 2009).

Work has been underway to develop metrics for facility provision of newborn care. The Newborn Indicators Technical Working Group (TWG)[3] developed an evidence-based list of newborn care service indicators that includes measures of service availability, equipment and supplies, documentation, staff training, supervision, and additional optional indicators (Newborn Indicators Technical Working Group 2012). Gabrysch and colleagues (2012) also proposed a new set of obstetric and newborn signal functions that includes four areas: general health facility requirements, routine care for all mothers and babies, basic emergency care for mothers and babies with complications, and comprehensive emergency care functions. Finally, the WHO Service Availability and Readiness Assessment (SARA) includes numerous indicators on newborn care. The current study combines indicators from these three sources—the TWG, Gabrysch and colleagues (2012), and the WHO SARA—to generate metrics to assess the quality of newborn care provided at health facilities during labor and delivery and the immediate postnatal period.

[3] First convened by Save the Children's Saving Newborn Lives program (SNL) in 2008, the Newborn Indicators Technical Working Group is a team of experts from evaluation and measurement, researchers, UN agencies, non-governmental organizations and donors, who collaborate to assess survey-based indicators to monitor and evaluate newborn health. The group includes representatives from SNL, USAID, ICF, and UNICEF (Save the Children Federation).

2. Data and Methods

2.1. Data

The study uses data from Service Provision Assessment (SPA) surveys in 5 of the 24 USAID maternal and child health (MCH) priority countries—Bangladesh, Haiti, Malawi, Senegal, and Tanzania. These facility-based surveys, developed by ICF International, provide information on the availability and readiness of health services, including antenatal care, delivery care, and newborn care services at formal-sector health facilities Specifically, the SPA surveys collect data on facility infrastructure (running water, electricity, privacy, etc.), the availability of resources (equipment, supplies, and medicines) and supportive processes and systems (client records, supervision, staff training, etc.). For certain types of services, the SPA surveys also collect information on the extent to which service providers adhere to standards of care, and the extent to which clients are satisfied with the care received.

Study countries were selected according to two criteria. We focused the initial selection on the 24 USAID MCH priority countries. These 24 countries account for more than 70% of global maternal deaths and are the focus of USAID programmatic efforts to scale up high-impact interventions and strengthen health systems (USAID 2013). We then restricted the analysis to countries with a SPA survey conducted within the last five years (i.e. since 2011) with data available as of May 2016. Table 2 presents survey characteristics for the five countries (six surveys) included in the study. Tanzania is the only study country with two recent SPA surveys available with adequate spacing between them (of roughly five years), enabling an analysis of trends in facility-level provision of newborn care. Four of the six surveys included in the study are nationally representative sample surveys, while two (Haiti 2013 and Malawi 2013-14) are a census of all health facilities in the country. All six surveys are able to produce indicators that are representative at the national level by facility type, managing authority, and geographic region.

Table 2 shows the total number of facilities included in each survey. The study was restricted to facilities that offer normal delivery services. It included 280 facilities with normal delivery services in the Bangladesh 2014 survey, 389 facilities in the Haiti 2013 survey, 528 facilities in the Malawi 2013-14 survey, 279 facilities in the Senegal 2014 survey, 451 facilities in the Tanzania 2006 survey, and 905 facilities in the Tanzania 2014-15 survey. Sample weights were applied throughout the study, so that indicator estimates are representative of each country's actual mix of facilities, rather than the sample's mix of facilities.

Table 2. Description of SPA surveys included in the study

Country/year	Number of facilities[1]	Unweighted number of facilities with normal delivery services	Weighted number of facilities with normal delivery services	Sample or census
Bangladesh 2014	1548	586	280	sample
Haiti 2013	905	389	389	census
Malawi 2013-14	977	528	528	census
Senegal 2014[2]	363	282	279	sample
Tanzania 2006	611	433	451	sample
Tanzania 2014-15	1188	951	905	sample

[1] For all SPA surveys, the facility weights are normalized to have an equal unweighted and weighted total number of facilities.

[2] The Senegal 2014 SPA is part of the Senegal Continuous Survey project, which is designed to have five annual rounds of both DHS and SPA data collection, with the last round in 2017. This study uses the most recent available year of data, 2014. This survey included a subsample of health huts (case de santé). However, the methodology used to select health huts was different and their probability of selection was dependent on that of the health posts with which they were affiliated. Health huts are excluded from the current study.

SPA surveys include four standardized data collection instruments—the Facility Inventory Questionnaire, the Provider Interview Questionnaire, Observation Protocol, and Client Exit Interview—which provide general and service-specific information on the availability and quality of health services. This study relies primarily on the Facility Inventory Questionnaire, which collects information on health facilities' infrastructure, supplies, medicines, staffing, training, and procedures, as well as on the availability of specific delivery and newborn services, through interviews with the person most knowledgeable about delivery services in the facility. The study also draws on the Provider Interview Questionnaire, which collects information on the experience, qualifications, and perceptions of the service delivery environment among health care workers who provide selected services. SPA surveys do not typically include observations of normal deliveries, or exit interviews with women after giving birth. However, the Malawi 2013-14 SPA did include observation of normal deliveries, and this report examines those results.

2.2. Measurement of Newborn Care Quality

2.2.1. Indicators

The analysis focuses on tracer indicators that report on two dimensions of newborn care quality: service availability and readiness. Newborn care quality indicators included in the study draw from three sources. The primary source is a list of Newborn Care Service Indicators selected by the Newborn Indicators Technical Working Group (TWG) (Newborn Indicators Technical Working Group 2012). These indicators are supplemented by additional indicators in the WHO Service Availability and Readiness Assessment (SARA) indicators of "basic obstetric and newborn care" (WHO 2015c), and by Gabrysch and colleagues' (2012) proposed obstetric and newborn signal functions. The study examines most but not all suggested TWG indicators. Indicators related to prevention of mother-to-child transmission of HIV (PMTCT), for example, are not included for several reasons. First, since the burden of HIV varies substantially across the study countries, the indicator is less relevant in some country contexts than in others. Second, while PMTCT is important, HIV is not a common cause of newborn death; it becomes more relevant for the post-neonatal period (Naniche et al. 2009). Several other suggested indicators are not available in the SPA surveys. For example, referral services for lower-level facilities, suggested by Gabrysch and colleagues (2012), are crucial, but the standard SPA survey does not collect this information. It also does not include information on whether the following items are available: resuscitation table, towel for drying the baby, or up-to-date delivery register.

Following the WHO SARA approach, the selected indicators are organized into two dimensions of newborn care—service availability and service readiness. Specifically, the study assesses three domains of service availability: basic emergency obstetric care (BEmOC) signal functions, newborn signal functions, and routine perinatal practices; and four domains of service readiness: general facility requirements, equipment, medicines and commodities, and guidelines and staffing. Table 3 describes the seven domains, lists and defines the indicators, and notes their relevance to newborn survival.

Table 3. Summary of metrics used to assess quality of newborn care at health facilities: Service availability and service readiness

		Indicator name	Definition	Recommended as indicator by:	Importance of this component of care
Service Availability	Domain A: Basic emergency obstetric care (BEmOC) signal functions	Parenteral administration of antibiotics	Among facilities offering normal delivery services, percentage reporting that they performed this signal function for emergency obstetric care at least once during the three months before the assessment	NITWG; Gabrysch et al 2012; WHO SARA	Part of EmoNC, which reduces risk of intraprum-related neonatal deaths (Bhutta et al. 2014).
		Parenteral administration of uterotonic drugs	see above	see above	see above
		Parenteral administration of anticonvulsants for hypertensive disorders of pregnancy	see above	see above	see above
		Manual removal of placenta	see above	see above	see above
		Assisted vaginal delivery	see above	see above	see above
		Removal of retained products	see above	see above	see above
	Domain B: Newborn signal functions	Neonatal resuscitation	Among facilities offering normal delivery services, percentage reporting that they performed neonatal resuscitation at least once during the three months before the assessment	NITWG; Gabrysch et al 2012; WHO SARA	Reduces risk of intrapartum-related death (Bhutta et al. 2014)
		Corticosteroids in preterm labor	Among facilities offering normal delivery services, percentage reporting that they performed this intervention at least once during the three months before the assessment	NITWG; Gabrysch et al 2012; WHO SARA	Reduces risk of neonatal death, NICU admission, and other unfavorable outcomes (Bhutta et al. 2014)
		KMC for premature/very small babies[1]	Among facilities offering normal delivery services, percentage reporting that they provide KMC for low birth weight babies	NITWG; Gabrysch et al 2012; WHO SARA	Reduces risk of neonatal mortality, hypothermia, and other unfavorable outcomes; associated with increase weight gain (Bhutta et al. 2014).
	Domain C: Routine perinatal practices	Partograph routinely used to monitor and manage labor[2]	Providers at the facility routinely use partograph to monitor and manage labor	Gabrysch et al 2012; WHO SARA	No evidence of effect (Bhutta et al. 2014).
		Routine early initiation of breastfeeding[2]	Providers at the facility routinely initiate breastfeeding within the first hour	Gabrysch et al 2012; WHO SARA	Prevents diarrhea (Bhutta et al. 2014); sets stage for continued breastfeeding, which has immediate and long-term benefits (Victora et al.).
		Routine thermal care (drying and wrapping)[2]	Providers at the facility routinely dry and wrap newborns to keep them warm	Gabrysch et al 2012; WHO SARA	Wrapping newborn reduces risk of hypothermia (Bhutta et al. 2014).

Continued

Table 3–*Continued*

		Indicator name	Definition	Recommended as indicator by:	Importance of this component of care
Service Readiness	Domain A: General requirements	Electricity	Facility is connected to a central power grid and there has not been an interruption in power supply lasting for more than two hours at a time during normal working hours in the seven days before the assessment, *or* the facility had a functioning generator with fuel available on the day of the assessment, or else facility has a back-up solar power	Gabrysch et al 2012	Light and temperature control are required for optimal care. Some pieces of equipment (e.g., ultrasound machines and incubators) require electricity to function. SARA manual: electricity for lights and communication (at a minimum) during normal working hours.
		Improved water source	Facility has an improved water source available. For most countries, this means that water is piped into the facility or onto facility grounds, or else water comes from a public tap or standpipe, a tube well or borehole, a protected dug well, protected spring, rain water, or bottled water and the outlet from this source is within 500 meters of the facility	Gabrysch et al 2012 (i.e. reliable water source)	For hygiene, (e.g., handwashing (SARA)), surgery (Chawla et al. 2016), infection control, and drinking. Handwashing prevents neonatal tetanus and sepsis, among other infections (Bhutta et al. 2014)
		Improved sanitation	Facility has a functioning flush or pour-flush toilet, a ventilated improved pit latrine, or composting toilet	Gabrysch et al 2012 (i.e. clean toilets)	For human waste disposal. Poor sanitation causes unnecessary sickness and death from polluted water, food, and soil and can lead to diarrhea and other problems. (Hesperian Health Guides 2014). Diarrhea is a leading cause of death for children under age 5 (WHO 2016a).
		Skilled birth attendance available 24/7	Provider of delivery care available on-site or on-call 24 hours/day, with observed duty schedule	NITWG; Gabrysch et al 2012	Skilled birth attendance is fundamental to reducing maternal and neonatal mortality (Darmstadt et al. 2008), and babies can be born at any time, any day.
		Emergency transport	Facility had a functioning ambulance or other vehicle for emergency transport that was stationed at the facility and had fuel available on the day of the assessment, or the facility has access to an ambulance or other vehicle for emergency transport that is stationed at another facility or that operates from another facility	WHO SARA	Delay in accessing care is a major risk factor for maternal and neonatal mortality. Distance to a facility and lack of transportation limit access to EmOC (Garenne et al. 1997; Lema nd; Menendez et al. 2008).

Continued

Table 3–*Continued*

		Indicator name	Definition	Recommended as indicator by:	Importance of this component of care
Service Readiness	Domain B: Equipment	Sterilization equipment	Facility reports that some instruments are processed in the facility and the facility has a functioning electric dry heat sterilizer, a functioning electric autoclave, or a non-electric autoclave with a functioning heat source available somewhere in the facility	WHO SARA	Sterilization can prevent infection, a leading cause of neonatal death.
		Delivery bed	At least one delivery bed available and observed the in delivery area	WHO SARA	Provides comfort to mother and a place for her to recover from delivery.
		Examination light	Examination light (flashlight okay) available, observed, and functioning in the delivery area	WHO SARA	Providers must be able to see what they are doing.
		Delivery pack	Delivery pack OR cord clamp, episiom scissors, scissors/blade to cut cord, suture material with needle, and needle holder all available in the delivery area	WHO SARA	Provision of clean birth kits and education on their use reduces risk of neonatal mortality, perinatal mortality, and infection, and promotes sterile cord cutting (Bhutta et al. 2014).
		Suction apparatus (mucus abstractor)	Suction apparatus (mucus abstractor) available, observed, and functioning in the delivery area	WHO SARA	Clears infant airways to promote breathing.
		Manual vacuum extractor	Manual vacuum extractor available, observed, and functioning in the delivery area	WHO SARA	Part of EmoNC, which reduces risk of intrapartum-related neonatal deaths (Bhutta et al. 2014).
		Vacuum aspirator or D&C kit	Vacuum aspirator or D&C kit available, observed, and functioning in the delivery area	WHO SARA	Removes uterine contents after spontaneous or induced abortion, with a low rate of infection (ARHP 2008).
		Partograph	Partograph available, observed, and functioning in the delivery area	WHO SARA	No evidence of effect (Bhutta et al. 2014).
		Disposable latex gloves	Disposable latex gloves observed in the delivery area	WHO SARA	Reduces risk of infection (Ng et al. 2004).
		Newborn bag and mask	Newborn bag and mask (AMBU bag and mask) available, observed, and functioning in the delivery area	NITWG; WHO SARA	Used for oxygen administration; components of supportive care package for preterm infants (Bhutta et al. 2014)
		Infant scale	Infant scale observed and functioning in the delivery area	NITWG; WHO SARA	Used to weigh infant; low birthweight triggers interventions.
		Blood pressure apparatus (digital or manual)	Manual or digital blood pressure apparatus observed and functioning in the delivery area	WHO SARA	Used to monitor maternal blood pressure. High blood pressure indicates the need for intervention. It may also predict early postpartum pre-eclampsia (Cohen et al. 2015).
		Handwashing soap and running water or hand disinfectant	Handwashing soap and running water or hand disinfectant available and observed in the delivery area	NITWG; WHO SARA	Handwashing prevents neonatal tetanus and sepsis, among other infections (Bhutta et al. 2014)

Continued

Table 3–*Continued*

		Indicator name	Definition	Recommended as indicator by:	Importance of this component of care
Service Readiness	Domain C: Medicines and commodities	Injectable antibiotic[3]	Injectable antibiotics observed in the delivery area and at least one dose valid	NITWG; Gabrysch et al 2012; WHO SARA	Prevents and treats infection in the infant and/or mother.
		Hydrocortisone available at the facility	Hydrocortisone observed at the facility and at least one dose valid	NITWG; Gabrysch et al 2012	Used to prevent infection from meconium aspiration. Reduced duration of hospital stay and oxygen therapy, but not risk of mortality or sepsis (Bhutta et al. 2014).
		Injectable uterotonic	Oxytocin observed in the delivery area and at least one dose valid	NITWG; Gabrysch et al 2012; WHO SARA	Part of EmoNC, which reduces risk of intrapartum-related neonatal deaths (Bhutta et al. 2014).
		Skin disinfectant	Skin disinfectant available in the delivery area	WHO SARA	Reduces risk of skin infection in first week of life, but not neonatal sepsis or mortality (Bhutta et al. 2014)
		Magnesium sulfate	Magnesium sulphate available in the delivery area and at least one dose valid	NITWG; Gabrysch et al 2012; WHO SARA	Reduces risk of eclampsia (Bhutta et al. 2014).
		IV solution with infusion set	IV solution with infusion set available in the delivery area and at least one set valid	Gabrysch et al 2012; WHO SARA	Used for (re)hydration.
		Chlorhexidine for cord cleaning[4]	Chlorhexidine solution (4%) for ubilical cord cleaning available in delivery area and at least one dose valid	Gabrysch et al 2012 suggested including “infection prevention including hygienic cord care” as a routine practice	Associated with reduced risk of all-cause mortality when applied to cord in first 24 hours (Bhutta et al. 2014).
		Antibiotic eye ointment for newborn	Tetracycline eye ointment for newborn available in delivery area and at least one dose valid	WHO SARA	Prevents newborn eye infections.

Continued

Table 3–*Continued*

		Indicator name	Definition	Recommended as indicator by:	Importance of this component of care
Service Readiness	Domain D: Guidelines and Staffing	Guidelines: Integrated Management of pregnancy and childbirth (IMPAC)	Guidelines available in the delivery area	NITWG	WHO guidelines that address factors related to access to skilled care before, during and after pregnancy and birth.
		Guidelines: CEmOC	Guidelines available in the delivery area	NITWG	Guides provision of comprehensive emergency obstetric care.
		Guidelines: Management of pre-term labor	Guidelines available in delivery area.	NITWG	Guides management of pre-term labor.
		Training in neonatal resuscitation	At least one provider of delivery/newborn care in the facility received training in neonatal resuscitation in the past 24 months	NITWG; WHO SARA	Neonatal resuscitation reduces risk of intrapartum-related death (Bhutta et al. 2014).
		Training in early and exclusive breastfeeding	At least one provider of delivery/newborn care in the facility received training in early and exclusive breastfeeding in the past 24 months	NITWG	Early and exclusive breastfeeding prevents diarrhea (Bhutta et al. 2014), reduces infants' risks of respiratory illness and other infections (Bachrach 2003; Ladomenou 2010), and may set stage for continued breastfeeding, which has immediate and long-term benefits for mothers and children (Victora et al. 2016).
		Training in newborn infection management (including injectable antibiotics)	At least one provider of delivery/newborn care in the facility received training in newborn infection management (including injectable antibiotics) in the past 24 months	NITWG	Infection is a major cause of neonatal mortality (Bhutta et al. 2014).
		Training in thermal care	At least one provider of delivery/newborn care in the facility received training in thermal care in the past 24 months	NITWG	Hypothermia is a major risk factor for neonatal mortality, especially for small infants (Bhutta et al. 2014).
		Training in cord care	At least one provider of delivery/newborn care in the facility received training in cord care in the past 24 months	NITWG	Proper cord care reduces the risk of infection, which is a major cause of neonatal mortality.
		Training in KMC	At least one provider of delivery/newborn care in the facility received training in KMC in the past 24 months	NITWG	KMC reduces risk of neonatal mortality, hypothermia, and other unfavorable outcomes; associated with increase weight gain (Bhutta et al. 2014).
		Supervision	Percentage of facilities with routine personal supervision (at least half of interviewed providers reported being personally supervised at least once during the six months preceding the survey	NITWG	Supportive supervision can improve health worker performance of newborn care (Arya 2011).

Note: Indicators in this report draw from three sources. The primary source is a list of Newborn Care Service Indicators selected by the Newborn Indicators Technical Working Group. These indicators are supplemented by additional indicators in the WHO SARA indicators of "Basic obstetric and newborn care," and by Gabrysch and colleagues' (2012) proposed obstetric and newborn signal functions. The table specifies the source of each indicator included in the analysis.

[1] Unlike the indicators for neonatal resuscitation and corticosteroids in preterm later, we do not have information on whether KMC for premature/very small babies was carried out in the last 3 months. The KMC indicator is based on the following SPA question: "Does this facility practice Kangaroo Mother Care for low birth weight babies?"

[2] We also do not have information on whether the three routine perinatal care indicators were carried out in the last 3 months. The partograph indicator is based on the following two SPA questions: "Do providers of delivery services in this facility use partograph to monitor labor and delivery" and "Are partographs used routinely (for all cases) or selectively (only for some cases) to monitor labor and delivery in this facility?". The other two indicators (drying and wrapping newborns to keep them warm, and initiation of breastfeeding within the first hour) are based on the following SPA question: "Does this facility routinely observe any of the following postpartum or newborn related practices?"

[3] The SPA surveys included in this study did not collect information on the type or brands of injectable antibiotic available in the delivery area.

[4] This indicator is assessed for all study countries, regardless of whether the country has a policy of CHX application.

2.2.2. Composite scores

In accordance with the WHO SARA approach, composite indicators were computed to assess overall newborn care service availability and readiness in the facilities. Indicators within each domain of service availability and service readiness were given equal weight to produce a domain score, and each domain was in turn weighted equally to produce a summary score for service availability and for service readiness. The simple additive scale gives equal weight to each conceptualized dimension of availability and readiness, and is easily replicable.

2.2.3. Facility characteristics

Newborn care service availability and readiness are examined nationally, as well by type of facility (hospital, health center, dispensary/clinic), managing authority (public versus private/other), urban-rural location, and (in Appendix tables) region. For managing authority, the private/other category includes NGOs, Mission or religious-run health facilities, and parastatal facilities. For region, in Senegal the 14 regions presented in the 2014 SPA final report are aggregated into six geographic zones, in accordance with DHS Analytic Study 55 (Assaf, Wang, and Mallick 2015). For the Tanzania trend analysis, regional designations from the most recent SPA survey are used in both surveys.

2.3. Analysis

The analysis has several components. First, we present current levels of newborn care quality (i.e. service availability and readiness) in the five countries. We present national coverage estimates for the individual components that comprise the seven domains of newborn care service availability and readiness, and then examine the composite availability and readiness scores disaggregated by facility characteristics[4]. For the three countries with SPA surveys that were a sample of all health facilities, we present confidence intervals around coverage point estimates. The confidence intervals were calculated using svy commands in Stata (v. 14), accounting for the SPA complex sample design. For the two countries with SPA surveys that were censuses of all formal health facilities, confidence intervals are not needed, since the point estimates themselves describe the full population of formal health facilities.

In addition to standard SPA modules, the Malawi 2013-14 survey includes observation of normal deliveries. We use these data to examine the gap between reported availability of commodities in the delivery area (i.e. drawing from the facility inventory) and the observed use of those commodities during delivery (i.e. drawing from the observation module). To make this comparison, we summarize the information collected during observations of deliveries at the facility level.

We examine recent trends in newborn care quality in Tanzania, the one country with two recent SPA surveys available with adequate spacing between them (i.e. roughly five years). Some of the selected indicators of newborn care quality were not available in the 2006 Tanzania SPA; thus, the trend analysis is limited to the subset of indicators available in both surveys. In particular, we could not examine trends in two of the three dimensions of service availability: newborn signal functions and routine care. We appended the data from the two survey years and used log probability models to assess the significance of changes in newborn care coverage between the two surveys.

Finally, we combine SPA survey and Demographic and Health Survey (DHS) data to examine the bivariate association between newborn care quality scores and neonatal mortality. The analysis is conducted at the

[4] For additional detail, Appendix Tables A2a-A6g show the individual components that comprise the seven dimensions of newborn care service availability and readiness disaggregated by facility characteristics, separately for each country.

regional level because SPA surveys that are a sample of facilities rather than a complete census should not be linked with DHS data at the individual level due to the potential for misclassification error (Burgert and Prosnitz 2014). The analysis is restricted to the three study countries with DHS and SPA surveys conducted within three years of one another—Bangladesh, Haiti, and Senegal (Table 4). For these countries, it is reasonable to assume that the SPA captures the service environment for births in the five years preceding the DHS.

Table 4. Correspondence between timing of DHS and SPA surveys, most recent SPA and closest-timed DHS

	2010	2011	2012	2013	2014	2015	*Reasonable to link SPA/DHS?*
Bangladesh					SPA, DHS		*yes*
Haiti			DHS	SPA			*yes*
Senegal					SPA, DHS		*yes*
Malawi	DHS			SPA[1]			*no*
Tanzania	DHS				SPA[1]		*no*

[1] Malawi 2013-14 SPA is placed between years 2013 and 2014, and the Tanzania 2014-15 SPA between years 2014 and 2015.

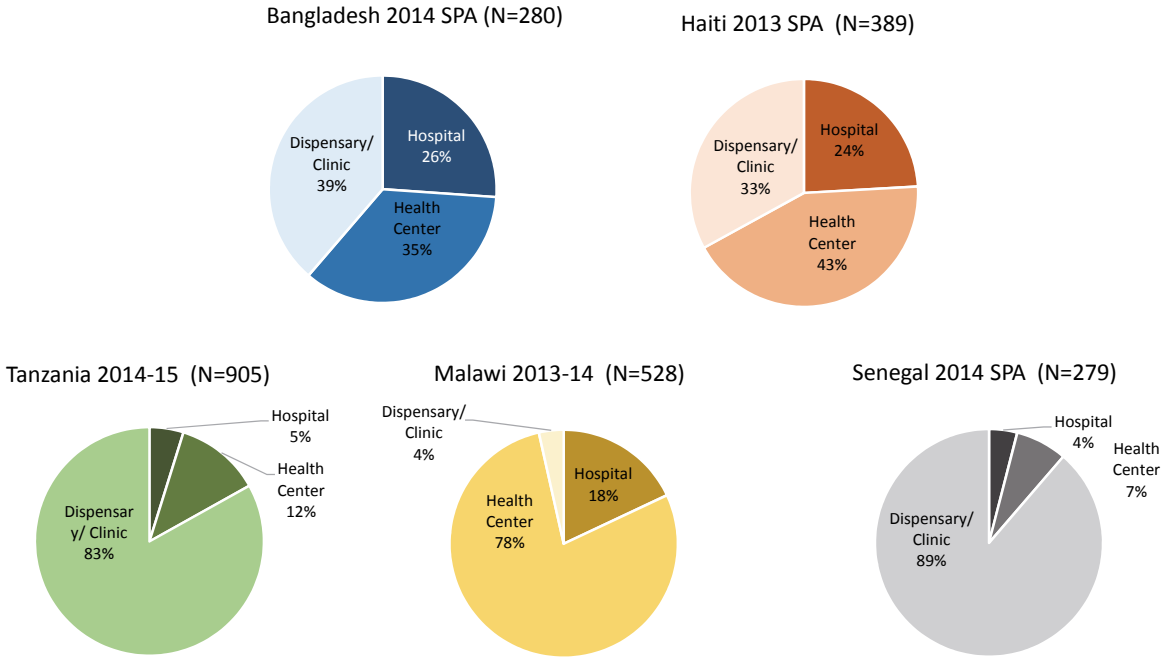
In these three countries, DHS data were used to calculate region-specific neonatal mortality rates. With log probability models, we estimated the probability of dying in the first month of life among births that occurred in the five years preceding each survey (months 1-60). To assess the magnitude, direction, and significance of the linear association between regions' newborn care quality scores and their neonatal mortality rates, simple linear regression models were fit. The analysis was conducted using Stata (v.14).

3. Results

3.1. Profile of Facilities with Normal Delivery Services

The study examines characteristics of health facilities that offer normal delivery services in the five study countries. This chapter examines data from the most recent SPA conducted in each country. This includes 280 health facilities with normal delivery services in Bangladesh, 389 in Haiti, 528 in Malawi, 279 in Senegal, and 905 in Tanzania. Among these facilities, Figure 2 shows the percent distribution by the type of facility, separately by country (see Appendix Table A1 for more detail). A consistent color scheme is used throughout the study, with shades of blue used to present results for Bangladesh, orange for Haiti, green for Tanzania, yellow for Malawi, and grey for Senegal. In Bangladesh and Haiti there is a fairly even distribution of hospitals, health centers, and dispensaries or clinics. In each of the two countries, hospitals constitute roughly one-quarter of facilities with normal delivery services. In Senegal and Tanzania the vast majority of facilities with normal delivery services are either dispensaries or clinics (89% and 83%, respectively), with a small percentage of hospitals (4% in Senegal, 5% in Tanzania) and health centers (7% in Senegal, 12% in Tanzania). Malawi stands out as the only country where the majority of facilities with normal delivery services are health centers (78%). In Malawi, 18% of such facilities are hospitals, and 4% are dispensaries or clinics.

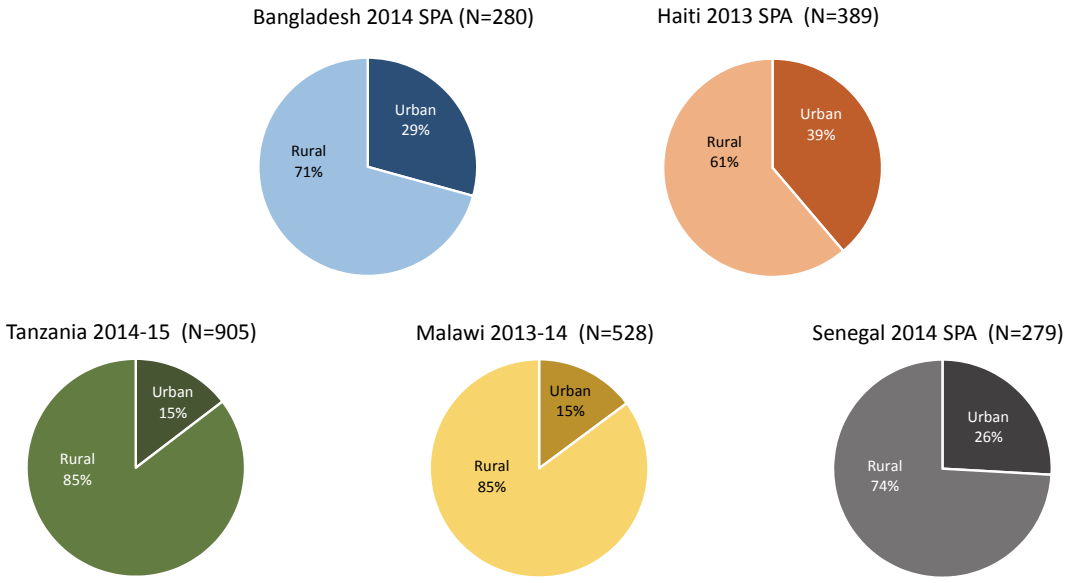
Figure 2. Percent distribution of facilities with normal delivery services by type of facility, Bangladesh, Haiti, Tanzania, Malawi, Senegal



Note: Dispensary/clinics were combined since some categories of each were quite small in some countries. For Senegal, this category also includes health posts. The share of facilities with normal delivery services that are clinics, dispensaries, and health posts are as follows: Bangladesh: 4% dispensaries, 35% clinics; Haiti, 0% clinic, 33% dispensary; Malawi: 0% dispensary, 4% clinic; Senegal: 0% dispensary, 0% clinic, 89% health post; Tanzania: 83% dispensary, 1% clinic. In this figure and throughout the study, the countries are ordered in such a way to facilitate meaningful comparison: the African countries are grouped together, with Tanzania adjacent to Malawi, given their geographic proximity; non-African countries are also grouped together.

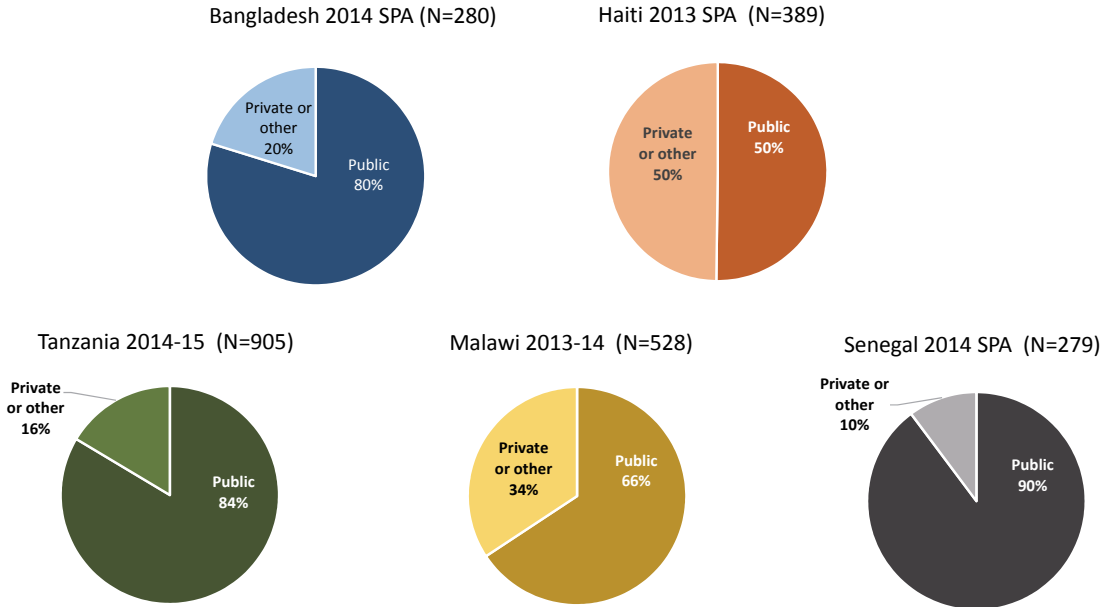
Figure 3 shows the urban-rural distribution of facilities with normal delivery services in the study countries. In all five countries, the majority of facilities with normal delivery services are in rural areas—ranging from 61% in Haiti to 85% in Tanzania and Malawi.

Figure 3. Percent distribution of facilities with normal delivery services by urban-rural location, Bangladesh, Haiti, Tanzania, Malawi, Senegal



Between 50% and 90% of facilities with normal delivery services in the study countries are public (see Figure 4). The managing authorities included within "private or other" vary by country, and include private, parastatal, NGO, for profit, and religious-affiliated facilities. Haiti has the largest share of private or other facilities with normal delivery services, at 50%. In Haiti these are a mix of NGO/private not for profit, private for profit, and Mission or faith-based facilities.

Figure 4. Percent distribution of facilities with normal delivery services by managing authority, Bangladesh, Haiti, Tanzania, Malawi, Senegal



3.2. Current Levels of Newborn Care Service Availability and Readiness

As described, the study examines service availability and readiness as components of quality newborn care among facilities with normal delivery services. This section examines current levels of newborn care service availability and readiness.

3.2.1. National coverage

3.2.1.1. Newborn care service availability

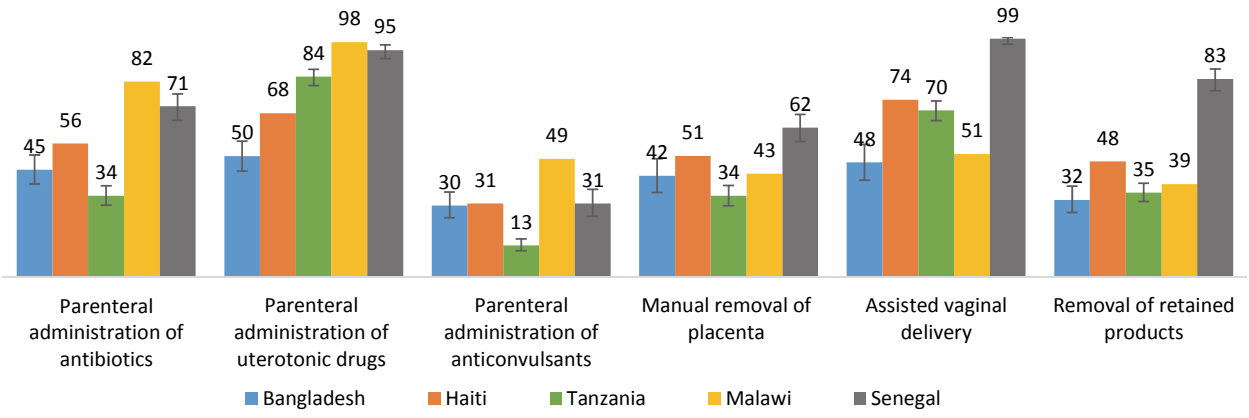
Service Availability Domain A: BEmOC Signal Functions

The first domain of newborn care service availability is the availability of the six basic emergency obstetric care signal functions. As Figure 5 shows, coverage of these components varies widely across countries. Overall, parenteral administration of uterotonic drugs and assisted vaginal delivery have the highest coverage. At least half of facilities with normal delivery services provided parenteral administration of a uterotonic within the three months prior to the assessment, and in Tanzania, Malawi, Senegal over 80% of facilities performed this function. Similarly, in each country nearly half of all facilities with normal delivery services performed an assisted delivery within the last three months, with over 70% coverage in Haiti, Tanzania, and Senegal.

Coverage of parenteral administration of anticonvulsants is low in all countries; less than half of facilities with normal delivery services in each country performed this function in the three months prior to the assessment. Coverage is lowest in Tanzania, at 13%, and is under 33% in Bangladesh, Haiti, and Senegal.

In three countries, Bangladesh, Tanzania, and Malawi, less than half of facilities with normal delivery services performed a manual removal of the placenta, and in four countries less than half removed retained products in the three months preceding the survey.

Figure 5. National coverage of newborn care service availability Domain A: BEmOC signal functions, Bangladesh, Haiti, Tanzania, Malawi, Senegal



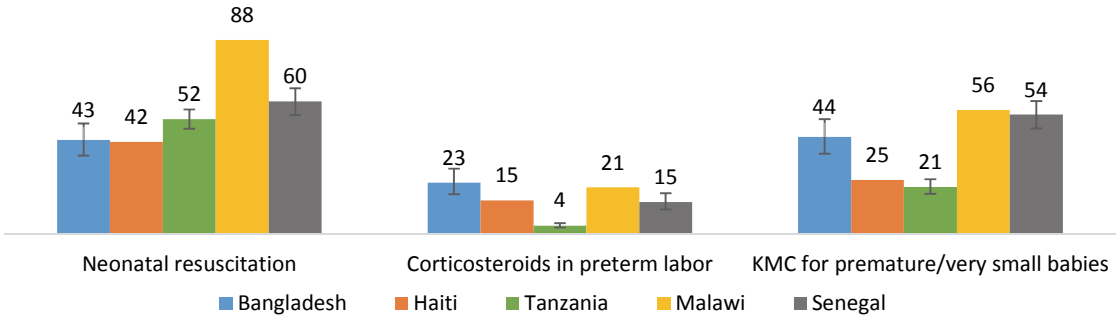
Note: We do not include confidence intervals for the Haiti or Malawi results because these surveys were a census of all facilities, rather than a sample of facilities.

Service Availability Domain B: Newborn Signal Function Availability

The second domain of newborn care service availability is newborn signal functions. We assessed whether the facility performed three newborn signal functions at least once in the three months preceding the day of assessment: neonatal resuscitation, provision of corticosteroids during preterm labor, and KMC for premature/very small babies.

Of these three function, coverage of neonatal resuscitation is highest (see Figure 6). In Malawi nearly 90% of facilities with normal delivery services performed a neonatal resuscitation in the last three months. In all other countries less than two-thirds of such facilities did so. In every county, less than one-quarter of facilities provided corticosteroids during preterm labor in the preceding three months. Coverage is lowest in Tanzania, at 4%. Roughly half of facilities in Bangladesh, Malawi, and Senegal performed KMC for premature/very small babies in the last three months. In Haiti and Tanzania, 25% and 21%, respectively, did so.

Figure 6. National coverage of newborn care service availability Domain B: Newborn signal functions, Bangladesh, Haiti, Tanzania, Malawi, Senegal



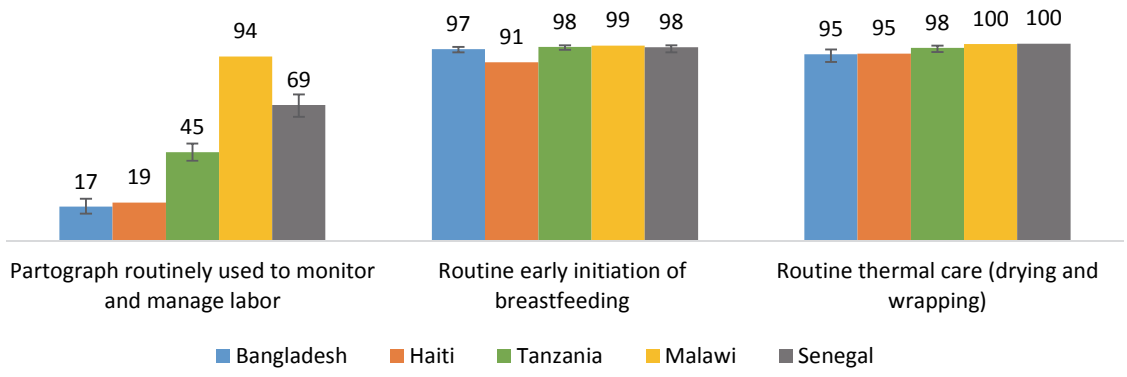
Note: We do not include confidence intervals for the Haiti or Malawi results because these surveys were a census of all facilities, rather than a sample of facilities.

Service Availability Domain C: Routine Practices

Routine practices, the third domain of newborn care service availability, includes three components: routine use of the partograph to monitor and manage labor, early initiation of breastfeeding, and provision of thermal care (drying and wrapping the newborn). Figure 7 shows the national coverage of these indicators in the five study countries.

Routine coverage of both early initiation of breastfeeding and provision of thermal care are nearly universal across the study countries, at 95% or higher in nearly all five. Coverage of routine use of the partograph[5] varies more widely across the study countries, from less than 20% in Bangladesh and Haiti to more than 90% in Malawi.

Figure 7. National coverage of newborn care service availability Domain C: Routine practices, Bangladesh, Haiti, Tanzania, Malawi, Senegal



Note: We do not include confidence intervals for the Haiti or Malawi results because these surveys were a census of all facilities, rather than a sample of facilities.

[5] Routine use of the partograph is included as a component of routine perinatal care. However, we note that there is no evidence of an effect on newborn survival (Bhutta et al. 2014).

3.2.1.2. Newborn care service readiness

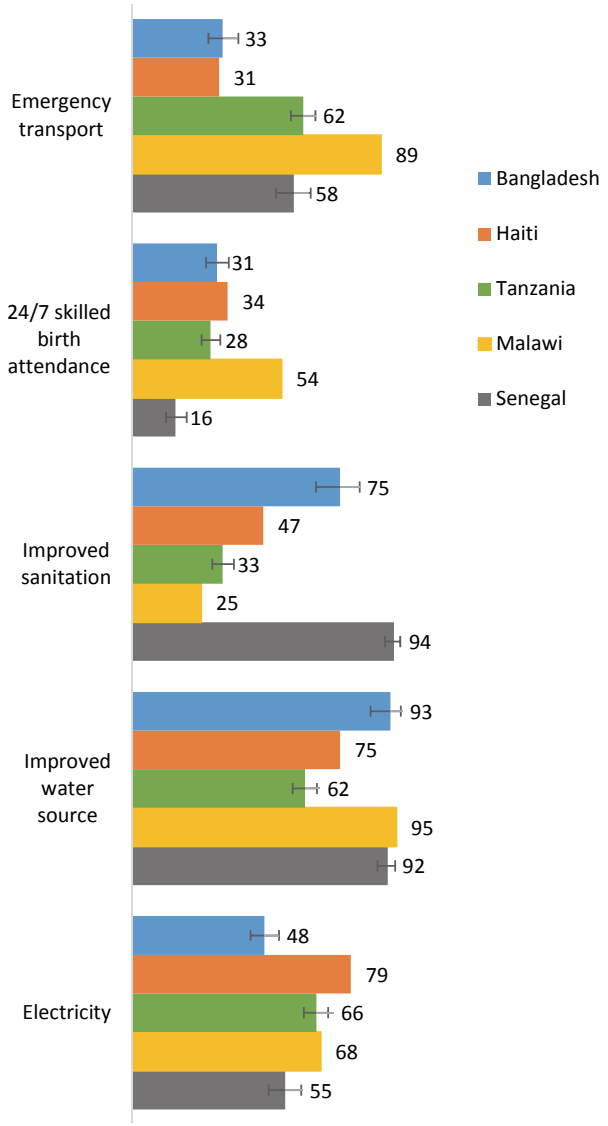
Service Readiness Domain A: General Requirements

The first domain of service readiness, general requirements, includes five components: uninterrupted electricity, an improved water source, improved sanitation, skilled birth attendance available 24/7, and emergency transport. Figure 8 shows the national coverage of these tracer indicators in the five countries.

Although babies can be born at any time of day or night, in four of the five countries more than two-thirds of facilities with normal delivery services do not have skilled birth attendance available 24/7. Emergency transport—defined as having either a functioning ambulance on site (with fuel), or access to an emergency vehicle stationed at another facility—is available in 89% of facilities with normal delivery services in Malawi, and more than half of such facilities in Tanzania and Senegal. However, less than one-third of facilities in Bangladesh or Haiti had emergency transport available on the day of the assessment.

Access to an improved water source onsite or within 500 meters of the facility ranges from 62% in Tanzania to 95% in Malawi. Access to improved sanitation varies more widely across the countries, from one-quarter of facilities in Malawi to 94% in Senegal. Uninterrupted electricity, which enables light and temperature control and is required for some equipment (e.g., ultrasound machines and incubators) to function, is available in at least two-thirds of facilities with normal delivery services in Haiti, Malawi, and Tanzania, more than half of facilities in Senegal, and nearly half (48%) in Bangladesh.

Figure 8. National coverage of newborn care service readiness Domain A: General requirements, Bangladesh, Haiti, Tanzania, Malawi, Senegal



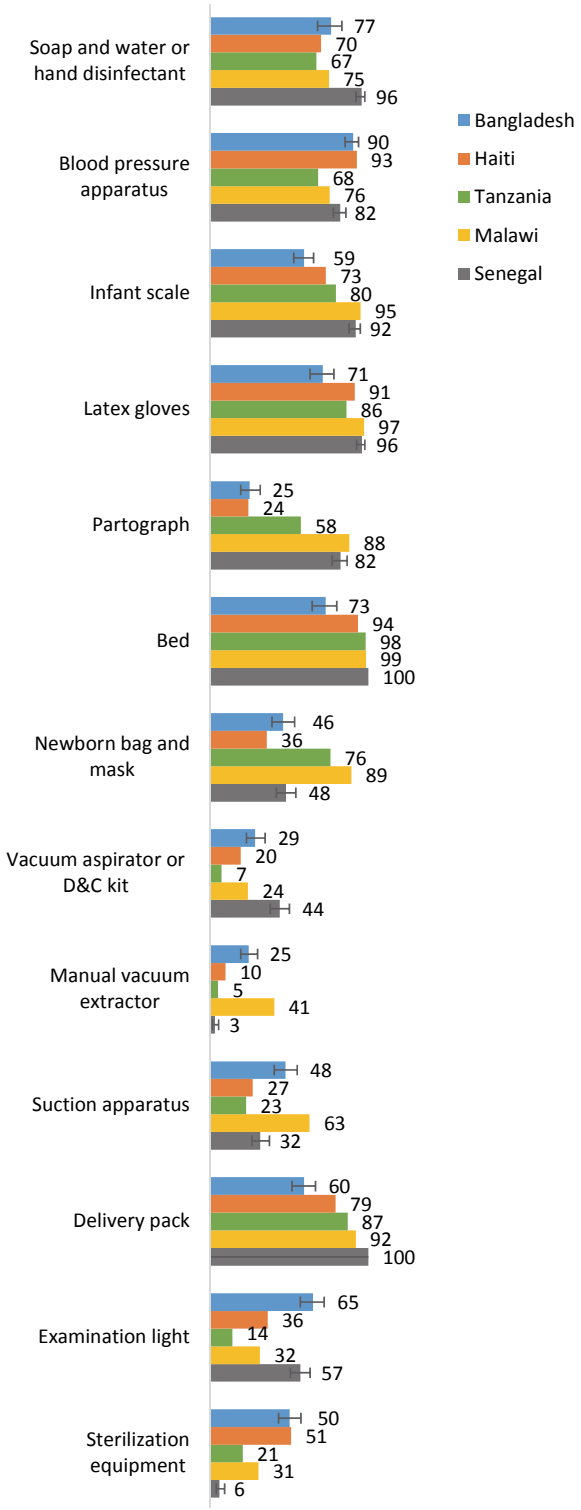
Note: Confidence intervals are not shown for the Haiti or Malawi results because these surveys were a census of all facilities, rather than a sample of facilities.

Service Readiness Domain B: Equipment

The second domain of service readiness, equipment, includes 13 indicators to gauge the extent to which facilities with normal delivery services have the essential equipment needed to support comprehensive delivery and newborn care. Figure 9 shows the availability of these 13 components across the five countries.

Availability varies widely across country, and across pieces of equipment. For example, the percentage of facilities with sterilization equipment ranges from 6% in Senegal to 51% in Haiti. The presence of an examination light ranges from 14% in Tanzania to 65% in Bangladesh. Delivery packs are more prevalent overall, ranging from 60% of facilities in Bangladesh to all facilities in Senegal. A suction apparatus was present in 23% of facilities in Tanzania and 63% of facilities in Malawi on the day of the assessment. The presence of a manual vacuum extractor ranges from 3% in Senegal to 40% in Malawi. A vacuum aspirator or D&C kit was present in 7% of facilities in Tanzania and 44% in Senegal. Newborn bags and masks were present in 36% of facilities in Haiti and 89% of facilities in Malawi. There was a bed in most facilities, ranging from 73% in Bangladesh to 99% in Malawi. Partographs are more variable, present in 24% of facilities in Haiti and 88% of facilities in Malawi. Latex gloves are quite prevalent, ranging from 71% of facilities in Bangladesh to 97% in Malawi. Infant scales are also quite prevalent, at 59% of facilities in Bangladesh and 95% in Malawi. A blood pressure apparatus was present in 76% of facilities in Malawi and 93% of facilities in Haiti on the day of the assessment. Soap and water or hand disinfectants are highly prevalent across countries, from 67% of facilities in Tanzania to 96% in Senegal.

Figure 9. National coverage of newborn care service readiness Domain B: Equipment, Bangladesh, Haiti, Tanzania, Malawi, Senegal

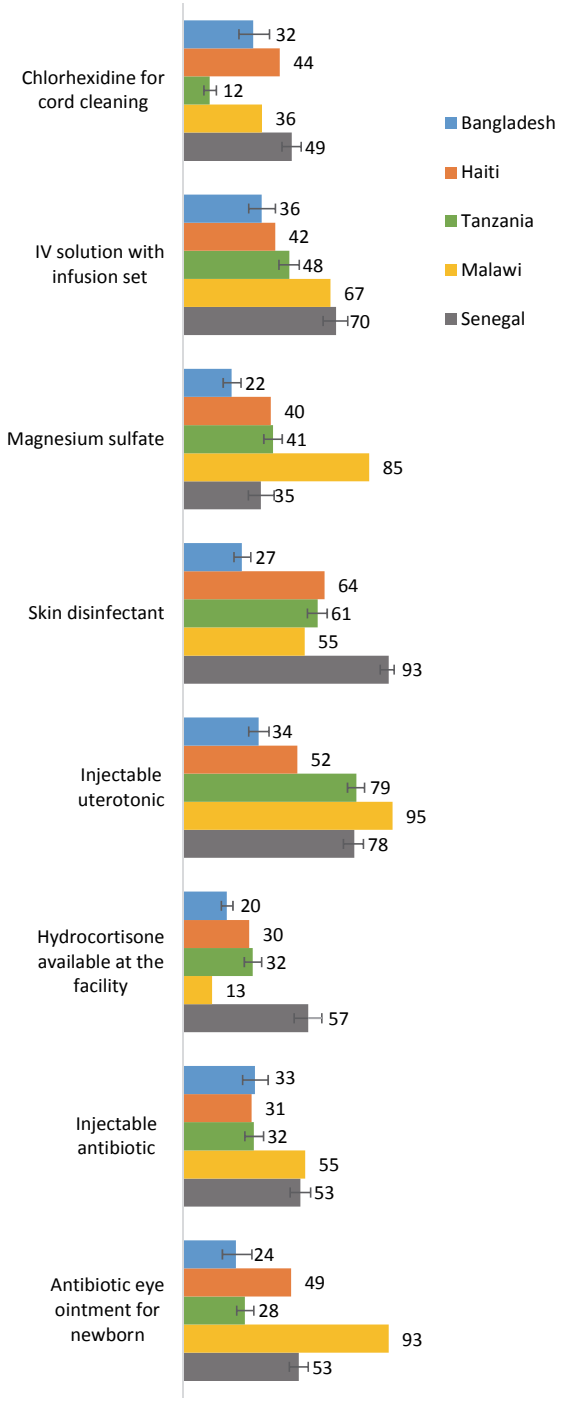


Note: We do not include confidence intervals for the Haiti or Malawi results because these surveys were a census of all facilities, rather than a sample of facilities.

Service Readiness Domain C: Medicines and Commodities

There are eight components in the third domain of service readiness, medicines and commodities. Their prevalence among facilities varies but, on average, is low. For example, at the time of the assessment, antibiotic eye ointment was present in the delivery area in only 24% of facilities in Bangladesh but in 93% of facilities in Malawi. Injectable antibiotics were found in 31% of facilities in Haiti and 56% of facilities in Malawi. Hydrocortisone was present in 13% of facilities in Malawi and 57% of facilities in Senegal. The prevalence of injectable uterotonics ranges from 34% in Bangladesh to 95% in Malawi. Skin disinfectant was found in 27% of facilities in Bangladesh and 93% of facilities in Senegal. The assessments found IV solutions with an infusion set in 36% of facilities in Bangladesh and 70% of facilities in Senegal. The presence of chlorhexidine for cord cleaning ranges from only 12% of facilities in Tanzania to 49% of facilities in Senegal.

Figure 10. National coverage of newborn care service readiness Domain C: Medicines and commodities, Bangladesh, Haiti, Tanzania, Malawi, Senegal

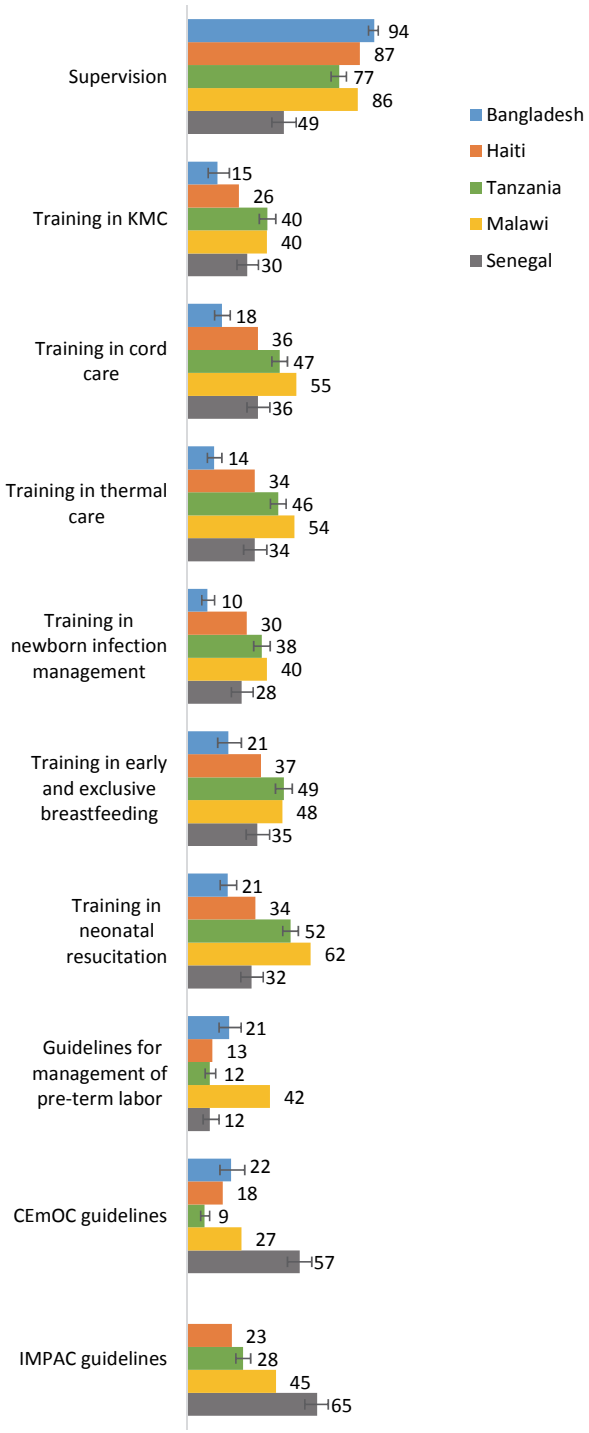


Note: We do not include confidence intervals for the Haiti or Malawi results because these surveys were a census of all facilities, rather than a sample of facilities.

Service Readiness Domain D: Guidelines and Staffing

There are 10 components in the fourth domain of service readiness, guidelines and staffing. Presence of the three types of guidelines is generally low throughout the countries (see Figure 11). The prevalence of IMPAC guidelines ranges from 23% in Haiti to 65% in Senegal. CEmOC guidelines are present in 15% of facilities in Haiti and 57% of facilities in Senegal. The SPA surveys found guidelines for management of pre-term labor in 12% of facilities in Senegal and Tanzania and 42% in Malawi. As for the six types of training, rarely do more than 50% of facilities in any of the countries have at least one provider of delivery/newborn care with recent training in those areas. Among the countries studied, Bangladesh consistently had the smallest percentage of facilities with staff with this training, and Malawi almost always had the largest percentage. Training in neonatal resuscitation ranges from 21% of facilities in Bangladesh to 62% in Malawi; training in early and exclusive breastfeeding ranges from 21% in Bangladesh to 49% in Tanzania. Training in newborn infection management ranges from 10% in Bangladesh to 40% in Malawi; whereas training in thermal care ranges from 14% in Bangladesh to 54% in Malawi. Training in cord care ranges from 18% in Bangladesh to 55% in Malawi, and training in KMC ranges from 15% in Bangladesh to 40% in Malawi and Tanzania. Supervision has the highest proportions of the 10 items in this group, ranging from 49% in Senegal to 94% in Bangladesh.

Figure 11. National coverage of newborn care service readiness Domain D: Guidelines and staffing, Bangladesh, Haiti, Tanzania, Malawi, Senegal



Note: We do not include confidence intervals for the Haiti or Malawi results because these surveys were a census of all facilities, rather than a sample of facilities.

3.2.1.3. Service readiness and availability summary scores

Figure 12 shows national summary scores for service availability and service readiness, as well as national scores for each domain of availability and readiness. All scores range from 0 to 100 and indicate the average percentage of component tracer items that are available within the domain. Summary scores weight each domain equally.

Summary scores for newborn care service availability range from 40 in Tanzania to about 60 in Malawi and Senegal. In all countries, of the three domains of service availability, scores for routine care availability are highest and scores for newborn signal function availability are lowest. Routine care scores range from about 70 in Bangladesh and Haiti to 97 in Malawi, and newborn signal function scores range from 26 and 27 in Tanzania and Haiti, respectively, to 55 in Malawi. BEmOC signal function scores range from 41 in Haiti to 74 in Senegal.

Summary scores for newborn care service readiness range from 42 in Tanzania to 62 in Malawi. The coverage patterns for the four domains of service readiness are consistent across the countries. Of the four domains, scores for guidelines and staffing are lowest, followed by scores for medicines. Guidelines and staffing scores range from 27 in Bangladesh to 51 in Malawi. Medicines scores range from 28 in Bangladesh to about 60 in Malawi and Senegal. Within each country, scores for general requirements and equipment are higher, and are similar to each other.

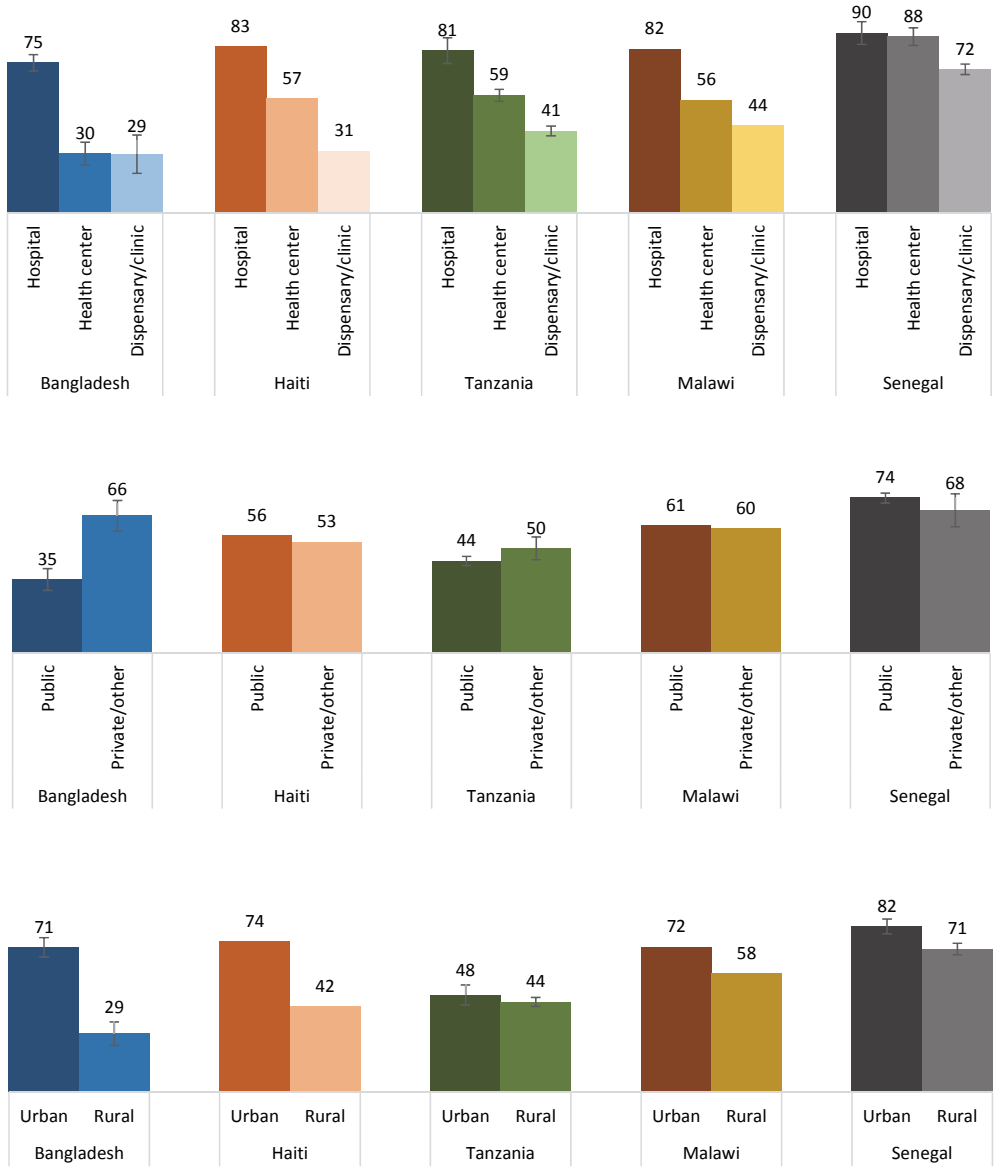
Figure 12. National service availability and service readiness summary scores, Bangladesh, Haiti, Tanzania, Malawi, Senegal

Note: Confidence intervals are not shown for Haiti or Malawi, since those surveys were a census of all formal health facilities.

3.2.2. Service availability and readiness scores by facility characteristics

Figure 13 shows the variation in BEmOC signal function availability scores by facility type, managing authority, and urban-rural location. In all countries but Senegal, scores are significantly[6] higher in hospitals than in lower-level facilities, and in all but Tanzania they are significantly higher in urban facilities than in rural ones. In Bangladesh, public facilities score far lower than private facilities in BEmOC availability (35% and 66%, respectively). However, in the other four countries the public-private differentials are small.

Figure 13. Service availability Domain A: BEmOC signal functions summary score by facility characteristics, Bangladesh, Haiti, Tanzania, Malawi, Senegal

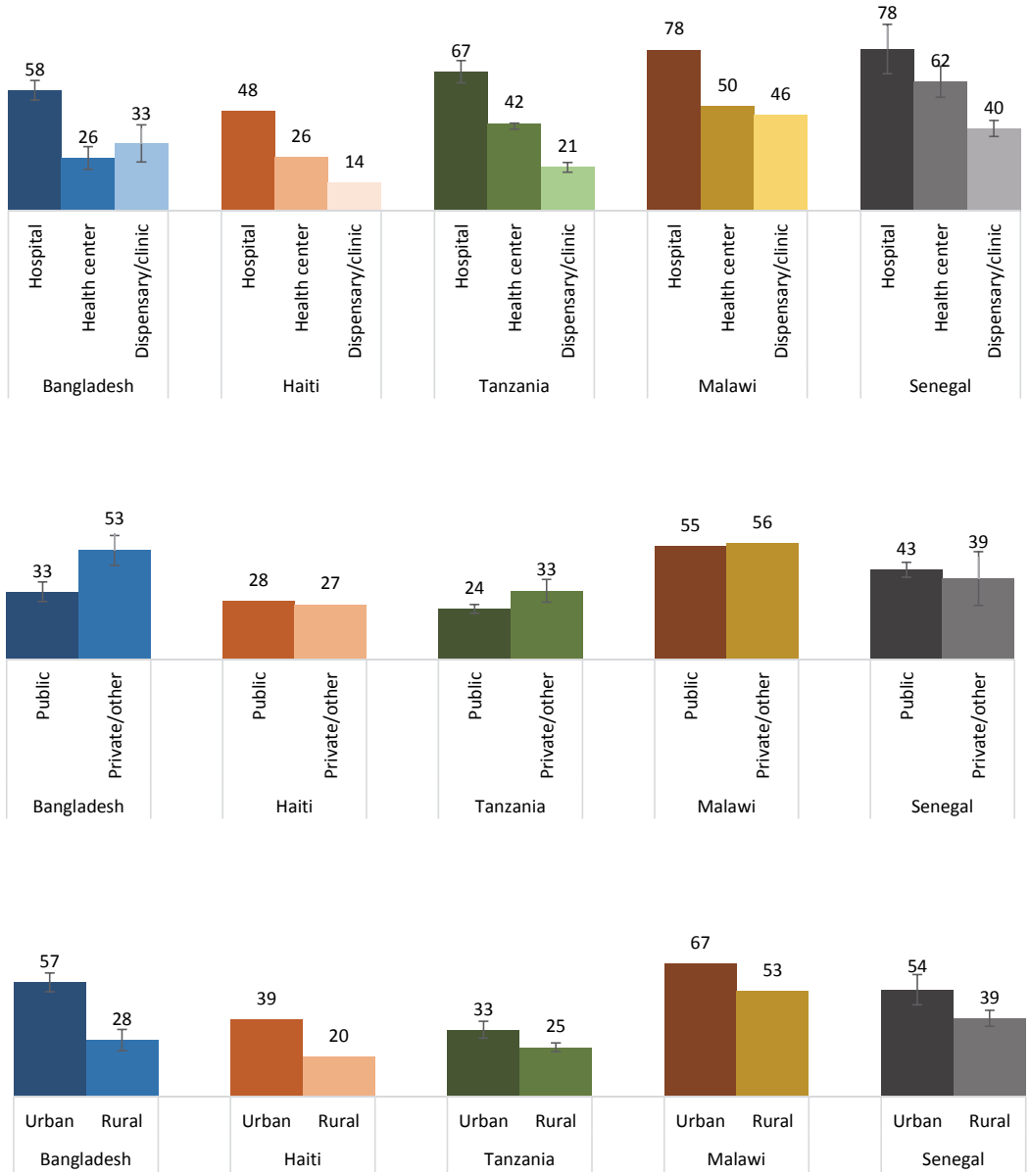


Note: Confidence intervals are not shown for Haiti or Malawi, since those surveys were a census of all formal health facilities.

[6] Here and onward, mention of "significant" differences refer to the three countries with SPA surveys that were a sample of health facilities in the country. The significance refers to non-overlapping confidence intervals between subgroups. For the two census surveys, the estimates describe the full population of facilities; confidence intervals and significance testing are not needed.

Figure 14 shows the variation in newborn signal function service availability scores by facility characteristics. In all countries but Senegal, scores are significantly higher in urban facilities than in rural ones, in hospitals than in lower-level facilities, and in Haiti, Tanzania, and Senegal they are notably higher in health centers than in dispensaries or clinics. In three countries—Haiti, Malawi, Senegal—scores are similarly low in public and private facilities, while in Bangladesh and Tanzania, private facilities score higher.

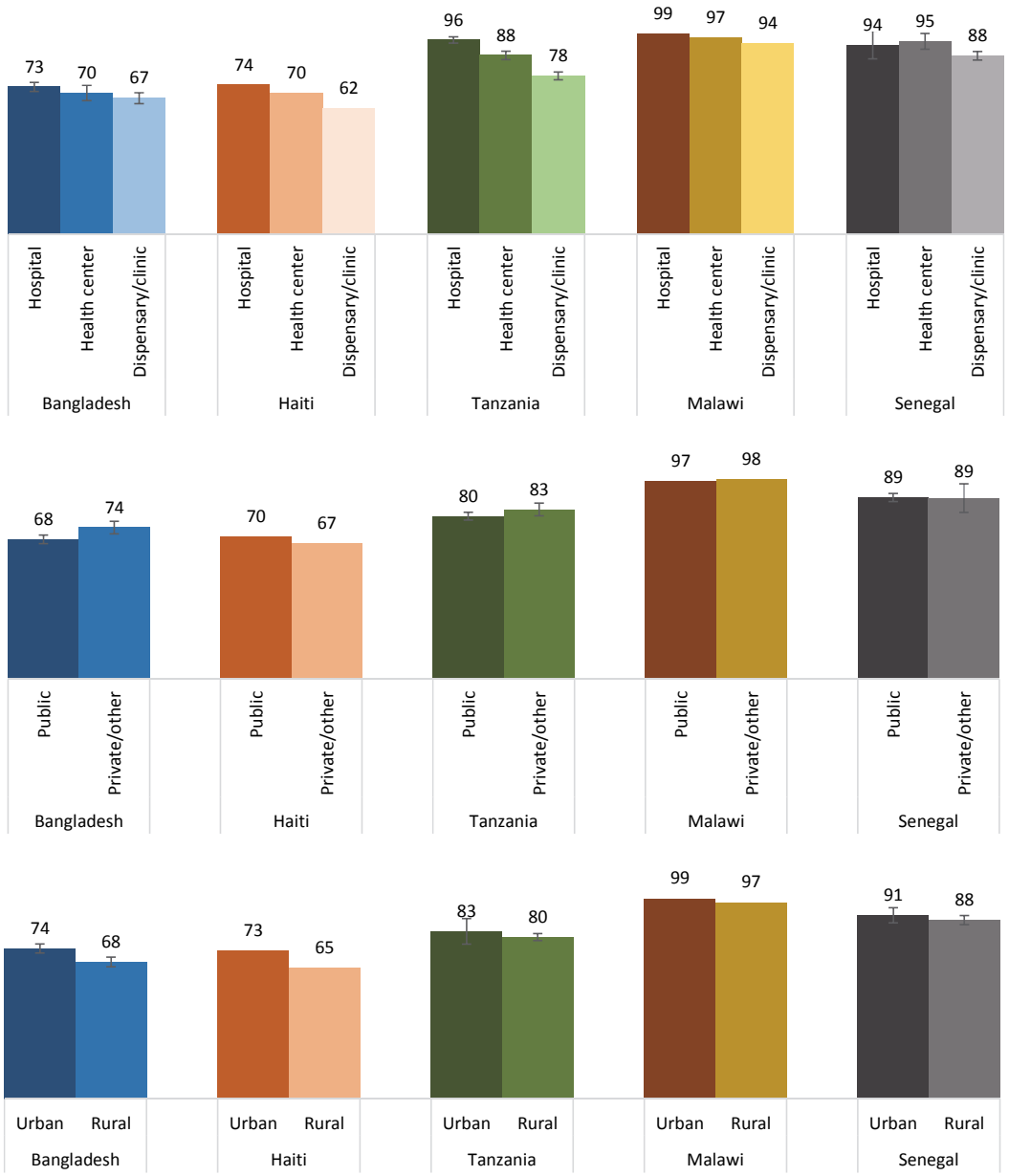
Figure 14. Service availability Domain B: Newborn signal functions summary score by facility characteristics, Bangladesh, Haiti, Tanzania, Malawi, Senegal



Note: Confidence intervals are not shown for Haiti or Malawi, since those surveys were a census of all formal health facilities.

Scores for the third domain of service availability, routine care, are strikingly similar across facility characteristics (see Figure 15). Only in Tanzania do we see differentials across types of facility, with hospitals scoring highest, and dispensaries and clinics scoring lowest in routine perinatal care service availability.

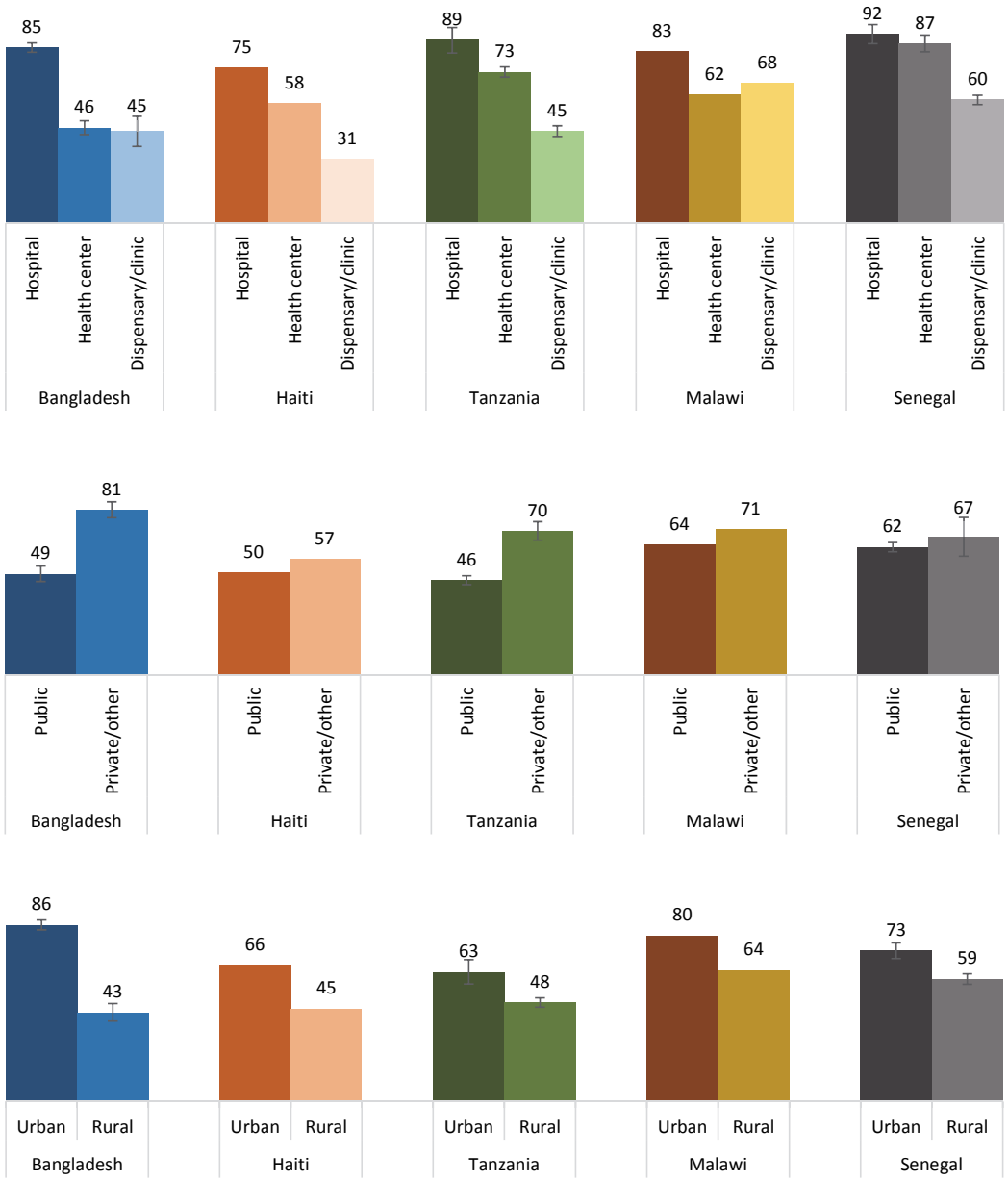
Figure 15. Service availability Domain C: Routine perinatal care summary score by facility characteristics, Bangladesh, Haiti, Tanzania, Malawi, Senegal



Note: Confidence intervals are not shown for Haiti or Malawi, since those surveys were a census of all formal health facilities.

Figure 16 shows the variation in summary scores for the first domain of service readiness, general facility requirements, by facility characteristics. General requirement scores differ notably by all three characteristics. By type of facility, hospitals have the highest general readiness scores. In Bangladesh and Malawi, health centers and dispensaries/clinics score similarly, while in the other three countries health centers score higher than dispensaries and clinics. Urban-rural differentials are evident in all countries, and are greatest in Bangladesh. Public-private differentials are also greatest in Bangladesh and are notable in Tanzania.

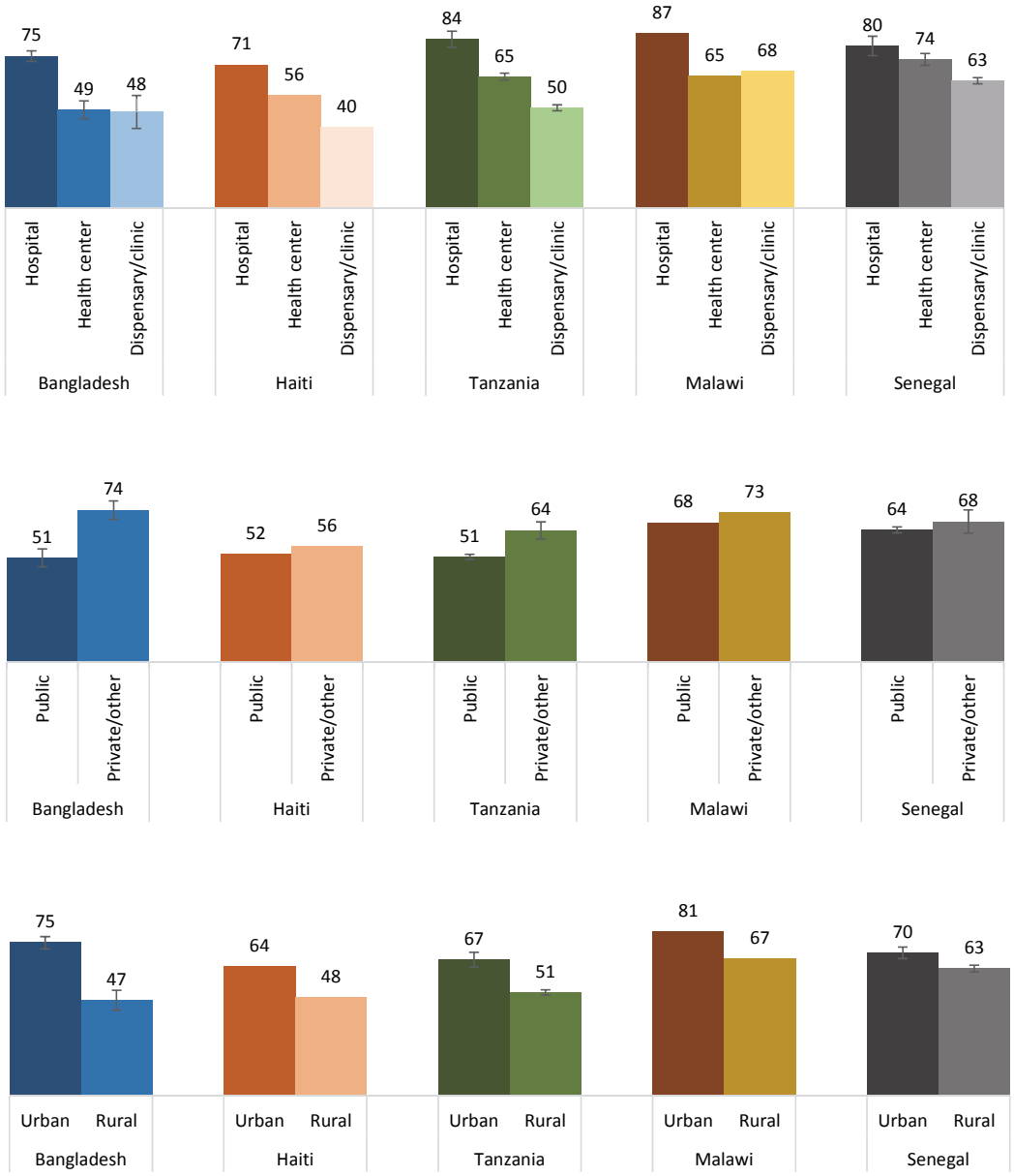
Figure 16. Service readiness Domain A: General requirements summary score by facility characteristics, Bangladesh, Haiti, Tanzania, Malawi, Senegal



Note: Confidence intervals are not shown for Haiti or Malawi, since those surveys were a census of all formal health facilities.

Figure 17 shows the differentials in scores for the second domain of service readiness, equipment, which follow similar patterns to those for general facility requirements.

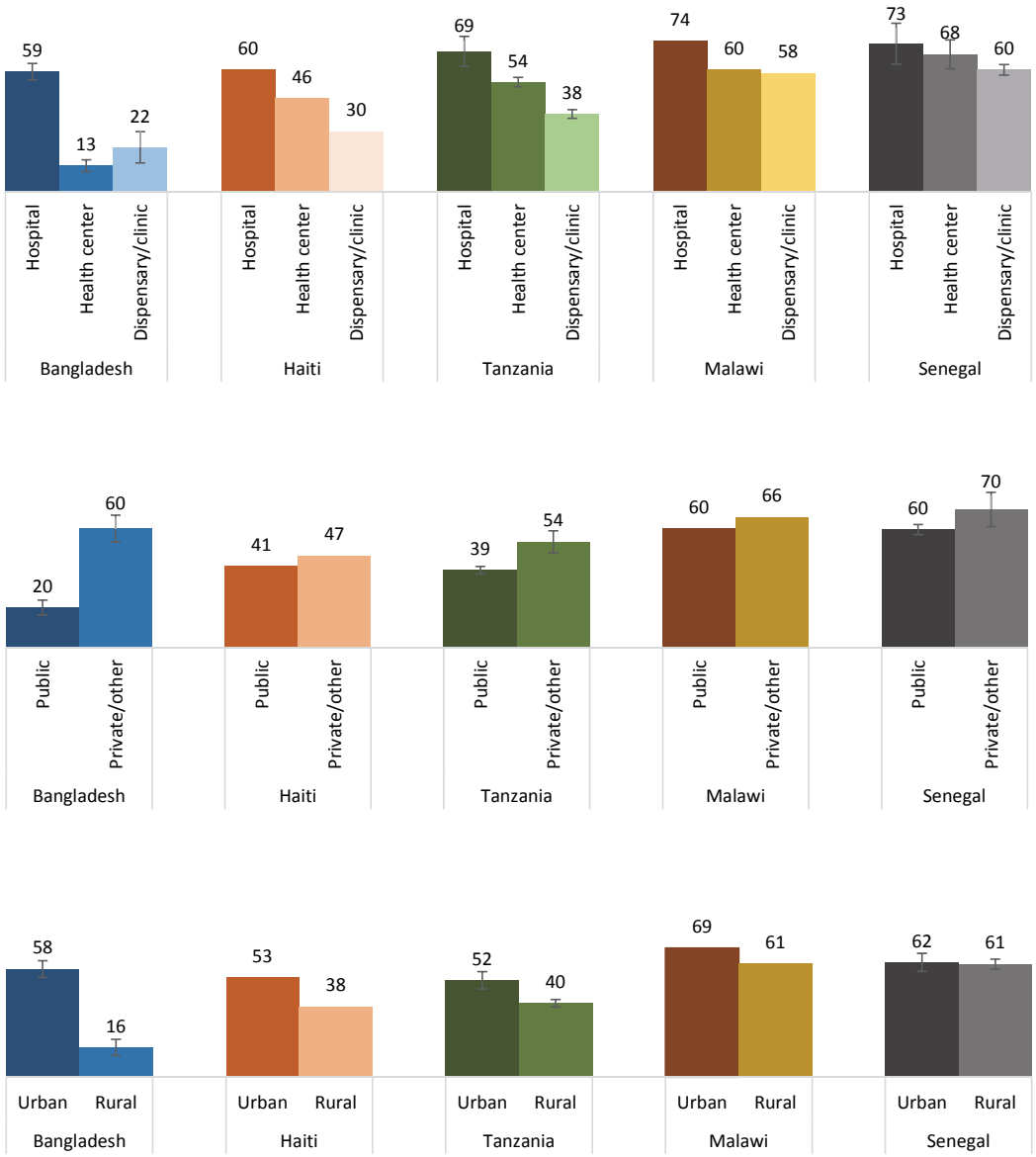
Figure 17. Service readiness Domain B: Equipment summary score by facility characteristics, Bangladesh, Haiti, Tanzania, Malawi, Senegal



Note: Confidence intervals are not shown for Haiti or Malawi, since those surveys were a census of all formal health facilities.

Figure 18 show the variation in the third domain of service readiness, medicines and commodities, by facility characteristics. Here, the variability by facility characteristics is wide across the countries. The differentials are greatest in Bangladesh, where the average scores are more than four times higher for hospitals than health centers, more than three times higher for urban than rural areas, and three times higher for private than public facilities. By contrast, in Senegal there is far less variation by facility type, managing authority, and urban-rural location, and virtually no difference between the average scores in urban and rural areas.

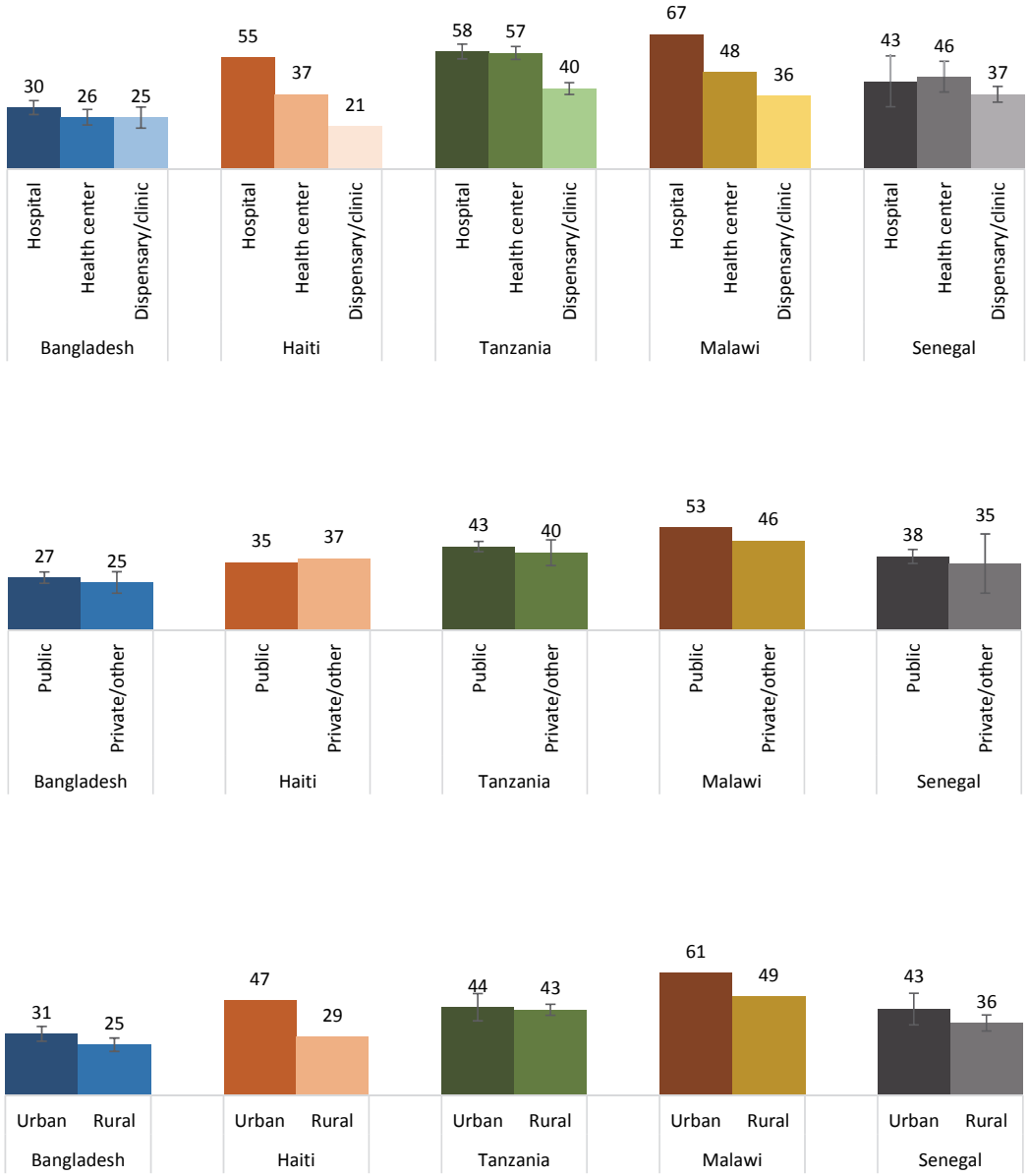
Figure 18. Service readiness Domain C: Medicines and commodities summary score by facility characteristics, Bangladesh, Haiti, Tanzania, Malawi, Senegal



Note: Confidence intervals are not shown for Haiti or Malawi, since those surveys were a census of all formal health facilities.

Scores for the fourth domain of service readiness, guidelines and staffing, are low across countries (see Figure 19), and overall there is less variation across facility characteristics than for the other three domains. Notably, there is very little variation across facility characteristics in Bangladesh, Senegal, and Tanzania.

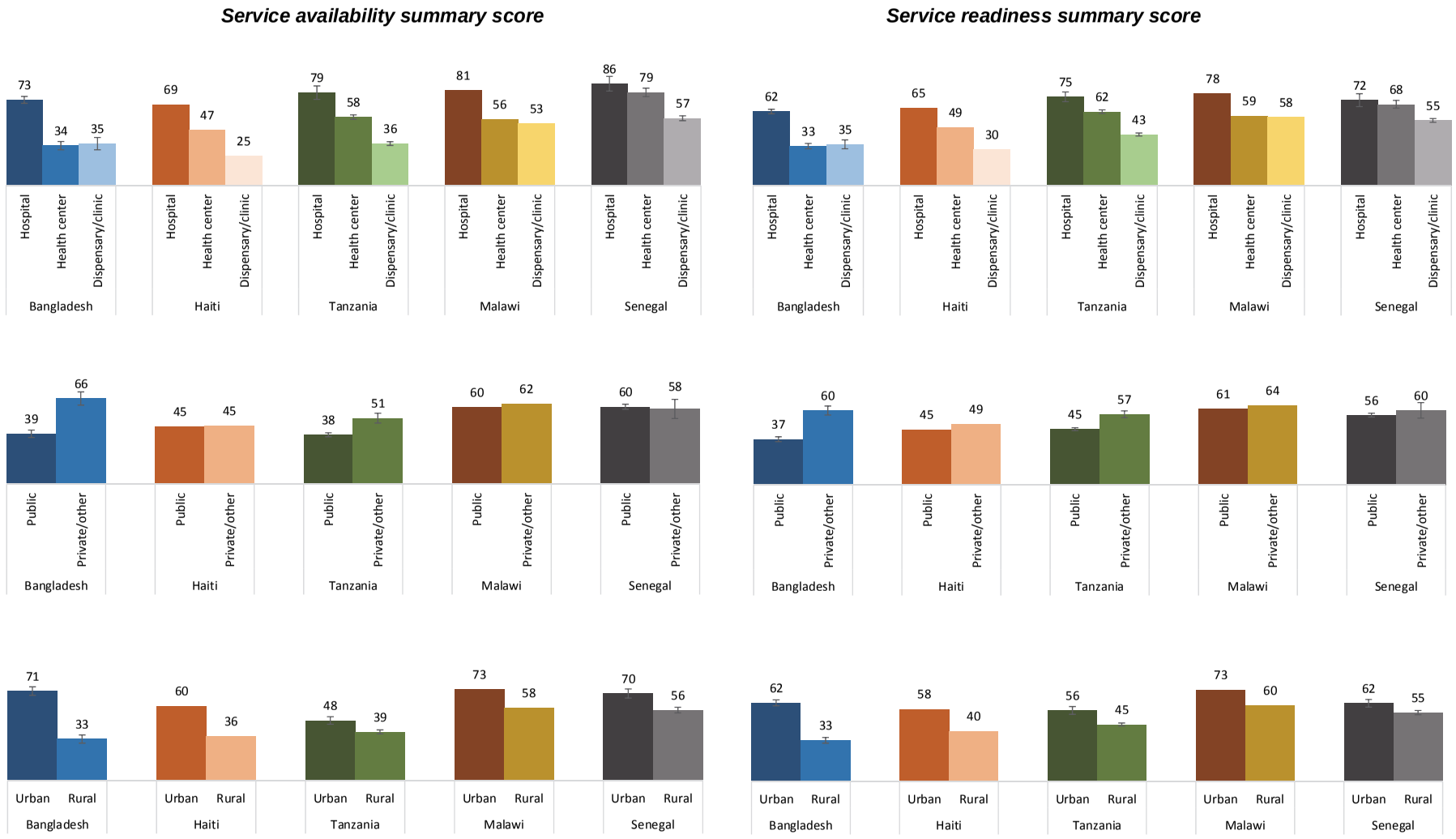
Figure 19. Service readiness Domain D: Guidelines and staffing summary score by facility characteristics, Bangladesh, Haiti, Tanzania, Malawi, Senegal



Note: Confidence intervals are not shown for Haiti or Malawi, since those surveys were a census of all formal health facilities.

Figure 20 presents differentials in the composite service availability and service readiness scores side by side. The patterns in service availability and service readiness are strikingly similar. Scores for both service availability and service readiness tend to be highest in hospitals and in urban areas. There is less difference in scores between public and private facilities, except for Bangladesh and Tanzania, where private facilities score notably higher for both service availability and service readiness.

Figure 20. Service availability (panels on left) and service readiness (panels on right) summary scores by facility characteristics, Bangladesh, Haiti, Tanzania, Malawi, Senegal



Note: Confidence intervals are not shown for Haiti or Malawi, since those surveys were a census of all formal health facilities.

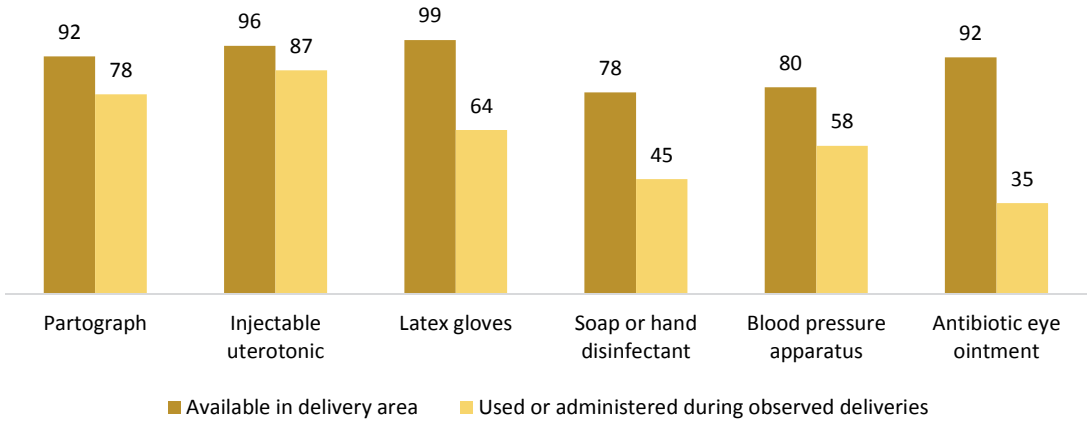
3.2.3. Availability of medicines and commodities versus their observed use

The majority of this study relies on data collected in the SPA facility inventory, which includes information on the observed availability of essential medicines and commodities. We use this information to tell us the extent to which facilities have the supplies needed to provide essential, appropriate, high-quality delivery and newborn care. We rely on commodity *availability* because in most cases we do not have an observed record of what delivery and newborn care is actually *provided* to women and babies. However, the Malawi 2013-14 supplemented the standard SPA survey with observations of a sample of the normal deliveries that took place in the facility on the day of assessment[7]. With these data we can examine the gap between the availability of key commodities in the delivery area (i.e. service readiness indicators obtained from the inventory questionnaire) and observed service delivery (i.e. information obtained during observations of care actually provided to women during normal deliveries).

As Figure 21 shows, a wide gap exists between the availability of commodities and their actual use in delivery. The figure compares the percentage of facilities that have certain items available, specifically, equipment (from service readiness Domain B) and medicines and commodities (from service readiness Domain C) with the percentage of observed normal deliveries during which the item was used. The gap between availability and use is smallest for injectable uterotonics: their availability is high (96%) and they were administered after delivery in comparable percentages of normal observed deliveries (87%). The gap is greatest between the availability and use of antibiotic eye ointment. While over 90% of facilities have the ointment available in the delivery area, the ointment was applied to the newborn in just 35% of observed deliveries. The gap is also large between availability and use of latex gloves (99% versus 64%) and soap or hand disinfectant (78% versus 45%).

These findings have several implications. First, they provide information on the interpretability of our service readiness indicators. Second, they tell us something about quality of care. A large gap between the availability and use of key commodities suggests a missing link or barrier, whether in staff training, knowledge of guidelines, access to commodities, or elsewhere.

Figure 21. Gap between the availability of medicines and commodities and their observed use during delivery, Malawi 2013-14 SPA



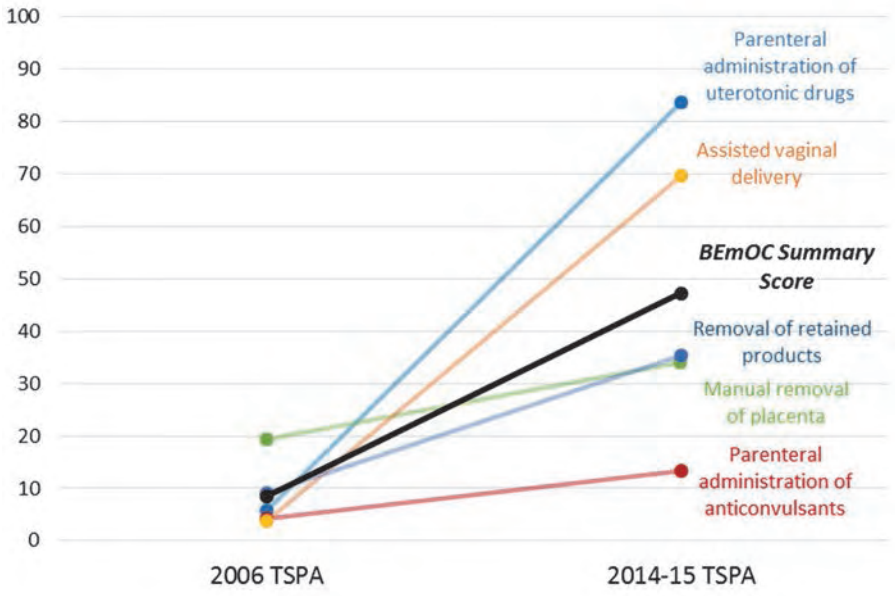
[7] The SPA Observation Protocol for normal obstetric deliveries and immediate newborn care assessed whether observed client–provider consultations met standards for acceptable content and quality. Specially-trained MSPA interviewers acted as observers, sitting in on consultations during normal deliveries and recording what processes the provider followed when assessing the client, conducting procedures, and providing care and treatment (Ministry of Health (MoH) [Malawi] and ICF International 2013-14).

3.3. Trends in Newborn Care Service Availability and Readiness in Tanzania

3.3.1. Trends in newborn care service availability

In Tanzania, where two SPA surveys have been conducted recently, in 2006 and 2014-15, we are able to examine trends in newborn care using the subset of indicators available in both surveys. In this report we examine trends in components of one of the three domains of service availability, Domain A[8]. As Figure 22 shows, Tanzanian health facilities that offer normal delivery services showed significant improvements in average BEmOC availability[9], from a mean score of 9 in 2006 to 47 in 2014-15. Coverage of all five signal functions with complete data improved significantly as well. The signal functions with the greatest improvements in coverage are provision of assisted vaginal delivery, which increased from 4% in 2006 to 70% in 2014-15, and provision of the removal of retained products, which increased from 9% in 2006 to 32% in 2014-15. Parenteral administration of anticonvulsants improved least, from 4% in 2006 to 13% in 2014-15.

Figure 22. National trend in components of service availability Domain A: BEmOC signal functions among facilities that offer normal delivery services, Tanzania 2006 and 2014-15 SPA



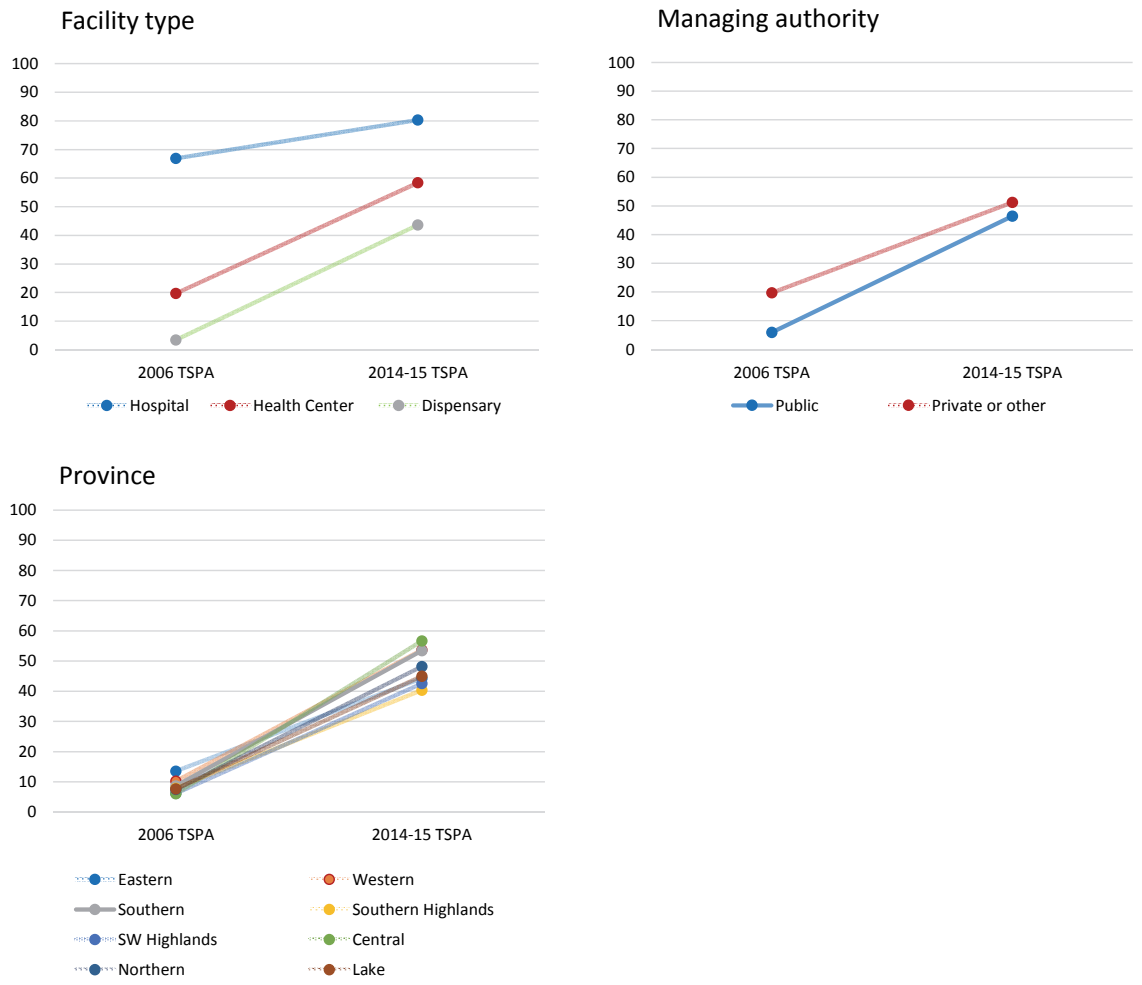
Note: A solid line between adjacent surveys indicates a significant change, while a dotted line indicates no significant change. The BEmOC availability score presented here may not match the score presented in the previous chapter. To preserve comparability across the two surveys, the summary excludes parenteral administration of antibiotics, which is not available in the 2006 survey.

[8] The 2006 Tanzania SPA did not collect comparable information on Domain B, newborn signal functions, or Domain C, routine care.

[9] The 2006 Tanzania SPA did not collect comparable information on one of the six component signal functions, parenteral administration of antibiotics. The summary indicator is based on the remaining five signal functions.

Figure 23 shows the trends in BEmOC service availability disaggregated by the type of facility, managing authority, and province[10] (see Appendix Table A7a for more detail). Between the 2006 and 2014-5 SPA surveys, BEmOC availability scores increased significantly in every subgroup. By type of facility, health centers and dispensaries experienced greater improvement in coverage than hospitals, so that the gap in coverage by type of facility narrowed between the two surveys. Similarly, the gap in BEmOC availability between public and private facilities narrowed between surveys due to the relatively larger improvement in public facilities. Improvements were roughly similar across regions of Tanzania; the Central province experienced the greatest improvement in BEmOC availability, from a score of 6 in 2006 to 51 in 2014-15.

Figure 23. Trend in service availability Domain B: BEmOC signal functions summary score among facilities that offer normal delivery services, by facility characteristics, Tanzania 2006 and 2014-15 SPA



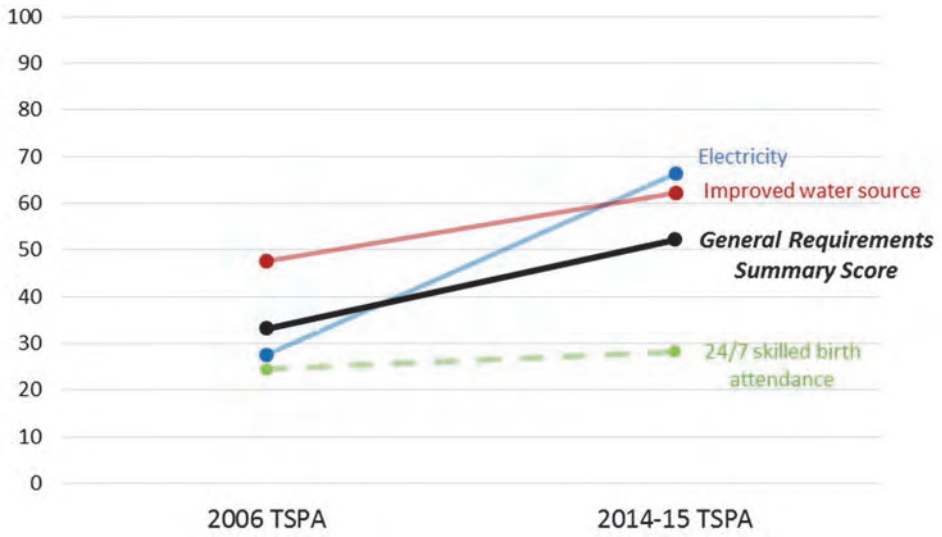
Note: A solid line between adjacent surveys indicates a significant change, while a dotted line indicates no significant change. In the panel disaggregated by type of facility, six clinics surveyed in the 2014-15 survey are excluded, because no facilities were classified as clinics in the 2006 survey. In the panel disaggregated by province, Zanzibar is excluded do to an insufficient number of cases in the 2006 survey. The BEmOC availability score presented here may not match the score presented in the previous chapter. To preserve comparability across the two surveys, the summary excludes parenteral administration of antibiotics, which is not available in the 2006 survey.

[10] Since information on urban/rural location is not available in the 2006 Tanzania SPA, we could not disaggregate the trend results by this variable.

3.3.2. Trends in newborn care service readiness

For the first domain of service readiness, general requirements, we are able to assess the trend in coverage of three of the five components. As Figure 24 shows, based on these three items, Tanzanian health facilities that offer normal delivery services made significant improvements in general requirements, from a mean score of 33 in 2006 to 52 in 2014-15 (see Appendix Table A7b for more detail). Coverage of uninterrupted electricity availability increased significantly, from 27% in 2006 to 66% in 2014-15, and the availability of improved water on-site improved significantly, from 48% to 62%. There was no improvement in coverage of skilled birth attendance, which remained low in 2014-15, at 28%.

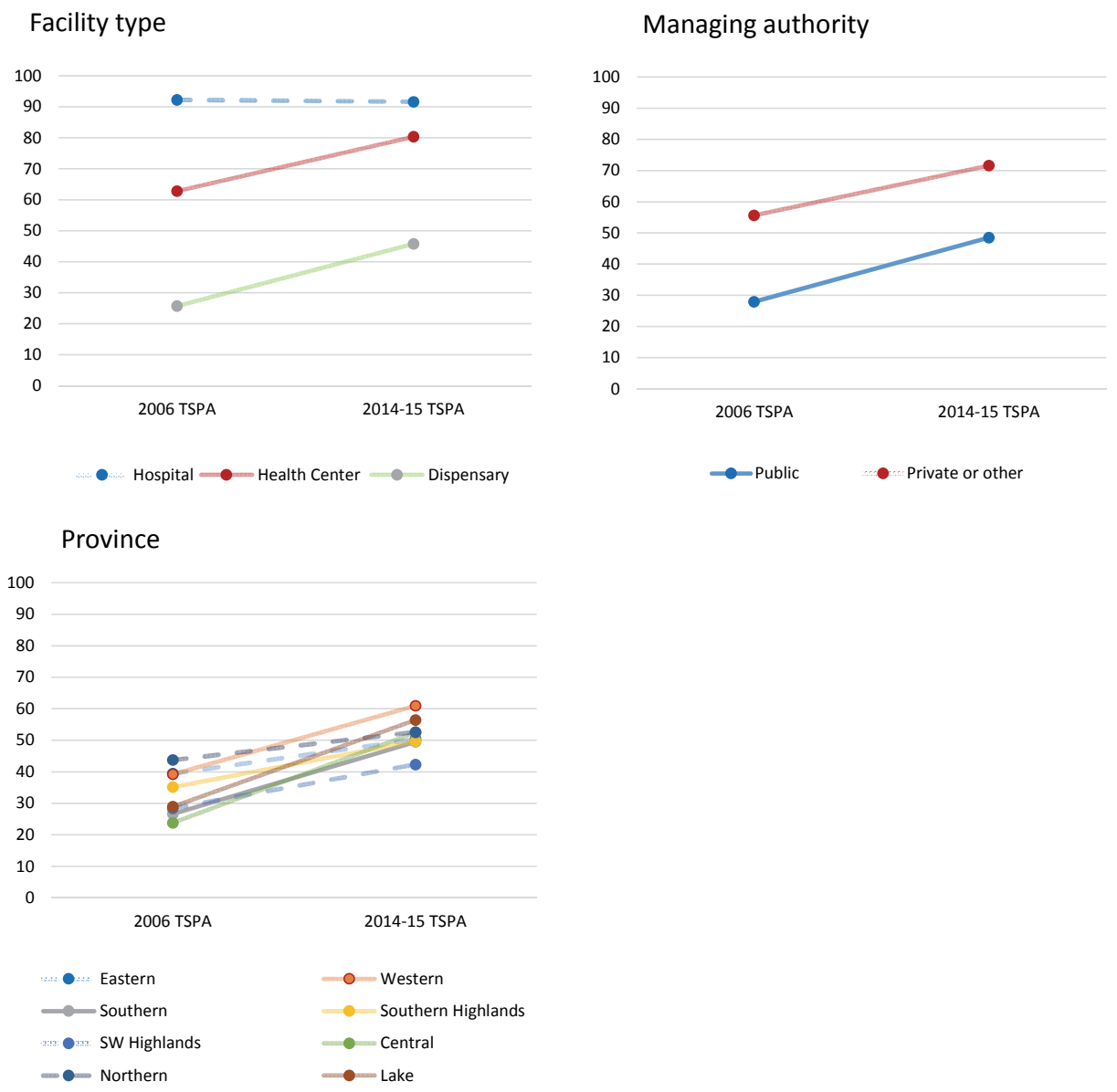
Figure 24. National trend in components of newborn care service readiness Domain A: General requirements, and trend in the summary score, among facilities that offer normal delivery services, Tanzania 2006 and 2014-15 SPA



Note: A solid line between adjacent surveys indicates a significant change, while a dotted line indicates no significant change. The General Requirements Summary Score presented here may not match the score presented in the previous chapter. To preserve comparability across the two surveys, the summary excludes components that are not available in the 2006 survey (emergency transport and improved sanitation).

Figure 25 shows the trend in general requirements service readiness disaggregated by facility characteristics. Between 2006 and 2014-5, the average general requirements score increased significantly among health centers and dispensaries, but not among hospitals. Public and private facilities experienced improvements of similar magnitude. Significant improvements in coverage were observed in roughly half the provinces, but with no evidence of improvement in the Eastern, SW Highlands, or Northern provinces.

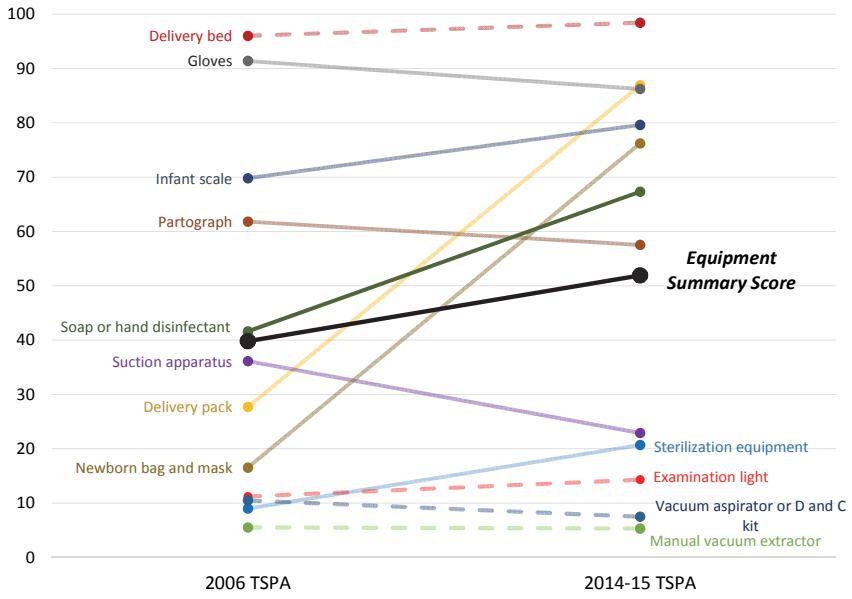
Figure 25. Trend in newborn care service readiness Domain A: General requirements summary score among facilities that offer normal delivery services, by facility characteristics, Tanzania 2006 and 2014-15 SPA



Note: A solid line between adjacent surveys indicates a significant change, while a dotted line indicates no significant change. The General Requirements Summary Score presented here may not match the score presented in the previous chapter. To preserve comparability across the two surveys, this summary score excludes components that are not available in the 2006 survey (emergency transport and improved sanitation). In the panel disaggregated by type of facility, six clinics surveyed in the 2014-15 survey are excluded, because no facilities were classified as clinics in the 2006 survey.

On average, facilities improved significantly in equipment-related newborn care service readiness (service readiness Domain B) from a score of 40 in 2006 to 52 in 2014-15, but the results varied widely in coverage of individual components. Huge improvements were made in coverage of newborn bag and mask and delivery packs, while coverage of suction apparatus, partographs, and latex gloves decreased significantly. Coverage of other pieces of equipment, such as examination lights, manual vacuum extractors, and vacuum aspirators or D&C kits remained quite low, with no improvement between surveys.

Figure 26. National trend in components of newborn care service readiness Domain B: Equipment, and trend in the summary score, among facilities that offer normal delivery services, Tanzania 2006 and 2014-15 SPA



Note: A solid line between adjacent surveys indicates a significant change, while a dotted line indicates no significant change. The Equipment Summary Score presented here may not match the score presented in the previous chapter. To preserve comparability across the two surveys, this summary score excludes components that were not available in the 2006 survey (i.e. blood pressure apparatus).

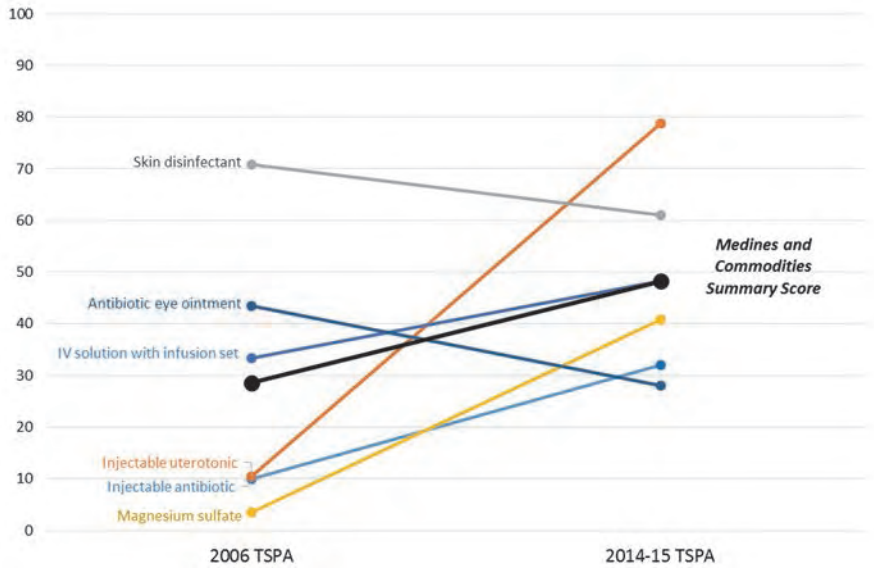
Between 2006 and 2014-15, the equipment-related service readiness score increased for all subgroups except hospitals, which already had the highest average score in 2006, at 81 (see Figure 27 and Appendix Table A7c).

Figure 27. Trend in service readiness Domain B: Equipment summary score among facilities that offer normal delivery services, by facility characteristics, Tanzania 2006 and 2014-15 SPA

Note: A solid line between adjacent surveys indicates a significant change, while a dotted line indicates no significant change. In the panel disaggregated by type of facility, six clinics surveyed in the 2014-15 survey are excluded, because no facilities were classified as clinics in the 2006 survey. The Equipment Summary Score presented here may not match the score presented in the previous chapter. To preserve comparability across the two surveys, the summary excludes components that are not available in the 2006 survey (i.e. blood pressure apparatus).

Newborn care readiness related to medicines and commodities (service readiness Domain C) remained low in facilities that offer normal delivery services, but readiness improved significantly from an overall score of 29 in 2006 to 48 in 2014-15 (see Figure 28). Facilities made substantial improvements in the delivery-room availability of several key medicines, including injectable uterotonics (from 11% coverage in 2006 to 79% in 2014-15), injectable antibiotics (from 10% to 32%), and magnesium sulfate (from 4% to 41%). However, there were substantial decreases in the availability of other medicines, such as antibiotic eye ointment (from 43% to 24%).

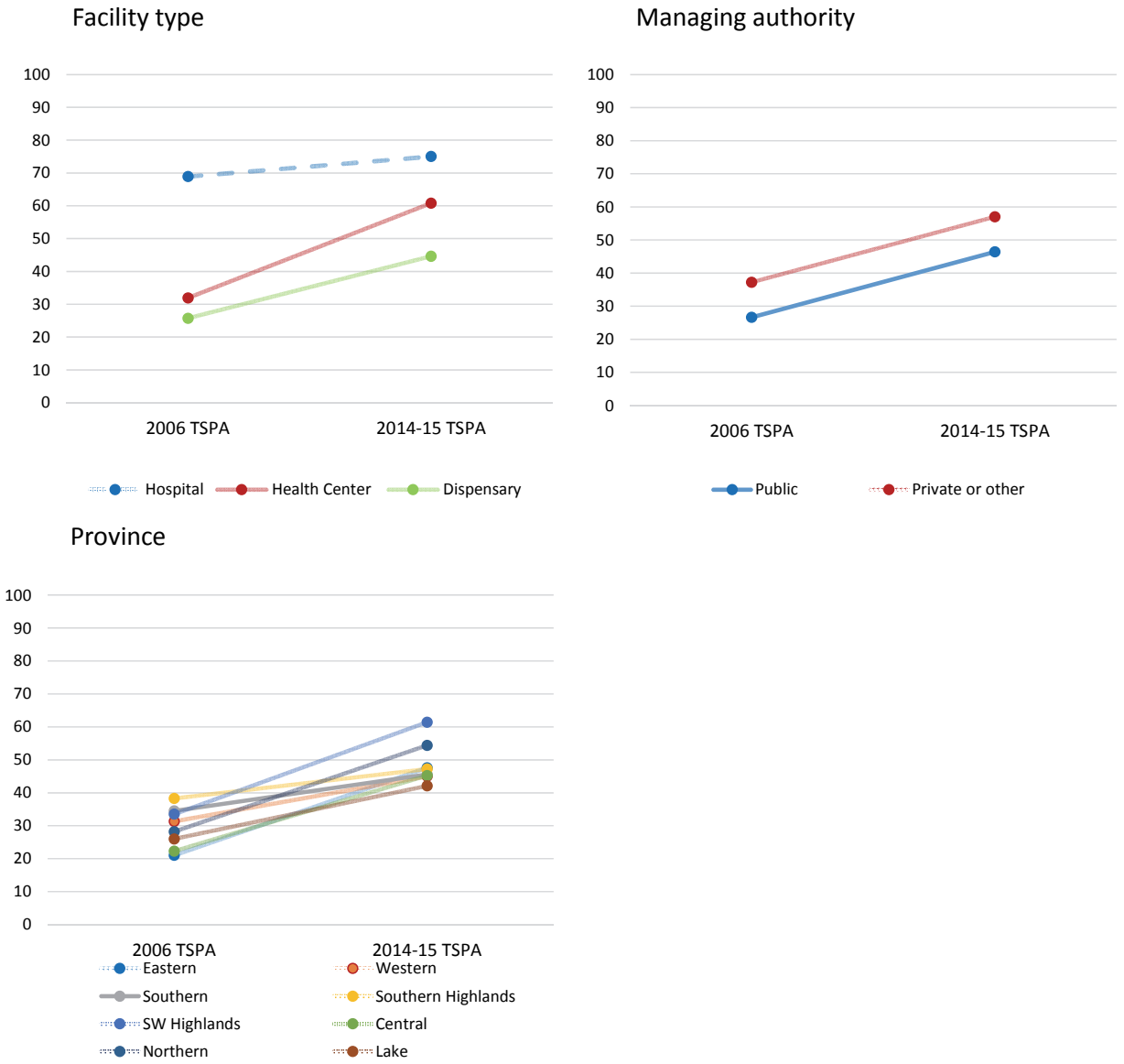
Figure 28. National trend in components of service readiness Domain C: Medicines and commodities, and trend in the summary score, Tanzania 2006 and 2014-15 SPA



Note: A solid line between adjacent surveys indicates a significant change, while a dotted line indicates no significant change. The Medicines and Commodities Summary Score presented here may not match the score presented in the previous chapter. To preserve comparability across the two surveys, the summary excludes components that are not available in the 2006 survey (i.e. availability of chlorhexidine for cord cleaning and hydrocortisone).

Figure 29 shows the trend in service readiness for medicines and commodities among health facilities in Tanzania disaggregated by facility characteristics (see Appendix Table A7d for more detail). Between the 2006 and 2014-5 SPA surveys, the average score increased for all subgroups except hospitals, which already had the highest score in 2006, at 69.

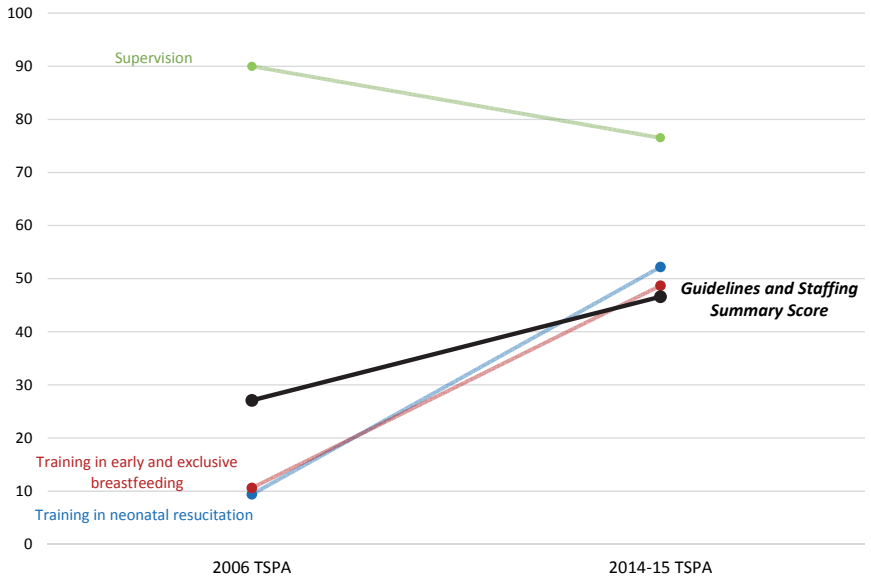
Figure 29. Trend in service readiness Domain C: Medicines and commodities summary score among facilities that offer normal delivery services, by facility characteristics, Tanzania 2006 and 2014-15 SPA



Note: A solid line between adjacent surveys indicates a significant change, while a dotted line indicates no significant change. In the panel disaggregated by type of facility, six clinics surveyed in the 2014-15 survey are excluded, because no facilities were classified as clinics in the 2006 survey. The Medicines and Commodities Summary Score presented here may not match the score presented in the previous chapter. To preserve comparability across the two surveys, the summary excludes components that are not available in the 2006 survey (i.e. hydrocortisone available at the facility).

For the fourth domain of newborn care service readiness, guidelines and staffing, we were able to examine trends in 3 of the 10 indicators. The percentage of facilities with at least one delivery or newborn care provider with recent in-service training in early and exclusive breastfeeding increased significantly, from 11% in 2006 to 49% in 2014-15, and the percentage of facilities with at least one delivery or newborn care provider with recent in-service training in newborn resuscitation with bag and mask increased from 9% to 52%. However, the percentage of facilities with routine personal supervision among health workers who provide delivery or newborn care decreased between surveys, from 90% to 73%. Overall, the summary score for this domain of service readiness increased significantly, from a score of 27 in 2006 to 47 in 2014-15 (see Figure 30 and Appendix Table A7e).

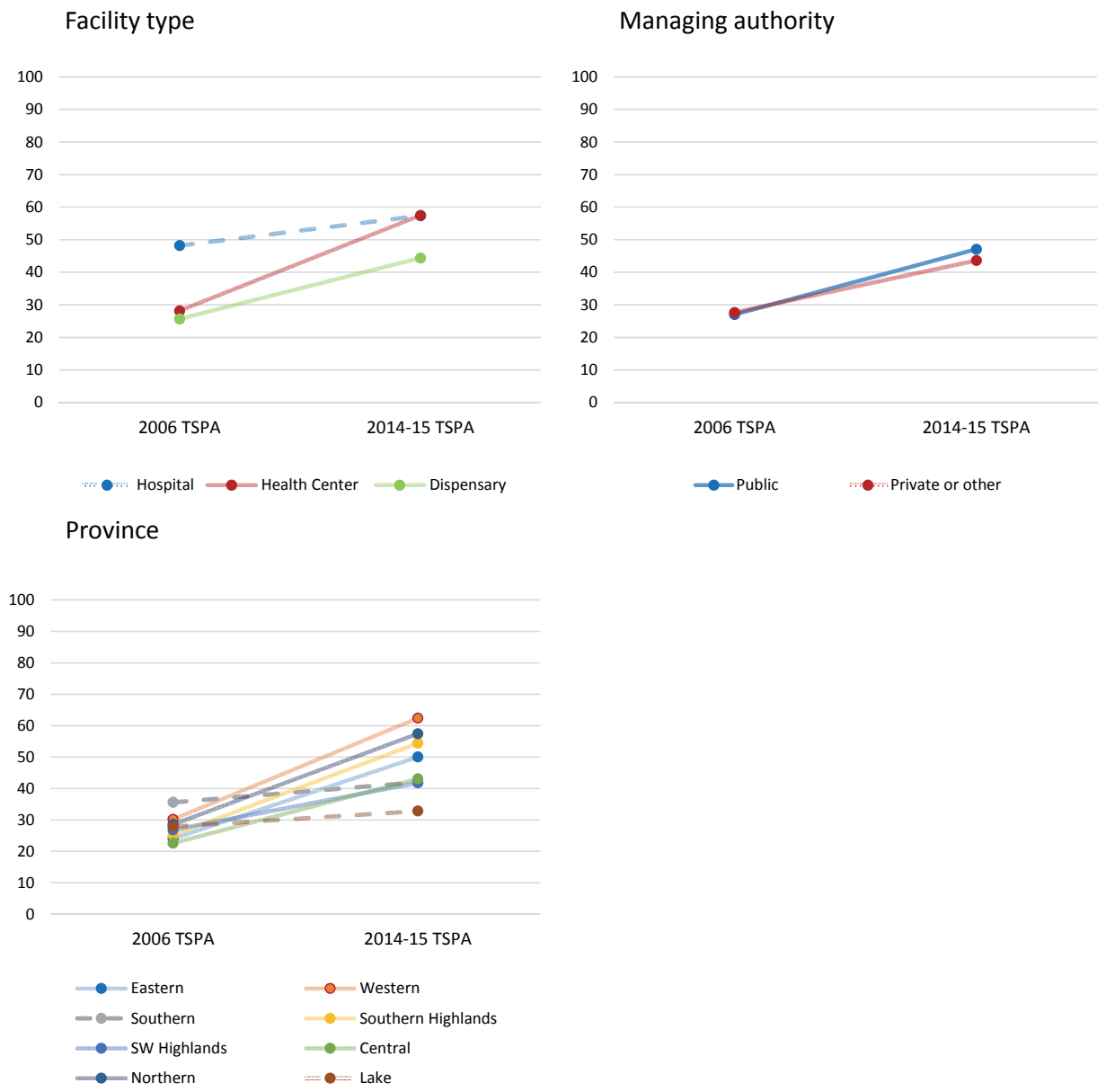
Figure 30. National trend in components of service readiness Domain C: Guidelines and staffing, and trend in the summary score, among facilities that offer normal delivery services, Tanzania 2006 and 2014-15 SPA



Note: A solid line between adjacent surveys indicates a significant change, while a dotted line indicates no significant change. The Guidelines and Staffing Summary Score presented here may not match the score presented in the previous chapter. To preserve comparability across the two surveys, the summary excludes components that are not available in the 2006 survey (i.e. availability of IMPAC, CEmOC, and pre-term labor guidelines, and indicators on recent in-service training on newborn infection management, thermal care, cord care, and KMC).

Significant improvements were made in newborn care service readiness related to guidelines and staffing in all subgroups except hospitals and two of Tanzania's eight provinces, the Southern and Lake provinces (see Figure 31).

Figure 31. Trend in service readiness Domain C: Guidelines and staffing summary score among facilities that offer normal delivery services, by facility characteristics, Tanzania 2006 and 2014-15 SPA



Note: A solid line between adjacent surveys indicates a significant change, while a dotted line indicates no significant change. In the panel disaggregated by type of facility, six clinics surveyed in the 2014-15 survey are excluded, because no facilities were classified as clinics in the 2006 survey. The Guidelines and Staffing Summary Score presented here may not match the score presented in the previous chapter. To preserve comparability across the two surveys, the summary excludes components that are not available in the 2006 survey (i.e. availability of IMPAC, CEmOC, and pre-term labor guidelines, and indicators on recent in-service training on newborn infection management, thermal care, cord care, and KMC).

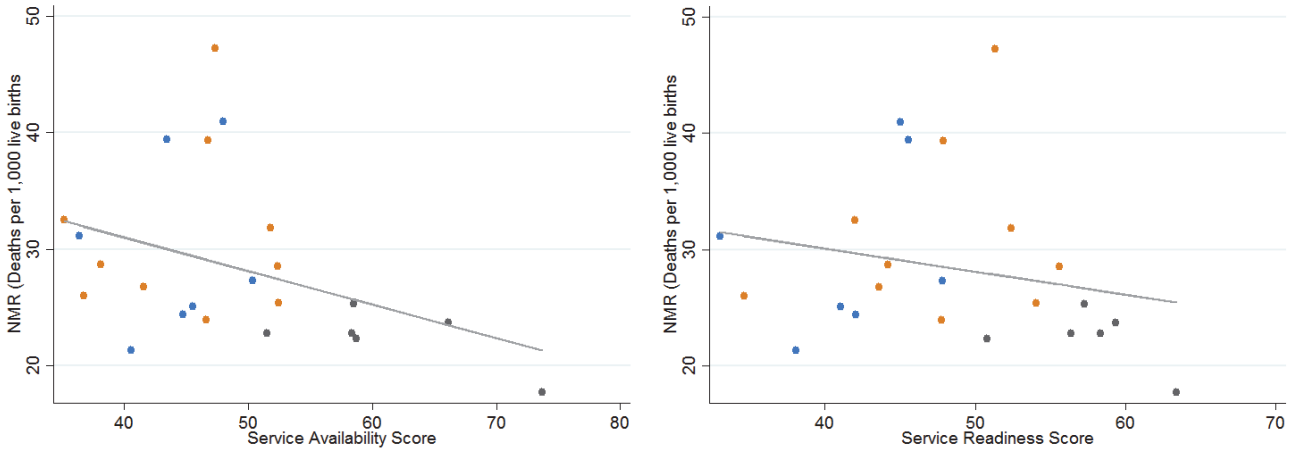
3.4. Linking the SPA and DHS at the Regional Level: Bivariate Association between Newborn Care Service Availability, Service Readiness, and Neonatal Mortality

Thus far, the report has described levels and trends in the readiness of facilities that offer normal delivery services to provide newborn care. To address the extent to which readiness to provide newborn care is associated with newborn survival, we examine the bivariate correspondence between mean service availability and readiness scores and neonatal mortality rates. The analysis is conducted at the regional level because SPA surveys that are a sample of facilities, rather than a complete census, should not be linked with DHS data at the individual level, due to the potential for misclassification error (Burgert and Prosnitz 2014). The analysis is restricted to the three study countries with DHS and SPA surveys conducted within three years of one another—Bangladesh, Haiti, and Senegal (Table 4). For these countries, it is reasonable to assume that the SPA captures the service environment for births in the five years preceding the DHS.

Figure 32 includes two panels. The panel on the left shows the correspondence between the mean service availability summary score and the neonatal mortality rate for the regions of Bangladesh, Haiti, and Senegal, based on births in the five years preceding the most recent DHS. The panel on the right shows the correspondence between the mean service readiness summary score and the neonatal mortality rate in the regions. Each plot includes 23 data points, representing the 23 geographic regions in the three countries. A simple linear regression line was fit through the data points. A slope (b) significantly different from 0 would indicate an association between regional newborn care service availability or service readiness and neonatal survival in the region.

The mean service availability score was marginally associated ($p<0.10$) with the region's NMR ($b=-0.29$, $p=0.072$), with lower service availability scores tending to be correlated with higher neonatal mortality rates. The mean service availability score accounted for 11% of the regional variation in the NMR. We did not find evidence of a linear association between mean service readiness and NMR ($b=-.20$, $p=0.311$). However, for both newborn care service availability and service readiness, the association was in the expected direction, with decreasing service availability/readiness associated with higher levels of neonatal mortality.

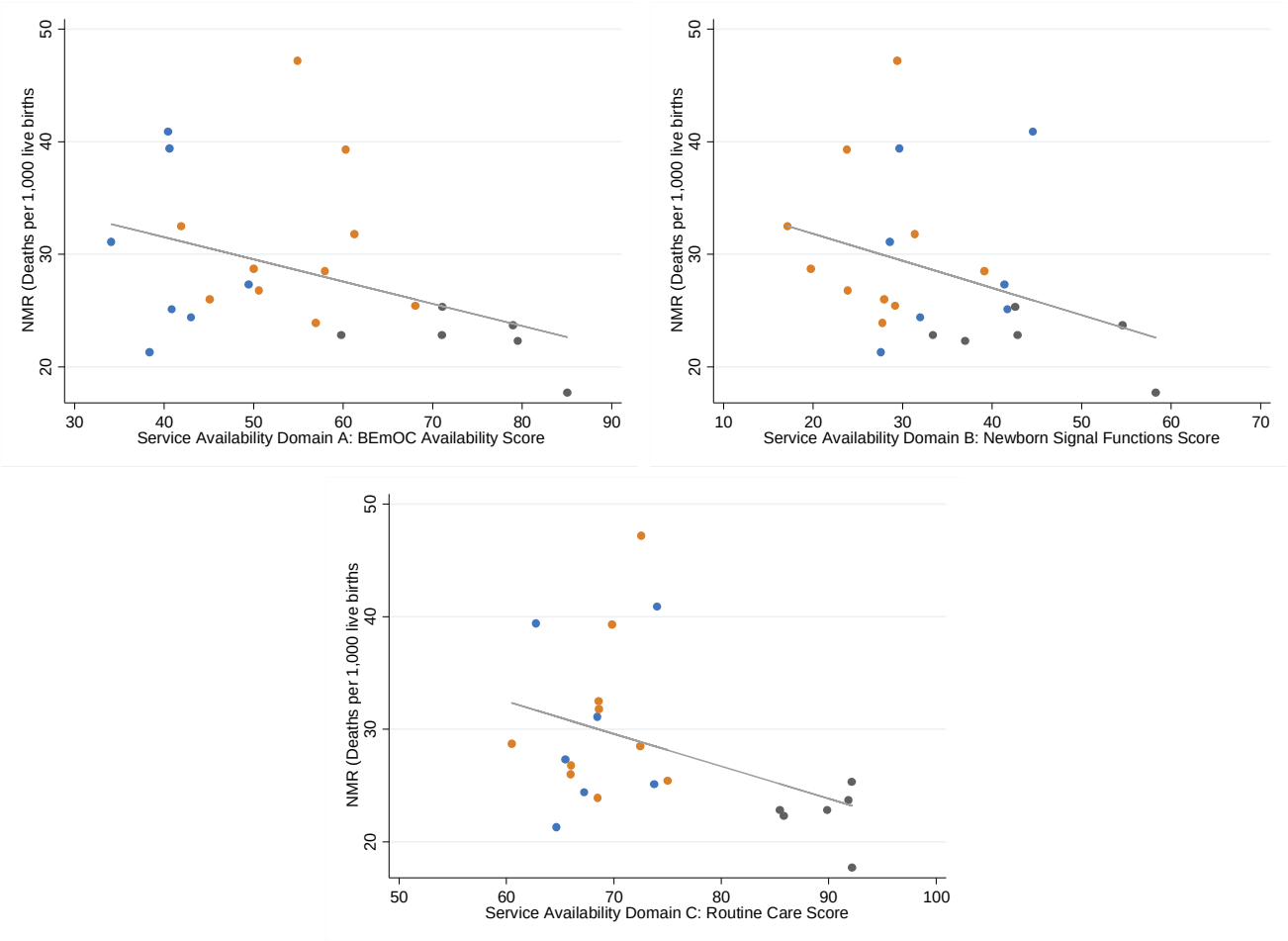
Figure 32. Association between neonatal mortality and newborn care service availability (left panel) and neonatal mortality and service readiness (right panel) for the regions of Bangladesh, Haiti, and Senegal



Note: Haiti is shown in orange, Bangladesh in blue, and Senegal in gray. Linear regression lines were fit through the 23 points. P-values for slope coefficients: service availability summary score: p=0.072; service readiness summary score: p=0.311.

Figure 33 shows the correspondence between each domain of service availability and the NMR. Domain A, BEmOC availability, (b=-.20, p=0.060) and Domain C, routine practices, (b=-.29, p=0.054) were each marginally associated with the NMR. The scores for BEmOC availability accounted for 12% of the variation in the NMR, while the score for routine practices accounted for 13%. We found no evidence of an association between Domain B, newborn signal functions service availability, and the NMR.

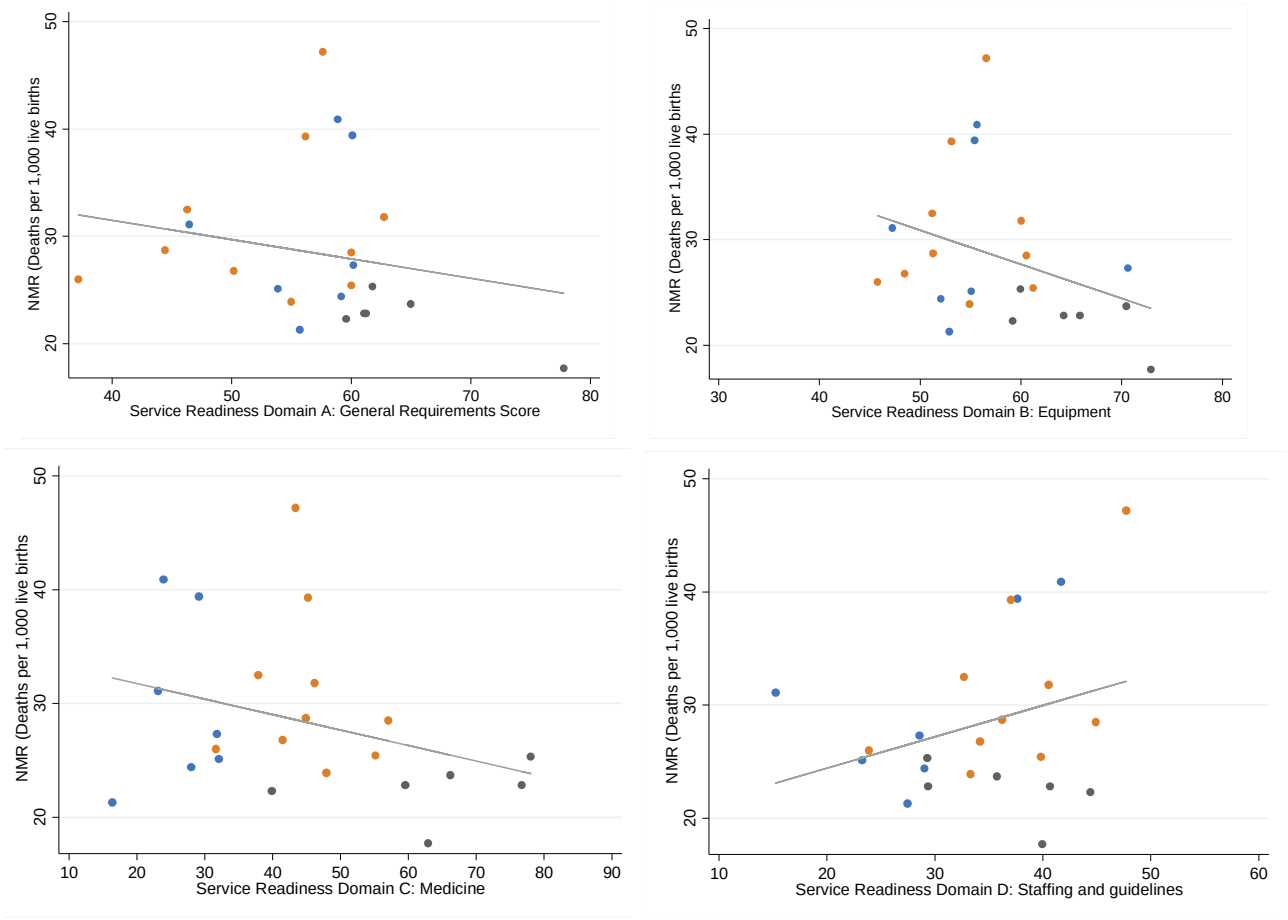
Figure 33. Association between newborn care service availability and neonatal mortality for the regions of Bangladesh, Haiti, and Senegal



Note: Haiti is shown in orange, Bangladesh in blue, and Senegal in gray. Linear regression lines were fit through the 23 points. P-values for slope coefficients: service availability domain A: p=0.060; domain B: p=0.108, domain C: p=0.054.

Figure 34 shows the association between each domain of service readiness and the NMR. We found no evidence of an association between any domain of service readiness and the NMR. However, it is worth noting that for three of the four domains the association was in the expected direction, with higher readiness scores correlated with lower neonatal mortality rates; the only exception was service readiness Domain D, guidelines and staffing.

Figure 34. Association between newborn care service readiness and neonatal mortality for the regions of Bangladesh, Haiti, and Senegal



Note: Haiti is shown in orange, Bangladesh in blue, and Senegal in gray. Linear regression lines were fit through the 23 points. Linear regression lines were fit through the 31 points. P-values for slope coefficients: service readiness domain A: p=0.348: domain B: p=0.120, domain C: p=0.140, domain D: p=0.160.

4. Discussion

Given differential access to delivery and newborn care, where you are born strongly affects your chance of survival (Lawn et al. 2013). However, previous studies have found that access to delivery care alone is not enough to reduce early neonatal mortality rates (e.g., Lohela et al. 2012). Beyond whether a mother has access to a health facility and whether she delivers in that facility, it is essential that the available services have appropriate content and good quality. Ours is the first study to examine two dimensions of quality of newborn care—service availability and service readiness—in five high-burden countries. In all five countries, key services, commodities and medicines needed for comprehensive delivery and newborn care were missing from a large proportion of facilities that offer normal delivery services. This is important not only because it indicates poor quality of care, or possibly even no care, but also because widespread perceptions of poor-quality services can deter women from seeking care at a facility (Darmstadt et al. 2014). In this chapter we discuss the meaning and implications of our findings by country, as well as the gap between service readiness and service delivery in Malawi, the mainly encouraging trend in Tanzania, and what we learned about the association between neonatal mortality and service availability and readiness.

Of the five countries assessed, Malawi has among the highest scores for both service availability and service readiness. Service availability scores vary by domain, with the lowest scores for BEmOC signal functions and newborn signal functions. Service readiness domain scores are generally consistent, at around 60. Save the Children has been instrumental in scaling up newborn care throughout Malawi over the past 15 years, with funding from USAID and The Bill and Melinda Gates Foundation, an effort that likely contributed to these scores. However, there is still a need for improvement in all domains except routine care. Hospitals score the highest for service availability and service readiness, while health centers score much lower. Given that health centers constitute nearly 80% of the facilities that provide normal delivery services, they have the potential to serve more people than hospitals, so investment in the availability and readiness of their newborn care services is greatly needed. Urban facilities generally score higher than rural facilities, and there is only a slight difference between public and private facility scores. With most surveyed facilities located in rural areas (85%), investments to increase the scores of those facilities in Malawi could have a significant impact on the population. Our findings are consistent with a study by Zimba and colleagues (2012) that found that most facilities had staff and supply shortages and lacked three or more signal functions.

Our comparison of service readiness and service delivery, using observation data in Malawi, brings a few issues to light. First, there is a gap between the commodities available in a facility and their use, a gap of 57 percentage points in the worst case (antibiotic eye ointment) and 9 percentage points in the best case (injectable uterotonic), with an average gap of 28 percentage points for six key commodities. This is an important finding regarding availability versus actual service delivery, and it sounds a warning for programs and policies that seek to improve service quality. Second, this finding means that our other findings regarding service availability and readiness should be interpreted cautiously, as they may overestimate actual provision of services. Finally, our findings point to a need for further investigation of barriers to the use of available commodities and medicines, to determine whether the gap we identified reflects a lack of staff knowledge or skill, or another barrier to effective service delivery.

Senegal's newborn care quality scores are nearly as high as those in Malawi, at about 60 points for both service availability and service readiness. Senegal's highest score is for routine care (89); its lowest scores are for guidelines and staffing (38) and the availability of newborn signal functions (43). Compared with the other countries, disparities are markedly less drastic in Senegal. There is little difference between public and private facilities in service availability and readiness, and on average the differences between urban

and rural facilities are smaller than for other countries except Malawi. Still, health posts[11], which constitute nearly 90% of all facilities that offer normal delivery services, score substantially lower than hospitals. Investments to increase the scores of dispensaries and clinics could have a significant impact on the population.

Bangladesh has shown impressive reductions in neonatal mortality since 1990; in fact is it one of two low-income countries included in the list of 50 countries with the highest rates of reduction in NMR (Oestergaard et al. 2011). However, we find that the country has relatively low scores for newborn care quality, with scores below 50 for both service availability and service readiness. Its highest score is for routine care (70) and its lowest is for the availability of medicines (28). Of the five countries, Bangladesh also shows the widest gaps in coverage across subgroups: hospitals generally have much higher scores than health centers or dispensaries/clinics; private facilities have higher scores than public facilities, and urban facilities have higher scores than rural facilities, suggesting geographic and economic inequities in access to high-quality newborn care. In general, most facilities that offer normal delivery services in Bangladesh do not provide comprehensive newborn care services and are not ready to do so. These findings are consistent with other studies that report inadequate quality of obstetric care in the country, and marked urban-rural gaps in quality (Anwar, Kalim, and Koblinsky 2009). Concentrated efforts to improve the quality of newborn care for all are urgently needed.

Tanzania also scores below 50 for overall service availability and service readiness. Tanzania scores highest for routine care (80) and lowest for newborn signal functions (26). Hospitals, which constitute just 5% of the country's health facilities with normal delivery services, have higher scores than health centers or dispensaries/clinics; private facilities have higher scores than public facilities; and urban facilities have higher scores than rural facilities, suggesting both geographic and economic inequities. However, the main finding for Tanzania may be its achievement in narrowing gaps in quality of newborn care between 2006 and 2014-15. All five of the measurable domains of newborn care service availability and readiness showed significant improvement between surveys. The greatest improvements were made in average BEmOC availability, with notable increases in assisted vaginal delivery and removal of retained products. Coverage of uninterrupted electricity availability and improved water onsite also increased substantially, with the largest gains at health centers and dispensaries/clinics, and at public rather than private facilities, indicating a narrowing of the equity gap in newborn care in Tanzania. The presence of newborn bag and mask and delivery packs, and supplies of injectable uterotonics, injectable antibiotics, and magnesium sulfate also increased, although the supply of medicines overall remains low. We observed decreases or stagnation for some indicators, presenting a somewhat mixed picture, but in all, an encouraging trend for the indicators we measured. As more SPA surveys are completed in Tanzania and in other countries, we will be able to conduct more trend analyses to monitor improvements in quality of newborn care.

Like Bangladesh and Tanzania, Haiti scores below 50 for service availability and service readiness, with a high score of 68 for routine care and a low score of 27 for newborn signal functions. Overall in Haiti, public and private facilities score similarly, but hospitals score higher than health centers and dispensaries and clinics, and urban facilities score higher than rural facilities, signaling geographic inequities and barriers to access. These findings are consistent with Wang and colleagues (2014), who also found that lower-level facilities in Haiti—and specifically health centers without beds and dispensaries—are poorly prepared to provide delivery services. In Haiti, health centers without beds and dispensaries lack a government mandate to provide delivery services (Ministère de la Santé Publique et de la Population (MSPP) 2000), yet these facilities constitute half of all facilities that report offering delivery care (Wang et al. 2015). Since these facilities lack official mandate, they may not receive necessary support from the government. Since in rural areas lower-level facilities are often all that is available, the government may do well to formally include

[11] In Senegal, the "dispensaries and clinics" category consists entirely of health posts.

them as providers of delivery care and equip them with the medicines, commodities, personnel, and training necessary to provide high-quality delivery and newborn care (Wang et al. 2015).

In our bivariate analysis of the association between neonatal mortality rates and newborn care service availability and service readiness scores in Bangladesh, Haiti, and Senegal, we found regional neonatal mortality rates to be marginally significantly associated with service availability scores but not with service readiness scores. The associations between NMR and service availability scores are in the expected direction, with lower scores tending to be correlated with higher regional neonatal mortality rates, and are marginally significant for two of the three domains of service availability: BEmOC availability and routine perinatal care availability. This analysis was a simple, unadjusted examination of the association at the regional level. It did not consider many important factors, including the density and accessibility of the health facilities that offer delivery services and, related, the level of use of delivery and newborn care services by women. The analysis did not account for any covariates or country-level characteristics, all of which could confound the associations. Nonetheless, the analysis provides a glimpse of an association that could be supported through future analyses, using census SPA surveys and multilevel models to examine both facility-level and individual-level characteristics, and accounting for facility variance within regions. These future analyses could investigate further the relative importance of service availability and service readiness dimensions as determinants of newborn survival.

Another useful area of future research could be to examine facility quality scores alongside population data on the use of delivery services: to what extent do women use the types of facilities with higher quality scores? In all countries, we found that hospitals have the highest quality scores, and yet hospitals comprise the smallest segment of facilities with normal delivery services, indicating that for most women, accessing newborn care services at health centers or dispensary/clinics is more likely than receiving hospital care. There are equity issues to be further explored and explained.

In addition to the limitations noted for the analyses of bivariate associations, limitations of the other analyses described in this report include the fact that not all relevant indicators were available in our data sources. The scores we created condense a great deal of information and need to be “unpacked” for clear interpretation and program purposes, but we believe they provide a valid way for us to convey a large amount of related information. Our choice of countries was limited by the availability of SPA surveys. Strengths of our analysis include our comprehensive definition of newborn care quality and our multifaceted analysis, through which we sought to expose the current status of newborn care quality from different angles.

In conclusion, we found some encouraging evidence of newborn care service availability and readiness among the countries studied, and also identified a great deal of room for improvement. Of the seven domains of service availability and service readiness studied, routine care consistently scores highest, while newborn signal functions and guidelines and staffing tend to score lowest. The results point to persistent inequity in access to high-quality newborn care between urban and rural areas and between hospitals and the more ubiquitous health centers and dispensaries/clinics and clinics. Together, the findings indicate the need for broad initiatives that improve staff competence, address systemic barriers to service provision, and promote equity in newborn care quality. The trend analysis for Tanzania provides a hopeful sign; more studies are needed to understand the extent of this trend more broadly. While the past 10 to 15 years have seen an increase in high-profile advocacy, research, and funding for some countries, clearly more can be done to increase newborn care service availability and readiness.

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Appendix

Table A1. Percent distribution of facilities that offer normal delivery services by facility characteristics, Bangladesh, Haiti, Tanzania, Malawi, Senegal

	Bangladesh 2014 SPA		Haiti 2013 SPA		Tanzania 2006 SPA		Tanzania 2014-15 SPA		Malawi 2013-14 SPA		Senegal 2014 SPA	
	%	N	%	N	%	N	%	N	%	N	%	N
Facility type												
Hospital	26.1	73	24.1	94	5.2	24	4.8	44	18.0	95	4.0	11
Health Center	35.2	99	42.9	167	10.7	48	12.1	110	78.5	414	7.3	20
Clinic	38.7	109	33.0	128	84.1	379	83.1	751	3.5	19	88.7	248
Managing Authority												
Public	79.8	224	50.2	195	81.0	365	83.6	756	65.7	347	89.8	251
Private or other	20.2	57	49.8	194	19.0	85	16.4	149	34.3	181	10.2	29
Locality												
Urban	29.3	82	38.8	151	n/a		14.6	132	14.8	78	25.9	72
Rural	70.7	198	61.2	238			85.4	773	85.2	450	74.1	207
Total	**100**	**280**	**100**	**389**	**100**	**451**	**100**	**905**	**100**	**528**	**100**	**279**

Table A2a. Service availability Domain A: BEmOC signal functions, Bangladesh 2014 SPA

	Parenteral administra-tion of antibiotics			Parenteral administra-tion of uterotonic drugs			Parenteral administra-tion of anti-convulsants			Manual removal of placenta			Assisted vaginal delivery			Removal of retained products			*Service availability Domain A summary score*			
	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	Mean	LB	UB	Mean	LB	UB	N
Facility type																						
Hospital	87.9	82.3	92.0	85.8	80.1	90.1	60.7	53.5	67.5	74.2	67.5	80.0	76.1	69.5	81.7	64.6	57.4	71.2	74.9	70.8	79.0	73
Health Center	33.8	24.6	44.5	40.9	31.1	51.6	16.4	10.8	24.1	27.5	19.4	37.3	39.3	29.6	50.0	19.2	12.7	27.9	29.5	23.8	35.2	99
Dispensary or clinic	25.8	15.9	39.1	35.4	24.0	48.7	21.4	12.2	34.8	34.1	20.6	50.8	36.8	22.5	53.8	22.4	13.1	35.6	29.3	19.9	38.7	108
Managing authority																						
Public	36.0	29.1	43.4	43.7	36.4	51.3	24.4	18.8	31.0	36.4	28.5	45.2	44.2	35.4	53.3	26.2	20.4	33.0	35.1	30.0	40.3	224
Private or other	80.1	70.4	87.2	77.4	67.4	85.0	51.9	41.5	62.1	65.4	54.9	74.5	62.7	52.2	72.1	56.3	45.6	66.4	65.6	58.3	72.9	56
Location																						
Urban	84.1	77.5	89.0	81.2	74.3	86.6	55.6	48.0	62.9	73.5	66.2	79.7	71.2	63.9	77.5	63.2	55.7	70.2	71.5	66.7	76.3	82
Rural	28.6	21.2	37.3	37.7	29.7	46.5	19.3	13.3	27.1	29.3	20.7	39.6	38.3	28.7	48.8	19.4	13.3	27.5	28.8	23.0	34.6	198
Division																						
Barisal	47.6	35.0	60.5	46.4	33.8	59.5	19.5	11.4	31.3	45.4	32.9	58.5	41.7	29.5	55.1	29.8	20.8	40.7	38.4	30.6	46.1	15
Chittagong	53.0	40.7	64.9	51.9	39.7	63.9	27.0	18.9	36.9	46.3	34.4	58.6	47.3	34.2	60.7	32.8	22.8	44.6	43.0	33.1	53.0	58
Chaka	49.3	35.5	63.1	51.0	37.2	64.7	27.5	16.9	41.6	39.0	26.4	53.3	48.8	33.2	64.7	29.6	22.7	37.5	40.9	31.9	49.9	97
Khulna	41.5	25.6	59.5	57.6	37.2	75.8	34.4	18.8	54.2	37.5	23.3	54.3	42.7	24.7	62.9	29.0	17.5	44.0	40.4	30.2	50.7	25
Rajshahi	31.0	22.9	40.4	30.3	22.1	39.9	20.8	15.6	27.1	42.0	21.7	65.4	48.2	26.3	70.7	32.3	14.7	56.9	34.1	21.6	46.6	35
Rangpur	38.2	26.5	51.4	69.2	54.1	81.0	53.8	41.3	65.9	46.3	24.1	70.1	44.8	32.1	58.2	44.5	22.6	68.7	49.5	37.7	61.2	33
Sylhet	36.7	22.2	54.1	41.8	25.8	59.7	29.0	15.4	47.9	43.9	25.9	63.6	63.3	39.8	81.8	29.0	17.4	44.2	40.6	26.5	54.7	18
Total	44.8	38.8	51.0	50.5	44.2	56.7	29.9	24.8	35.6	42.3	35.4	49.5	47.9	40.5	55.5	32.3	27.0	38.0	41.3	36.8	45.7	280

Note: LB and UB refer to the lower and upper bounds of the 95% confidence interval.

Table A2b. Service availability Domain B: Newborn signal functions, Bangladesh 2014 SPA

	Neonatal resuscitation			Cortisosteroids for pre-term labor			Kangaroo Mother Care			*Service availability Domain B summary score*			
	%	LB	UB	%	LB	UB	%	LB	UB	Mean	LB	UB	N
Facility type													
Hospital	69.4	62.5	75.5	47.7	40.8	54.7	57.1	50.1	63.8	58.1	53.4	62.8	73
Health Center	31.6	22.8	42.1	10.6	6.2	17.5	34.6	25.2	45.4	25.6	20.2	31	99
Dispensary or clinic	34.9	21.1	51.9	18.8	8.9	35.4	44	27.9	61.4	32.6	23.8	41.3	108
Managing authority													
Public	37.9	29.7	47	18.8	13	26.4	41.5	32.4	51.2	32.7	27.9	37.5	224
Private or other	61.8	51.3	71.3	41.9	32.1	52.4	54.6	44.5	64.2	52.8	45.6	59.9	56
Location													
Urban	68.1	60.9	74.5	47.9	40.6	55.2	56	48.7	63.1	57.3	52.5	62.1	82
Rural	32.2	23.3	42.7	13.3	7.4	22.7	39.2	29.1	50.2	28.2	22.8	33.7	198
Division													
Barisal	31.7	21.4	44.2	15.4	9.4	24	35.6	24.1	49.2	27.6	20	35.1	15
Chittagong	39.2	28.5	51	15.5	9.4	24.5	41.3	29.5	54.2	32	23.7	40.2	58
Chaka	47.1	31.8	63	29.9	18.9	43.7	48.2	32.5	64.3	41.7	33.3	50.1	97
Khulna	57.7	36.8	76.1	27.6	13.3	48.6	48.4	28.7	68.7	44.6	31.1	58.1	25
Rajshahi	29.6	21.1	39.9	18.5	12.6	26.4	37.6	18.5	61.5	28.6	19.8	37.3	35
Rangpur	49.8	26.4	73.2	27.3	10.4	55	47.1	24.3	71.1	41.4	30.1	52.6	33
Sylhet	31.8	20.3	46	17.6	8.8	32.3	39.6	24.7	56.6	29.7	18	41.3	18
Total	42.8	35.7	50.1	23.4	18.2	29.7	44.1	36.4	52.1	36.8	32.6	40.9	280

Note: LB and UB refer to the lower and upper bounds of the 95% confidence interval.

Table A2c. Service availability Domain C: Routine perinatal care, Bangladesh 2014 SPA

	Partograph routinely used to monitor labor			Routine early initiation of breastfeeding (w/in first hour)			Thermal care			*Service availability Domain C summary score*			
	%	LB	UB	%	LB	UB	%	LB	UB	Mean	LB	UB	N
Facility type													
Hospital	24.3	18.8	30.7	97.7	94.9	98.9	96.6	93.8	98.2	72.9	70.6	75.1	73
Health Center	21.6	14.0	32.0	94.5	90.4	96.9	93.4	88.3	96.4	69.9	66.1	73.6	99
Dispensary or clinic	8.0	5.4	11.8	99.3	95.3	99.9	94.4	82.4	98.4	67.2	64.5	69.9	108
Managing authority													
Public	14.4	10.6	19.2	96.9	94.8	98.1	94.1	89.2	96.9	68.4	66.3	70.6	224
Private or other	27.7	20.4	36.2	98.4	95.3	99.5	96.7	91.6	98.8	74.3	71.3	77.3	56
Location													
Urban	28.5	22.9	34.8	98.3	96.1	99.2	96.1	92.7	98.0	74.3	72.0	76.6	82
Rural	12.3	8.3	17.9	96.7	94.4	98.1	94.0	88.3	97.0	67.7	65.3	70.0	198
Division													
Barisal	11.6	6.3	20.3	92.0	78.5	97.3	90.4	78.0	96.1	64.7	58.8	70.5	15
Chittagong	12.5	7.1	21.1	97.7	95.0	99.0	91.5	69.8	98.1	67.2	62.4	72.1	58
Chaka	22.5	15.4	31.8	100.0			98.7	95.6	99.6	73.8	70.9	76.6	97
Khulna	24.8	12.5	43.3	98.8	91.8	99.8	98.5	92.6	99.7	74.0	68.8	79.2	25
Rajshahi	8.9	4.4	16.9	100.0			96.5	78.5	99.5	68.5	65.4	71.5	35
Rangpur	17.7	9.4	30.8	91.0	79.3	96.4	87.7	76.2	94.1	65.5	58.7	72.3	33
Sylhet	10.7	5.8	18.9	88.0	73.3	95.1	89.6	71.3	96.8	62.8	56.7	68.8	18
Total	17.1	13.6	21.2	97.2	95.5	98.2	94.6	90.7	97.0	69.6	67.8	71.4	280

Note: LB and UB refer to the lower and upper bounds of the 95% confidence interval.

Table A2d. Service readiness Domain A: General requirements, Bangladesh 2014 SPA

	Electricity			Improved water source			Improved sanitation			24/7 skilled birth attendance			Emergency transport			*Service readiness Domain A summary score*			
	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	Mean	LB	UB	N
Facility type																			
Hospital	85.7	80.9	89.5	96.6	92.9	98.4	90.2	85.5	93.5	74.2	67.4	80.0	78.5	72.0	83.8	85.1	82.8	87.3	73
Health Center	38.5	29.1	48.9	93.4	87.4	96.6	73.2	62.9	81.6	12.6	8.6	18.1	13.6	8.2	21.8	46.3	42.9	49.6	99
Dispensary or clinic	30.4	22.1	40.2	89.9	69.3	97.2	65.7	46.1	81.1	17.5	10.8	27.1	19.1	10.1	33.2	44.5	37.4	51.7	108
Managing authority																			
Public	35.8	29.7	42.3	91.9	82.9	96.3	70.5	60.0	79.3	24.1	20.0	28.6	24.7	19.1	31.4	49.4	45.6	53.1	224
Private or other	94.9	87.9	97.9	96.8	91.0	98.9	91.5	84.7	95.4	56.4	45.9	66.4	64.1	53.8	73.3	80.7	76.9	84.6	56
Location																			
Urban	91.1	86.9	94.1	96.7	93.1	98.5	91.5	86.9	94.6	72.8	65.4	79.1	76.2	69.2	82.0	85.7	83.3	88.0	82
Rural	29.6	23.0	37.3	91.3	81.0	96.2	67.8	56.0	77.7	13.1	9.0	18.6	14.6	8.9	23.0	43.3	39.0	47.5	198
Division																			
Barisal	40.1	29.0	52.3	88.8	76.4	95.1	77.7	62.7	87.8	39.5	29.6	50.3	32.3	26.0	39.4	55.7	50.7	60.7	15
Chittagong	51.8	41.3	62.2	95.9	88.0	98.7	86.8	68.9	95.1	28.7	20.3	38.9	32.6	24.6	41.7	59.2	53.4	64.9	58
Chaka	45.4	38.2	52.7	90.4	70.4	97.4	68.2	50.3	81.9	28.3	23.4	33.7	37.2	24.9	51.4	53.9	47.3	60.4	97
Khulna	62.7	44.5	77.9	97.6	91.1	99.4	54.7	32.9	74.8	34.0	25.0	44.3	45.4	28.6	63.3	58.9	50.6	67.1	25
Rajshahi	27.1	18.7	37.6	89.1	47.3	98.7	78.2	45.6	93.9	20.6	17.1	24.5	17.4	12.8	23.2	46.5	41.4	51.5	35
Rangpur	60.0	34.7	80.9	96.7	87.4	99.2	77.2	46.8	92.9	44.9	23.6	68.2	22.2	19.8	24.8	60.2	46.9	73.5	33
Sylhet	50.1	30.0	70.3	93.3	80.9	97.9	86.1	69.7	94.4	30.3	19.9	43.2	40.5	22.7	61.3	60.1	53.4	66.8	18
Total	47.7	42.6	52.8	92.9	85.8	96.6	74.8	66.1	81.8	30.6	26.7	34.8	32.7	27.5	38.3	55.7	52.6	58.9	280

Note: LB and UB refer to the lower and upper bounds of the 95% confidence interval.

Table A2e. Service readiness Domain B: Equipment, Bangladesh 2014 SPA

	Sterilization equipment			Delivery bed			Examination light			Delivery pack			Suction apparatus			Manual vacuum extractor			Vacuum aspirator or D and C kit			Partograph		
	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB
Facility type																								
Hospital	80.7	74.6	85.7	94.8	90.3	97.3	84.7	79.0	89.1	94.8	90.3	97.3	75.1	68.4	80.8	49.0	42.4	55.6	55.4	48.3	62.2	39.0	32.6	45.9
Health Center	40.1	31.0	50.1	69.6	59.5	78.0	49.6	40.1	59.1	69.6	59.5	78.0	39.2	29.7	49.5	17.2	11.1	25.7	18.9	13.2	26.3	20.1	13.2	29.4
Dispensary or clinic	39.3	25.4	55.2	61.8	43.0	77.6	66.0	47.6	80.6	50.0	34.3	65.7	37.3	23.4	53.6	14.7	6.6	29.4	19.4	9.5	35.6	20.4	10.2	36.7
Managing authority																								
Public	41.0	32.7	49.8	69.0	58.7	77.7	59.1	49.6	68.0	69.0	58.7	77.7	41.4	33.0	50.3	20.5	15.0	27.4	23.3	17.1	30.8	22.8	16.3	30.9
Private or other	87.7	80.0	92.7	89.3	80.4	94.5	88.8	79.8	94.1	89.3	80.4	94.5	73.3	63.3	81.3	40.5	31.3	50.4	49.8	39.8	59.9	34.6	26.0	44.3
Location																								
Urban	85.8	80.2	90.0	91.0	84.8	94.8	87.3	81.1	91.6	91.0	84.8	94.8	77.7	70.6	83.5	45.6	38.7	52.5	54.0	46.7	61.2	40.3	34.0	46.8
Rural	35.7	26.7	45.9	65.7	54.2	75.6	55.9	45.3	66.0	65.7	54.2	75.6	35.4	26.3	45.7	15.8	10.0	24.1	18.1	11.6	27.1	18.9	12.0	28.5
Division																								
Barisal	46.0	33.2	59.4	79.7	65.0	89.2	43.7	31.7	56.5	79.7	65.0	89.2	41.6	29.1	55.3	23.1	14.8	34.2	28.8	20.0	39.5	26.7	16.9	39.4
Chittagong	50.6	39.7	61.4	70.0	54.2	82.2	55.0	40.2	68.9	70.0	54.2	82.2	49.1	36.6	61.7	30.2	21.5	40.7	36.2	26.0	47.9	17.8	11.2	27.1
Chaka	62.8	45.7	77.3	77.3	58.6	89.2	67.9	50.0	81.8	77.3	58.6	89.2	55.1	38.8	70.3	19.0	9.2	35.2	22.1	12.2	36.7	29.6	16.6	47.0
Khulna	44.8	27.6	63.4	66.6	42.4	84.4	74.0	52.7	87.9	66.6	42.4	84.4	56.2	33.5	76.6	21.8	13.9	32.6	34.9	21.1	51.8	29.2	15.9	47.4
Rajshahi	27.6	21.2	35.1	72.0	44.3	89.3	46.8	24.0	70.9	72.0	44.3	89.3	28.2	21.1	36.5	16.4	9.7	26.4	12.5	8.5	18.1	13.6	8.6	21.0
Rangpur	47.5	24.9	71.1	69.3	41.2	87.9	93.5	81.5	97.9	69.3	41.2	87.9	49.8	26.7	73.0	41.1	28.9	54.5	46.4	24.1	70.2	35.1	23.5	48.8
Sylhet	44.3	32.9	56.4	73.2	49.3	88.5	72.2	53.9	85.2	73.2	49.3	88.5	32.4	21.5	45.7	26.1	16.1	39.5	29.4	18.7	43.1	22.1	11.8	37.7
Total	50.4	43.4	57.5	73.1	64.7	80.2	65.1	57.2	72.2	73.1	64.7	80.2	47.8	40.6	55.1	24.5	19.6	30.3	28.6	23.1	34.8	25.2	19.5	31.8

	Gloves			Newborn bag and mask			Infant scale			Blood pressure apparatus, dig or manual			Soap or hand disinfectant			*Service readiness Domain B summary score*			
	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	Mean	LB	UB	N
Facility type																			
Hospital	82.0	75.5	87.1	76.9	70.1	82.6	67.0	59.8	73.4	98.1	95.3	99.2	95.3	91.5	97.5	75.3	72.7	77.9	73
Health Center	72.0	61.6	80.5	37.8	28.7	47.8	61.9	52.2	70.8	79.6	68.9	87.2	73.0	62.3	81.6	48.7	44.3	53.1	99
Dispensary or clinic	63.6	45.6	78.5	33.4	20.0	50.0	52.1	39.4	64.4	95.2	82.9	98.8	67.0	48.2	81.7	47.7	39.7	55.7	108
Managing authority																			
Public	69.3	59.4	77.7	40.0	31.7	48.8	57.0	49.5	64.2	88.1	81.9	92.3	71.5	61.1	79.9	50.6	46.2	54.9	224
Private or other	79.5	69.7	86.7	71.3	61.1	79.7	69.1	58.9	77.7	99.9	99.0	100.0	96.6	90.8	98.8	73.8	69.4	78.1	56
Location																			
Urban	81.6	74.7	86.9	74.9	67.6	81.0	70.2	62.8	76.7	98.1	95.7	99.2	95.4	91.6	97.5	75.3	72.2	78.3	82
Rural	67.1	56.1	76.6	34.4	25.5	44.6	54.9	46.5	63.1	87.3	80.3	92.0	68.7	57.2	78.3	46.9	42.1	51.8	198
Division																			
Barisal	83.2	68.9	91.7	48.9	35.7	62.2	50.4	37.1	63.6	90.5	76.9	96.4	70.5	55.2	82.2	52.9	46.4	59.4	15
Chittagong	66.2	49.0	80.0	43.6	32.7	55.3	53.5	40.7	65.8	83.5	65.5	93.1	71.4	54.3	83.9	52.1	44.5	59.6	58
Chaka	59.2	42.5	74.0	47.2	31.9	63.1	49.5	35.9	63.1	89.4	79.9	94.7	75.9	56.8	88.3	55.1	46.5	63.6	97
Khulna	82.0	61.8	92.8	51.3	30.6	71.6	57.8	38.1	75.2	82.9	60.1	94.0	74.7	45.4	91.3	55.6	46.8	64.4	25
Rajshahi	63.2	35.0	84.5	28.7	20.1	39.1	77.2	64.8	86.2	99.8	98.3	100.0	70.1	40.1	89.1	47.3	41.6	52.9	35
Rangpur	98.2	93.4	99.5	62.9	37.5	82.8	89.7	74.7	96.3	100.0			94.8	84.4	98.4	70.6	64.7	76.6	33
Sylhet	96.1	91.2	98.4	44.2	28.5	61.3	51.5	32.2	70.4	92.9	73.3	98.4	83.3	53.1	95.6	55.4	48.9	61.8	18
Total	71.4	63.2	78.3	46.3	39.2	53.5	59.4	53.1	65.5	90.5	85.5	93.8	76.5	68.0	83.3	55.3	51.6	58.9	280

Note: LB and UB refer to the lower and upper bounds of the 95% confidence interval.

Table A2f. Service readiness Domain C: Medicine and commodities, Bangladesh 2014 SPA

	Injectable antibiotic			Hydro-cortisone available at the facility			Injectable uterotonic			Skin disinfectant			Magnesium sulfate			IV solution with infusion set			Chlorhexidine for cord cleaning			Antibiotic eye ointment			*Service readiness Domain C summary score*			
	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	Mean	LB	UB	N
Facility type																												
Hospital	75.1	68.6	80.7	56.7	49.5	63.5	72.7	66.2	78.4	54.9	47.8	61.8	51.7	44.7	58.7	82.7	76.8	87.4	50.0	42.9	57.2	28.3	22.2	35.3	59.0	55.0	63.0	73
Health Center	10.1	6.1	16.1	1.7	1.1	2.6	14.4	9.2	21.7	18.1	11.8	26.7	8.6	4.8	15.0	8.5	5.6	12.7	20.0	13.8	28.1	20.3	14.0	28.5	12.7	9.7	15.7	99
Dispensary or clinic	24.2	13.3	39.9	11.4	7.7	16.6	26.3	18.2	36.4	15.5	11.4	20.8	14.1	7.8	24.2	28.5	16.1	45.3	30.3	16.8	48.2	24.2	12.1	42.5	21.8	14.2	29.4	108
Managing authority																												
Public	22.9	16.9	30.3	9.4	7.9	11.1	24.6	19.9	30.0	17.4	13.9	21.6	13.4	9.6	18.5	24.2	17.7	32.2	26.9	19.4	36.0	22.9	15.8	32.0	20.2	16.5	24.0	224
Private or other	70.5	60.4	79.0	61.0	50.1	71.0	72.3	62.2	80.6	63.5	53.0	72.9	55.8	46.0	65.2	80.8	70.9	87.9	51.4	41.2	61.5	27.7	19.6	37.5	60.4	53.6	67.1	56
Location																												
Urban	70.7	63.5	77.0	55.8	48.2	63.3	68.8	61.7	75.2	58.6	51.2	65.7	51.4	44.7	58.0	80.5	73.7	85.9	50.1	42.8	57.4	28.4	22.2	35.5	58.1	53.6	62.5	82
Rural	16.7	10.3	25.7	4.8	3.1	7.4	19.9	14.8	26.2	13.4	9.6	18.4	9.8	5.8	15.9	17.0	10.2	26.8	24.2	16.1	34.8	22.0	14.2	32.4	16.0	11.6	20.3	198
Division																												
Barisal	21.2	15.3	28.5	12.0	7.7	18.1	21.0	13.3	31.6	20.6	14.0	29.2	5.6	3.0	10.3	24.1	17.0	32.8	15.8	10.0	23.9	10.9	5.2	21.4	16.4	12.8	20.0	15
Chittagong	33.1	24.7	42.7	24.9	17.7	33.9	29.7	21.0	40.2	30.4	21.4	41.3	17.3	11.3	25.7	31.7	23.7	41.0	35.4	22.8	50.4	21.1	12.9	32.7	28.0	21.4	34.6	58
Chaka	41.5	29.3	54.8	24.3	20.0	29.2	36.3	30.4	42.8	25.7	20.2	31.9	27.2	21.8	33.3	40.2	28.7	52.9	33.8	20.6	50.2	27.7	15.3	45.0	32.1	25.7	38.5	97
Khulna	20.8	13.8	30.2	16.1	9.3	26.4	33.2	20.0	49.7	37.7	21.0	58.0	17.5	11.3	26.0	33.2	24.5	43.3	24.8	13.3	41.5	8.0	4.0	15.3	23.9	15.7	32.2	25
Rajshahi	28.9	12.3	54.1	11.8	8.0	16.9	30.4	13.2	55.6	15.8	10.5	23.0	24.5	9.0	51.5	33.9	16.0	57.9	16.4	9.2	27.8	23.1	7.5	52.6	23.1	9.1	37.0	35
Rangpur	24.3	17.2	33.1	11.8	7.6	17.8	46.8	37.3	56.7	28.7	18.5	41.6	20.8	12.4	32.8	37.1	18.3	60.8	51.3	27.8	74.3	33.4	21.5	47.8	31.8	25.0	38.6	33
Sylhet	30.6	20.7	42.7	21.3	11.7	35.5	34.0	20.5	50.8	27.9	15.2	45.7	26.4	15.5	41.1	36.9	25.7	49.7	27.1	14.5	44.8	29.0	12.7	53.3	29.1	19.4	38.9	18
Total	32.5	27.0	38.6	19.8	17.3	22.6	34.2	29.8	39.0	26.7	23.1	30.7	22.0	18.2	26.3	35.6	29.7	42.0	31.8	25.2	39.2	23.9	17.8	31.2	28.3	24.9	31.7	280

Note: LB and UB refer to the lower and upper bounds of the 95% confidence interval.

Table A2g. Service readiness Domain D: Guidelines and staffing, Bangladesh 2014 SPA

	Facility has guidelines, observed:									*At least one provider of delivery or newborn care at facility was trained in each the following areas in the last 24 months:*																							
	IMPAC guide-lines			CEmOC guidelines			Guidelines for management of pre-term labor			Training in neonatal resuscitation			Training in early and exclusive breastfeeding			Training in newborn infection management			Training in thermal care			Training in cord care			Training in KMC			Supervision			*Service readiness Domain D summary score*			
	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	Mean	LB	UB	N
Facility type																																		
Hospital	n/a			22.7	18.0	28.3	27.6	22.2	33.7	28.2	23.1	33.9	26.1	21.1	31.7	15.6	11.5	20.7	17.7	13.7	22.6	23.4	18.7	28.9	20.2	15.7	25.7	89.7	84.1	93.5	30.4	27.0	33.8	73
Health Center				21.6	15.7	29.0	20.5	14.0	29.1	22.7	15.6	31.7	15.9	10.3	23.9	10.0	5.0	18.9	11.1	6.8	17.7	18.3	12.3	26.3	12.7	7.8	20.1	92.8	84.9	96.8	25.6	21.8	29.5	99
Dispensary				22.4	11.2	39.9	17.6	8.7	32.5	13.5	7.7	22.6	21.7	11.1	38.2	7.2	3.7	13.6	13.1	7.3	22.5	13.0	7.4	21.9	14.5	6.0	31.1	98.2	94.6	99.4	25.5	20.4	30.6	108
Managing authority	n/a																																	
Public				23.7	16.9	32.0	21.2	15.3	28.5	21.1	16.7	26.4	21.7	15.4	29.7	9.0	6.1	13.3	13.6	9.9	18.3	17.6	13.6	22.5	16.2	10.7	23.6	95.8	92.2	97.8	27.3	24.5	30.2	224
Private or other				16.5	10.3	25.5	21.5	14.6	30.5	18.3	11.6	27.6	17.4	10.9	26.6	15.5	9.4	24.7	13.9	8.1	22.6	17.6	11.1	26.7	12.3	7.0	20.6	87.4	79.9	92.4	24.9	19.4	30.3	56
Location																																		
Urban	n/a			19.9	15.4	25.3	26.2	21.1	32.1	28.7	22.8	35.4	25.7	20.0	32.3	18.4	13.6	24.4	19.7	14.9	25.4	24.0	18.8	30.2	18.4	14.3	23.5	90.2	84.8	93.8	30.6	26.9	34.3	82
Rural				23.2	15.8	32.8	19.2	12.8	27.7	17.2	12.4	23.3	18.8	12.0	28.3	7.0	3.9	12.2	11.1	7.2	16.8	14.9	10.6	20.6	14.1	8.3	23.0	95.7	91.7	97.9	25.3	22.0	28.6	198
Division																																		
Barisal	n/a			18.1	10.6	29.3	20.8	12.4	32.6	20.9	12.9	32.3	20.0	12.7	30.0	12.2	7.6	19.1	22.3	14.4	32.9	22.9	14.8	33.5	12.6	7.4	20.5	90.6	76.9	96.5	27.4	22.2	32.7	15
Chittagong				21.9	11.5	37.8	16.3	9.4	26.8	24.1	15.8	34.8	26.9	15.4	42.5	12.8	6.9	22.6	14.8	8.5	24.5	18.6	11.2	29.2	16.7	9.7	27.2	96.7	92.0	98.7	29.0	23.1	35.0	58
Chaka				16.7	7.5	33.0	20.3	10.1	36.8	12.9	8.5	19.0	16.9	7.7	33.1	8.1	4.0	15.7	8.5	4.8	14.7	14.6	9.6	21.6	15.2	6.4	32.0	93.2	87.7	96.4	23.3	19.0	27.5	97
Khulna				20.2	9.0	39.3	12.7	7.0	21.9	48.7	28.0	69.8	34.9	17.2	58.1	21.8	11.2	38.0	35.7	18.2	58.0	45.3	25.9	66.2	36.8	19.3	58.7	90.1	68.5	97.4	41.7	30.0	53.4	25
Rajshahi				10.1	5.4	18.1	11.9	6.6	20.6	7.4	2.6	19.2	3.0	1.3	7.0	1.4	0.4	5.4	1.9	0.6	5.3	2.6	0.9	6.8	2.6	0.9	6.8	92.9	78.3	98.0	15.2	12.8	17.7	35
Rangpur				56.2	31.2	78.5	42.4	30.4	55.3	17.6	9.3	30.8	20.5	11.2	34.6	9.3	3.4	23.3	8.2	4.1	15.8	11.2	6.0	20.0	10.3	5.3	19.3	95.3	78.4	99.1	28.6	23.3	33.9	33
Sylhet				20.5	10.1	36.9	33.8	16.5	56.8	43.5	24.1	65.0	39.5	20.9	61.8	16.8	4.5	46.2	33.1	16.3	55.9	28.9	16.5	45.7	19.4	9.8	34.6	99.5	96.5	99.9	37.7	26.5	48.8	18
Total	n/a			22.2	16.6	29.0	21.2	16.2	27.3	20.6	16.7	25.1	20.8	15.5	27.4	10.4	7.6	14.0	13.6	10.4	17.7	17.6	14.0	21.8	15.4	10.8	21.5	94.1	91.2	96.1	26.8	24.3	29.4	280

Note: LB and UB refer to the lower and upper bounds of the 95% confidence interval.

Table A3a. Service availability Domain A: BEmOC signal functions, Haiti 2013 SPA

	Parenteral admini-stration of antibiotics	Parenteral admini-stration of uterotonic drugs	Parenteral admini-stration of anti-convulsants	Manual removal of placenta	Assisted vaginal delivery	Removal of retained products	*Service availability Domain A summary score*	
	%	%	%	%	%	%	Mean	N
Facility type								
Hospital	90.4	98.9	71.3	70.2	94.7	72.3	83.0	94
Health Center	56.4	74.3	25.7	55.2	80.2	50.9	57.1	167
Dispensary or clinic	29.7	38.3	7.8	30.5	50.8	27.3	30.7	128
Managing authority								
Public	53.3	69.7	31.7	55.4	74.3	53.2	56.3	195
Private	58.2	67.0	29.9	45.9	73.7	43.3	53.0	194
Location								
Urban	80.2	90.7	52.2	67.6	88.7	66.9	74.4	151
Rural	40.3	54.2	17.2	39.9	64.7	36.5	42.1	238
Department								
Ouest	70.6	72.5	35.3	55.9	79.4	53.9	61.3	102
Sud-Est	40.0	45.7	17.1	34.3	65.7	48.6	41.9	35
Nord	61.1	66.7	36.1	47.2	80.6	50.0	56.9	36
Nord-Est	44.4	66.7	25.9	44.4	74.1	44.4	50.0	27
Artibonite	47.2	62.3	32.1	54.7	64.2	43.4	50.6	53
Centre	52.2	78.3	34.8	47.8	78.3	56.5	58.0	23
Sud	75.0	100.0	37.5	58.3	87.5	50.0	68.1	24
Grand-Anse	42.9	76.2	38.1	66.7	71.4	66.7	60.3	21
Nord-Ouest	47.1	58.9	23.3	43.3	64.5	33.3	45.1	52
Nippes	52.9	76.5	23.5	52.9	82.4	41.2	54.9	17
Total	**55.8**	**68.4**	**30.8**	**50.6**	**74.0**	**48.3**	**54.6**	**389**

Note: Confidence intervals are not shown since the Haiti 2013 SPA was a census of all formal health facilities, rather than a sample.

Table A3b. Service availability Domain B: Newborn signal functions, Haiti 2013 SPA

	Neonatal resuscitation	Cortisosteroids for pre-term labor	Kangaroo Mother Care	*Service availability Domain B summary score*	
	%	%	%	Mean	N
Facility type					
Hospital	66.0	51.1	27.7	48.2	94
Health Center	45.4	6.7	26.3	26.1	167
Dispensary or clinic	19.6	0.8	20.3	13.6	128
Managing authority					
Public	44.0	15.9	24.1	28.0	195
Private	39.7	14.9	25.3	26.6	194
Location					
Urban	59.5	30.5	26.4	38.8	151
Rural	30.7	5.9	23.5	20.0	238
Department					
Ouest	48.0	23.5	22.5	31.4	102
Sud-Est	25.7	5.7	20.0	17.1	35
Nord	38.9	19.4	25.0	27.8	36
Nord-Est	25.9	7.4	25.9	19.8	27
Artibonite	39.6	9.4	22.6	23.9	53
Centre	47.8	26.1	43.5	39.1	23
Sud	50.0	16.7	20.8	29.2	24
Grand-Anse	42.9	4.8	23.8	23.8	21
Nord-Ouest	40.9	13.8	29.2	27.9	52
Nippes	58.8	11.8	17.6	29.4	17
Total	**41.9**	**15.4**	**24.7**	**27.3**	**389**

Note: Confidence intervals are not shown since the Haiti 2013 SPA was a census of all formal health facilities, rather than a sample.

Table A3c. Service availability Domain C: Routine perinatal care, Haiti 2013 SPA

	Partograph routinely used to monitor labor	Early initiation of breastfeeding	Thermal care	*Service availability Domain C summary score*	
	%	%	%	Mean	N
Facility type					
Hospital	34.0	87.2	100.0	73.8	94
Health Center	24.5	91.6	92.8	69.7	167
Dispensary or clinic	1.6	91.4	93.8	62.2	128
Managing authority					
Public	21.5	92.3	95.4	69.7	195
Private	17.0	88.7	94.3	66.7	194
Location					
Urban	32.4	89.4	98.0	73.3	151
Rural	10.9	91.2	92.9	65.0	238
Department					
Ouest	22.5	86.3	97.1	68.6	102
Sud-Est	22.9	85.7	97.1	68.6	35
Nord	13.9	97.2	94.4	68.5	36
Nord-Est	11.1	85.2	85.2	60.5	27
Artibonite	20.8	88.7	88.7	66.0	53
Centre	26.1	95.7	95.7	72.5	23
Sud	25.0	100.0	100.0	75.0	24
Grand-Anse	23.8	90.5	95.2	69.8	21
Nord-Ouest	5.8	96.1	96.1	66.0	52
Nippes	29.4	88.2	100.0	72.5	17
Total	**19.2**	**90.5**	**94.9**	**68.2**	**389**

Note: Confidence intervals are not shown since the Haiti 2013 SPA was a census of all formal health facilities, rather than a sample.

Table A3d. Service readiness Domain A: General requirements, Haiti 2013 SPA

	Electricity	Improved water source	Improved sanitation	24/7 skilled birth attendance	Emergency transport	*Service readiness Domain A summary score*	
	%	%	%	%	%	Mean	N
Facility type							
Hospital	97.9	77.7	71.3	71.3	58.5	75.3	94
Health Center	87.4	79.1	55.6	38.3	29.9	58.1	167
Dispensary or clinic	53.2	67.2	18.7	2.3	13.2	30.9	128
Managing authority							
Public	73.8	73.3	39.9	34.2	28.6	50.0	195
Private or other	83.5	76.3	54.6	34.5	34.0	56.6	194
Location							
Urban	92.7	75.5	62.8	58.8	41.7	66.3	151
Rural	69.7	74.3	37.3	18.9	24.7	45.0	238
Department							
Ouest	83.3	72.5	78.4	38.2	41.2	62.7	102
Sud-Est	68.6	85.7	28.6	22.9	25.7	46.3	35
Nord	88.9	77.8	36.1	41.7	30.6	55.0	36
Nord-Est	70.4	66.7	37.0	33.3	14.8	44.4	27
Artibonite	64.2	64.2	43.4	35.8	43.4	50.2	53
Centre	87.0	69.6	47.8	47.8	47.8	60.0	23
Sud	95.8	87.5	45.8	33.3	37.5	60.0	24
Grand-Anse	90.5	85.7	38.1	52.4	14.3	56.2	21
Nord-Ouest	74.5	70.6	15.6	17.4	7.8	37.2	52
Nippes	70.6	94.1	58.8	29.4	35.3	57.6	17
Total	**78.7**	**74.8**	**47.2**	**34.4**	**31.3**	**53.3**	**389**

Note: Confidence intervals are not shown since the Haiti 2013 SPA was a census of all formal health facilities, rather than a sample.

Table A3e. Service readiness Domain B: Equipment, Haiti 2013 SPA

	Sterilization equipment	Delivery bed	Examination light	Delivery pack	Suction apparatus	Manual vacuum extractor	Vacuum aspirator or D and C kit	Partograph	Gloves	Newborn bag and mask	Infant scale	Blood pressure apparatus, dig or manual	Soap or hand disinfectant	*Service readiness Domain B summary score*	
	%	%	%	%	%	%	%	%	%	%	%	%	%	Mean	N
Facility type															
Hospital	89.4	97.9	52.1	94.7	54.3	28.7	35.1	40.4	92.6	75.5	90.4	92.6	79.8	71.0	94
Health Center	55.1	96.4	37.7	83.3	26.9	6.6	22.1	31.1	93.9	35.3	74.8	91.6	69.4	55.7	167
Dispensary or clinic	18.8	86.7	23.4	63.3	7.8	0.8	4.7	3.9	87.5	7.8	58.6	94.6	64.0	40.1	128
Managing authority															
Public	46.6	95.4	30.7	75.9	22.0	6.6	17.9	28.6	88.6	30.2	78.4	93.9	64.6	52.3	195
Private or other	56.2	91.8	42.3	83.0	32.5	13.4	21.1	20.1	94.3	41.7	68.0	91.8	75.8	56.3	194
Location															
Urban	70.8	98.7	45.0	90.1	40.3	16.5	31.7	39.0	90.7	56.2	86.0	92.1	70.2	63.6	151
Rural	39.0	90.3	31.1	72.7	18.9	5.9	11.7	15.1	92.0	23.1	65.1	93.3	70.1	48.3	238
Departement															
Ouest	56.9	93.1	47.1	80.4	45.1	16.7	29.4	23.5	93.1	50.0	72.5	93.1	79.4	60.0	102
Sud-Est	45.7	88.6	28.6	82.9	11.4	2.9	20.0	25.7	94.3	25.7	74.3	94.3	71.4	51.2	35
Nord	50.0	91.7	27.8	86.1	25.0	13.9	25.0	19.4	88.9	38.9	91.7	91.7	63.9	54.9	36
Nord-Est	63.0	92.6	37.0	77.8	14.8	11.1	14.8	25.9	96.3	18.5	66.7	81.5	66.7	51.3	27
Artibonite	37.7	92.5	26.4	64.2	24.5	5.7	13.2	26.4	92.5	28.3	62.3	92.5	64.2	48.5	53
Centre	78.3	100.0	39.1	95.7	13.0	13.0	4.3	34.8	91.3	47.8	91.3	100.0	78.3	60.5	23
Sud	62.5	100.0	50.0	91.7	45.8	4.2	25.0	29.2	87.5	58.3	79.2	91.7	70.8	61.2	24
Grand-Anse	28.6	90.5	42.9	85.7	33.3	14.3	14.3	42.9	100.0	28.6	76.2	81.0	52.4	53.1	21
Nord-Ouest	44.9	94.1	23.4	70.6	11.6	5.8	11.6	7.8	82.2	13.5	66.6	98.1	64.6	45.8	52
Nippes	52.9	100.0	47.1	82.4	17.6	0.0	17.6	35.3	94.1	47.1	64.7	100.0	76.5	56.6	17
Total	**51.4**	**93.6**	**36.5**	**79.4**	**27.2**	**10.0**	**19.5**	**24.4**	**91.5**	**35.9**	**73.2**	**92.8**	**70.2**	**54.3**	**389**

Note: Confidence intervals are not shown since the Haiti 2013 SPA was a census of all formal health facilities, rather than a sample.

Table A3f. Service readiness Domain C: Medicine and commodities, Haiti 2013 SPA

	Injectable antibiotic	Hydrocortisone available at the facility	Injectable uterotonic	Skin disinfectant	Magnesium sulfate	IV solution with infusion set	Chlorhexidine for cord cleaning	Antibiotic eye ointment	*Service readiness Domain C summary score*	
	%	%	%	%	%	%	%	%	Mean	N
Facility type										
Hospital	47.9	56.4	75.5	75.5	72.3	48.9	44.7	60.6	60.2	94
Health Center	34.7	29.9	51.4	64.0	41.9	44.2	47.9	53.3	45.9	167
Dispensary or clinic	14.0	10.9	35.2	56.2	13.3	33.6	38.2	35.1	29.6	128
Managing authority										
Public	25.0	22.5	50.2	61.4	40.4	40.9	45.6	45.1	41.4	195
Private or other	37.1	37.6	53.6	67.0	39.2	42.8	42.3	53.1	46.6	194
Location										
Urban	44.3	40.3	64.8	71.4	58.8	45.6	45.0	57.6	53.5	151
Rural	22.7	23.5	43.7	59.6	27.7	39.5	43.2	43.7	37.9	238
Department										
Ouest	41.2	34.3	52.9	65.7	45.1	41.2	43.1	46.1	46.2	102
Sud-Est	20.0	20.0	51.4	51.4	28.6	40.0	51.4	40.0	37.9	35
Nord	33.3	36.1	55.6	61.1	36.1	50.0	47.2	63.9	47.9	36
Nord-Est	33.3	25.9	51.9	66.7	37.0	51.9	48.1	44.4	44.9	27
Artibonite	20.8	26.4	43.4	66.0	35.8	41.5	37.7	60.4	41.5	53
Centre	43.5	56.5	56.5	78.3	65.2	52.2	43.5	60.9	57.1	23
Sud	37.5	54.2	62.5	75.0	54.2	37.5	66.7	54.2	55.2	24
Grand-Anse	28.6	23.8	61.9	66.7	47.6	42.9	47.6	42.9	45.2	21
Nord-Ouest	17.5	9.7	46.8	54.6	27.2	31.2	25.5	41.0	31.7	52
Nippes	35.3	29.4	47.1	70.6	29.4	41.2	58.8	35.3	43.4	17
Total	**31.1**	**30.0**	**51.9**	**64.2**	**39.8**	**41.9**	**43.9**	**49.1**	**44.0**	**389**

Note: Confidence intervals are not shown since the Haiti 2013 SPA was a census of all formal health facilities, rather than a sample.

Table A3g. Service readiness Domain D: Guidelines and staffing, Haiti 2013 SPA

	Facility has guidelines, observed:			*At least one provider of delivery or newborn care at facility was trained in each the following areas in the last 24 months:*							*Service readiness Domain D summary score*	
	IMPAC guidelines	CEmOC guidelines	Guidelines for management of pre-term labor	Training in neonatal resuscitation	Training in early and exclusive breastfeeding	Training in newborn infection management	Training in thermal care	Training in cord care	Training in KMC	Super-vision		
	%	%	%	%	%	%	%	%	%	%	Mean	N
Facility type												
Hospital	23.4	21.3	20.2	67.0	62.8	51.1	63.8	63.8	54.3	88.3	55.1	94
Health Center	22.2	16.7	12.6	34.2	38.3	31.2	34.7	37.7	26.3	90.4	36.8	167
Dispensary or clinic	22.6	17.2	7.8	10.9	17.1	13.2	11.7	12.5	5.4	81.2	21.3	128
Managing authority												
Public	24.6	15.9	11.8	30.7	33.7	28.2	33.7	34.2	25.6	89.2	35.1	195
Private or other	20.6	20.1	13.9	38.1	40.7	32.0	34.5	37.1	26.8	84.5	37.2	194
Location												
Urban	25.2	17.9	17.2	55.0	52.2	44.4	49.6	50.9	40.3	89.4	47.2	151
Rural	21.0	18.1	10.1	21.4	27.7	21.0	24.3	26.0	17.2	85.3	29.1	238
Departement												
Ouest	15.7	15.7	12.7	43.1	51.0	39.2	43.1	46.1	32.4	78.4	40.5	102
Sud-Est	31.4	14.3	5.7	20.0	28.6	22.9	31.4	31.4	20.0	94.3	32.7	35
Nord	19.4	19.4	16.7	33.3	30.6	25.0	27.8	27.8	25.0	91.7	33.3	36
Nord-Est	29.6	18.5	3.7	25.9	37.0	25.9	29.6	33.3	25.9	100.0	36.2	27
Artibonite	26.4	17.0	13.2	28.3	34.0	32.1	26.4	30.2	24.5	88.7	34.2	53
Centre	21.7	21.7	21.7	43.5	39.1	39.1	47.8	47.8	47.8	95.7	44.9	23
Sud	25.0	20.8	12.5	45.8	37.5	29.2	37.5	37.5	33.3	91.7	39.8	24
Grand-Anse	19.0	33.3	23.8	38.1	33.3	23.8	38.1	47.6	19.0	81.0	37.0	21
Nord-Ouest	25.5	13.7	9.7	21.6	19.4	17.7	17.4	13.6	5.8	80.4	23.9	52
Nippes	23.5	23.5	17.6	52.9	52.9	35.3	52.9	52.9	41.2	94.1	47.7	17
Total	**22.6**	**18.0**	**12.8**	**34.4**	**37.2**	**30.1**	**34.1**	**35.7**	**26.2**	**86.9**	**36.1**	**389**

Note: Confidence intervals are not shown since the Haiti 2013 SPA was a census of all formal health facilities, rather than a sample.

Table A4a. Service availability Domain A: BEmOC signal functions, Tanzania 2014-15 SPA

	Parenteral administration of antibiotics			Parenteral administration of uterotonic drugs			Parenteral administration of anticonvulsants			Manual removal of placenta			Assisted vaginal delivery			Removal of retained products			*Service availability Domain A summary score*			
	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	Mean	LB	UB	Mean	LB	UB	N
Facility type																						
Hospital	83.9	69.7	92.2	96.9	93.8	98.4	77.5	65.3	86.3	69.7	58.8	78.7	88.9	84.2	92.4	68.6	57.9	77.6	80.9	74.5	87.3	44
Health Center	60.0	54.5	65.3	90.9	86.8	93.9	31.6	26.7	37.0	45.3	40.0	50.8	72.9	67.7	77.4	51.4	46.2	56.5	58.7	55.7	61.6	109
Dispensary or clinic	27.3	22.8	32.4	81.8	77.3	85.5	7.0	4.6	10.4	30.2	25.5	35.5	68.0	62.9	72.7	31.1	26.8	35.8	40.9	38.5	43.2	751
Managing authority																						
Public	32.0	27.8	36.7	83.7	79.4	87.2	10.9	8.6	13.7	32.9	28.4	37.6	69.5	64.7	73.9	34.9	30.7	39.3	44.0	41.8	46.2	756
Private or other	44.0	33.9	54.7	83.2	73.2	89.9	25.6	18.5	34.4	39.5	30.0	49.8	70.1	59.1	79.2	37.8	28.4	48.2	50.0	44.2	55.8	149
Location																						
Urban	42.7	32.8	53.1	76.7	65.5	85.1	24.5	19.4	30.4	38.1	29.6	47.5	72.9	62.3	81.4	32.7	25.4	41.0	47.9	42.5	53.4	132
Rural	32.5	28.1	37.2	84.8	80.7	88.2	11.4	8.9	14.5	33.2	28.7	38.1	69.0	64.3	73.4	35.8	31.7	40.1	44.5	42.2	46.7	773
Province																						
Eastern	31.1	20.7	43.9	85.2	72.0	92.8	23.6	14.1	36.8	27.8	16.9	42.1	59.1	45.9	71.1	25.9	15.5	40.0	42.1	34.9	49.4	115
Western	43.9	32.1	56.5	82.2	68.0	90.9	25.9	16.6	38.0	38.9	26.7	52.6	81.9	70.3	89.7	39.7	27.1	53.9	52.1	45.1	59.1	85
Southern	26.4	15.9	40.5	91.8	78.0	97.2	5.3	3.7	7.5	59.7	44.1	73.5	75.9	60.2	86.8	34.8	22.2	49.9	49.0	41.7	56.3	66
Southern Highlands	21.7	13.8	32.4	72.4	59.6	82.4	8.1	5.0	13.0	31.2	21.1	43.6	57.6	44.6	69.7	32.7	22.7	44.5	37.3	31.9	42.7	115
SW Highlands	43.8	29.8	58.9	95.0	80.3	98.9	7.3	5.3	9.9	27.7	17.5	40.9	56.2	41.7	69.7	26.6	20.7	33.5	42.8	37.2	48.3	103
Central	50.9	38.0	63.6	90.4	78.7	96.0	13.5	8.2	21.5	36.9	25.7	49.7	78.6	67.9	86.5	64.1	51.3	75.1	55.7	51.2	60.2	104
Northern	32.5	21.5	45.9	89.6	79.6	95.0	18.8	11.3	29.7	31.9	20.0	46.9	78.3	64.6	87.7	22.4	13.4	35.0	45.6	39.3	51.9	110
Lake	28.4	20.8	37.4	73.9	63.8	82.0	7.6	4.5	12.4	31.6	23.5	41.1	74.1	64.3	82.0	37.6	29.9	45.8	42.2	38.4	45.9	199
Zanzibar	24.3	12.6	41.7	92.5	72.0	98.3	19.3	10.3	33.4	22.8	13.7	35.4	30.7	19.6	44.7	30.9	19.1	45.8	36.7	28.8	44.7	7
Total	**34.0**	**30.1**	**38.2**	**83.6**	**79.9**	**86.8**	**13.3**	**11.1**	**16.0**	**34.0**	**29.9**	**38.3**	**69.6**	**65.3**	**73.5**	**35.4**	**31.6**	**39.3**	**45.0**	**43.0**	**47.0**	**905**

Note: LB and UB refer to the lower and upper bounds of the 95% confidence interval.

Table A4b. Service availability Domain B: Newborn signal functions, Tanzania 2014-15 SPA

	Neonatal resuscitation			Cortisosteroids for pre-term labor			Kangaroo Mother Care			*Service availability Domain B summary score*			
	%	LB	UB	%	LB	UB	%	LB	UB	Mean	LB	UB	N
Facility type													
Hospital	92.0	87.8	94.9	43.4	35.6	51.5	65.6	55.4	74.6	67.0	61.7	72.3	44
Health Center	73.0	68.1	77.5	9.2	6.4	13.0	44.9	39.5	50.6	42.4	39.5	45.3	109
Dispensary or clinic	46.8	41.7	51.9	1.0	0.3	2.8	15.5	12.0	19.8	21.1	18.8	23.4	751
Managing authority													
Public	50.6	45.9	55.4	2.9	2.0	4.3	19.8	16.3	23.7	24.4	22.3	26.6	756
Private or other	59.8	48.3	70.2	9.7	7.2	12.9	30.2	22.3	39.6	33.2	27.6	38.9	149
Location													
Urban	58.1	47.3	68.3	12.6	9.5	16.5	29.5	22.5	37.7	33.4	27.9	38.9	132
Rural	51.1	46.3	55.9	2.6	1.7	3.9	20.1	16.6	24.1	24.6	22.4	26.8	773
Province													
Eastern	37.1	25.2	50.8	6.0	4.2	8.5	26.6	17.1	38.9	23.3	17.6	28.9	115
Western	50.9	36.7	65.0	8.2	3.5	18.0	14.4	8.0	24.6	24.5	17.4	31.6	85
Southern	58.5	43.1	72.4	0.9	0.3	2.7	29.5	18.0	44.4	29.6	22.7	36.5	66
Southern Highlands	74.7	61.8	84.3	2.2	1.3	3.8	9.0	5.7	13.9	28.6	24.5	32.8	115
SW Highlands	61.5	46.1	74.9	2.3	1.4	4.0	34.4	22.5	48.6	32.7	26.1	39.3	103
Central	59.3	47.2	70.3	3.1	2.1	4.5	20.5	13.3	30.2	27.6	23.0	32.3	104
Northern	56.6	43.9	68.4	3.8	2.5	5.8	34.7	22.4	49.5	31.7	25.1	38.3	110
Lake	35.7	27.4	45.0	4.4	2.3	8.4	13.0	9.1	18.2	17.7	13.5	22.0	199
Zanzibar	37.0	22.8	53.8	11.4	4.6	25.7	11.8	4.7	26.6	20.0	10.8	29.3	7
Total	**52.1**	**47.8**	**56.5**	**4.0**	**3.1**	**5.2**	**21.5**	**18.4**	**25.0**	**25.9**	**23.9**	**27.9**	**905**

Note: LB and UB refer to the lower and upper bounds of the 95% confidence interval.

Table A4c. Service availability Domain C: Routine perinatal care, Tanzania 2014-15 SPA

	Partograph routinely used to monitor labor			Routine early initiation of breastfeeding (w/in first hour)			Thermal care			*Service availability Domain C summary score*			
	%	LB	UB	%	LB	UB	%	LB	UB	Mean	LB	UB	N
Facility type													
Hospital	91.1	86.9	94.0	98.0	95.3	99.2	99.2	96.7	99.8	96.1	94.6	97.6	44
Health Center	69.6	64.6	74.3	97.8	95.1	99.0	97.9	95.1	99.1	88.4	86.4	90.5	109
Dispensary or clinic	38.5	33.5	43.8	98.5	96.4	99.4	97.8	95.2	99.0	78.3	76.3	80.3	751
Managing authority													
Public	43.6	38.8	48.6	98.3	96.3	99.2	97.6	95.1	98.8	79.8	77.9	81.7	756
Private or other	51.1	40.6	61.5	98.9	96.9	99.6	99.4	97.2	99.9	83.1	79.5	86.7	149
Location													
Urban	56.8	45.0	67.9	96.2	87.9	98.8	95.2	85.5	98.5	82.7	77.1	88.3	132
Rural	42.8	38.1	47.7	98.8	97.1	99.5	98.4	96.0	99.3	80.0	78.2	81.7	773
Province													
Eastern	50.8	36.8	64.7	96.5	85.3	99.2	94.0	81.6	98.2	80.4	73.8	87.1	115
Western	32.9	21.5	46.7	99.7	97.7	100.0	97.6	84.4	99.7	76.7	72.5	80.9	85
Southern	60.6	44.7	74.5	100.0			100.0			86.9	81.7	92.0	66
Southern Highlands	39.9	29.1	51.8	100.0			95.8	85.9	98.8	78.6	73.9	83.2	115
SW Highlands	37.5	24.6	52.5	100.0			96.4	77.6	99.5	78.0	72.3	83.6	103
Central	35.9	24.7	48.9	92.8	81.2	97.5	99.7	98.2	100.0	76.1	71.4	80.9	104
Northern	73.8	60.8	83.7	99.6	97.3	99.9	99.6	97.4	99.9	91.0	87.2	94.9	110
Lake	36.5	28.0	46.1	99.3	95.9	99.9	99.7	98.8	99.9	78.5	75.4	81.6	199
Zanzibar	48.6	35.5	62.0	86.0	70.1	94.1	96.6	78.6	99.5	77.1	69.3	84.8	7
Total	**44.8**	**40.5**	**49.2**	**98.4**	**96.8**	**99.2**	**97.9**	**95.8**	**99.0**	**80.4**	**78.7**	**82.0**	**905**

Note: LB and UB refer to the lower and upper bounds of the 95% confidence interval.

Table A4d. Service readiness Domain A: General requirements, Tanzania 2014-15 SPA

	Electricity			Improved water source			Improved sanitation			24/7 skilled birth attendance			Emergency transport			*Service readiness Domain A summary score*			
	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	Mean	LB	UB	N
Facility type																			
Hospital	90.5	71.5	97.3	86.7	71.1	94.5	74.7	63.2	83.6	97.7	94.9	99	93.4	89.4	96	88.6	82.4	94.8	44
Health Center	76.1	71	80.5	82.3	77.7	86.1	49.3	43.9	54.8	82.7	78.4	86.2	75.4	70.4	79.9	73.2	70.7	75.6	109
Dispensary or clinic	63.4	58.1	68.5	57.9	52.6	63	27.8	23.5	32.6	16.3	12.7	20.7	57.7	52.4	62.9	44.6	42.1	47.2	751
Managing authority																			
Public	62.8	57.8	67.6	57.9	53	62.6	26.6	22.7	30.7	24.7	21.2	28.4	59.4	54.5	64	46.3	44.0	48.5	756
Private or other	83.7	73.1	90.7	84.5	73.9	91.3	63.7	52.9	73.3	46.7	36.4	57.2	73.1	62	81.8	70.3	65.7	74.9	149
Location																			
Urban	66.2	54.9	75.9	73.3	60.8	82.9	68.3	57.6	77.3	49	39.4	58.7	57.7	45.8	68.8	62.9	56.5	69.3	132
Rural	66.3	61.3	70.9	60.4	55.5	65	26.6	22.6	31	24.7	21.2	28.7	62.3	57.4	66.9	48.0	45.7	50.4	773
Province																			
Eastern	57.1	42.6	70.4	66	50.5	78.7	46.3	35.2	57.7	27.8	18.9	39	48.9	34.8	63.2	49.2	41.9	56.6	115
Western	88.1	76.2	94.5	74.3	59.5	85.1	25.9	16.6	38.1	20.3	12.8	30.6	58.2	43.3	71.7	53.4	48.2	58.5	85
Southern	68.9	52.7	81.4	61.6	47.2	74.2	32	19.7	47.4	18.2	10.7	29	36.5	23.7	51.5	43.4	36.9	49.9	66
Southern Highlands	64.3	51.1	75.6	66	53.2	76.8	26.1	17.3	37.4	18.8	13.4	25.7	42.9	32.6	53.9	43.6	38.2	49.1	115
SW Highlands	56.3	40.9	70.5	41.9	28.7	56.5	19.9	11	33.3	28.5	18.6	41.1	68.5	52.5	81.1	43.0	34.9	51.2	103
Central	66.9	53	78.3	66.5	52.6	78	18.8	11.4	29.3	24.2	16.8	33.4	78.2	65.1	87.3	50.9	45.7	56.1	104
Northern	54.6	39.9	68.6	69.9	55	81.6	28.6	19.3	40.3	33.4	23.9	44.3	67.5	52.1	79.8	50.8	43.8	57.8	110
Lake	73	64.2	80.3	56.1	47.6	64.3	45.6	36.1	55.4	40.2	31.7	49.3	74.6	64.7	82.5	57.9	53.7	62.1	199
Zanzibar	87.1	70.7	95.0	88.2	73.5	95.3	92.8	79.5	97.7	22.8	12.9	37.0	44.9	32.7	57.8	67.2	62.2	72.1	7
Total	**66.3**	**61.7**	**70.5**	**62.2**	**57.8**	**66.5**	**32.7**	**28.9**	**36.6**	**28.3**	**25**	**31.8**	**61.6**	**57.1**	**65.9**	**50.2**	**48.1**	**52.4**	**905**

Note: LB and UB refer to the lower and upper bounds of the 95% confidence interval.

Table A4e. Service readiness Dimension B: Equipment, Tanzania 2014-15 SPA

	Sterilization equipment			Delivery Bed			Examination light			Delivery Pack			Suction apparatus			Manual vacuum extractor			Vacuum aspirator or D and C kit			Partograph		
	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB
Facility type																								
Hospital	88.5	71.6	95.9	100.0			53.6	44.9	62.2	98.1	95.4	99.2	51.9	43.4	60.2	51.9	43.4	60.2	39.8	32.6	47.4	96.4	93.2	98.1
Health Center	47.9	42.8	53.1	100.0			28.0	23.4	33.1	89.6	86.1	92.3	11.6	8.4	15.7	11.6	8.4	15.7	24.4	20.3	29.1	79.7	75.0	83.6
Dispensary or clinic	12.8	9.9	16.5	98.0	95.8	99.1	10.0	7.2	13.8	85.9	81.6	89.3	1.7	0.6	4.3	1.7	0.6	4.3	3.1	1.8	5.5	52.0	46.8	57.2
Managing authority																								
Public	14.4	11.9	17.3	98.0	95.9	99.1	9.2	6.9	12.1	85.2	81.1	88.6	3.8	2.6	5.6	3.8	2.6	5.6	6.0	4.6	7.9	57.0	52.1	61.8
Private or other	53.1	42.2	63.8	100.0			40.6	30.7	51.3	95.6	85.5	98.8	12.8	8.7	18.6	12.8	8.7	18.6	14.8	9.8	21.6	60.0	48.7	70.3
Location																								
Urban	60.8	49.8	70.8	100.0			38.3	28.3	49.3	94.3	85.9	97.9	17.5	12.7	23.7	17.5	12.7	23.7	16.7	11.8	22.9	68.4	56.0	78.7
Rural	13.9	11.2	17.1	98.1	95.9	99.1	10.2	7.8	13.4	85.7	81.6	88.9	3.2	2.0	5.0	3.2	2.0	5.0	5.9	4.4	7.8	55.6	50.8	60.4
Province																								
Eastern	37.3	29.3	46.2	100.0			26.7	17.3	38.8	88.3	74.9	95.1	9.0	4.8	16.3	9.0	4.8	16.3	9.1	5.7	14.2	59.8	44.8	73.2
Western	30.0	20.3	42.0	100.0			7.4	2.9	17.5	88.1	76.1	94.5	4.1	2.7	6.2	4.1	2.7	6.2	12.4	6.3	22.8	60.8	47.9	72.3
Southern	11.2	5.6	21.4	89.2	74.5	95.9	10.9	4.7	23.5	85.2	70.4	93.3	2.0	1.2	3.3	2.0	1.2	3.3	2.2	1.2	4.1	77.0	61.1	87.6
Southern Highlands	13.4	8.1	21.4	98.0	87.0	99.7	6.1	3.1	11.9	92.3	81.4	97.0	1.9	1.2	2.9	1.9	1.2	2.9	5.4	2.6	10.8	62.4	51.4	72.3
SW Highlands	10.9	5.4	20.8	96.0	78.8	99.3	26.1	16.1	39.5	95.3	80.0	99.0	1.9	1.1	3.3	1.9	1.1	3.3	0.8	0.3	1.9	51.6	37.2	65.8
Central	6.8	5.3	8.8	100.0			6.5	3.4	12.2	89.5	78.1	95.3	3.9	2.7	5.7	3.9	2.7	5.7	3.9	2.6	5.8	44.3	32.5	56.6
Northern	37.3	25.9	50.2	100.0			21.4	13.8	31.6	86.5	71.2	94.3	7.3	3.5	14.9	7.3	3.5	14.9	9.9	5.2	17.9	74.3	60.0	84.7
Lake	16.3	11.0	23.4	99.4	95.5	99.9	9.3	5.0	16.7	78.9	69.4	86.1	7.7	4.2	13.9	7.7	4.2	13.9	10.7	7.2	15.7	46.1	37.1	55.4
Zanzibar	60.6	39.5	78.3	100.0			34.3	21.1	50.5	53.6	40.5	66.2	13.7	7.1	24.8	13.7	7.1	24.8	24.8	13.5	41.1	60.8	49.4	71.2
Total	**20.7**	**18.0**	**23.7**	**98.4**	**96.5**	**99.2**	**14.3**	**11.8**	**17.3**	**86.9**	**83.4**	**89.8**	**5.3**	**4.0**	**6.9**	**5.3**	**4.0**	**6.9**	**7.5**	**6.0**	**9.2**	**57.5**	**53.1**	**61.8**

	Gloves			Newborn bag and mask			Infant scale			Blood pressure apparatus, dig or manual			Soap or hand disinfectant			*Service readiness Domain B summary score*			
	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	Mean	LB	UB	N
Facility type																			
Hospital	99.6	97.3	99.9	97.2	94.2	98.7	92.9	69.3	98.7	95.7	92.3	97.6	94.2	90.3	96.5	83.6	79.7	87.5	44
Health Center	88.9	85.3	91.7	84.5	80.4	87.8	95.3	92.3	97.2	70.7	65.6	75.4	79.4	74.7	83.5	65.1	63.4	66.8	109
Dispensary or clinic	85.1	81.0	88.4	73.7	69.5	77.6	76.5	71.7	80.7	66.5	61.4	71.2	64.0	58.8	68.8	49.7	48.2	51.1	751
Managing authority																			
Public	84.8	80.9	88.0	75.4	71.5	78.9	79.0	74.4	82.9	68.3	63.5	72.7	63.8	58.9	68.5	51.1	49.7	52.4	756
Private or other	93.5	85.8	97.1	80.0	68.6	88.0	82.4	71.7	89.7	69.0	57.6	78.6	85.2	75.2	91.6	63.9	60.0	67.8	149
Location																			
Urban	92.1	83.2	96.5	86.0	76.7	91.9	86.3	75.0	92.9	81.0	71.2	88.1	81.9	71.8	88.9	66.9	62.9	70.9	132
Rural	85.2	81.4	88.4	74.5	70.4	78.2	78.4	73.9	82.3	66.3	61.5	70.7	64.8	60.0	69.4	50.8	49.5	52.1	773
Division																			
Eastern	86.5	73.5	93.7	89.2	77.0	95.3	90.3	76.9	96.3	68.9	55.5	79.7	81.4	67.6	90.1	59.2	55.3	63.0	115
Western	73.8	59.0	84.6	76.8	62.6	86.8	82.3	69.4	90.5	52.8	39.9	65.4	47.2	33.4	61.4	50.9	46.9	54.8	85
Southern	80.1	66.3	89.2	83.4	70.1	91.5	84.1	68.7	92.8	60.5	44.8	74.2	57.5	41.9	71.7	51.2	47.4	55.1	66
Southern Highlands	92.8	82.2	97.3	94.2	83.6	98.1	74.2	61.4	83.9	78.4	65.7	87.3	87.8	76.3	94.1	56.1	53.3	58.9	115
SW Highlands	83.1	75.5	88.8	76.5	63.4	85.9	80.7	66.7	89.8	91.4	79.4	96.7	76.1	60.7	86.8	55.0	51.7	58.2	103
Central	95.1	84.6	98.5	85.4	73.7	92.4	71.7	57.9	82.3	69.4	55.6	80.4	51.0	38.4	63.4	49.7	46.8	52.5	104
Northern	87.9	74.5	94.8	96.0	84.2	99.1	79.7	66.7	88.5	77.5	63.6	87.2	78.5	64.3	88.1	60.2	56.5	63.9	110
Lake	85.3	76.8	91.1	40.8	31.7	50.5	77.0	67.4	84.4	53.9	43.9	63.6	56.4	46.2	66.2	46.4	43.3	49.5	199
Zanzibar	96.6	78.6	99.5	47.0	33.9	60.6	83.2	57.3	94.8	76.9	60.5	87.9	86.3	71.3	94.1	59.7	54.4	65.0	7
Total	**86.2**	**82.9**	**89.0**	**76.2**	**72.6**	**79.4**	**79.6**	**75.5**	**83.1**	**68.4**	**64.2**	**72.4**	**67.3**	**63.0**	**71.4**	**53.2**	**51.9**	**54.4**	**905**

Note: LB and UB refer to the lower and upper bounds of the 95% confidence interval.

Table A4f. Service readiness Domain C: Medicines and commodities, Tanzania 2014-15 SPA

	Injectable antibiotic			Hydrocortisone available at the facility			Injectable uterotonic			Skin disinfectant			Magnesium sulfate			IV solution with infusion set			Chlorhexidine for cord cleaning			Antibiotic eye ointment			*Service readiness Domain C summary score*			
	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	Mean	LB	UB	N
Facility type																												
Hospital	52.7	43.9	61.3	84.0	69.8	92.2	97.2	94.2	98.7	81.2	67.8	89.8	87.3	71.3	95.0	85.8	70.7	93.8	18.3	13.7	23.9	45.7	37.8	53.8	69.0	61.7	76.3	44
Health Center	36.0	30.8	41.5	52.3	46.9	57.7	88.1	84.3	91.1	71.6	66.5	76.2	66.8	61.3	71.8	69.0	63.7	73.8	13.8	10.2	18.4	33.5	28.5	39.0	53.9	51.5	56.3	109
Dispensary or clinic	30.4	25.6	35.6	25.5	21.1	30.4	76.4	71.4	80.7	58.4	52.9	63.6	34.3	29.4	39.4	42.9	37.5	48.5	11.3	8.4	15.1	26.2	21.9	31.1	38.2	36.0	40.3	751
Managing authority																												
Public	32.4	27.8	37.3	23.5	19.9	27.5	78.8	74.2	82.8	59.2	54.0	64.1	39.4	34.9	44.1	44.5	39.5	49.7	11.5	8.7	15.0	24.3	20.3	28.7	39.2	37.2	41.2	756
Private or other	30.8	22.5	40.5	72.4	60.4	81.8	78.9	67.4	87.1	70.9	60.2	79.7	47.6	37.2	58.2	66.7	54.7	76.8	14.3	8.5	23.0	47.3	36.7	58.2	53.6	48.0	59.2	149
Location																												
Urban	36.1	26.9	46.4	54.3	42.8	65.3	84.7	73.5	91.7	66.8	54.9	76.9	59.4	47.5	70.3	60.5	49.4	70.7	13.8	8.5	21.6	40.9	30.6	52.0	52.1	46.7	57.4	132
Rural	31.4	27.0	36.3	27.7	23.6	32.1	77.8	73.2	81.8	60.1	55.1	65.0	37.6	33.1	42.3	46.0	41.0	51.1	11.6	8.8	15.2	25.9	21.8	30.4	39.8	37.7	41.8	773
Province																												
Eastern	26.7	15.9	41.2	52.8	39.7	65.4	73.0	59.3	83.4	60.4	45.3	73.7	49.2	35.7	62.9	46.1	32.6	60.3	9.8	4.8	18.7	30.4	19.2	44.5	43.5	37.5	49.6	115
Western	42.3	29.1	56.7	26.4	16.1	40.0	71.5	56.6	82.8	63.4	48.7	76.0	41.3	29.5	54.2	41.6	28.5	55.9	6.7	2.5	16.6	9.7	4.2	21.0	37.9	32.6	43.1	85
Southern	35.8	22.7	51.5	16.1	9.0	27.3	74.4	58.5	85.7	72.3	56.9	83.8	51.2	36.1	66.0	29.6	18.1	44.5	9.2	3.3	22.7	10.0	3.9	23.1	37.3	30.9	43.8	66
Southern Highlands	22.1	13.7	33.5	27.3	18.2	38.8	85.0	73.2	92.1	42.6	31.3	54.7	36.3	25.5	48.8	50.0	37.5	62.5	11.0	5.5	20.9	47.5	36.3	58.9	40.2	35.3	45.1	115
SW Highlands	50.0	36.6	63.4	24.6	15.2	37.4	87.5	72.1	95.0	64.9	49.2	77.9	57.2	42.2	71.0	62.7	46.9	76.2	25.4	13.9	41.7	46.2	33.4	59.5	52.3	47.0	57.6	103
Central	35.1	24.2	47.8	38.2	27.5	50.1	81.8	69.2	90.0	55.9	44.4	66.8	21.6	13.9	31.8	47.8	35.3	60.5	5.0	1.7	14.0	29.1	18.7	42.2	39.3	34.5	44.1	104
Northern	35.6	23.0	50.6	45.1	31.2	59.8	87.8	74.3	94.7	70.5	55.5	82.0	42.3	29.9	55.8	55.5	40.8	69.4	19.7	11.8	31.0	34.5	22.2	49.3	48.9	42.1	55.6	110
Lake	23.0	15.7	32.4	21.9	15.3	30.3	71.7	61.3	80.1	62.9	52.6	72.2	34.2	26.6	42.8	44.4	35.1	54.0	9.4	5.6	15.5	16.6	10.6	24.9	35.5	31.9	39.1	199
Zanzibar	22.8	12.9	36.9	28.0	15.8	44.7	92.5	73.7	98.2	64.9	41.6	82.7	71.8	53.7	84.9	85.8	67.0	94.7	8.0	2.4	23.6	6.8	2.2	19.3	47.6	41.4	53.8	7
Total	**32.1**	**28.0**	**36.5**	**31.5**	**27.7**	**35.6**	**78.8**	**74.7**	**82.4**	**61.1**	**56.5**	**65.5**	**40.8**	**36.6**	**45.0**	**48.2**	**43.6**	**52.8**	**12.0**	**9.4**	**15.0**	**28.0**	**24.3**	**32.1**	**41.6**	**39.7**	**43.4**	**905**

Note: LB and UB refer to the lower and upper bounds of the 95% confidence interval.

Table A4g. Service readiness Domain D: Guidelines and staffing, Tanzania 2014-15 SPA

	Facility has guidelines, observed:									*At least one provider of delivery or newborn care at facility was trained in each the following areas in the last 24 months:*																				
	IMPAC guidelines			CEmOC guidelines			Guidelines for management of pre-term labor			Training in neonatal resuscitation			Training in early and exclusive breastfeeding			Training in newborn infection management			Training in thermal care			Training in cord care			Training in KMC			Supervision		
	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB
Facility type																														
Hospital	41.1	33.8	48.8	17.9	13.3	23.6	25.4	19.8	32.0	79.0	73.1	83.9	65.7	58.6	72.3	59.6	51.7	67.0	65.7	58.5	72.2	65.4	58.1	72.0	61.4	53.8	68.5	66.8	56.6	75.6
Health Center	48.5	43.2	53.7	20.0	16.0	24.6	14.9	11.3	19.4	70.5	66.1	74.6	62.5	57.3	67.4	52.9	47.6	58.1	62.5	57.6	67.2	64.4	59.5	68.9	57.7	52.5	62.6	76.9	71.9	81.2
Dispensary or clinic	24.5	20.4	29.2	6.8	4.6	9.9	10.3	7.5	13.8	47.9	43.3	52.6	45.7	40.7	50.7	34.2	29.5	39.3	42.3	37.8	47.0	42.9	38.4	47.6	36.7	31.9	41.7	77.0	72.2	81.2
Managing authority																														
Public	28.2	24.3	32.5	9.1	6.8	12.0	11.3	8.6	14.5	52.0	47.7	56.1	49.2	44.6	53.8	38.8	34.3	43.5	46.7	42.4	51.0	47.4	43.1	51.7	40.1	35.7	44.7	78.3	73.8	82.2
Private or other	28.2	19.3	39.2	7.9	4.5	13.3	13.0	7.8	21.0	53.2	42.4	63.7	46.2	35.7	57.1	32.1	23.3	42.4	41.9	32.0	52.5	42.4	32.5	53.0	42.0	31.9	52.9	67.3	56.6	76.5
Location																														
Urban	30.5	21.9	40.9	9.9	5.9	16.1	16.0	10.1	24.4	59.3	47.7	69.9	50.2	39.1	61.3	39.2	29.3	50.2	47.9	37.9	58.0	47.8	37.8	58.0	38.7	29.6	48.7	71.2	60.3	80.1
Rural	27.8	23.9	32.2	8.7	6.5	11.5	10.8	8.2	14.1	50.9	46.5	55.3	48.4	43.7	53.1	37.4	32.9	42.2	45.5	41.1	50.1	46.4	41.9	50.9	40.7	36.1	45.5	77.4	73.0	81.3
Province																														
Eastern	40.2	27.9	53.9	22.8	14.2	34.5	18.4	10.5	30.1	64.9	50.2	77.2	50.5	36.7	64.2	35.2	23.0	49.8	41.8	30.3	54.2	42.0	30.5	54.5	40.2	28.4	53.2	62.0	48.8	73.6
Western	41.5	28.8	55.5	14.7	7.4	26.9	8.1	3.0	20.1	79.5	66.8	88.2	74.6	60.5	85.0	66.1	52.7	77.4	76.9	64.3	86.0	76.9	64.3	86.0	59.7	46.6	71.6	81.0	67.0	89.9
Southern	32.4	21.0	46.5	4.0	1.0	14.9	13.7	6.3	27.3	46.8	34.5	59.4	35.4	23.1	49.9	31.3	19.9	45.4	43.6	31.2	57.0	43.6	31.2	57.0	34.3	22.7	48.1	82.1	67.1	91.1
Southern Highlands	27.3	18.2	38.9	9.4	4.5	18.8	30.8	20.8	43.0	74.6	62.6	83.8	67.6	54.8	78.3	43.6	32.3	55.7	59.8	46.8	71.5	63.7	50.6	75.0	55.7	43.8	66.9	65.9	53.4	76.6
SW Highlands	21.8	15.8	29.2	1.5	0.5	4.1	4.9	2.0	11.7	36.2	23.5	51.2	43.6	29.4	59.0	34.7	21.8	50.4	31.3	19.8	45.7	29.8	18.5	44.3	36.9	23.6	52.5	85.9	70.1	94.1
Central	16.1	9.2	26.6	7.4	2.7	18.7	8.4	3.4	19.2	43.7	34.7	53.1	43.3	34.3	52.8	34.7	26.3	44.2	41.2	33.4	49.5	43.5	34.5	52.9	38.7	30.5	47.7	77.9	66.1	86.5
Northern	36.8	24.6	50.9	5.9	3.9	8.9	7.8	2.9	19.6	78.1	62.7	88.4	69.9	55.0	81.5	51.7	38.0	65.2	76.2	61.0	86.7	79.1	64.3	88.9	55.2	40.5	69.0	75.8	62.6	85.4
Lake	19.7	13.4	27.9	6.0	3.0	11.6	4.6	2.3	9.1	19.9	13.8	27.8	23.6	16.7	32.2	20.7	14.1	29.3	20.8	14.4	29.2	19.5	13.3	27.7	19.7	13.2	28.3	81.5	72.9	87.8
Zanzibar	31.3	19.7	45.8	8.0	2.4	23.6	6.8	2.2	19.1	65.8	49.8	78.8	56.7	41.4	70.8	45.3	31.1	60.3	52.1	35.8	68.0	54.4	38.0	69.9	51.0	35.8	66.0	89.8	75.0	96.2
Total	**28.2**	**24.7**	**32.1**	**8.9**	**6.9**	**11.4**	**11.6**	**9.2**	**14.5**	**52.2**	**48.2**	**56.1**	**48.7**	**44.5**	**52.9**	**37.7**	**33.6**	**41.9**	**45.9**	**42.0**	**49.8**	**46.6**	**42.7**	**50.5**	**40.4**	**36.4**	**44.6**	**76.5**	**72.5**	**80.1**

	Service readiness Domain D summary score			
	Mean	LB	UB	N
Facility type				
Hospital	58.1	54.4	61.7	44
Health Center	57.3	54.1	60.5	109
Dispensary or clinic	39.8	36.9	42.6	751
Managing authority				
Public	43.3	40.7	45.9	756
Private or other	40.1	33.5	46.7	149
Location				
Urban	43.9	37.2	50.5	132
Rural	42.6	39.9	45.3	773
Province				
Eastern	44.4	37.2	51.6	115
Western	63.4	55.2	71.7	85
Southern	39.3	31.6	46.9	66
Southern Highlands	52.0	45.3	58.6	115
SW Highlands	35.8	26.8	44.7	103
Central	38.5	32.6	44.4	104
Northern	58.7	51.7	65.8	110
Lake	25.7	21.0	30.4	199
Zanzibar	50.5	40.7	60.3	7
Total	**42.8**	**40.4**	**45.2**	**905**

Note: LB and UB refer to the lower and upper bounds of the 95% confidence interval.

Table A5a. Service availability Domain A: BEmOC signal functions, Malawi 2013-14 SPA

	Parenteral administration of antibiotics	Parenteral administration of uterotonic drugs	Parenteral administration of anticonvulsants	Manual removal of placenta	Assisted vaginal delivery	Removal of retained products	*Service availability Domain A summary score*	
	%	%	%	%	%	%	%	N
Facility type								
Hospital	97.9	99.0	79.6	65.2	81.6	67.4	81.8	95
Health Center	78.1	98.1	43.8	39.0	45.2	33.4	56.3	414
Dispensary or clinic	77.7	89.0	22.5	22.3	33.6	16.5	43.6	19
Managing authority								
Public	79.7	97.8	49.3	44.0	52.2	42.0	60.8	347
Private or other	85.4	98.3	49.6	41.5	49.7	32.9	59.6	181
Location								
Urban	92.4	97.4	68.6	44.7	71.0	56.0	71.7	78
Rural	79.8	98.0	46.1	42.9	47.9	35.9	58.4	450
Region								
north	75.6	98.1	46.4	35.8	57.1	42.4	59.2	102
central	85.3	97.1	50.4	46.0	53.8	39.6	62.0	198
south	81.2	98.7	50.0	43.9	46.6	36.7	59.5	227
Total	**81.6**	**98.0**	**49.4**	**43.1**	**51.3**	**38.9**	**60.4**	**528**

Note: Confidence intervals are not shown since the Malawi 2013-14 SPA was a census of all formal health facilities, rather than a sample.

Table A5b. Service availability Domain B: Newborn signal functions, Malawi 2013-14 SPA

	Neonatal resuscitation	Cortisosteroids for pre-term labor	Kangaroo Mother Care	*Service availability Domain B summary score*	
	%	%	%	Mean	N
Facility type					
Hospital	92.8	55.2	84.6	77.5	95
Health Center	87.8	13.2	50.3	50.4	414
Dispensary or clinic	66.4	27.6	44.5	46.2	19
Managing authority					
Public	89.6	19.0	55.2	54.6	347
Private or other	84.7	25.5	58.3	56.1	181
Location					
Urban	89.8	51.2	59.7	66.9	78
Rural	87.6	16.0	55.7	53.1	450
Region					
north	93.2	18.3	56.0	55.8	102
central	90.7	21.1	51.4	54.4	198
south	83.2	22.7	60.6	55.5	227
Total	**87.9**	**21.2**	**56.3**	**55.1**	**528**

Note: Confidence intervals are not shown since the Malawi 2013-14 SPA was a census of all formal health facilities, rather than a sample.

Table A5c. Service availability Domain D: Routine perinatal care, Malawi 2013-14 SPA

	Partograph routinely used to monitor labor	Early initiation of breastfeeding	Thermal care	*Service availability Domain D summary score*	
	%	%	%	Mean	N
Facility type					
Hospital	98.0	98.9	100.0	99.0	95
Health Center	92.9	98.8	99.8	97.2	414
Dispensary or clinic	83.0	100.0	100.0	94.3	19
Managing authority					
Public	92.7	98.9	99.7	97.1	347
Private or other	95.0	98.9	100.0	98.0	181
Location					
Urban	98.7	98.7	100.0	99.1	78
Rural	92.6	98.9	99.8	97.1	450
Region					
north	97.1	100.0	100.0	99.0	102
central	91.2	98.5	99.5	96.4	198
south	93.9	98.7	100.0	97.5	227
Total	**93.5**	**98.9**	**99.8**	**97.4**	**528**

Note: Confidence intervals are not shown since the Malawi 2013-14 SPA was a census of all formal health facilities, rather than a sample.

Table A5d. Service readiness Domain A: General requirements, Malawi 2013-14 SPA

	Electricity	Improved water source	Improved sanitation	24/7 skilled birth attendance	Emergency transport	*Service readiness Domain A summary score*	
	%	%	%	%	%	%	N
Facility type							
Hospital	79.6	98.0	56.2	86.7	95.9	83.3	95
Health Center	65.2	94.1	16.9	47.2	87.8	62.2	414
Dispensary or clinic	66.7	100.0	44.5	33.1	94.5	67.7	19
Managing authority							
Public	67.4	92.6	18.5	49.8	89.3	63.5	347
Private or other	68.7	99.5	37.3	61.4	89.8	71.3	181
Location							
Urban	72.3	96.3	57.5	83.4	92.5	80.4	78
Rural	67.1	94.8	19.3	48.6	88.9	63.7	450
Region							
North	69.9	88.3	24.1	36.6	89.3	61.6	102
Central	76.4	95.6	28.9	53.3	88.7	68.6	198
South	59.5	97.4	21.9	61.9	90.2	66.2	227
Total	**67.9**	**95.0**	**24.9**	**53.8**	**89.5**	**66.2**	**528**

Note: Confidence intervals are not shown since the Malawi 2013-14 SPA was a census of all formal health facilities, rather than a sample.

Table A5e. Service readiness Domain B: Equipment, Malawi 2013-14 SPA

	Sterili-zation equipment	Delivery bed	Examinat-ion light	Delivery pack	Suction apparatus	Manual vacuum extractor	Vacuum aspirator or D and C kit	Parto-graph	Gloves	Newborn bag and mask	Infant scale	Blood pressure apparatus	Soap or hand disinfect-ant	*Service readiness Domain B summary score*	N
	%	%	%	%	%	%	%	%	%	%	%	%	%	Mean	
Facility type															
Hospital	76.5	99.0	62.4	97.0	87.8	81.6	55.1	94.9	100.0	95.9	97.0	91.9	87.8	86.7	95
Health Center	19.7	98.3	23.3	91.3	57.9	32.2	17.4	86.8	97.0	89.0	94.6	71.3	72.7	65.5	414
Dispensary or clinic	44.2	100.0	60.6	88.7	50.1	22.0	16.5	83.2	94.3	66.2	100.0	89.2	66.9	67.8	19
Managing authority															
Public	24.0	98.0	26.1	89.3	62.0	42.0	25.7	86.8	98.0	91.9	95.8	69.4	70.5	67.7	347
Private or other	43.7	99.5	42.3	97.8	64.8	38.2	21.0	90.7	96.2	84.7	94.1	87.6	84.2	72.7	181
Location															
Urban	63.6	100.0	51.3	97.5	87.3	59.8	44.9	94.9	100.0	86.0	90.1	91.3	84.8	80.9	78
Rural	25.1	98.3	28.3	91.3	58.8	37.4	20.5	86.9	97.0	90.0	96.1	72.9	73.5	67.4	450
Region															
North	20.1	98.0	42.5	86.4	64.9	34.7	18.2	86.3	100.0	93.2	95.1	76.6	76.6	68.7	102
Central	33.7	99.0	26.5	90.7	65.2	44.5	24.9	87.2	96.6	91.6	94.6	73.5	76.0	69.5	198
South	33.0	98.3	31.3	96.1	60.2	40.1	26.0	89.7	97.0	85.8	95.8	77.0	74.0	69.6	227
Total	**30.8**	**98.5**	**31.7**	**92.2**	**63.0**	**40.7**	**24.1**	**88.1**	**97.4**	**89.4**	**95.2**	**75.6**	**75.2**	**69.4**	**528**

Note: Confidence intervals are not shown since the Malawi 2013-14 SPA was a census of all formal health facilities, rather than a sample.

Table A5f. Service readiness Domain C: Medicine and commodities, Malawi 2013-14 SPA

	Injectable antibiotic	Hydrocortisone available at the facility	Injectable uterotonic	Skin disinfectant	Magnesium sulfate	IV solution with infusion set	Chlorhexidine for cord cleaning	Antibiotic eye ointment	*Service readiness Domain C summary score*	
	%	%	%	%	%	%	%	%	Mean	N
Facility type										
Hospital	76.6	48.1	94.9	74.5	90.8	65.4	51	91.9	74.1	95
Health Center	50.6	4.5	95.3	51.1	85.6	66.9	32.2	93.7	60	414
Dispensary or clinic	55.8	27.6	94.7	49.8	28	78.1	39.1	94.3	58.4	19
Managing authority									0	
Public	52.5	5.6	94.9	48.6	87.6	69.1	31.4	94.1	60.5	347
Private or other	61.1	27.6	95.7	67.9	78.7	62.9	44.3	91.9	66.3	181
Location									0	
Urban	75	36.3	95	61.1	84.8	68.9	42.5	91.3	69.4	78
Rural	52.1	9.1	95.2	54.2	84.5	66.7	34.7	93.7	61.3	450
Region									0	
North	57.2	13.4	90.3	63	83.5	69	34.8	98.1	63.7	102
Central	53.4	11.2	97.1	48	83.3	64.8	30.9	90.7	59.9	198
South	56.5	14.7	95.7	58.1	86.1	68	40.6	93.6	64.2	227
Total	**55.5**	**13.1**	**95.2**	**55.2**	**84.5**	**67**	**35.8**	**93.4**	**62.5**	**528**

Note: Confidence intervals are not shown since the Malawi 2013-14 SPA was a census of all formal health facilities, rather than a sample.

Table A5g. Service readiness Domain D: Guidelines and staffing, Malawi 2013-14 SPA

	Facility has guidelines, observed:			*At least one provider of delivery or newborn care at facility was trained in each the following areas in the last 24 months:*								
	IMPAC guidelines	CEmOC guidelines	Guidelines for management of pre-term labor	Training in neonatal resuscitation	Training in early and exclusive breast-feeding	Training in newborn infection management	Training in thermal care	Training in cord care	Training in KMC	Supervision	*Service readiness Domain D summary score*	N
	%	%	%	%	%	%	%	%	%	%	Mean	
Facility type												
Hospital	52	39.8	55.1	80.5	66.3	62.2	77.5	75.5	57.1	91.8	67.0	95
Health Center	43.1	24.8	39.3	59.1	44	36.3	49.9	51.3	37	91.7	48.6	414
Dispensary or clinic	44.6	22.3	27.8	38.6	44.5	16.7	27.6	33.1	27.6	72.2	36.4	19
Managing authority												
Public	43	30.1	40.4	65.2	52.5	43.5	56.7	58.4	45.5	90.1	53.9	347
Private or other	48.1	22.2	44.2	56.6	39.5	33.9	49	48.5	30.3	92.8	46.8	181
Location											0.0	
Urban	49.8	39.8	47.3	74.8	60	53.7	64.9	64.9	53.6	91	61.4	78
Rural	43.9	25.2	40.8	60	46	37.9	52.2	53.3	37.9	91.1	49.7	450
Region												
North	48.6	40.8	40.8	70.7	56.2	46.5	54.2	55.2	42.6	87.3	55.8	102
Central	41.6	23	42.1	58.8	45.1	41.1	53.4	55.4	43.6	91.6	50.4	198
South	45.7	25.2	41.9	61.4	47	36.7	54.6	54.6	36.3	92.3	50.4	227
Total	**44.7**	**27.4**	**41.7**	**62.2**	**48.1**	**40.2**	**54.1**	**55**	**40.2**	**91.1**	**51.4**	**528**

Note: Confidence intervals are not shown since the Malawi 2013-14 SPA was a census of all formal health facilities, rather than a sample.

Table A6a. Service availability Domain A: BEmOC signal functions, Senegal 2014 SPA

	Parenteral administration of antibiotics			Parenteral administration of uterotonic drugs			Parenteral administration of anticonvulsants			Manual removal of placenta			Assisted vaginal delivery			Removal of retained products			*Service availability Domain A summary score*			
	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	Mean	LB	UB	Mean	LB	UB	N
Facility type																						
Hospital	97.9	86.7	99.7	97.9	86.7	99.7	69.7	48.9	84.7	74.6	53.9	88.1	100.0			97.9	86.7	99.7	89.7	84.5	94.9	11
Health Center	95.8	84.0	99.0	100.0			62.2	44.6	77.0	73.1	58.7	83.8	100.0			96.6	79.6	99.5	87.9	83.7	92.2	20
Clinic	68.0	61.5	73.9	94.1	90.1	96.5	26.4	20.7	33.0	61.0	54.7	67.0	99.3	96.7	99.9	80.9	75.3	85.5	71.6	69.0	74.2	248
Managing Authority																						
Public	71.1	64.8	76.7	94.7	91.0	96.9	31.7	26.0	37.9	64.0	58.0	69.6	99.3	96.8	99.9	84.0	78.6	88.2	74.1	71.7	76.6	251
Private or other	72.5	52.5	86.3	94.4	74.2	99.0	22.7	10.6	42.1	48.2	30.1	66.8	100.0			71.8	51.6	85.9	68.3	60.2	76.4	29
Locality																						
Urban	87.4	75.9	93.8	97.8	88.7	99.6	47.9	36.5	59.6	65.5	53.4	75.8	100.0			92.4	81.8	97.0	81.8	77.8	85.8	72
Rural	65.6	58.3	72.2	93.6	89.1	96.3	24.7	18.8	31.9	61.3	54.4	67.8	99.2	96.1	99.8	79.4	73.3	84.4	70.6	67.8	73.5	207
Region																						
North	61.9	47.4	74.6	95.9	84.4	99.0	30.3	19.2	44.3	91.3	80.4	96.4	100.0			97.9	86.1	99.7	79.5	75.2	83.8	63
Dakar	93.3	72.1	98.7	100.0			55.0	35.6	73.0	72.0	51.2	86.3	100.0			90.1	67.5	97.6	85.1	78.2	92.0	28
Thies	84.7	65.2	94.2	96.2	76.4	99.5	46.0	28.4	64.6	62.5	43.0	78.7	100.0			84.4	64.6	94.1	79.0	73.1	84.8	35
Central	74.8	62.8	83.9	91.5	82.4	96.2	19.6	12.3	29.8	58.0	45.7	69.5	98.3	88.9	99.8	84.1	73.0	91.1	71.1	66.3	75.9	79
East	68.8	50.7	82.6	93.5	85.0	97.3	30.8	16.0	51.0	51.1	32.2	69.7	98.6	90.3	99.8	83.7	64.3	93.6	71.1	63.1	79.0	29
South	55.8	41.9	68.8	94.8	81.4	98.7	24.0	13.7	38.7	31.1	20.5	44.1	100.0			53.1	38.0	67.6	59.8	53.8	65.9	46
Total	**71.2**	**65.4**	**76.5**	**94.7**	**91.1**	**96.9**	**30.8**	**25.4**	**36.6**	**62.4**	**56.7**	**67.8**	**99.4**	**97.1**	**99.9**	**82.7**	**77.7**	**86.8**	**73.5**	**71.0**	**76.1**	**279**

Note: LB and UB refer to the lower and upper bounds of the 95% confidence interval.

Table A6b. Service availability Domain B: Newborn signal functions, Senegal 2014 SPA

	Neonatal resuscitation			Cortisosteroids for pre-term labor			Kangaroo Mother Care			*Service availability Domain B summary score*			
	%	LB	UB	%	LB	UB	%	LB	UB	Mean	LB	UB	N
Facility type													
Hospital	82.6	61.8	93.3	87.5	68.9	95.6	63.7	42.3	80.7	77.9	67.0	88.8	11
Health Center	90.4	76.0	96.5	41.5	28.8	55.5	54.7	41.1	67.6	62.2	55.0	69.4	20
Clinic	56.6	49.8	63.2	9.1	5.9	13.8	53.7	46.8	60.4	39.8	36.0	43.6	248
Managing Authority													
Public	61.2	54.8	67.3	12.9	9.6	17.3	56.0	49.4	62.4	43.4	39.8	47.0	251
Private or other	50.5	31.7	69.1	29.2	15.7	47.8	37.8	21.7	57.1	39.2	26.5	51.9	29
Locality													
Urban	71.2	58.8	81.1	38.8	29.0	49.6	50.9	39.1	62.6	53.6	45.8	61.5	72
Rural	56.3	48.9	63.4	6.2	3.4	10.9	55.3	47.8	62.6	39.2	35.3	43.2	207
Region													
North	44.2	31.1	58.1	1.8	0.6	5.8	64.9	51.9	76.1	37.0	31.1	42.9	63
Dakar	80.0	58.9	91.8	48.0	30.7	65.8	46.8	28.5	66.0	58.3	44.3	72.2	28
Thies	86.7	67.6	95.3	29.3	16.3	46.9	47.7	30.0	66.0	54.6	44.8	64.3	35
Central	61.6	49.2	72.8	7.7	4.0	14.3	59.2	47.2	70.2	42.9	36.0	49.7	79
East	60.5	42.4	76.2	18.1	7.4	37.9	49.1	30.5	68.0	42.6	32.4	52.8	29
South	46.8	31.8	62.4	10.2	4.6	21.2	43.2	28.8	58.8	33.4	24.7	42.1	46
Total	**60.1**	**54.0**	**66.0**	**14.6**	**11.3**	**18.7**	**54.2**	**47.9**	**60.3**	**43.0**	**39.5**	**46.4**	**279**

Note: LB and UB refer to the lower and upper bounds of the 95% confidence interval.

Table A6c. Service availability Domain C: Routine perinatal care, Senegal 2014 SPA

	Partograph routinely used to monitor labor			Routine early initiation of breastfeeding (w/in first hour)			Thermal care			*Service availability Domain C summary score*			
	%	LB	UB	%	LB	UB	%	LB	UB	Mean	LB	UB	N
Facility type													
Hospital	85.1	66.1	94.4	95.7	74.1	99.4	100.0			93.6	87.2	100.0	11
Health Center	93.3	80.5	98.0	92.9	79.0	97.8	100.0			95.4	91.7	99.2	20
Clinic	66.0	59.5	72.0	98.6	95.5	99.6	100.0			88.2	86.1	90.3	248
Managing Authority													
Public	68.7	62.6	74.2	98.2	95.4	99.3	100.0			89.0	87.0	91.0	251
Private or other	69.2	49.2	83.9	96.8	87.4	99.2	100.0			88.7	82.4	94.9	29
Locality													
Urban	78.5	66.7	87.0	93.5	84.4	97.4	100.0			90.7	86.9	94.4	72
Rural	65.3	58.2	71.8	99.7	97.8	100.0	100.0			88.3	86.1	90.6	207
Region													
North	59.6	46.9	71.1	97.8	85.7	99.7	100.0			85.8	81.7	89.9	63
Dakar	84.9	65.1	94.5	91.6	72.2	97.9	100.0			92.2	86.3	98.0	28
Thies	76.7	56.7	89.2	98.8	91.9	99.8	100.0			91.8	86.3	97.4	35
Central	71.2	59.8	80.4	98.4	93.8	99.6	100.0			89.9	86.3	93.4	79
East	76.4	55.4	89.4	100.0			100.0			92.1	86.4	97.9	29
South	56.4	41.5	70.2	100.0			100.0			85.5	80.5	90.4	46
Total	**68.8**	**62.9**	**74.1**	**98.1**	**95.6**	**99.2**	**100.0**			**88.9**	**87.0**	**90.9**	**279**

Note: LB and UB refer to the lower and upper bounds of the 95% confidence interval.

Table A6d. Service readiness Domain A: General requirements, Senegal 2014 SPA

	Electricity			Improved water source			Improved sanitation			24/7 skilled birth attendance			Emergency transport			*Service readiness Domain A summary score*			
	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	Mean	LB	UB	N
Facility type																			
Hospital	97.9	86.7	99.7	100.0			100.0			70.5	50.8	84.6	89.5	68.3	97.1	91.6	87.3	95.9	11
Health Center	74.0	57.9	85.4	100.0			100.0			68.6	52.4	81.3	92.8	79.2	97.7	87.1	83.2	90.9	20
Clinic	51.6	45.0	58.0	90.9	86.7	93.9	93.5	89.8	95.9	8.8	5.7	13.4	53.9	46.9	60.7	59.7	57.4	62.0	248
Managing authority																			
Public	55.1	48.7	61.4	91.4	87.2	94.3	94.1	90.5	96.5	14.6	11.1	19.0	57.1	50.4	63.6	62.5	60.3	64.7	251
Private or other	54.3	34.9	72.4	96.7	79.9	99.6	94.8	79.0	98.9	24.7	12.5	42.9	67.0	45.9	82.9	67.5	59.5	75.5	29
Locality																			
Urban	58.9	47.3	69.5	100.0			94.5	84.0	98.3	44.5	33.6	56.0	67.8	55.2	78.2	73.1	68.8	77.5	72
Rural	53.7	46.5	60.8	89.1	84.1	92.7	94.1	90.4	96.4	5.6	3.1	10.0	54.8	47.2	62.1	59.5	57.0	62.0	207
Region																			
North	39.4	27.1	53.2	96.1	86.0	99.0	100.0			6.9	3.2	14.4	55.4	41.8	68.2	59.6	55.9	63.2	63
Dakar	56.2	38.6	72.3	100.0			94.9	70.0	99.3	58.1	38.4	75.6	79.8	58.5	91.7	77.8	71.1	84.5	28
Thies	64.0	44.5	79.8	100.0			100.0			18.9	8.9	35.7	41.9	25.8	60.0	65.0	58.3	71.7	35
Central	40.5	29.6	52.4	97.6	89.9	99.4	94.9	87.5	98.0	15.2	9.2	24.0	57.3	45.0	68.8	61.1	57.1	65.0	79
East	73.9	52.9	87.7	81.9	60.6	93.0	85.2	69.7	93.5	4.4	1.3	14.1	63.6	43.4	79.9	61.8	54.9	68.7	29
South	82.4	68.7	90.9	71.6	56.6	83.0	85.8	72.2	93.4	7.2	2.9	16.7	59.2	43.5	73.2	61.3	55.5	67.0	46
Total	**55.1**	**49.1**	**60.9**	**91.9**	**88.2**	**94.6**	**94.2**	**90.9**	**96.4**	**15.7**	**12.3**	**19.7**	**58.1**	**51.8**	**64.2**	**63.0**	**60.9**	**65.1**	**279**

Note: LB and UB refer to the lower and upper bounds of the 95% confidence interval.

Table A6e. Service readiness Domain B: Equipment, Senegal 2014 SPA

	Sterilization equipment			Delivery bed			Examination light			Delivery pack			Suction apparatus			Manual vacuum extractor			Vacuum aspirator or D and C kit			Partograph		
	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB
Facility type																								
Hospital	57.4	36.1	76.3	100.0			75.3	56.0	88.0	100.0			77.8	58.7	89.6	26.1	11.9	48.1	39.4	23.4	58.1	89.4	70.5	96.7
Health Center	9.9	4.6	19.9	100.0			73.9	59.8	84.3	100.0			71.6	55.8	83.4	16.2	8.3	29.3	33.0	22.1	46.1	97.9	86.3	99.7
Dispensary or clinic	3.6	1.7	7.4	100.0			55.0	47.9	61.8	100.0			26.5	20.9	33.0	1.1	0.3	4.5	45.2	38.6	52.0	80.9	75.0	85.7
Managing authority																								
Public	41.0	32.7	49.8	69.0	58.7	77.7	59.1	49.6	68.0	100.0			29.4	24.0	35.3	2.7	1.5	4.7	44.3	38.0	50.7	83.4	77.9	87.7
Private or other	87.7	80.0	92.7	89.3	80.4	94.5	88.8	79.8	94.1	100.0			53.5	34.4	71.7	8.2	2.2	26.5	42.8	25.3	62.3	74.6	54.3	87.9
Location										100.0														
Urban	85.8	80.2	90.0	91.0	84.8	94.8	87.3	81.1	91.6	100.0			53.9	42.0	65.3	10.0	5.6	17.2	39.9	29.0	51.9	86.2	75.1	92.9
Rural	35.7	26.7	45.9	65.7	54.2	75.6	55.9	45.3	66.0	100.0			24.1	18.3	31.2	0.9	0.2	4.0	45.6	38.5	52.8	81.2	74.6	86.3
Division										100.0														
North	46.0	33.2	59.4	79.7	65.0	89.2	43.7	31.7	56.5	100.0			27.5	17.2	41.0	4.7	1.6	12.8	52.0	38.1	65.6	76.8	63.5	86.4
Dakar	50.6	39.7	61.4	70.0	54.2	82.2	55.0	40.2	68.9	100.0			64.7	44.6	80.7	6.2	2.4	15.3	36.8	20.4	57.0	91.8	73.5	97.8
Thies	62.8	45.7	77.3	77.3	58.6	89.2	67.9	50.0	81.8	100.0			48.3	30.3	66.8	5.3	1.0	23.2	57.8	39.1	74.5	88.2	68.6	96.2
Central	44.8	27.6	63.4	66.6	42.4	84.4	74.0	52.7	87.9	100.0			32.2	22.2	44.2	3.1	1.5	6.5	34.3	24.5	45.6	88.8	78.8	94.4
East	27.6	21.2	35.1	72.0	44.3	89.3	46.8	24.0	70.9	100.0			18.1	8.4	34.8	0.0			19.2	7.8	40.3	84.4	63.2	94.5
South	47.5	24.9	71.1	69.3	41.2	87.9	93.5	81.5	97.9	100.0			13.0	6.5	24.2	0.0			59.5	44.1	73.2	68.1	52.9	80.3
Total	**50.4**	**43.4**	**57.5**	**73.1**	**64.7**	**80.2**	**65.1**	**57.2**	**72.2**	**100.0**			**31.8**	**26.6**	**37.6**	**3.2**	**1.9**	**5.6**	**44.1**	**38.1**	**50.3**	**82.5**	**77.2**	**86.7**

	Gloves			Newborn bag and mask			Infant scale			Blood pressure apparatus, dig or manual			Soap or hand disinfectant			*Service readiness Domain B summary score*			
	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	Mean	LB	UB	N
Facility type																			
Hospital	100.0			81.4	66.2	90.7	97.9	86.7	99.7	100.0			100.0			80.4	75.9	84.8	11
Health Center	100.0			69.6	53.5	82.0	97.7	85.0	99.7	87.7	72.0	95.2	100.0			73.7	70.8	76.5	20
Dispensary or clinic	95.6	91.7	97.7	44.8	38.0	51.7	91.4	86.6	94.6	81.1	76.4	85.0	95.4	91.4	97.5	63.1	61.6	64.7	248
Managing authority																			
Public	96.7	93.1	98.4	45.6	39.1	52.1	92.5	88.0	95.3	82.2	77.5	86.1	95.9	92.1	97.9	64.2	62.7	65.6	251
Private or other	91.1	70.4	97.8	70.0	50.5	84.2	89.2	67.9	97.0	83.5	62.8	93.8	95.9	76.0	99.4	68.2	63.0	73.4	29
Location																			
Urban	98.1	87.6	99.7	62.4	50.4	73.0	97.3	89.9	99.3	85.7	74.6	92.4	100.0			70.3	67.3	73.3	72
Rural	95.4	90.9	97.7	43.1	35.8	50.6	90.3	84.8	94.0	81.2	75.7	85.6	94.4	89.7	97.1	62.6	60.9	64.2	207
Division																			
North	87.7	74.9	94.4	48.2	34.7	62.0	85.8	73.0	93.1	47.0	34.5	59.8	89.8	77.6	95.8	59.2	56.0	62.3	63
Dakar	100.0			60.0	40.3	76.9	98.3	88.8	99.8	93.3	72.1	98.7	100.0			72.9	69.2	76.6	28
Thies	100.0			61.2	42.1	77.4	92.0	72.5	98.1	92.3	73.4	98.1	100.0			70.5	66.1	74.8	35
Central	96.7	87.3	99.2	40.5	29.7	52.4	95.1	85.7	98.4	85.7	77.1	91.4	96.7	87.3	99.2	64.3	61.4	67.1	79
East	98.3	88.6	99.8	24.4	11.9	43.3	88.8	67.3	96.8	100.0			96.6	87.7	99.1	60.0	57.4	62.6	29
South	100.0			58.1	43.0	71.9	94.2	84.0	98.1	100.0			96.8	79.7	99.6	65.9	62.4	69.3	46
Total	**96.1**	**92.6**	**98.0**	**48.1**	**41.9**	**54.2**	**92.1**	**87.9**	**95.0**	**82.3**	**78.1**	**85.9**	**95.9**	**92.3**	**97.8**	**64.6**	**63.2**	**66.0**	**279**

Note: LB and UB refer to the lower and upper bounds of the 95% confidence interval.

Table A6f. Service readiness Domain C: Medicine and commodities, Senegal 2014 SPA

	Injectable antibiotic			Hydrocortisone available at the facility			Injectable uterotonic			Skin disinfectant			Magnesium sulfate			IV solution with infusion set			Chlorhexidine for cord cleaning			Antibiotic eye ointment			*Service readiness Domain C summary score*			
	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	Mean	LB	UB	N
Facility type																												
Hospital	66.9	47.5	81.9	57.8	36.0	76.9	82.7	60.3	93.8	95.9	76.2	99.4	84.7	63.2	94.7	86.9	65.9	95.8	61.2	40.2	78.6	46.5	30.7	63.1	72.8	63.5	82.2	11
Health Center	64.2	49.8	76.4	66.1	50.8	78.5	81.9	66.7	91.1	90.7	76.4	96.7	55.5	40.4	69.7	74.8	60.8	85.0	52.5	40.2	64.6	54.8	43.0	66.1	67.6	60.7	74.4	20
Clinic	51.8	46.6	56.9	56.1	49.0	62.8	77.2	71.9	81.7	93.5	89.2	96.2	31.4	25.3	38.1	68.3	61.8	74.1	48.4	43.7	53.2	52.6	47.9	57.3	59.9	57.3	62.5	248
Managing Authority																												
Public	50.4	45.4	55.4	58.0	51.3	64.5	76.9	71.6	81.5	92.7	88.5	95.4	33.0	27.2	39.3	68.4	62.1	74.1	48.6	43.8	53.4	51.5	46.9	56.1	59.9	57.3	62.6	251
Private or other	78.5	59.1	90.2	46.6	28.3	66.0	84.8	65.1	94.3	100.0			55.2	35.8	73.1	79.1	56.3	91.8	55.0	35.7	73.0	61.5	42.1	77.8	70.1	61.4	78.8	29
Locality																												
Urban	57.9	46.0	68.8	50.7	39.1	62.2	77.3	65.7	85.9	86.1	75.3	92.6	45.9	34.8	57.5	75.1	63.5	84.0	49.2	37.8	60.7	51.3	39.9	62.5	61.7	55.4	67.9	72
Rural	51.7	46.1	57.3	59.0	51.4	66.2	77.9	71.9	82.9	96.0	91.9	98.1	31.5	25.1	38.8	67.5	60.3	74.0	49.3	44.1	54.4	53.0	47.8	58.0	60.7	57.9	63.6	207
Zone																												
North	9.4	4.1	20.2	63.6	49.1	76.1	57.6	43.2	70.8	94.5	84.2	98.2	28.7	17.7	43.1	53.2	39.3	66.7	10.2	4.4	22.1	2.0	0.3	12.9	39.9	34.3	45.4	63
Dakar	63.2	42.8	79.7	43.6	26.4	62.5	79.8	58.6	91.6	79.6	57.7	91.8	45.8	28.9	63.8	76.4	56.1	89.2	59.9	40.0	77.0	55.1	35.7	73.1	62.9	53.4	72.5	28
Thies	60.5	41.2	76.9	75.9	56.6	88.4	85.8	67.5	94.6	91.2	73.2	97.5	34.5	19.4	53.6	79.3	59.8	90.8	55.0	36.2	72.5	47.6	29.8	66.1	66.2	56.9	75.6	35
Central	55.2	46.5	63.5	48.8	36.9	60.9	74.3	68.7	79.2	94.3	86.3	97.8	33.7	24.3	44.5	64.0	53.4	73.5	44.8	37.2	52.7	61.3	54.5	67.6	59.6	56.4	62.8	79
East	91.8	83.3	96.1	59.8	39.6	77.2	93.4	73.0	98.7	100.0			34.8	19.5	54.2	80.5	59.5	92.0	84.5	75.5	90.6	79.6	58.9	91.4	78.1	71.7	84.4	29
South	75.3	61.4	85.5	52.7	37.6	67.4	94.3	81.2	98.4	96.6	85.9	99.3	41.4	27.9	56.4	82.8	68.3	91.5	78.0	70.3	84.2	92.9	79.2	97.8	76.8	71.8	81.7	46
Total	**53.3**	**48.6**	**58.0**	**56.8**	**50.5**	**63.0**	**77.7**	**72.9**	**81.9**	**93.4**	**89.6**	**95.9**	**35.3**	**29.7**	**41.3**	**69.5**	**63.6**	**74.8**	**49.3**	**44.9**	**53.7**	**52.5**	**48.2**	**56.8**	**61.0**	**58.6**	**63.4**	**279**

Note: LB and UB refer to the lower and upper bounds of the 95% confidence interval.

Table A6g. Service readiness Domain D: Guidelines and staffing, Senegal 2014 SPA

	Facility has guidelines, observed:									*At least one provider of delivery or newborn care at facility was trained in each the following areas in the last 24 months:*																							
	IMPAC guidelines			CEmOC guidelines			Guidelines for management of pre-term labor			Training in neonatal resuscitation			Training in early and exclusive breastfeeding			Training in newborn infection management			Training in thermal care			Training in cord care			Training in KMC			Supervision			*Service readiness Domain D summary score*			
	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	%	LB	UB	Mean	LB	UB	N
Facility type																																			
Hospital	45.5	26.1	66.4	48.1	28.3	68.5	35.5	18.1	57.9	54.3	33.5	73.6	48.1	28.5	68.3	40.1	21.8	61.6	44.3	25.3	65.3	44.3	25.3	65.3	46.9	27.6	67.2	26.3	13.2	45.6	43.4	31.7	55.0	11
Health Center	66.7	49.8	80.3	64.7	48.1	78.3	22.7	12.8	37.0	49.2	36.0	62.5	43.7	31.3	56.9	32.8	21.1	47.2	47.0	34.4	60.0	45.0	32.8	57.8	42.9	31.2	55.5	41.7	30.4	54.1	45.6	38.4	52.9	20
Clinic	66.2	59.4	72.4	56.5	49.7	63.0	9.6	6.2	14.7	30.1	24.3	36.7	34.2	28.1	41.0	26.5	21.0	32.9	32.6	26.5	39.4	34.6	28.5	41.2	28.5	22.9	34.9	50.4	43.7	57.1	36.9	33.1	40.8	248
Managing Authority																																			
Public	68.4	61.9	74.2	59.5	53.0	65.7	11.5	8.0	16.2	31.9	26.3	38.2	34.5	28.5	40.9	26.8	21.5	32.9	33.8	27.9	40.2	35.1	29.3	41.4	30.7	25.3	36.7	49.8	43.4	56.2	38.2	34.6	41.8	251
Private or other	39.6	22.9	59.1	32.5	17.5	52.2	13.1	4.4	33.3	37.0	20.4	57.3	44.2	26.1	63.9	33.8	17.8	54.6	37.0	20.4	57.3	41.1	23.6	61.1	27.0	12.8	48.1	40.1	23.0	60.0	34.5	21.5	47.6	29
Locality																																			
Urban	67.1	55.5	76.9	58.5	46.5	69.6	20.1	12.5	30.9	41.2	30.3	53.0	42.0	30.9	53.9	35.4	24.8	47.6	40.0	29.0	52.0	41.4	30.3	53.4	37.5	26.9	49.5	46.3	34.9	58.0	42.9	35.5	50.3	72
Rural	64.8	57.4	71.6	56.1	48.8	63.2	8.7	5.3	13.9	29.4	23.2	36.5	33.2	26.6	40.5	24.8	19.0	31.6	32.1	25.6	39.4	33.8	27.3	40.9	27.8	21.9	34.5	49.7	42.5	56.8	36.0	32.0	40.1	207
Zone																																			
North	66.3	52.0	78.1	72.2	58.3	82.9	21.0	11.9	34.4	38.0	25.7	52.0	40.1	27.6	54.0	35.0	23.1	49.1	37.9	25.8	51.8	37.9	25.8	51.8	35.8	23.9	49.7	59.9	45.6	72.7	44.4	36.1	52.7	63
Dakar	63.4	44.9	78.6	51.7	32.9	70.1	19.9	8.7	39.3	34.8	19.2	54.5	43.1	25.8	62.2	35.1	19.0	55.3	38.4	21.7	58.3	38.4	21.7	58.3	38.2	21.6	58.2	36.7	20.2	57.0	40.0	28.0	52.0	28
Thies	44.7	27.4	63.4	37.0	21.2	56.2	14.0	5.2	32.7	36.2	20.4	55.7	40.0	23.4	59.3	31.2	16.5	50.9	32.3	17.5	51.9	31.2	16.5	50.9	31.8	17.2	51.2	59.2	40.8	75.4	35.8	23.0	48.5	35
Central	66.6	55.0	76.4	48.6	37.3	60.1	7.5	3.5	15.4	42.2	31.3	54.0	42.8	31.9	54.4	34.1	24.4	45.4	39.6	29.0	51.4	46.5	35.9	57.4	35.3	26.8	44.9	43.7	32.4	55.8	40.7	34.7	46.7	79
East	70.2	50.2	84.6	64.7	44.6	80.7	0.0			15.2	6.0	33.6	17.4	7.3	36.2	13.9	5.6	30.2	29.9	15.9	49.1	25.7	12.6	45.4	25.3	11.7	46.4	30.7	18.7	46.2	29.3	20.2	38.4	29
South	76.5	60.7	87.3	62.7	46.9	76.2	6.2	2.0	17.7	14.5	8.0	24.9	19.6	10.6	33.4	7.1	2.1	21.4	20.9	11.8	34.4	22.4	13.0	36.0	11.3	4.9	23.8	52.7	39.3	65.7	29.4	23.4	35.4	46
Total	**65.4**	**59.3**	**71.1**	**56.7**	**50.6**	**62.7**	**11.6**	**8.2**	**16.2**	**32.5**	**27.1**	**38.4**	**35.5**	**29.8**	**41.5**	**27.5**	**22.4**	**33.3**	**34.1**	**28.5**	**40.2**	**35.7**	**30.2**	**41.7**	**30.3**	**25.2**	**36.0**	**48.8**	**42.8**	**54.8**	**37.8**	**34.3**	**41.3**	**279**

Note: LB and UB refer to the lower and upper bounds of the 95% confidence interval.

Table A7a. Trend in service availability Domain A: BEmOC signal functions, Tanzania 2006 and 2014-15 SPA

	Parenteral administration of uterotonic drugs										Parenteral administration of anticonvulsants										Manual removal of placenta									
	2006 TSPA				2014-15 TSPA						2006 TSPA				2014-15 TSPA						2006 TSPA				2014-15 TSPA					
	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig
Facility type[3]																														
Hospital	**77.0**	63.5	86.5	24	**96.9**	93.8	98.4	44	19.9	***	**57.5**	42.6	71.1	24	**77.5**	65.3	86.3	44	20.0	*	**74.2**	60.0	84.7	24	**69.7**	58.8	78.7	44	-4.5	
Health Center	**11.0**	4.7	23.6	48	**90.9**	86.8	93.9	109	79.9	***	**3.3**	0.6	16.2	48	**31.6**	26.7	37.0	109	28.3	**	**42.3**	26.3	60.0	48	**45.3**	40.0	50.8	109	3.0	
Dispensary	**0.7**	0.2	2.9	379	**81.7**	77.2	85.5	746	81.0	***	**1.1**	0.4	3.4	379	**6.9**	4.6	10.4	746	5.8	**	**13.0**	9.6	17.5	379	**30.3**	25.5	35.6	746	17.3	***
Managing authority																														
Public	**2.9**	2.0	4.1	365	**83.7**	79.4	87.2	756	80.8	***	**3.0**	1.9	4.7	365	**10.9**	8.6	13.7	756	7.9	***	**15.5**	11.9	20.0	365	**32.9**	28.4	37.6	756	17.4	***
Private or other	**18.5**	11.8	27.7	85	**83.2**	73.2	89.9	149	64.7	***	**9.6**	5.2	17.1	85	**25.6**	18.5	34.4	149	16.0	*	**35.9**	25.6	47.7	85	**39.5**	30.0	49.8	149	3.6	
Province[4]																														
Eastern	**14.0**	8.0	23.4	56	**85.2**	72.0	92.8	115	71.2	***	**8.2**	3.6	17.4	56	**23.6**	14.1	36.8	115	15.4		**27.0**	18.8	37.1	56	**27.8**	16.9	42.1	115	0.8	
Western	**5.6**	1.4	19.8	37	**82.2**	68.0	90.9	85	76.6	***	**5.9**	1.6	19.6	37	**25.9**	16.6	38.0	85	20.0	*	**30.4**	16.1	49.7	37	**38.9**	26.7	52.6	85	8.5	
Southern	**5.1**	2.8	8.8	30	**91.8**	78.0	97.2	66	86.7	***	**3.8**	1.8	8.0	30	**5.3**	3.7	7.5	66	1.5		**25.7**	12.2	46.2	30	**59.7**	44.1	73.5	66	34.0	*
Southern Highlands	**1.8**	0.7	4.4	55	**72.4**	59.6	82.4	115	70.6	***	**5.9**	1.8	17.4	55	**8.1**	5.0	13.0	115	2.2		**14.0**	5.8	30.1	55	**31.2**	21.1	43.6	115	17.2	*
SW Highlands	**5.9**	2.4	13.7	49	**95.0**	80.3	98.9	103	89.1	***	**3.8**	1.4	10.4	49	**7.3**	5.3	9.9	103	3.5		**11.8**	5.2	24.6	49	**27.7**	17.5	40.9	103	15.9	
Central	**3.0**	0.9	9.0	54	**90.4**	78.7	96.0	104	87.4	***	**2.7**	0.8	9.1	54	**13.5**	8.2	21.5	104	10.8	*	**16.2**	7.9	30.3	54	**36.9**	25.7	49.7	104	20.7	
Northern	**8.6**	4.5	16.0	60	**89.6**	79.6	95.0	110	81.0	***	**4.1**	2.0	8.3	60	**18.8**	11.3	29.7	110	14.7	**	**10.1**	4.9	19.8	60	**31.9**	20.0	46.9	110	21.8	*
Lake	**3.0**	1.3	7.1	107	**73.9**	63.8	82.0	199	70.9	***	**1.5**	1.0	2.2	107	**7.6**	4.5	12.4	199	6.1	***	**22.5**	14.9	32.5	107	**31.6**	23.5	41.1	199	9.1	
Total	**5.8**	**4.4**	**7.7**	**451**	**83.6**	**79.9**	**86.8**	**905**	**77.8**	***	**4.3**	**3.0**	**6.1**	**451**	**13.3**	**11.1**	**16.0**	**905**	**9.0**	***	**19.4**	**15.7**	**23.6**	**451**	**34.0**	**29.9**	**38.3**	**905**	**14.6**	***

	Assisted vaginal delivery										Manual removal of placenta										BEmOC summary score[2]									
	2006 TSPA				2014-15 TSPA						2006 TSPA				2014-15 TSPA						2006 TSPA				2014-15 TSPA					
	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig
Facility type[3]																														
Hospital	**49.2**	35.2	63.2	24	**88.9**	84.2	92.4	44	39.7	***	**76.8**	63.8	86.1	24	**68.6**	57.9	77.6	44	-8.2		**66.9**	59.7	74.1	24	**80.3**	77.5	83.1	44	13.4	**
Health Center	**11.0**	3.0	32.8	48	**72.9**	67.7	77.4	109	61.9	***	**30.9**	16.0	51.3	48	**51.4**	46.2	56.5	109	20.5		**19.7**	10.8	28.6	48	**58.4**	54.9	62	109	38.7	***
Dispensary	**0.0**			379	**68.0**	62.9	72.7	746	68.0		**2.2**	1.0	4.8	379	**31.2**	26.8	35.9	746	29.0	***	**3.4**	2.4	4.4	379	**43.6**	40.6	46.6	746	40.2	***
Managing authority																														
Public	**1.8**	1.2	2.7	365	**69.5**	64.7	73.9	756	67.7	***	**6.1**	4.2	8.8	365	**34.9**	30.7	39.3	756	28.8	***	**5.9**	4.7	7	365	**46.4**	43.6	49.1	756	40.5	***
Private or other	**12.1**	6.0	22.8	85	**70.1**	59.1	79.2	149	58.0	***	**22.4**	14.2	33.5	85	**37.8**	28.4	48.2	149	15.4	*	**19.7**	13.8	25.6	85	**51.2**	43.8	58.7	149	31.5	***
Province[4]																														
Eastern	**4.7**	1.8	11.7	56	**59.1**	45.9	71.1	115	54.4	***	**14.0**	7.4	24.9	56	**25.9**	15.5	40.0	115	11.9		**13.6**	8.6	18.5	56	**44.3**	35.1	53.6	115	30.7	***
Western	**4.5**	1.0	17.5	37	**81.9**	70.3	89.7	85	77.4	***	**5.0**	1.4	17.0	37	**39.7**	27.1	53.9	85	34.7	**	**10.3**	4.9	15.7	37	**53.7**	45.1	62.3	85	43.4	***
Southern	**4.2**	2.1	8.3	30	**75.9**	60.2	86.8	66	71.7	***	**4.6**	2.5	8.5	30	**34.8**	22.2	49.9	66	30.2	***	**8.7**	4.3	13.1	30	**53.5**	43.6	63.4	66	44.8	***
Southern Highlands	**8.7**	2.6	25.8	55	**57.6**	44.6	69.7	115	48.9	***	**9.2**	2.8	25.7	55	**32.7**	22.7	44.5	115	23.5	***	**7.9**	2	13.8	55	**40.4**	32.9	47.9	115	32.5	***
SW Highlands	**3.0**	0.8	11.0	49	**56.2**	41.7	69.7	103	53.2	***	**6.5**	2.4	16.9	49	**26.6**	20.7	33.5	103	20.1	*	**6.2**	2.4	10	49	**42.6**	36.3	48.8	103	36.4	***
Central	**3.6**	1.4	8.9	54	**78.6**	67.9	86.5	104	75.0	***	**5.0**	1.8	13.4	54	**64.1**	51.3	75.1	104	59.1	***	**6.1**	2.2	10	54	**56.7**	51.2	62.2	104	50.6	***
Northern	**2.9**	1.0	8.0	60	**78.3**	64.6	87.7	110	75.4	***	**11.7**	6.0	21.5	60	**22.4**	13.4	35.0	110	10.7		**7.5**	4.2	10.8	60	**48.2**	40.4	56.1	110	40.7	***
Lake	**1.0**	0.5	1.7	107	**74.1**	64.3	82.0	199	73.1	***	**10.7**	5.9	18.4	107	**37.6**	29.9	45.8	199	26.9	***	**7.7**	5	10.4	107	**45**	40.2	49.7	199	37.3	***
Total	**3.7**	**2.4**	**5.9**	**451**	**69.6**	**65.3**	**73.5**	**905**	**65.9**	***	**9.2**	**6.9**	**12.2**	**451**	**35.4**	**31.6**	**39.3**	**905**	**26.2**	***	**8.5**	**7**	**10**	**451**	**47.2**	**44.6**	**49.7**	**905**	**38.7**	***

LB and UB are the lower and upper boundaries of 95% confidence intervals.

[1] Percentage point difference between survey years with significance tests for the difference in proportions. P-values *<0.05 **<0.01 ***<0.001

[2] Note: The BEmOC availability score presented here may not match the score presented in the previous chapter. To preserve comparability across the two surveys, the summary score excludes parenteral administration of antibiotics, which is not available in the 2006 survey.

[3] In general, this report uses the categories, Hospital, Health Center, and Dispensary or Clinic. However, the 2014-15 TSPA included 19 clinics while the 2006 TSPA included none. To examine trends by type of facility, we exclude the 19 clinics and examine the trend in just dispensaries. The 19 clinics are still included in the Total.

[4] Trends are not shoN for Zanzibar due to the small number of normal-delivery facilities included in the 2006 TSPA sample (10 facilities, unweighted) and the relatively high sampling error. The facilities in Zanzibar are included in the Totals row.

Table A7b. Trend in service readiness Domain A: General requirements, Tanzania 2006 and 2014-15 SPA

	Electricity										Improved water source										24/7 skilled birth attendance										General requirements summary score[2]									
	2006 TSPA				2014-15 TSPA						2006				2014-15						2006				2014-15						2006 TSPA				2014-15 TSPA					
	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig
Facility type[3]																																								
Hospital	**81.7**	66.9	90.8	24	**90.5**	71.5	97.3	44	8.8		**96.2**	92.5	98.2	24	**86.7**	71.1	94.5	44	-9.5	**	**98.6**	95.9	99.5	24	**97.7**	94.9	99.0	44	-0.9		**92.2**	88.2	96.2	24	**91.6**	90.2	93.0	44	-0.6	
Health Center	**49.3**	31.9	66.8	48	**76.1**	71.0	80.5	109	26.8	**	**65.0**	47.2	79.4	48	**82.3**	77.7	86.1	109	17.3	*	**74.2**	53.2	87.9	48	**82.7**	78.4	86.2	109	8.5		**62.8**	52.7	72.9	48	**80.3**	77.1	83.5	109	17.5	**
Dispensary	**21.2**	16.8	26.4	379	**63.6**	58.2	68.7	746	42.4	***	**42.5**	36.9	48.4	379	**57.7**	52.4	62.8	746	15.2	***	**13.4**	10.0	17.7	379	**16.1**	12.5	20.6	746	2.7		**25.7**	22.7	28.7	379	**45.8**	42.1	49.5	746	20.1	***
Managing authority																																								
Public	**21.1**	16.9	26.0	365	**62.8**	57.8	67.6	756	41.7	***	**41.3**	35.7	47.0	365	**57.9**	53.0	62.6	756	16.6	***	**21.3**	17.4	25.9	365	**24.7**	21.2	28.4	756	3.4		**27.9**	24.9	30.9	365	**48.5**	45.2	51.7	756	20.6	***
Private or other	**54.1**	41.9	65.9	85	**83.7**	73.1	90.7	149	29.6	**	**75.4**	63.5	84.4	85	**84.5**	73.9	91.3	149	9.1		**37.2**	27.2	48.5	85	**46.7**	36.4	57.2	149	9.5		**55.6**	48.1	63.1	85	**71.6**	64.3	78.9	149	16	**
Province[4]																																								
Eastern	**39.1**	26.2	53.8	56	**57.1**	42.6	70.4	115	18		**51.9**	37.9	65.6	56	**66.0**	50.5	78.7	115	14.1		**27.2**	19.0	37.3	56	**27.8**	18.9	39.0	115	0.6		**39.4**	31.1	47.7	56	**50.3**	39.6	61.0	115	10.9	
Western	**40.0**	23.4	59.2	37	**88.1**	76.2	94.5	85	48.1	***	**60.9**	41.9	77.2	37	**74.3**	59.5	85.1	85	13.4		**16.6**	7.3	33.3	37	**20.3**	12.8	30.6	85	3.7		**39.2**	27.3	51.0	37	**60.9**	53.5	68.3	85	21.7	**
Southern	**13.2**	5.1	30.2	30	**68.9**	52.7	81.4	66	55.7	***	**43.7**	25.1	64.2	30	**61.6**	47.2	74.2	66	17.9		**22.7**	9.4	45.6	30	**18.2**	10.7	29.0	66	-4.5		**26.6**	18.8	34.3	30	**49.5**	40.2	58.9	66	22.9	***
Southern Highlands	**19.5**	9.6	35.6	55	**64.3**	51.1	75.6	115	44.8	***	**70.9**	55.2	82.7	55	**66.0**	53.2	76.8	115	-4.9		**15.0**	7.6	27.4	55	**18.8**	13.4	25.7	115	3.8		**35.1**	27.4	42.8	55	**49.7**	42.0	57.4	115	14.6	**
SW Highlands	**23.4**	12.8	39.1	49	**56.3**	40.9	70.5	103	32.9	*	**50.2**	34.6	65.8	49	**41.9**	28.7	56.5	103	-8.3		**11.6**	5.5	22.6	49	**28.5**	18.6	41.1	103	16.9		**28.4**	20.0	36.8	49	**42.3**	31.2	53.3	103	13.9	
Central	**23.0**	14.0	35.4	54	**66.9**	53.0	78.3	104	43.9	***	**34.3**	21.7	49.7	54	**66.5**	52.6	78.0	104	32.2	**	**14.1**	6.5	28.1	54	**24.2**	16.8	33.4	104	10.1		**23.8**	15.7	31.9	54	**52.5**	44.2	60.8	104	28.7	***
Northern	**36.5**	24.2	50.7	60	**54.6**	39.9	68.6	110	18.1		**63.5**	48.8	76.1	60	**69.9**	55.0	81.6	110	6.4		**31.2**	21.9	42.3	60	**33.4**	23.9	44.3	110	2.2		**43.7**	35.9	51.5	60	**52.6**	43.7	61.6	110	8.9	
Lake	**23.3**	15.5	33.4	107	**73.0**	64.2	80.3	199	49.7	***	**25.9**	17.6	36.4	107	**56.1**	47.6	64.3	199	30.2	***	**37.5**	28.0	48.1	107	**40.2**	31.7	49.3	199	2.7		**28.9**	22.7	35.1	107	**56.4**	50.0	62.8	199	27.5	***
Total	**27.4**	**23.0**	**32.1**	**451**	**66.3**	**61.7**	**70.5**	**905**	38.9	***	**47.7**	**42.6**	**52.9**	**451**	**62.2**	**57.8**	**66.5**	**905**	14.5	***	**24.4**	**20.7**	**28.4**	**451**	**28.3**	**25**	**31.8**	**905**	3.9		**33.1**	**30.3**	**36.0**	**451**	**52.3**	**49.2**	**55.3**	**905**	19.2	***

LB and UB are the lower and upper boundaries of 95% confidence intervals.

[1] Percentage point difference between survey years with significance tests for the difference in proportions. P-values *<0.05 **<0.01 ***<0.001

[2] The General Requirements Summary Score presented here may not match the score presented in the previous chapter. To preserve comparability across the two surveys, this summary score excludes components that are not available in the 2006 survey (emergency transport and improved sanitation).

[3] In general, this report uses the categories, Hospital, Health Center, and Dispensary or Clinic. However, the 2014-15 TSPA included 19 clinics while the 2006 TSPA included none. To examine trends by type of facility, we exclude the 19 clinics and examine the trend in just dispensaries. The 19 clinics are still included in the Total.

[4] Trends are not shown for Zanzibar due to the small number of normal-delivery facilities included in the 2006 TSPA sample (10 facilities, unweighted) and the relatively high sampling error. The facilities in Zanzibar are included in the Totals row.

Table A7c. Trend in service readiness Domain B: Equipment among facilities that offer normal delivery services, Tanzania 2006 and 2014-15 SPA

	Sterilization equipment										Delivery bed									
	2006 TSPA				2014-15 TSPA						2006 TSPA				2014-15 TSPA					
	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig
Facility type[3]																				
Hospital	**91.5**	77.1	97.2	24	**88.5**	71.6	95.9	44	-3.0		**100.0**			24	**100.0**			44	0.0	
Health Center	**28.2**	14.3	48.1	48	**47.9**	42.8	53.1	109	19.7		**97.7**	84.8	99.7	48	**100.0**			109	2.3	
Dispensary	**1.5**	0.5	3.8	379	**12.5**	9.6	16.3	746	11.0	***	**95.5**	92.4	97.4	379	**98.0**	95.8	99.1	746	2.5	
Managing authority																				
Public	**4.4**	3.1	6.0	365	**14.4**	11.9	17.3	756	10.0	***	**95.8**	92.7	97.7	365	**98.0**	95.9	99.1	756	2.2	
Private or other	**29.0**	19.5	40.8	85	**53.1**	42.2	63.8	149	24.1	**	**96.8**	88.1	99.2	85	**100.0**			149	3.2	
Province[4]																				
Eastern	**15.4**	8.5	26.2	56	**37.3**	29.3	46.2	115	21.9	*	**95.0**	81.7	98.8	56	**100.0**			115	5.0	
Western	**2.4**	1.4	3.9	37	**30.0**	20.3	42.0	85	27.6	***	**100.0**			37	**100.0**			85	0.0	
Southern	**3.7**	2.2	6.3	30	**11.2**	5.6	21.4	66	7.5	*	**100.0**			30	**89.2**	74.5	95.9	66	-10.8	
Southern Highlands	**9.8**	3.3	25.7	55	**13.4**	8.1	21.4	115	3.6		**100.0**			55	**98.0**	87.0	99.7	115	-2.0	
SW Highlands	**8.9**	3.8	19.2	49	**10.9**	5.4	20.8	103	2.0		**94.5**	80.2	98.6	49	**96.0**	78.8	99.3	103	1.5	
Central	**3.6**	1.4	9.0	54	**6.8**	5.3	8.8	104	3.2		**97.4**	83.4	99.7	54	**100.0**			104	2.6	
Northern	**16.8**	9.7	27.6	60	**37.3**	25.9	50.2	110	20.5	*	**91.2**	78.5	96.8	60	**100.0**			110	8.8	
Lake	**6.7**	3.6	12.1	107	**16.3**	11.0	23.4	199	9.6	*	**94.9**	87.1	98.1	107	**99.4**	95.5	99.9	199	4.5	
Total	**9.0**	**6.9**	**11.8**	**451**	**20.7**	**18.0**	**23.7**	**905**	11.7	***	**96.0**	**93.3**	**97.7**	**451**	**98.4**	**96.5**	**99.2**	**905**	2.4	

	Examination light										Delivery pack									
	2006 TSPA				2014-15 TSPA						2006 TSPA				2014-15 TSPA					
	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig
Facility type[3]																				
Hospital	**57.4**	43.5	70.3	24	**53.6**	44.9	62.2	44	-3.8		**64.4**	50.7	76.0	24	**98.1**	95.4	99.2	44	33.7	***
Health Center	**30.4**	18.6	45.4	48	**28.0**	23.4	33.1	109	-2.4		**37.8**	21.4	57.6	48	**89.6**	86.1	92.3	109	51.8	***
Dispensary	**5.9**	3.7	9.4	379	**9.6**	6.8	13.4	746	3.7		**24.2**	19.6	29.4	379	**85.8**	81.4	89.3	746	61.6	***
Managing authority																				
Public	**6.3**	4.2	9.5	365	**9.2**	6.9	12.1	756	2.9		**24.0**	19.5	29.1	365	**85.2**	81.1	88.6	756	61.2	***
Private or other	**32.1**	22.4	43.8	85	**40.6**	30.7	51.3	149	8.5		**43.7**	32.1	56.1	85	**95.6**	85.5	98.8	149	51.9	***
Province[4]																				
Eastern	**21.7**	12.1	35.8	56	**26.7**	17.3	38.8	115	5.0		**26.0**	15.2	40.7	56	**88.3**	74.9	95.1	115	62.3	***
Western	**1.2**	0.5	2.8	37	**7.4**	2.9	17.5	85	6.2	**	**23.0**	10.7	42.6	37	**88.1**	76.1	94.5	85	65.1	***
Southern	**1.7**	0.7	4.1	30	**10.9**	4.7	23.5	66	9.2	**	**25.7**	12.2	46.2	30	**85.2**	70.4	93.3	66	59.5	***
Southern Highlands	**8.8**	3.6	20.2	55	**6.1**	3.1	11.9	115	-2.7		**65.3**	49.6	78.2	55	**92.3**	81.4	97.0	115	27.0	**
SW Highlands	**12.8**	5.7	26.2	49	**26.1**	16.1	39.5	103	13.3		**19.3**	9.5	35.2	49	**95.3**	80.0	99.0	103	76.0	***
Central	**2.4**	0.6	9.5	54	**6.5**	3.4	12.2	104	4.1		**2.9**	0.9	8.9	54	**89.5**	78.1	95.3	104	86.6	***
Northern	**24.8**	14.9	38.2	60	**21.4**	13.8	31.6	110	-3.4		**18.8**	10.2	32.1	60	**86.5**	71.2	94.3	110	67.7	***
Lake	**8.4**	4.1	16.4	107	**9.3**	5.0	16.7	199	0.9		**33.2**	23.6	44.3	107	**78.9**	69.4	86.1	199	45.7	***
Total	**11.2**	**8.6**	**14.5**	**451**	**14.3**	**11.8**	**17.3**	**905**	3.1		**27.7**	**23.3**	**32.6**	**451**	**86.9**	**83.4**	**89.8**	**905**	59.2	***

	Suction apparatus										Manual vacuum extractor									
	2006 TSPA				2014-15 TSPA						2006 TSPA				2014-15 TSPA					
	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig
Facility type[3]																				
Hospital	**91.7**	77.9	97.2	24	**79.3**	66.5	88.1	44	-12.4		**59.1**	44.3	72.5	24	**51.9**	43.4	60.2	44	-7.2	
Health Center	**70.6**	52.1	84.1	48	**46.3**	40.9	51.8	109	-24.3	*	**19.3**	7.7	40.7	48	**11.6**	8.4	15.7	109	-7.7	
Dispensary	**28.3**	23.3	33.8	379	**16.1**	12.3	20.7	746	-12.2	***	**0.4**	0.1	2.5	379	**1.6**	0.6	4.3	746	1.2	
Managing authority																				
Public	**30.3**	25.3	35.7	365	**18.8**	15.4	22.7	756	-11.5	**	**3.0**	1.9	4.6	365	**3.8**	2.6	5.6	756	0.8	
Private or other	**61.2**	49.0	72.2	85	**43.8**	33.7	54.5	149	-17.4		**16.0**	8.8	27.3	85	**12.8**	8.7	18.6	149	-3.2	
Province[4]																				
Eastern	**55.3**	40.8	69.1	56	**22.6**	14.0	34.4	115	-32.7	**	**7.8**	3.3	17.3	56	**9.0**	4.8	16.3	115	1.2	
Western	**20.1**	9.4	38.0	37	**25.5**	15.3	39.3	85	5.4		**5.0**	1.4	17.0	37	**4.1**	2.7	6.2	85	-0.9	
Southern	**30.4**	15.4	51.1	30	**22.8**	13.0	36.7	66	-7.6		**3.8**	1.8	8.0	30	**2.0**	1.2	3.3	66	-1.8	
Southern Highlands	**41.1**	27.2	56.6	55	**22.5**	14.2	33.7	115	-18.6		**9.0**	2.7	25.8	55	**1.9**	1.2	2.9	115	-7.1	***
SW Highlands	**30.9**	18.7	46.3	49	**24.4**	13.9	39.3	103	-6.5		**3.0**	0.8	11.0	49	**1.9**	1.1	3.3	103	-1.1	
Central	**23.8**	13.5	38.6	54	**18.2**	10.8	29.1	104	-5.6		**3.6**	1.4	8.9	54	**3.9**	2.7	5.7	104	0.3	
Northern	**52.1**	38.2	65.6	60	**26.3**	17.3	38.0	110	-25.8	*	**5.0**	1.9	12.5	60	**7.3**	3.5	14.9	110	2.3	
Lake	**29.9**	21.1	40.5	107	**21.3**	15.1	29.2	199	-8.6		**5.2**	2.4	10.9	107	**7.7**	4.2	13.9	199	2.5	
Total	**36.1**	**31.5**	**41.1**	**451**	**22.9**	**19.5**	**26.6**	**905**	-13.2	***	**5.5**	**3.7**	**8.0**	**451**	**5.3**	**4.0**	**6.9**	**905**	-0.2	

	Vacuum aspirator or D and C kit										Partograph									
	2006 TSPA				2014-15 TSPA						2006 TSPA				2014-15 TSPA					
	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig
Facility type[3]																				
Hospital	**68.5**	54.1	80.1	24	**39.8**	32.6	47.4	44	-28.7	**	**85.9**	70.8	93.8	24	**96.4**	93.2	98.1	44	10.5	*
Health Center	**38.9**	22.4	58.5	48	**24.4**	20.3	29.1	109	-14.5		**65.9**	48.7	79.8	48	**79.7**	75.0	83.6	109	13.8	
Dispensary	**3.3**	1.7	6.2	379	**3.0**	1.7	5.4	746	-0.3		**59.8**	54.4	65.0	379	**52.1**	46.9	57.3	746	-7.7	*
Managing authority																				
Public	**6.6**	4.5	9.5	365	**6.0**	4.6	7.9	756	-0.6		**65.1**	59.5	70.4	365	**57.0**	52.1	61.8	756	-8.1	
Private or other	**27.4**	18.0	39.3	85	**14.8**	9.8	21.6	149	-12.6		**47.6**	36.0	59.5	85	**60.0**	48.7	70.3	149	12.4	
Province[4]																				
Eastern	**18.0**	9.6	31.3	56	**9.1**	5.7	14.2	115	-8.9		**67.2**	51.2	79.9	56	**59.8**	44.8	73.2	115	-7.4	
Western	**8.0**	2.3	24.6	37	**12.4**	6.3	22.8	85	4.4		**65.4**	45.9	80.7	37	**60.8**	47.9	72.3	85	-4.6	
Southern	**4.6**	2.5	8.5	30	**2.2**	1.2	4.1	66	-2.4		**73.8**	52.4	87.9	30	**77.0**	61.1	87.6	66	3.2	
Southern Highlands	**12.2**	4.9	27.4	55	**5.4**	2.6	10.8	115	-6.8		**90.2**	76.6	96.2	55	**62.4**	51.4	72.3	115	-27.8	**
SW Highlands	**5.2**	1.4	17.2	49	**0.8**	0.3	1.9	103	-4.4	*	**86.9**	71.6	94.6	49	**51.6**	37.2	65.8	103	-35.3	*
Central	**10.2**	4.3	22.1	54	**3.9**	2.6	5.8	104	-6.3		**60.7**	44.7	74.7	54	**44.3**	32.5	56.6	104	-16.4	
Northern	**11.3**	6.2	19.6	60	**9.9**	5.2	17.9	110	-1.4		**40.1**	27.2	54.5	60	**74.3**	60.0	84.7	110	34.2	**
Lake	**9.8**	5.4	17.2	107	**10.7**	7.2	15.7	199	0.9		**41.1**	30.8	52.3	107	**46.1**	37.1	55.4	199	5.0	
Total	**10.5**	**8.0**	**13.8**	**451**	**7.5**	**6.0**	**9.2**	**905**	-3.0		**61.8**	**56.9**	**66.5**	**451**	**57.5**	**53.1**	**61.8**	**905**	-4.3	

Continues…

Table A7c—*Continued*

	Gloves										Newborn bag and mask										Infant scale										Soap or hand disinfectant									
	2006 TSPA				2014-15 TSPA						2006 TSPA				2014-15 TSPA						2006 TSPA				2014-15 TSPA						2006 TSPA				2014-15 TSPA					
	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig
Facility type[3]																																								
Hospital	**97.6**	94.7	99.0	24	**99.6**	97.3	99.9	44	2.0	**	**78.4**	63.1	88.5	24	**97.2**	94.2	98.7	44	18.8	**	**95.4**	77.1	99.2	24	**92.9**	69.3	98.7	44	-2.5		**79.8**	68.6	87.7	24	**94.2**	90.3	96.5	44	14.4	**
Health Center	**80.4**	65.9	89.7	48	**88.9**	85.3	91.7	109	8.5		**35.6**	19.7	55.5	48	**84.5**	80.4	87.8	109	48.9	***	**88.6**	75.8	95.1	48	**95.3**	92.3	97.2	109	6.7		**48.3**	32.8	64.1	48	**79.4**	74.7	83.5	109	31.1	***
Dispensary	**92.4**	88.6	95.0	379	**85.0**	81.0	88.3	746	-7.4	**	**10.2**	7.1	14.4	379	**73.7**	69.5	77.6	746	63.5	***	**65.8**	60.0	71.1	379	**76.5**	71.7	80.7	746	10.7	**	**38.3**	33.1	43.9	379	**63.8**	58.6	68.7	746	25.5	***
Managing authority																																								
Public	**92.4**	88.6	95.0	365	**84.8**	80.9	88.0	756	-7.6	*	**13.0**	9.7	17.1	365	**75.4**	71.5	78.9	756	62.4	***	**70.8**	65.2	75.9	365	**79.0**	74.4	82.9	756	8.2	*	**37.0**	31.8	42.6	365	**63.8**	58.9	68.5	756	26.8	***
Private or other	**87.0**	77.9	92.7	85	**93.5**	85.8	97.1	149	6.5		**31.5**	21.5	43.6	85	**80.0**	68.6	88.0	149	48.5	***	**65.1**	52.9	75.5	85	**82.4**	71.7	89.7	149	17.3	*	**61.1**	49.1	71.8	85	**85.2**	75.2	91.6	149	24.1	***
Province[4]																																								
Eastern	**89.8**	80.3	95.0	56	**86.5**	73.5	93.7	115	-3.3		**25.0**	14.6	39.4	56	**89.2**	77.0	95.3	115	64.2	***	**85.7**	71.3	93.5	56	**90.3**	76.9	96.3	115	4.6		**54.4**	39.0	69.0	56	**81.4**	67.6	90.1	115	27.0	*
Western	**100.0**			37	**73.8**	59.0	84.6	85	-26.2		**23.1**	11.9	40.0	37	**76.8**	62.6	86.8	85	53.7	***	**54.2**	35.8	71.5	37	**82.3**	69.4	90.5	85	28.1	*	**23.3**	11.3	42.0	37	**47.2**	33.4	61.4	85	23.9	
Southern	**91.0**	71.0	97.7	30	**80.1**	66.3	89.2	66	-10.9		**8.9**	3.2	22.6	30	**83.4**	70.1	91.5	66	74.5	***	**78.5**	57.1	91.0	30	**84.1**	68.7	92.8	66	5.6		**33.9**	17.7	54.8	30	**57.5**	41.9	71.7	66	23.6	
Southern Highlands	**97.6**	84.9	99.7	55	**92.8**	82.2	97.3	115	-4.8		**18.9**	9.1	35.2	55	**94.2**	83.6	98.1	115	75.3	***	**63.7**	47.9	77.0	55	**74.2**	61.4	83.9	115	10.5		**75.1**	60.0	85.8	55	**87.8**	76.3	94.1	115	12.7	
SW Highlands	**97.2**	82.5	99.6	49	**83.1**	75.5	88.8	103	-14.1		**17.5**	8.7	32.2	49	**76.5**	63.4	85.9	103	59.0	***	**75.2**	58.5	86.7	49	**80.7**	66.7	89.8	103	5.5		**61.0**	44.9	75.0	49	**76.1**	60.7	86.8	103	15.1	
Central	**86.5**	71.1	94.3	54	**95.1**	84.6	98.5	104	8.6		**11.3**	4.9	23.8	54	**85.4**	73.7	92.4	104	74.1	***	**69.0**	53.1	81.4	54	**71.7**	57.9	82.3	104	2.7		**31.2**	19.1	46.6	54	**51.0**	38.4	63.4	104	19.8	
Northern	**90.8**	77.9	96.5	60	**87.9**	74.5	94.8	110	-2.9		**16.7**	9.1	28.5	60	**96.0**	84.2	99.1	110	79.3	***	**65.6**	51.2	77.6	60	**79.7**	66.7	88.5	110	14.1		**47.9**	34.0	62.2	60	**78.5**	64.3	88.1	110	30.6	*
Lake	**86.8**	77.2	92.8	107	**85.3**	76.8	91.1	199	-1.5		**12.3**	7.0	20.7	107	**40.8**	31.7	50.5	199	28.5	***	**67.8**	56.8	77.1	107	**77.0**	67.4	84.4	199	9.2		**18.5**	11.5	28.2	107	**56.4**	46.2	66.2	199	37.9	***
Total	**91.4**	**88.0**	**93.9**	**451**	**86.2**	**82.9**	**89.0**	**905**	-5.2		**16.5**	**13.1**	**20.6**	**451**	**76.2**	**72.6**	**79.4**	**905**	59.7	***	**69.8**	**64.7**	**74.4**	**451**	**79.6**	**75.5**	**83.1**	**905**	9.8	**	**41.6**	**36.7**	**46.6**	**451**	**67.3**	**63.0**	**71.4**	**905**	25.7	***

	Equipment summary score[2]									
	2006 TSPA				2014-15 TSPA					
	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig
Facility type[3]										
Hospital	**80.8**	76.0	85.6	24	**82.6**	81.2	84.0	44	0.4	
Health Center	**53.5**	45.0	62.0	48	**64.6**	62.6	66.7	109	9.1	*
Dispensary	**35.5**	34.1	36.9	379	**48.1**	46.5	49.8	746	11.0	***
Managing authority										
Public	**37.4**	35.9	38.8	365	**49.6**	48.1	51.1	756	10.7	***
Private or other	**49.9**	44.2	55.5	85	**63.5**	59.1	67.9	149	9.2	***
Province[4]										
Eastern	**46.8**	41.9	51.6	56	**58.4**	54.0	62.8	115	7.2	**
Western	**35.5**	31.5	39.4	37	**50.7**	46.1	55.3	85	10.6	***
Southern	**38.0**	34.7	41.3	30	**50.5**	46.0	55.0	66	8.0	***
Southern Highlands	**49.3**	43.7	54.9	55	**54.3**	50.9	57.6	115	1.6	*
SW Highlands	**42.7**	38.4	47.0	49	**52.0**	48.1	55.8	103	5.4	**
Central	**33.5**	29.6	37.5	54	**48.0**	44.8	51.3	104	11.3	***
Northern	**40.1**	35.3	44.9	60	**58.8**	54.4	63.1	110	14.3	***
Lake	**34.5**	31.6	37.5	107	**45.8**	42.3	49.2	199	7.8	***
Total	**39.8**	**38.2**	**41.3**	**451**	**51.9**	**50.5**	**53.3**	**905**	10.7	***

LB and UB are the lower and upper boundaries of 95% confidence intervals.

[1] Percentage point difference between survey years with significance tests for the difference in proportions. P-values *<0.05 **<0.01 ***<0.001

[2] The Equipment Summary Score presented here will not match the score presented in the previous chapter. To preserve comparability across the two surveys, the summary excludes components that are not available in the 2006 survey (i.e. blood pressure apparatus).

[3] In general, this report uses the categories, Hospital, Health Center, and Dispensary or Clinic. However, the 2014-15 TSPA included 19 clinics while the 2006 TSPA included none. To examine trends by type of facility, we exclude the 19 clinics and examine the trend in just dispensaries. The 19 clinics are still included in the Total.

[4] Trends are not shown for Zanzibar due to the small number of normal-delivery facilities included in the 2006 TSPA sample (10 facilities, unweighted) and the relatively high sampling error. The facilities in Zanzibar are included in the Totals row.

Table A7d. Trend in service readiness Domain C: Medicines and commodities among facilities that offer normal delivery services, Tanzania 2006 and 2014-15 SPA

	Injectable antibiotic										Injectable uterotonic									
	2006 TSPA				2014-15 TSPA						2006 TSPA				2014-15 TSPA					
	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig
Facility type[3]																				
Hospital	**58.3**	43.9	71.3	24	**52.7**	43.9	61.3	44	-5.6		**88.4**	76.0	94.9	24	**97.2**	94.2	98.7	44	8.8	
Health Center	**14.4**	6.0	30.5	48	**36.0**	30.8	41.5	109	21.6	*	**18.4**	7.5	38.4	48	**88.1**	84.3	91.1	109	69.7	***
Dispensary	**6.5**	4.1	10.0	379	**30.3**	25.5	35.6	746	23.8	***	**4.7**	2.8	7.9	379	**76.2**	71.3	80.6	746	71.5	***
Managing authority																				
Public	**4.6**	2.9	7.2	365	**32.4**	27.8	37.3	756	27.8	***	**3.6**	2.5	5.2	365	**78.8**	74.2	82.8	756	75.2	***
Private or other	**33.3**	23.1	45.4	85	**30.8**	22.5	40.5	149	-2.5		**40.0**	29.2	52.0	85	**78.9**	67.4	87.1	149	38.9	***
Province[4]																				
Eastern	**14.8**	7.5	27.1	56	**26.7**	15.9	41.2	115	11.9		**15.4**	8.0	27.4	56	**73.0**	59.3	83.4	115	57.6	***
Western	**5.0**	1.1	20.4	37	**42.3**	29.1	56.7	85	37.3	**	**2.1**	1.1	3.7	37	**71.5**	56.6	82.8	85	69.4	***
Southern	**3.8**	1.8	8.0	30	**35.8**	22.7	51.5	66	32.0	***	**5.1**	2.8	8.8	30	**74.4**	58.5	85.7	66	69.3	***
Southern Highlands	**18.0**	9.3	32.1	55	**22.1**	13.7	33.5	115	4.1		**14.3**	6.0	30.1	55	**85.0**	73.2	92.1	115	70.7	***
SW Highlands	**6.1**	2.0	16.9	49	**50.0**	36.6	63.4	103	43.9	***	**5.7**	2.3	13.8	49	**87.5**	72.1	95.0	103	81.8	***
Central	**5.3**	1.7	15.2	54	**35.1**	24.2	47.8	104	29.8	**	**5.9**	2.4	13.5	54	**81.8**	69.2	90.0	104	75.9	***
Northern	**12.8**	6.3	24.5	60	**35.6**	23.0	50.6	110	22.8	*	**12.1**	6.4	21.8	60	**87.8**	74.3	94.7	110	75.7	***
Lake	**9.0**	4.5	17.4	107	**23.0**	15.7	32.4	199	14.0	*	**13.9**	8.3	22.4	107	**71.7**	61.3	80.1	199	57.8	***
Total	**10.0**	**7.5**	**13.3**	**451**	**32.1**	**28.0**	**36.5**	**905**	**22.1**	***	**10.5**	**8.0**	**13.7**	**451**	**78.8**	**74.7**	**82.4**	**905**	**68.3**	***

	Skin disinfectant										Magnesium sulfate									
	2006 TSPA				2014-15 TSPA						2006 TSPA				2014-15 TSPA					
	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig
Facility type[3]																				
Hospital	**87.1**	71.1	94.9	24	**81.2**	67.8	89.8	44	-5.9		**55.5**	40.8	69.2	24	**87.3**	71.3	95.0	44	31.8	***
Health Center	**75.1**	58.4	86.6	48	**71.6**	66.5	76.2	109	-3.5		**0.0**			48	**66.8**	61.3	71.8	109	66.8	
Dispensary	**69.3**	63.6	74.4	379	**58.3**	52.8	63.6	746	-11.0	**	**0.7**	0.2	2.9	379	**34.2**	29.4	39.4	746	33.5	***
Managing authority																				
Public	**72.9**	67.3	77.8	365	**59.2**	54.0	64.1	756	-13.7	**	**2.8**	1.8	4.2	365	**39.4**	34.9	44.1	756	36.6	***
Private or other	**62.0**	49.5	73.1	85	**70.9**	60.2	79.7	149	8.9		**6.7**	3.3	12.9	85	**47.6**	37.2	58.2	149	40.9	***
Province[4]																				
Eastern	**52.8**	37.4	67.7	56	**60.4**	45.3	73.7	115	7.6		**5.9**	2.8	11.7	56	**49.2**	35.7	62.9	115	43.3	***
Western	**58.2**	39.0	75.3	37	**63.4**	48.7	76.0	85	5.2		**6.2**	1.8	19.4	37	**41.3**	29.5	54.2	85	35.1	**
Southern	**78.1**	56.8	90.7	30	**72.3**	56.9	83.8	66	-5.8		**1.7**	0.7	4.1	30	**51.2**	36.1	66.0	66	49.5	***
Southern Highlands	**92.7**	79.5	97.7	55	**42.6**	31.3	54.7	115	-50.1	***	**1.5**	0.5	4.3	55	**36.3**	25.5	48.8	115	34.8	***
SW Highlands	**75.8**	59.3	87.1	49	**64.9**	49.2	77.9	103	-10.9		**3.2**	0.9	10.7	49	**57.2**	42.2	71.0	103	54.0	***
Central	**71.4**	55.5	83.2	54	**55.9**	44.4	66.8	104	-15.5		**6.1**	2.2	15.7	54	**21.6**	13.9	31.8	104	15.5	*
Northern	**75.0**	60.3	85.6	60	**70.5**	55.5	82.0	110	-4.5		**1.8**	1.0	3.0	60	**42.3**	29.9	55.8	110	40.5	***
Lake	**66.2**	54.8	75.9	107	**62.9**	52.6	72.2	199	-3.3		**2.5**	1.5	4.3	107	**34.2**	26.6	42.8	199	31.7	***
Total	**70.8**	**65.8**	**75.4**	**451**	**61.1**	**56.5**	**65.5**	**905**	**-9.7**	*	**3.5**	**2.5**	**5.0**	**451**	**40.8**	**36.6**	**45.0**	**905**	**37.3**	***

	IV solution with infusion set										Antibiotic eye ointment									
	2006 TSPA				2014-15 TSPA						2006 TSPA				2014-15 TSPA					
	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig
Facility type[3]																				
Hospital	**82.7**	69.2	91.0	24	**85.8**	70.7	93.8	44	3.1		**41.4**	28.4	55.7	24	**45.7**	37.8	53.8	44	4.3	
Health Center	**56.3**	38.9	72.3	48	**69.0**	63.7	73.8	109	12.7		**27.2**	13.8	46.6	48	**33.5**	28.5	39.0	109	6.3	
Dispensary	**27.4**	22.6	32.9	379	**42.6**	37.2	48.2	746	15.2	***	**45.6**	40.4	50.9	379	**25.9**	21.6	30.9	746	-19.7	***
Managing authority																				
Public	**28.9**	23.9	34.4	365	**44.5**	39.5	49.7	756	15.6	***	**46.9**	41.5	52.4	365	**24.3**	20.3	28.7	756	-22.6	***
Private or other	**52.9**	40.8	64.7	85	**66.7**	54.7	76.8	149	13.8	ns	**28.3**	18.9	40.1	85	**47.3**	36.7	58.2	149	19.0	
Province[4]																				
Eastern	**35.1**	22.2	50.5	56	**46.1**	32.6	60.3	115	11.0		**2.2**	0.4	10	56	**30.4**	19.2	44.5	115	28.2	**
Western	**28.0**	14.6	46.9	37	**41.6**	28.5	55.9	85	13.6		**88.5**	70.4	96.1	37	**9.7**	4.2	21.0	85	-78.8	***
Southern	**43.8**	24.9	64.7	30	**29.6**	18.1	44.5	66	-14.2		**74.3**	53.8	87.8	30	**10.0**	3.9	23.1	66	-64.3	***
Southern Highlands	**48.4**	33.6	63.5	55	**50.0**	37.5	62.5	115	1.6		**54.7**	39.0	69.5	55	**47.5**	36.3	58.9	115	-7.2	
SW Highlands	**27.8**	15.9	43.9	49	**62.7**	46.9	76.2	103	34.9	*	**82.4**	67.1	91.5	49	**46.2**	33.4	59.5	103	-36.2	**
Central	**14.1**	6.3	28.4	54	**47.8**	35.3	60.5	104	33.7	**	**31.1**	18.9	46.5	54	**29.1**	18.7	42.2	104	-2.0	
Northern	**36.9**	24.4	51.5	60	**55.5**	40.8	69.4	110	18.6		**30.4**	18.8	45.1	60	**34.5**	22.2	49.3	110	4.1	
Lake	**34.0**	24.6	44.8	107	**44.4**	35.1	54.0	199	10.4		**30.5**	21.5	41.4	107	**16.6**	10.6	24.9	199	-13.9	
Total	**33.4**	**28.8**	**38.4**	**451**	**48.2**	**43.6**	**52.8**	**905**	**14.8**	***	**43.4**	**38.6**	**48.3**	**451**	**28.0**	**24.3**	**32.1**	**905**	**-15.4**	***

	Medicines and commodities summary score[2]									
	2006 TSPA				2014-15 TSPA					
	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig
Facility type[3]										
Hospital	**68.9**	61.8	76.0	24	**75.0**	72.6	77.4	44	6.1	
Health Center	**31.9**	24.1	39.7	48	**60.8**	57.7	64.0	109	28.9	***
Dispensary	**25.7**	23.7	27.7	379	**44.6**	41.5	47.7	746	18.9	***
Managing authority										
Public	**26.6**	24.7	28.5	365	**46.4**	43.5	49.3	756	19.8	***
Private or other	**37.2**	30.4	44.0	85	**57.0**	49.6	64.5	149	19.8	***
Province[4]										
Eastern	**21.0**	14.8	27.2	56	**47.6**	38.5	56.8	115	26.6	***
Western	**31.3**	25.5	37.2	37	**45.0**	36.7	53.2	85	13.7	**
Southern	**34.5**	28.5	40.4	30	**45.6**	36.4	54.8	66	11.1	*
Southern Highlands	**38.3**	32.9	43.7	55	**47.2**	40.6	53.9	115	8.9	*
SW Highlands	**33.5**	28.9	38.1	49	**61.4**	54.0	68.9	103	27.9	***
Central	**22.3**	17.4	27.2	54	**45.2**	38.0	52.4	104	22.9	***
Northern	**28.2**	23.2	33.2	60	**54.4**	46.3	62.5	110	26.2	***
Lake	**26.0**	21.2	30.9	107	**42.1**	36.9	47.3	199	16.1	***
Total	**28.6**	**26.7**	**30.6**	**451**	**48.2**	**45.6**	**50.8**	**905**	**19.6**	***

LB and UB are the lower and upper boundaries of 95% confidence intervals.

[1] Percentage point difference between survey years with significance tests for the difference in proportions. P-values *<0.05 **<0.01 ***<0.001

[2] The Equipment Summary Score presented here will not match the score presented in the previous chapter. To preserve comparability across the two surveys, the summary excludes components that are not available in the 2006 survey (i.e. blood pressure apparatus).

[3] In general, this report uses the categories, Hospital, Health Center, and Dispensary or Clinic. However, the 2014-15 TSPA included 19 clinics while the 2006 TSPA included none. To examine trends by type of facility, we exclude the 19 clinics and examine the trend in just dispensaries. The 19 clinics are still included in the Total.

[4] Trends are not shown for Zanzibar due to the small number of normal-delivery facilities included in the 2006 TSPA sample (10 facilities, unweighted) and the relatively high sampling error. The facilities in Zanzibar are included in the Totals row.

Table A7e. Trend in service readiness Domain D: Guidelines and staffing among facilities that offer normal delivery services, Tanzania 2006 and 2014-15 SPA

	At least one provider of delivery or newborn care at facility was trained in each the following areas in the last 24 months:																																							
	Training in neonatal resuscitation										Training in early and exclusive breastfeeding										Supervision										*Guidelines and staffing summary score[2]*									
	2006 TSPA				2014-15 TSPA						2006				2014-15						2006				2014-15						2006 TSPA				2014-15 TSPA					
	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig	%	LB	UB	N	%	LB	UB	N	Diff.[1]	Sig
Facility type[3]																																								
Hospital	**41.3**	28.3	55.6	24	**79.0**	73.1	83.9	44	37.7	***	**56.8**	42.7	69.8	24	**65.7**	58.6	72.3	44	8.9		**77.7**	61.0	88.6	24	**66.8**	56.6	75.6	44	-10.9		**48.2**	39.7	56.8	24	**57.4**	54.2	60.5	44	9.2	
Health Center	**11.1**	4.1	26.5	48	**70.5**	66.1	74.6	109	59.4	***	**5.8**	1.4	21.4	48	**62.5**	57.3	67.4	109	56.7	***	**97.1**	81.6	99.6	48	**76.9**	71.9	81.2	109	-20.2		**28.2**	23.1	33.3	48	**57.5**	54.0	60.9	109	29.3	***
Dispensary	**7.2**	4.7	10.9	379	**48.1**	43.4	52.8	746	40.9	***	**8.3**	5.6	12.2	379	**45.8**	40.8	50.9	746	37.5	***	**89.9**	85.7	92.9	379	**77.1**	72.3	81.3	746	-12.8	**	**25.7**	23.9	27.5	379	**44.4**	41.2	47.7	746	18.7	***
Managing authority																																								
Public	**8.4**	5.7	12.1	365	**52.0**	47.7	56.1	756	43.6	***	**9.8**	6.9	13.7	365	**49.2**	44.6	53.8	756	39.4	***	**91.0**	87.0	93.9	365	**78.3**	73.8	82.2	756	-12.7		**27.0**	25.2	28.8	365	**47.1**	44.2	50.1	756	20.1	***
Private or other	**13.7**	7.7	23.3	85	**53.2**	42.4	63.7	149	39.5	***	**13.8**	8.0	22.8	85	**46.2**	35.7	57.1	149	32.4	***	**85.5**	74.9	92.1	85	**67.3**	56.6	76.5	149	-18.2	*	**27.7**	23.2	32.2	85	**43.6**	36.5	50.8	149	15.9	**
Province[4]																																								
Eastern	**7.2**	2.8	17.2	56	**64.9**	50.2	77.2	115	57.7	***	**9.2**	4.2	18.9	56	**50.5**	36.7	64.2	115	41.3	***	**77.4**	61.8	87.8	56	**62.0**	48.8	73.6	115	-15.4		**24.0**	18.7	29.3	56	**50.0**	41.1	58.9	115	26.0	***
Western	**11.8**	4.1	29.7	37	**79.5**	66.8	88.2	85	67.7	***	**20.0**	8.8	39.2	37	**74.6**	60.5	85.0	85	54.6	***	**88.5**	69.7	96.3	37	**81.0**	67.0	89.9	85	-7.5		**30.2**	23.1	37.3	37	**62.4**	53.1	71.8	85	32.2	***
Southern	**25.3**	11.9	45.8	30	**46.8**	34.5	59.4	66	21.5		**25.7**	12.2	46.2	30	**35.4**	23.1	49.9	66	9.7		**91.0**	71.0	97.7	30	**82.1**	67.1	91.1	66	-8.9		**35.6**	28.9	42.3	30	**42.0**	34.4	49.7	66	6.4	
Southern Highlands	**3.5**	0.9	13.4	55	**74.6**	62.6	83.8	115	71.1	***	**1.6**	0.6	4.3	55	**67.6**	54.8	78.3	115	66.0	***	**95.3**	83.1	98.8	55	**65.9**	53.4	76.6	115	-29.4	**	**25.1**	23.0	27.2	55	**54.4**	46.7	62.1	115	29.3	***
SW Highlands	**8.9**	3.1	23.2	49	**36.2**	23.5	51.2	103	27.3	*	**12.1**	4.9	26.8	49	**43.6**	29.4	59.0	103	31.5	*	**75.2**	58.8	86.6	49	**85.9**	70.1	94.1	103	10.7		**26.8**	20.5	33.1	49	**41.8**	31.6	52.0	103	15.0	*
Central	**1.9**	0.3	10.5	54	**43.7**	34.7	53.1	104	41.8	***	**2.3**	0.5	9.6	54	**43.3**	34.3	52.8	104	41.0	***	**83.2**	69.2	91.6	54	**77.9**	66.1	86.5	104	-5.3		**22.6**	19.4	25.8	54	**43.1**	36.4	49.8	104	20.5	***
Northern	**11.6**	5.4	23.0	60	**78.1**	62.7	88.4	110	66.5	***	**11.6**	5.4	23.0	60	**69.9**	55.0	81.5	110	58.3	***	**90.6**	78.8	96.1	60	**75.8**	62.6	85.4	110	-14.8		**28.6**	24.5	32.6	60	**57.4**	49.1	65.8	110	28.8	***
Lake	**11.2**	5.9	20.3	107	**19.9**	13.8	27.8	199	8.7		**11.5**	6.2	20.1	107	**23.6**	16.7	32.2	199	12.1		**87.1**	77.6	92.9	107	**81.5**	72.9	87.8	199	-5.6		**27.9**	24.2	31.6	107	**32.8**	28.3	37.2	199	4.9	
Total	**9.4**	**6.9**	**12.7**	**451**	**52.2**	**48.2**	**56.1**	**905**	42.8	***	**10.6**	**7.9**	**14.0**	**451**	**48.7**	**44.5**	**52.9**	**905**	38.1	***	**90.0**	**86.4**	**92.8**	**451**	**76.5**	**72.5**	**80.1**	**905**	-13.5	**	**27.1**	**25.5**	**28.8**	**451**	**46.6**	**43.9**	**49.3**	**905**	19.5	**

LB and UB are the lower and upper boundaries of 95% confidence intervals.

[1] Percentage point difference between survey years with significance tests for the difference in proportions. P-values *<0.05 **<0.01 ***<0.001

[2] The Equipment Summary Score presented here will not match the score presented in the previous chapter. To preserve comparability across the two surveys, the summary excludes components that are not available in the 2006 survey (i.e. blood pressure apparatus).

[3] In general, this report uses the categories, Hospital, Health Center, and Dispensary or Clinic. However, the 2014-15 TSPA included 19 clinics while the 2006 TSPA included none. To examine trends by type of facility, we exclude the 19 clinics and examine the trend in just dispensaries. The 19 clinics are still included in the Total.

[4] Trends are not shown for Zanzibar due to the small number of normal-delivery facilities included in the 2006 TSPA sample (10 facilities, unweighted) and the relatively high sampling error. The facilities in Zanzibar are included in the Totals row.