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ONSE Health Activity

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IMPLEMENTING SYSTEMIC CAPACITY-BUILDING APPROACHES TO IMPROVE THE DELIVERY OF EMERGENCY OBSTETRIC AND NEONATAL CARE IN MALAWI

Introduction

Malawi has registered a significant maternal mortality decrease, from 749 per 100,00 live births in 2000 to 349 per 100,000 in 2017, but it still remains in the bottom 10 countries for lifetime risk of maternal death.¹ Neonatal mortality also decreased rapidly between 2014 and 2018, from 29 to 22 per 1,000 live births, but neonatal deaths still represent 44% of child mortality.² Although 91% of pregnant women deliver in health facilities, only 54% of facilities have a provider on duty 24 hours a day. In addition, the rates of institutional delivery have increased rapidly, and many facilities are not able to provide key lifesaving interventions for mothers and newborns—especially those born prematurely. Most maternal deaths are due to direct obstetric causes such as hemorrhage, sepsis, abortion complications, and hypertensive disorders,³ but mortality can also be attributed to low quality of care in health facilities. Deaths that occur among neonates are largely due to delays in the decision to seek care, reaching the health facility, and receiving care at the health facility.⁴

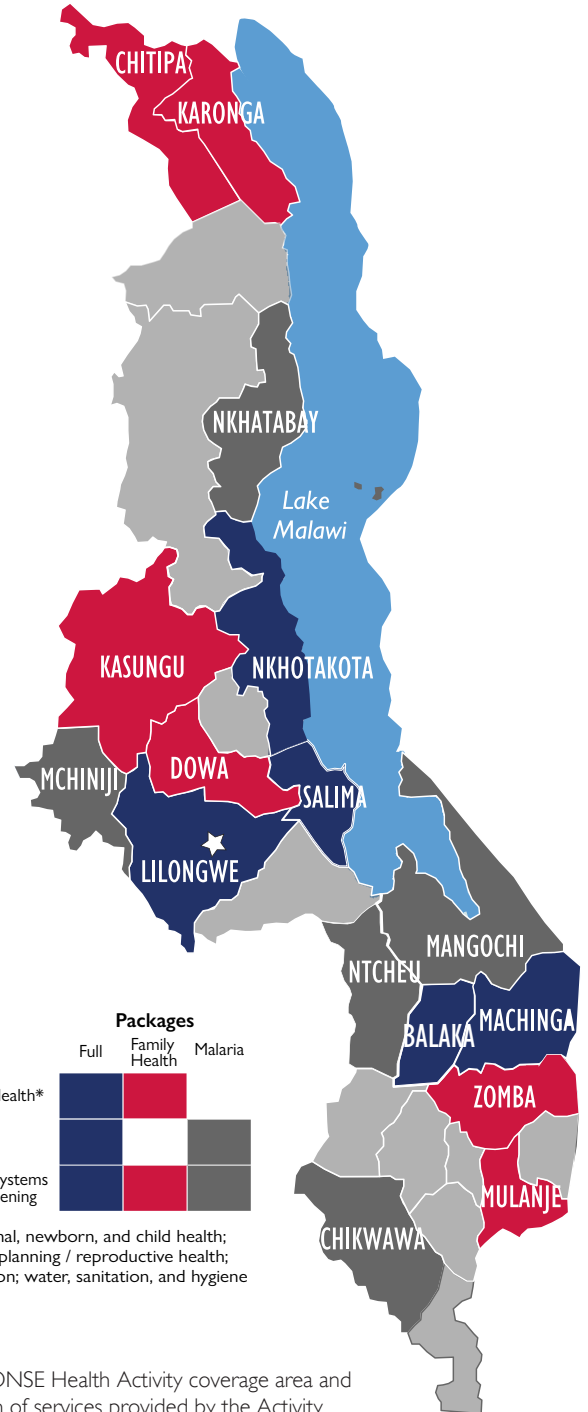


Figure 1: ONSE Health Activity coverage area and description of services provided by the Activity

About ONSE Health Activity

The Organized Network of Services for Everyone's (ONSE) Health Activity is USAID's flagship health program working to reduce maternal, newborn, and child morbidity and mortality in Malawi. Led by Management Sciences for Health, ONSE works closely with the Ministry of Health and key stakeholders at the national and district levels to deliver on four intermediate results: (1) Improving access to priority health services, (2) improving quality of priority health services, (3) strengthening the performance of health systems, and (4) increasing demand for priority health services. As a trusted partner in 16 of Malawi's districts, ONSE works across a series of priority health areas, including maternal, newborn, and child health; family planning and reproductive health; malaria; nutrition; and water and sanitation.

Improving access to emergency obstetric care through comprehensive obstetric newborn care (CEmONC) or basic obstetric newborn care (BEmONC) is an effective strategy for reducing maternal and infant mortality by identifying complications of pregnancy and childbirth and making referrals to a higher level of care if necessary. Basic obstetric care signal functions include parenteral administration of antibiotics, parenteral administration of oxytocics, parenteral administration of anticonvulsants, assisted vaginal delivery, manual removal of placenta, manual removal of retained products, and neonatal resuscitation. BEmONC includes the capacity to provide these signal functions. Guidelines issued by the World Health Organization, UNICEF, and the United Nations Population Fund (UNFPA) recommend four facilities offering basic obstetric care for every 500,000 people

Despite years of investing in traditional training approaches to improve the delivery of high-quality maternal and newborn health services, emergency obstetric and neonatal care (EmONC) remains a crucial gap in service delivery in Malawi. Training has had a limited impact on outcomes, contributed to absences from the workplace that affect health service delivery, and instilled distorted incentives. Key to the core of ONSE's technical approach is the fact that training in and of itself is necessary but is not sufficient for improving health outcomes.

ONSE's Approach to the Problem

Challenge of improving EmONC in Malawi

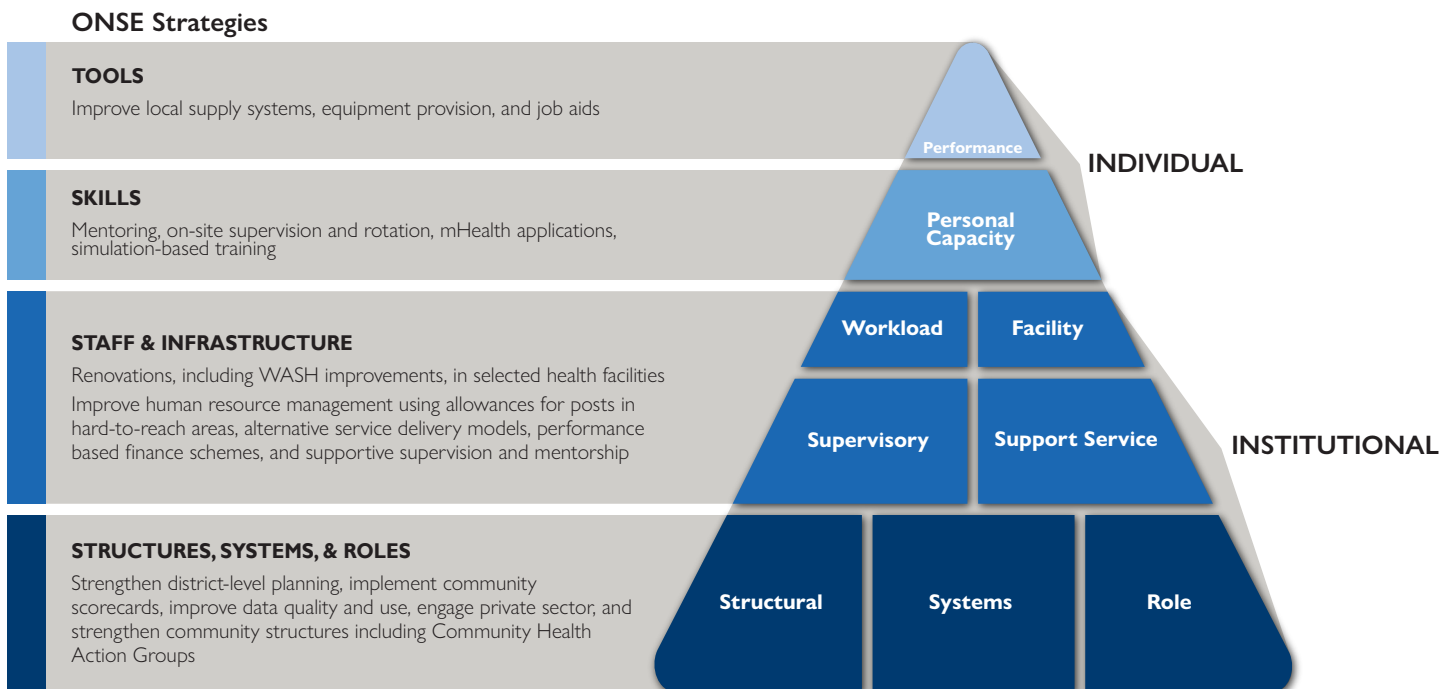
ONSE's success in EmONC is measured against a complex, composite indicator that tracks the performance of the seven BEmONC signal functions in the previous three months. Signal functions assist in tracking key causes of morbidity and mortality and vary in their level of complexity and requirements for decision making, and each has unique perceived strengths and weaknesses, environmental requirements, and capacity-building needs. Some of the signal functions are amenable to mentoring and equipment provision interventions, while others require a systems thinking lens dedicated to work environment challenges (e.g., how the health system and its constraints impact service delivery). Typically progress toward sustainable emergency obstetric care is demonstrated by showing the proportion of fully, partially, and non-functional BEmONC facilities. To better understand the factors affecting a facility's designation as a fully, partially, or non-functional BEmONC facility, ONSE disaggregated this indicator to measure each of the signal functions individually (Table 1).

As a result, ONSE can develop targeted interventions based on the signal functions with the greatest need and build the

Table 1: Factors affecting a facility's designation as a fully, partially, or non-functional BEmONC facility

	Function	Environmental Requirements	Human Capacity Requirements
Easy to Intervene	Uterotonics	<ul style="list-style-type: none"> • Needle / syringe • Drugs: viable and cold chain 	<ul style="list-style-type: none"> • Little technical skill required • Routine with each delivery • Identify and manage the cause of hemorrhage while stabilizing patient
	Antibiotics	<ul style="list-style-type: none"> • Needle / syringe • Drugs 	<ul style="list-style-type: none"> • Little technical skill required • Clear set of criteria for providers - requires clinical assessment
	Newborn Resuscitation	<ul style="list-style-type: none"> • Bag and mask • Dedicated area / working space 	<ul style="list-style-type: none"> • Requires certain level of technical skill (HBB)
Hard to Intervene	Anticonvulsants (MgSO ₄)	<ul style="list-style-type: none"> • Blood pressure, urine checks (including at ANC and during delivery) • Ability to monitor following provision of anticonvulsants • Needle / syringe / drugs 	<ul style="list-style-type: none"> • Clinical decision making more complex with multiple decision points • Preparing the drug for administration • Patient monitoring during and after administration
	Vacuum Deliveries	<ul style="list-style-type: none"> • Vacuum extractor • Good lighting • Back up including referral systems 	<ul style="list-style-type: none"> • Needs good monitoring during labor • Clinical decision making with multiple decision points • Need backup for failure
	Post Abortion Care	<ul style="list-style-type: none"> • Availability of MVA kits (USAID restrictions) 	<ul style="list-style-type: none"> • Training required
	Retained Placenta	<ul style="list-style-type: none"> • Anesthetic sometimes required • Appropriate IPC / PPE 	<ul style="list-style-type: none"> • Potentially complicated clinical assessment • More advanced clinical procedure • General anesthetic at times

Figure 2: ONSE Capacity Building Framework



capacity of health facilities to use these data to understand and make decisions on where their resources are best allocated for the greatest impact on service delivery. ONSE found that certain signal functions are more amenable to interventions such as mentoring and provision of equipment (neonatal resuscitation and vacuum extraction), whereas others provide serious challenges as a result of either problems within the work environment (e.g., distance from nearest referral center, infrastructure limitations) or human capacity challenges (e.g., complex decision making for magnesium sulfate administration, assisted deliveries).

The ONSE approach to smart capacity building for EmONC

The USAID ONSE Health Activity takes a different approach to capacity building, and while the activity may engage in some traditional training methods—which are essential for certain activities—the bulk of capacity-building interventions focus on fostering providers’ competencies at the sites where they work. Capacity building is integrated, thoughtful, and targeted to meet the needs of providers to improve both the availability and quality of priority health care interventions. To enable stronger overall systemic capacity—and thus improve the performance capacity of individuals working in and with that system—ONSE needs to intervene at multiple levels of Malawi’s health system. ONSE therefore employs a systemic capacity-building approach modeled on the framework proposed by Potter and Brough that includes interventions targeting various components of systemic capacity (Figure 2).

Analytical Approach and Question

In an effort to understand the impact that this new, holistic approach to capacity building had on the provision of EmONC services in Malawi, the USAID ONSE Health Activity undertook a study examining the provision of emergency obstetric care services as recorded in the national health management information system (HMIS). This technical brief provides an overview of the methods, findings, and key findings for researchers, policymakers, and program managers.

Methods

This study employed an interrupted time series approach using service delivery data provided to the District Health Information System (DHIS2). As part of the program’s start-up activities, a five-module baseline assessment was conducted in 2017 that included a register data extraction for health services, including deliveries, and the provision of BEmONC and CEmONC signal functions for 18 months prior to program implementation. The pre-intervention period for this study was April 2016-May 2017; the post-intervention period was June 2017-December 2019.

The outcomes of interest, or dependent variables, for this research study at the facility level, recorded per the HMIS/DHIS2, included:

- Emergency obstetric service provision: Were the seven emergency obstetric care functions provided in previous (Y/N) based on recording in the registers/DHIS2 and not simply self-reported by the facility.
- Volume of services provided per month.

This brief will focus on the findings of the exploratory data analyses, and a second report will discuss the findings of forthcoming regression analyses. These regression analyses are expected to control for important factors that may also contribute to differences or changes in service provision, including the type of facility (primary or secondary provision of care), delivery volume, staffing levels, and managing authority of the facility (public or private).

Findings

The complexity of the BEmONC functionality indicator is born out in the routine service delivery data from the ONSE Health Activity.

Figure 3: BEmONC services by deliveries in Bwaila

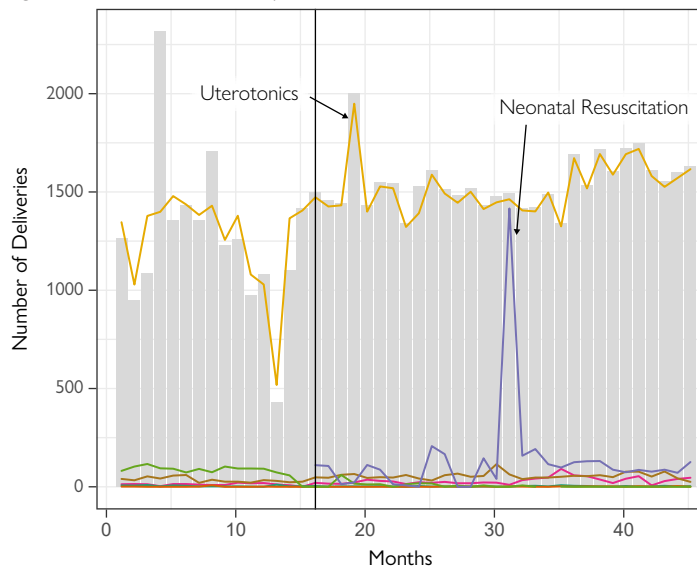
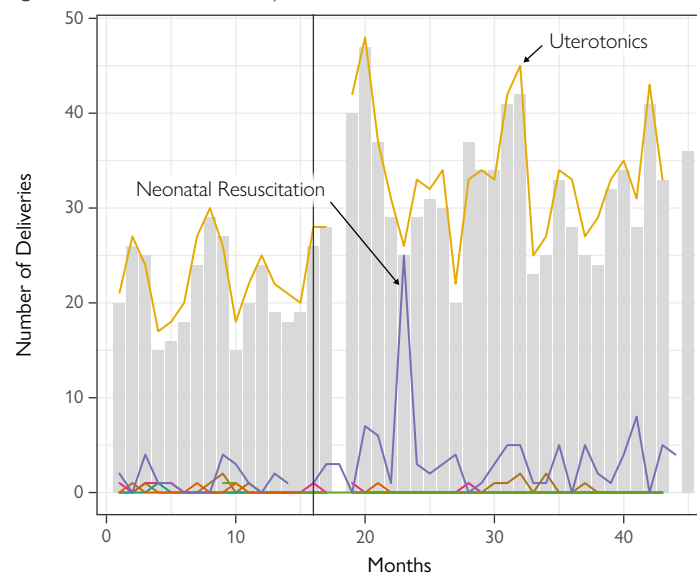
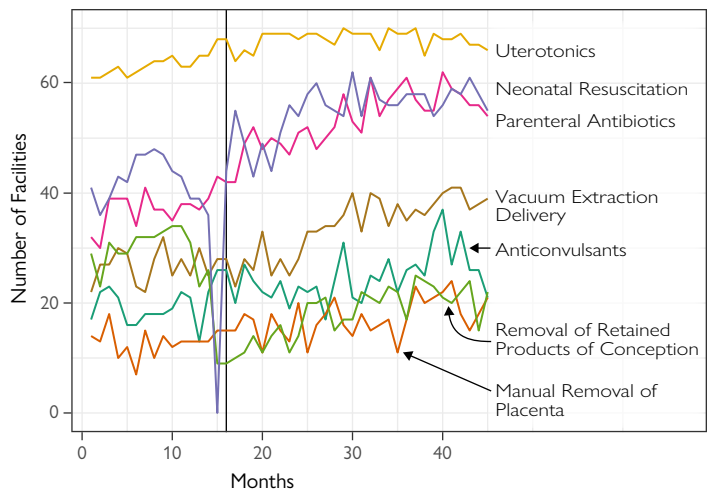


Figure 4: BEmONC services by deliveries in Chadza



Provision of emergency obstetric and neonatal health services, as discussed above, is complex, and requires a responsive and adaptive system. This system is influenced by many components, including health facility infrastructure; sufficient human resources with the necessary training and skills to provide the services; adequate equipment, supplies, and commodities; and sufficient delivery volume. Obstetric complications are generally low and unpredictable.^{5,6} Figure 3 and 4 show this in two health facilities: Bwaila Hospital, which has among the highest delivery volumes in all of Malawi, and Chadza Health Center with an average delivery volume of about one per day. The gray bars indicate the number of deliveries per month, and the colored lines indicate the EmONC services provided each month. In both facilities, it is clear that uterotonics has become routine in delivery care, while the remaining six signal functions occur in only a very small portion of deliveries.

Figure 5: Number of facilities providing BEmONC services per month



Because the primary objective of ONSE was to increase the number of facilities that were considered fully functional, the following results indicate the number of facilities that provided each service, as opposed to service delivery volume.

Figure 5 shows the number of facilities that provided each signal function out of the 70 ONSE-supported health facilities. This is further indication that some of these seven services are more amenable to the holistic package of capacity building provided by ONSE, while others remain more difficult to intervene. However, the relative provision of these services is low compared to the total number of deliveries, since some of these complications during pregnancy and delivery continue to be rare events.

Exploratory analyses of these data suggest that certain facility characteristics are likely to contribute to sustained provision of emergency obstetric services, including a higher monthly delivery volume at a health facility and whether that facility is a designated CEmONC site. Figures 6-12 show the number

Figure 6: Number of health facilities providing parenteral antibiotics per month

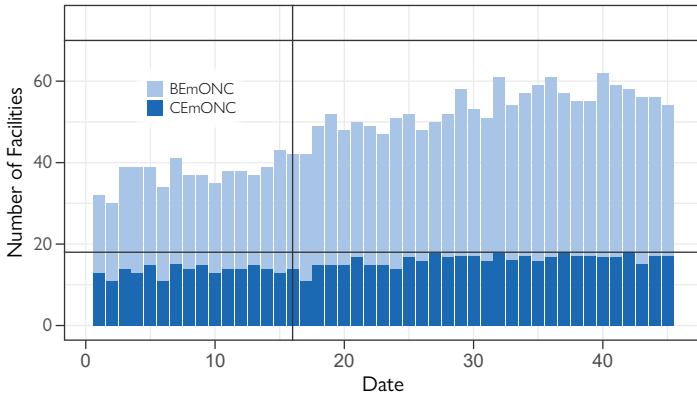


Figure 7: Number of health facilities providing uterotonics (AMTSL) per month

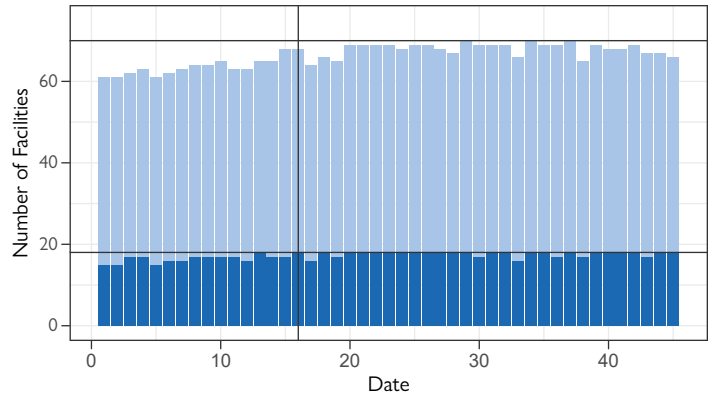


Figure 8: Number of health facilities providing neonatal resuscitation per month

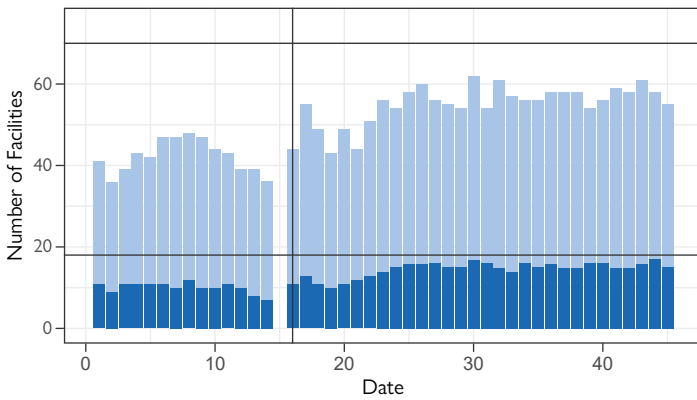


Figure 9: Number of health facilities providing manual removal of the placenta per month

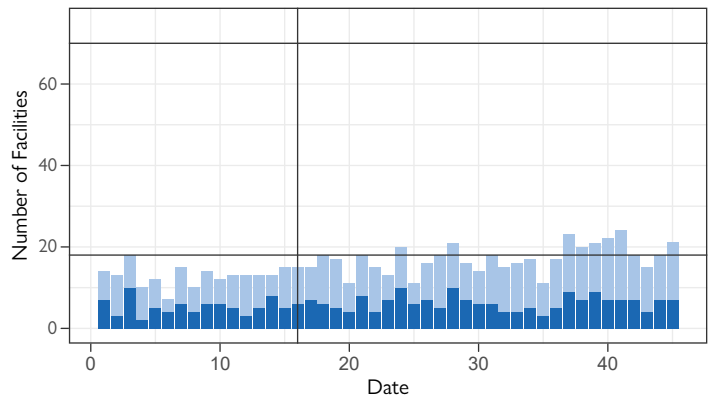


Figure 10: Number of facilities providing removal of retained products of conception per month

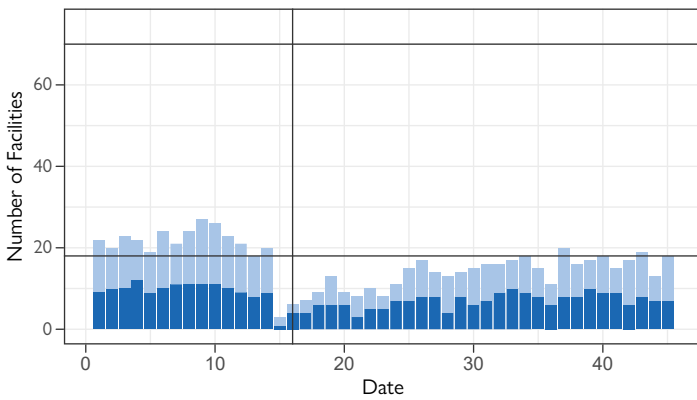


Figure 11: Number of health facilities providing anticonvulsants (MgSO₄) per month

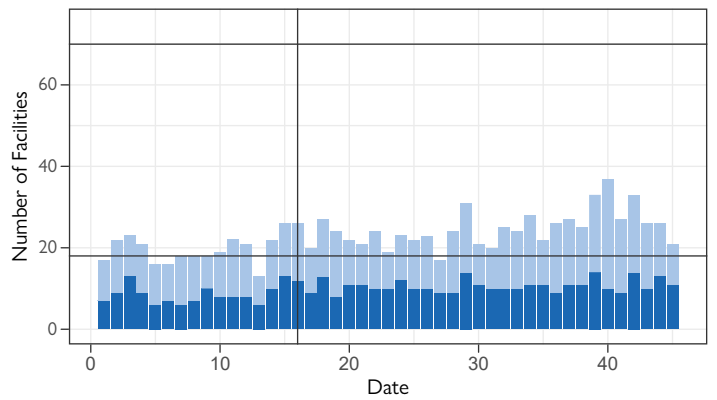
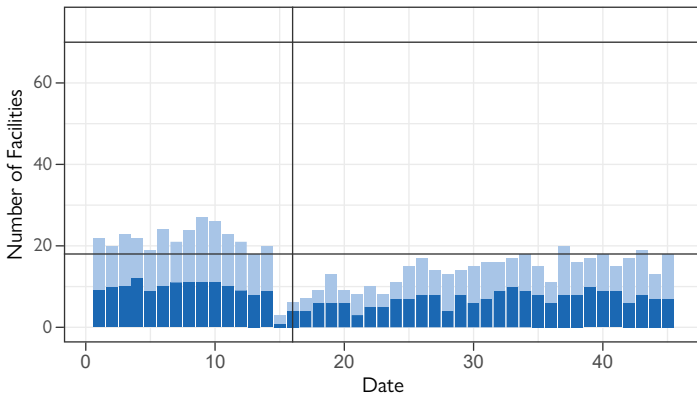


Figure 12: Number of facilities providing vacuum assisted deliveries per month



of facilities that provided each signal function per month over the 45 months of data collection (16 months prior to and 29 months during ONSE implementation). Horizontal lines at 18 and 70 designate the number of CEmONC and BEmONC sites included in this analysis, providing a sense of the proportion of facilities providing each service. Administration of antibiotics, uterotonics, and newborn resuscitation take place in nearly all ONSE-supported facilities, while the remaining four services occur in fewer facilities.

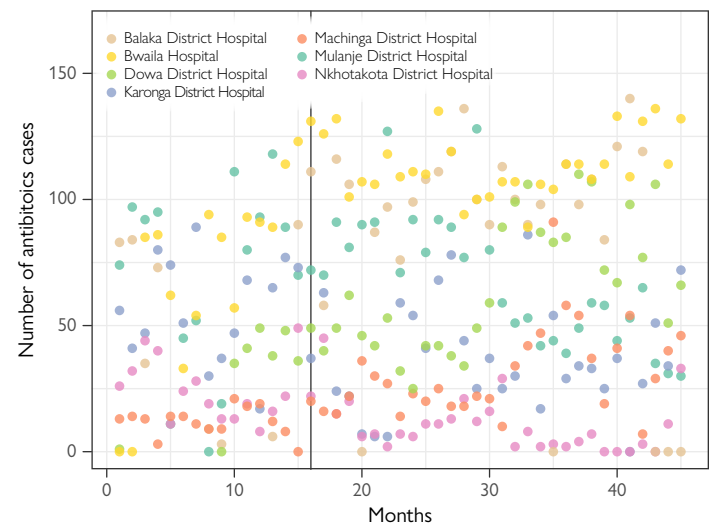
Through the systemic capacity-building approaches, ONSE was able to make improvements in the provision of antibiotics, uterotonics, and neonatal resuscitation at a significant percentage of BEmONC and CEmONC facilities. Services that are harder to intervene in, such as provision of anticonvulsants and vacuum extraction deliveries, also saw improvements, although many of those improvements are concentrated in CEmONC sites that have larger teams of providers, higher delivery volumes, limited need for transport in the case of referral, and sufficient resources to delivery these more complex services.

Provision of postabortion care and manual removal of the placenta are demonstrably harder to improve. Manual removal of the placenta is a rare condition with the increasing use of Active Management of the Third Stage of Labor, and is unlikely to present regularly at facilities with low delivery volumes. It can be a complicated procedure, requiring significant training, provider confidence, and transport for referral for cases with severe bleeding or complicated by sepsis. This significantly impacts the achievement of the target of seven signal functions each quarter in all EmONC facilities.

Next steps

The ONSE Health Activity is using this data set to explore service delivery trends at various levels. For example, at individual facilities like Bwaila Hospital, consistently high levels of vacuum-assisted delivery suggest active progress to track and manage deliveries, but this is not seen across all facilities. Provision of services in district hospitals is quite different (Figure 13), and these data are helping ONSE staff, district

Figure 13: Provision of Antibiotics across District Hospitals per month



Safe Motherhood Coordinators, and the Reproductive Health Directorate of the Ministry of Health to better understand exactly what is happening in districts and facilities.

Overall, the leading impression at this time is that obstetrics in Malawi appears to be managed more passively than actively. Monitoring of patients is minimal, which means that when complications arise, they alarm providers who may be unable to effectively manage and resolve the complications. Future programs should include understanding the use of partographs and delivery observation to explore the extent of monitoring undertaken during labor and delivery in Malawi's health facilities.

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- 2 Malawi Harmonised Health Facility Assessment (HHFA): 2018/2019 Report. Government of Malawi. Ministry of Health and Population; 2019.
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- 6 Aoyama K, D'Souza R, Pinto R, Ray JG, Hill A, Scales DC, et al. (2018) Risk prediction models for maternal mortality: A systematic review and meta-analysis. *PLoS ONE* 13(12): e0208563. <https://doi.org/10.1371/journal.pone.0208563>

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