Health Facility Readiness to Provide Emergency Obstetric and Newborn Care in Kenya

Results of a 2014 assessment of 13 Kenyan counties with high maternal mortality

February 2016

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MEASURE Evaluation PIMA

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Contributors

This report presents the results of an assessment conducted in 2014 of 13 Kenyan counties with high maternal mortality. MEASURE Evaluation PIMA staff who supported field coordination and made contributions to this report are: Carol Njeru Ambrose Agweyu, Benter Owino, Viola Rop, Yvonne Otieno, Njeri Nyamu, Amin Abdinasir, and Edward Kunyanga.

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Cover photo: Lucia Wilson lying next to her newborn child at the Nassa Health Center, Mwanza, Tanzania. Source: Bill & Melinda Gates Foundation, "Impatient Optimists" blog, February 13, 2012. Available at: http://www.impatientoptimists.org/Posts/2012/02/The-Role-of-Local-Leaders-in-Maternal-Health#.VmBURHarRaR.

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Abbreviations

BEmONC	basic emergency obstetric and newborn care
CEmONC	comprehensive emergency obstetric and newborn care
CHMT	county health management team
EmONC	emergency obstetric and newborn care
eMTCT	elimination of mother-to-child transmission of HIV
MDG	Millennium Development Goal
PPH	postpartum hemorrhage
USAID	United States Agency for International Development

Executive Summary

Most maternal and neonatal deaths in low-income countries, including Kenya, are attributable to a handful of preventable causes. Emergency obstetric and newborn care (EmONC) is an integrated strategy that aims to equip health workers with skills, life-saving medicines, and equipment to manage the leading causes of maternal and newborn death.

Kenya's Ministry of Health, working closely with county governments and other partners, is committed to expanding the coverage of EmONC to all health facilities. Ending preventable child and maternal deaths is one of USAID's global health priorities, implemented by supporting the delivery of a core package of high-quality reproductive maternal, newborn, and child health interventions that provide a continuum of care to mothers, newborns and children. In addition, USAID supports the Ministry of Health and county governments to monitor trends and performance of maternal newborn and child health outcomes and strengthen use of data at the national and county levels. Substantial investments have been made to achieve this goal, but relatively little is known regarding the preparedness of health facilities to provide this package of services.

In July 2013, the Government of Kenya, in partnership with USAID, embarked on a program to scale up EmONC services to 15 counties spanning the 10 major regions of the country. The program began with Phase I assessments of the needs of select facilities in 14 of the target counties. These were conducted to identify the specific interventions that scale-up would require and to provide baseline data for purposes of monitoring and evaluation. However, large quantities of missing data on key observations limited interpretation of the findings.

Lessons from this phase informed the approach adopted in the second phase, whose results are reported here. Phase II focused on the 13 Kenyan counties with the highest maternal and neonatal mortality rates. It assessed the preparedness to provide EmONC of 376 health facilities (278 health centers and dispensaries and 98 hospitals), chosen on the basis of their burden of maternal morbidity and mortality.

Assessment Method

County teams, with support from USAID APHIAplus partners and AMPATH PLUS, collected data on the number of EmONC-trained health workers and the availability of equipment and medicines required to provide the EmONC signal functions from July 2014 to August 2014 in the selected facilities. MEASURE Evaluation PIMA analyzed the findings and disseminated them to county teams for the development of action plans.

Availability of Supplies and Equipment

On average, only 2 percent (range 0–11%) of health centers and dispensaries across the 13 counties were found to have the essential supplies required for provision of all seven basic EmONC signal functions. In comparison, 35 percent (range 0%–83%) of hospitals had all the supplies required to provide these functions. Generally, oxytocin was the most widely available commodity (present in more than 80% of the facilities assessed); in contrast, vacuum extractors for assisted vaginal delivery were the least available (present in only half of the hospitals and a third of the health centers and dispensaries).

Training of Providers and Availability of Guidelines

The share of health workers deployed in the maternity and newborn departments who had received training in EmONC in the 12 months preceding the survey was also low, ranging between 10 percent and 30 percent in most counties. The guidelines on quality emergency obstetric and neonatal care were found to be available in most hospitals but absent in many health centers and dispensaries.

Conclusions and Recommendations

The majority of health facilities lack essential equipment and commodities required to provide EmONC services. These results are consistent with other reports indicating poor coverage of EmONC services in the country. Substantial improvements in the quality of data collected were observed between the baseline assessment and the subsequent (Phase II) assessment. This was attributed to refinement of the assessment tool and training provided to the teams involved in the survey. The findings of this assessment have been used to develop county and facility action plans targeted to the identified areas of need. Subsequent periodic assessments are necessary to examine progress achieved and provide timely feedback to all relevant stakeholders to ensure universal access to high-quality maternal and newborn care in health facilities across the country.

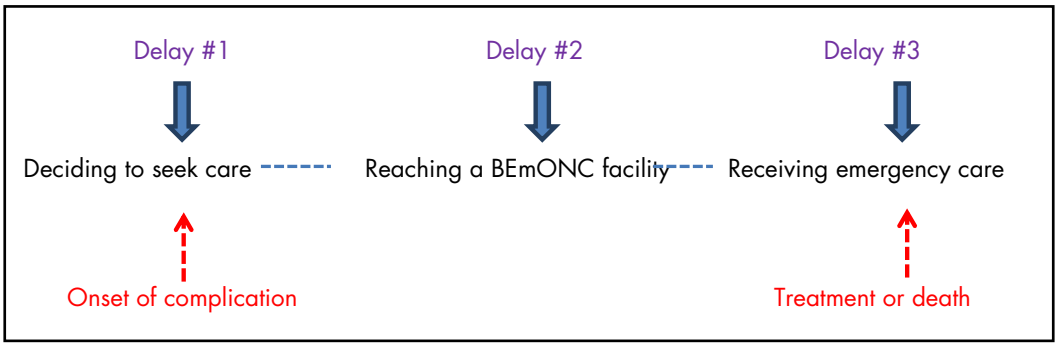
Background

Since the landmark Safe Motherhood Conference was convened in Nairobi in 1987, maternal, newborn, and child health has gained increasing international recognition as a major global health priority. The commitment to end all preventable maternal and child deaths was most recently expressed during the launch of a financing facility by global partners, who committed more than US$4 billion to scale up and sustain essential services for women and children.[1] In spite of these efforts, recent data indicate that progress toward reducing maternal and neonatal mortality is likely to fall short of the targets set by Millennium Development Goals (MDGs) 4 and 5, particularly in sub-Saharan Africa, where two-thirds of the world's maternal deaths and half of the world's child deaths are estimated to occur.[2] Postpartum hemorrhage (PPH), hypertension, infections, obstructed labor, and complications of abortion are the leading causes of maternal death, representing more than two-thirds of the estimated 289,000 global annual mortalities related to pregnancy and childbirth.[3] Up to three-quarters of neonatal deaths are attributable to infections, pre-term birth, and intrapartum complications.[4] These top causes of maternal and newborn mortality are all largely preventable through the effective use of highly cost-effective interventions that should be available at the primary care level.

Barriers in Maternal and Newborn Health

Maternal and neonatal mortality both can be attributed to the three common delays in the continuum of care: delay in deciding to seek care from a skilled attendant by the pregnant woman; delay in reaching a facility with capacity to offer basic emergency obstetric care (BEmONC); and delay in receiving emergency care upon reaching a health facility.[5] (See Figure 1.)

Figure 1: Three-Stage Delay Model Explaining Maternal Mortality



Source: Thaddeus and Maine, 1994.

[1] The World Bank Group. 2015. "Development Partners Support the Creation of Global Financing Facility to Advance Women's and Children's Health." Press release, January 6, 2015. Available at: http://www.worldbank.org/en/news/press-release/2014/09/25/development-partners-support-creation-global-financing-facility-women-children-health.
[2] United Nations. 2014. The Millennium Development Goals Report 2014. New York, NY: United Nations.
[3] Kassebaum NJ, Bertozzi-Villa A, Coggeshall MS, Shackelford KA, Steiner C, Heuton KR, et al. 2014. "Global, Regional, and National Levels and Causes of Maternal Mortality during 1990-2013: A Systematic Analysis for the Global Burden of Disease Study 2013." *The Lancet* 384 (9947): 980–1004.
[4] Wang H, Liddell CA, Coates MM, Mooney MD, Levitz CE, Schumacher AE, et al. 2014. "Global, Regional, and National Levels of Neonatal, Infant, and Under-5 Mortality during 1990-2013: A Systematic Analysis for the Global Burden of Disease Study 2013." *The Lancet* 384 (9947): 957–979.
[5] Thaddeus S, Maine D. 1994. "Too Far to Walk: Maternal Mortality in Context." *Social Science & Medicine* 38(8):1091–110.

Emergency obstetric and newborn care, developed by the World Health Organization, United Nations Population Fund, and United Nations Children's Fund, is an integrated strategy that aims to equip facilities to effectively attend to the major causes of pregnancy- or childbirth-related maternal and neonatal deaths.[6] Two levels of care are recognized under this approach: basic (administration of parenteral antibiotics, uterotonic drugs, and anticonvulsants and performing manual removal of placenta, removal of retained products of conception, assisted vaginal delivery, and newborn resuscitation) and comprehensive (all seven basic functions plus Caesarean section and safe blood transfusion). Primary-level facilities are required to provide all seven basic EmONC (BEmONC) signal functions; hospitals must provide comprehensive EmONC (CEmONC) signal functions (see Table 1). Declining trends in maternal and newborn mortality in countries that are on track to achieve the MDGs have been attributed to successful implementation of EmONC.

Table 1: The Signal Functions for Emergency Obstetric and Newborn Care Services

Basic services	Comprehensive services
(1) Administer parenteral antibiotics	Perform all seven components of BEmONC, plus
(2) Administer uterotonic drugs (i.e. parenteral oxytocin)	(8) Perform Caesarean section
(3) Administer parenteral anticonvulsants for preeclampsia and eclampsia (i.e., magnesium sulfate)	(9) Perform blood transfusion
(4) Manually remove the placenta	
(5) Remove retained products of conception (e.g., manual vacuum extraction and dilation and curettage)	
(6) Perform assisted vaginal delivery (e.g., vacuum extraction, forceps delivery)	
(7) Perform basic neonatal resuscitation (e.g., with bag and mask)	

Recent estimates indicate that Kenya is off-target to achieve both MDGs 4 and 5; the country has a maternal mortality ratio of 488/100,000 live births and a neonatal mortality rate of 32/1,000 live births.[7] Moreover, these national estimates mask wide regional disparities within the country. The Kenyan National Reproductive Health Strategy 2009–2015 is a roadmap for achieving national and global targets for maternal and newborn health. With it, the Government of Kenya aims to scale up EmONC services to cover 100 percent of health facilities by 2015.[8]

[6] World Health Organization, United Nations Population Fund, United Nations Children's Fund, Columbia University Mailman School of Public Health, Averting Maternal Death and Disability. 2009. *Monitoring Emergency Obstetric Care: A Handbook*. Available at: http://www.who.int/reproductivehealth/publications/monitoring/9789241547734/en/.

[7] Kenya National Bureau of Statistics (KNBS) and ICF Macro. 2010. Kenya Demographic and Health Survey 2008–2009. Calverton, Maryland: KNBS and ICF Macro.

[8] Ministry of Health, Government of Kenya. 2009. National Reproductive Health Strategy 2009–2015. Nairobi, Kenya: Ministry of Health.

To accelerate the national targets of maternal and newborn mortality, Kenya has adopted a model similar to one successfully implemented in Bangladesh to reduce maternal mortality due to postpartum hemorrhage. The Kenyan strategy targets the six leading drivers both of maternal mortality (PPH, pre-eclampsia/eclampsia, and puerperal sepsis) and neonatal mortality (prematurity, perinatal asphyxia, and neonatal sepsis). These six conditions are entry points to address the lack of broad demand generation, faulty practices of healthcare providers, and commodity misuse and mismanagement that contribute to the deaths of mothers and children.[9]

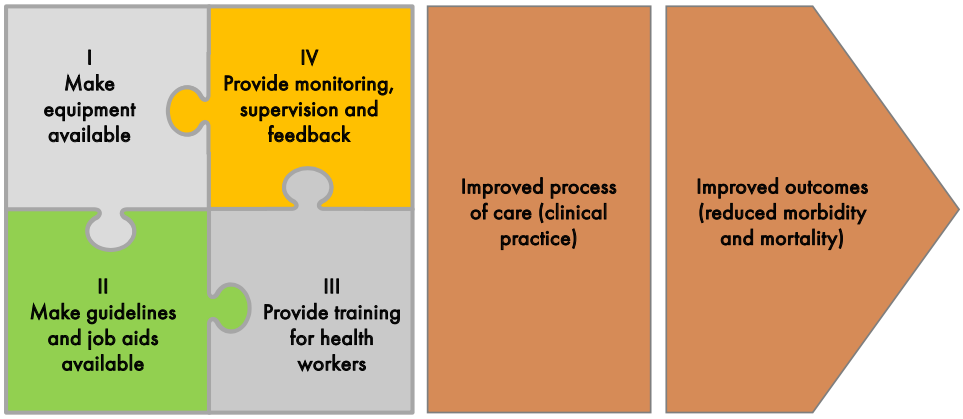
To achieve these goals, national and county governments and their development partners have made substantial investments in training and in increasing the supply of commodities and equipment for maternal and newborn care. However, these efforts have been largely fragmented. The 2010 Kenya Service Provision Assessment survey established that health workers in delivery service units were more likely to be trained in HIV-related modules such as prevention of mother-to-child transmission (63%) than in the other critical labor, delivery, and post-delivery components activities, such as active management of the third-stage of labor (37%), management of PPH (36%), and diagnosis and management of pre-eclampsia and eclampsia (33%). Remarkably, the capacity of health facilities across the country to provide the EmONC signal functions is largely unknown. The extent to which available data are used to set priorities for the allocation of resources is unclear, as well. A focused scale-up of EmONC, delivered along with effective monitoring and evaluation, is expected to address the shortcomings highlighted above.

This report examines the capacity of primary care and referral health facilities in 13 counties supported by USAID implementing partners to provide the EmONC signal functions. Specifically, the report addresses the question: *What proportion of primary care facilities (health centers and dispensaries) and hospitals surveyed in the selected counties are equipped and staffed to provide the EmONC signal functions?* The report further discusses the use of the survey findings to develop action plans to address gaps identified in the delivery of EmONC services. Support for these counties is provided in the form of in-service training of health workers on EmONC, dissemination of EmONC clinical guidelines, and equipment, commodities, and drugs to support maternal, newborn, and child health services.

The theoretical framework on which the intervention is based is the Donabedian model, which represents a quality-of-care framework in three interlinked, unidirectional dimensions: structure, process, and outcome.[10] Thus, changes in structure-related items (e.g., commodities, buildings, equipment, and guidelines) directly influence the process of care (e.g., patient diagnosis and treatment), which, in turn, determines outcomes (e.g., morbidity and mortality). Through assessing the capacity of health facilities to provide the EmONC signal functions, inferences can be made about the ability of facilities to reduce maternal and newborn mortality. A simple illustration of this framework is displayed in Figure 2.

[9] Ministry of Health, Government of Kenya. 2014. Kenya Maternal and Newborn Health Implementation Plan 2014-2017. Nairobi, Kenya: Ministry of Health.
[10] Donabedian A. 1988. "The Quality of Care: How Can It Be Assessed?" *Journal of the American Medical Association* 260(12):1743-8.

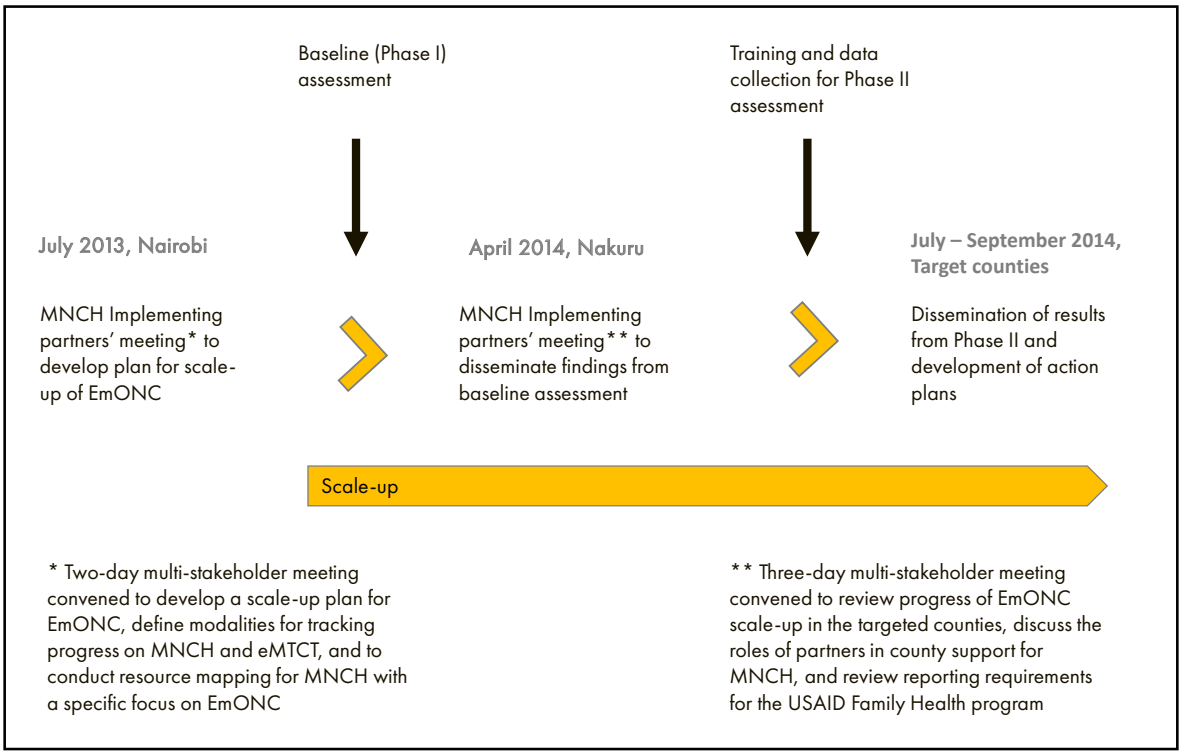
Figure 2: Theoretical Framework for Evaluation of the Scale-up of EmONC in Kenya



History of the Decision to Scale Up EmONC Services in Kenya

In July 2013, the Government of Kenya, in partnership with USAID, embarked on a scale-up of EmONC services across the country (Figure 3). The primary objective of this intervention was to make sure that at least half of the target group of facilities had capacity to offer all the signal functions for BEmONC. APHIAplus partners based in the target counties led the intervention, with technical assistance for quality improvement from University Research Company/ASSIST. MEASURE Evaluation PIMA coordinated monitoring and evaluation; the Maternal and Child Survival Program (formerly the Maternal and Child Health Integrated Program) provided technical support for implementation. The overall goal of the assessment was to obtain reliable data to identify county- and facility-specific needs for the effective scaling-up of EmONC services.

Figure 3: Timeline of Key Events during the USAID Partners' Scale-Up of EmONC in Kenya



Methods and Main Findings of the Phase I Assessment

In the first phase of the scale-up, a rapid results approach was adopted. The implementing partners conducted surveys to identify needs, which in turn would inform the specific interventions to be prioritized. In this initial survey, 377 health facilities from 14 counties were included.

Training was not provided ahead of data collection. The data collected under supervision of APHIAplus were entered directly in a Microsoft Excel spreadsheet, which was then sent to MEASURE Evaluation PIMA electronically and, in some instances, in hard copy, for cleaning and analysis. Availability of equipment and commodities required to provide the seven BEmONC signal functions was reported for each county. Tables summarizing performance at the facility level were also generated.

Wide variations in the preparedness to perform signal functions were observed across facilities and counties. Oxytocin, magnesium sulfate, surgical gloves, and neonatal self-inflating resuscitators ("Ambu bags") were found to be available in the majority of facilities but parenteral antibiotics, manual vacuum aspiration kits, and vacuum extractors for assisted vaginal delivery were frequently noted to be unavailable. Drawing conclusions from this analysis was difficult, however, because of a high frequency of missing data. Appendix 2 summarizes Phase I's methods and results.

The findings of this baseline assessment were disseminated at a USAID meeting of maternal, newborn, and child health implementing partners in Nakuru in April 2014 (Figure 3).

Recommendations from the discussions at this meeting, summarized below, informed the design and implementation of the Phase II survey discussed in this report.

1. Data quality (particularly minimization of missing data) requires improvement through:
   a. Structural improvement of the data collection tools
   b. Training of data collection teams before the surveys
2. Findings from surveys need to be shared promptly to inform ongoing activities and develop appropriate action plans
3. County health management teams need to play a greater role in data management

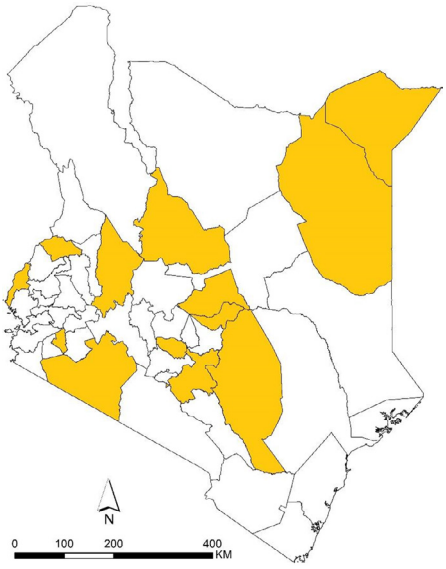
Phase II Assessment

Methods

A cross-sectional survey was conducted in selected health facilities in 13 high-burden counties. County health officials working with USAID APHIAplus implementing partners identified high-volume health facilities for inclusion in the assessments to evaluate the scale-up of EmONC services.

Figure 4: Counties and Health Facilities Included in Phase II of the Assessments

County	Health Centers/ Dispensaries	Hospitals	Total
Baringo	14	5	19
Busia	35	4	39
Kitui	32	9	41
Machakos	37	6	43
Mandera	27	6	33
Meru	28	27	55
Muranga	3	6	9
Narok	10	3	13
Nyamira	26	6	32
Samburu	15	3	18
Tharaka Nithi	13	7	20
Trans Nzoia	23	8	31
Wajir	15	8	23
Total	278	98	376



Orientation and Training of County Teams

County health directors and the APHIAplus and AMPATH PLUS teams in the target counties identified participants to attend one-day meetings for orientation and practical training on use of the data collection tool (Appendix 2) was provided. Also on the agenda were an overview of the EmONC training package, basic principles of data management, feedback on the Phase I results, and the recommendations from the April 2014 implementing partners' meeting. Training was conducted using standard operating procedures and training materials developed jointly by MEASURE Evaluation PIMA and Maternal and Child Survival Program to ensure uniformity of the data collection and data entry processes across all sites. The tool was modified to incorporate feedback from the county teams and the Ministry of Health prior to circulation to the trainees.

In response to the implementing partners' feedback on Phase I, additional orientation was provided on the use of an Excel-based analysis dashboard, which had been developed to enable generation of basic graphs on selected indicators. The dashboard allowed the county teams to see how the assessment data they logged in Excel changed the overall results.

Data Collection and Analysis

Upon conclusion of the orientation, county teams proceeded to collect data from selected facilities in their respective counties. This exercise took place between June and August 2014 across the 13 counties. Data were entered in Microsoft Excel by the county teams and transmitted electronically and in paper copies to MEASURE Evaluation PIMA for cleaning, analysis, reporting, and archiving. Quantitative data on the availability of essential supplies required to perform the EmONC signal functions at countywide and individual health facility levels were reported as proportions. Where mean performance was reported, sampling weights were applied to account for uneven selection of facilities in the counties included in the assessment. Analyses were conducted using Stata version 12.1 (StataCorp, College Station, Texas).

Dissemination of Results and Development of Action Plans

Results of the assessment were shared with the respective county health management teams (CHMTs) and APHIAplus partners and AMPATH PLUS for dissemination and action planning. Each county team scheduled a meeting and invited relevant stakeholders, CHMT members, subcounty reproductive health teams, and health records information officers. Local nongovernmental organizations, community-based organizations, and faith-based organizations were also represented. Those present, led by the CHMT, discussed the findings and developed action plans targeting the identified areas of need.

Findings

Facilities were assessed for their preparedness to provide the EmONC signal functions as defined by the WHO guidelines,[11] adopted by the Kenya Ministry of Health. BEmONC preparedness was defined as the availability of equipment, commodities, and drugs required for health centers and dispensaries to provide each of the seven BEmONC signal functions and for hospitals to provide the nine CEmONC signal functions.

The specific indicators linked to each signal function are shown in Table 2.

Table 2: Items Assessed to Determine Facility Preparedness to Provide EmONC

Signal function	Item(s) assessed
(1) Administer parenteral antibiotics	Availability of injectable penicillin *and* gentamicin *and* metronidazole OR ceftriaxone *and* metronidazole
(2) Administer uterotonic drugs	Availability of parenteral oxytocin
(3) Administer parenteral anticonvulsants for severe pre-eclampsia and eclampsia	Availability of magnesium sulfate
(4) Manually remove the placenta	Availability of sterile elbow-length gloves
(5) Remove retained products of conception	Availability of manual vacuum aspiration kit
(6) Perform assisted vaginal delivery	Availability of vacuum extractor
(7) Perform basic neonatal resuscitation	Availability of pediatric bag valve mask device
(8) Perform surgery (e.g., caesarean delivery)	Availability of Caesarean section delivery set
(9) Perform blood transfusion	Availability of blood transfusion sets
Additional indicators	
Training of health workers on EmONC equipment*	
Availability of EmONC clinical guidelines	

*See Appendix 1 ("County Profiles") for a description of the equipment assessed.

[11] World Health Organization, United Nations Population Fund, United Nations Children's Fund, Columbia University Mailman School of Public Health, Averting Maternal Death and Disability. 2009. *Monitoring Emergency Obstetric Care: A Handbook*. Available at: http://www.who.int/reproductivehealth/publications/monitoring/9789241547734/en/.

Additional data were collected on the proportion of health workers providing services in the maternal and newborn units who had received training in EmONC within the 12 months preceding the survey and the availability of the national EmONC clinical guidelines. The results of this assessment are provided at the end of this section of the report.

Facility Preparedness to Perform Signal Functions

Signal Function 1: Administer Parenteral Antibiotics

Facilities were assessed for the availability of broad spectrum antibiotics required for the management of puerperal sepsis (see Table 2). Most counties reported availability in more than 60 percent of hospitals assessed, reflecting wide availability. In health centers and dispensaries, only four counties (Mandera, Wajir, Machakos, and Trans Nzoia) were found to have the recommended antibiotics in at least half of surveyed facilities.

Signal Function 2: Administer Uterotonic Drugs

Parenteral oxytocin for the management of postpartum hemorrhage was present in the majority of health centers, dispensaries, and hospitals assessed. All 13 counties reporting availability in more than 85 percent of the facilities assessed.

Signal Function 3: Administer Parenteral Anticonvulsants for Severe Pre-eclampsia and Eclampsia

Magnesium sulfate for the management of preeclampsia and eclampsia was available in 87 percent of hospitals and 63 percent of health centers and dispensaries assessed. More than half of the counties assessed reported 100-percent availability within the hospitals surveyed. In contrast, only Murang'a County reported availability in all health centers and dispensaries assessed.

Signal Function 4: Manually Remove the Placenta

Elbow-length gloves for manual removal of the placenta were generally only available in 32 percent of health centers and dispensaries. Performance for this signal function was better in hospitals, with 72 percent of facilities in the 13 counties reporting availability and one county (Samburu) reporting availability in all hospitals assessed.

Signal Function 5: Remove Retained Products of Conception

Manual vacuum aspiration kits for the removal of retained products of conception were available in most hospitals (91%). However only Trans Nzoia, Murang'a, and Wajir counties were observed to have these kits in at least half of the health centers and dispensaries (average availability in health centers and dispensaries was 42%).

Signal Function 6: Perform Assisted Vaginal Delivery

Availability of vacuum extractors for assisted vaginal delivery was low in hospitals, health centers, and dispensaries across most of the counties assessed. Meru, Narok, Nyamira, Tharaka Nithi, and Wajir counties reported availability in fewer than half of the hospitals surveyed (average availability in hospitals was 52%). In health centers and dispensaries, availability of this equipment ranged from 0 percent (Murang'a and Samburu Counties) to 31 percent (Kitui County), with an average availability of 15 percent.

Signal Function 7: Perform Basic Neonatal Resuscitation

Pediatric Ambu bag valve and mask devices for newborn resuscitation were observed to be widely available. In hospitals, availability was observed to range from 75 percent (Wajir County) to 100 percent (Baringo, Busia, Murang'a Narok, Samburu, Tharaka Nithi, Trans Nzoia, and Machakos Counties). In health centers and dispensaries, the availability of this equipment was lowest in Mandera County (52%) and highest in Murang'a County (100%).

Signal Function 8: Perform Surgery (e.g., Caesarean Section Delivery)

Facilities were assessed for availability of surgical equipment required for performing delivery by Caesarean section. Performance of this signal function is not required for health centers and dispensaries. In the hospitals, availability ranged from 0 percent (Nyamira County) to 67 percent (Machakos and Samburu Counties). (The mean availability was 42%).

Signal Function 9: Perform Blood Transfusion

The capacity to perform blood transfusion is the second additional requirement for the provision of CEmONC. Blood transfusion sets were found to be available in 42 percent of hospitals in the 13 counties. Availability ranged from 17 percent (Nyamira County) to 83 percent (Mandera County).

Health Worker Training on EmONC

Health facilities were assessed for the number of health workers in the maternity/newborn units who had received training on EmONC within the 12 months preceding the survey. This indicator was reported as a proportion of the total number of health workers in the maternity/newborn units at the time of the survey.

Overall, the number of trained health workers was found to be low. Murang'a was the best-performing county, reporting 67 percent of health workers having received training. Most counties were found to have between 10 percent and 30 percent of health workers trained in EmONC attending maternity and newborn clients.

Availability of Guidelines

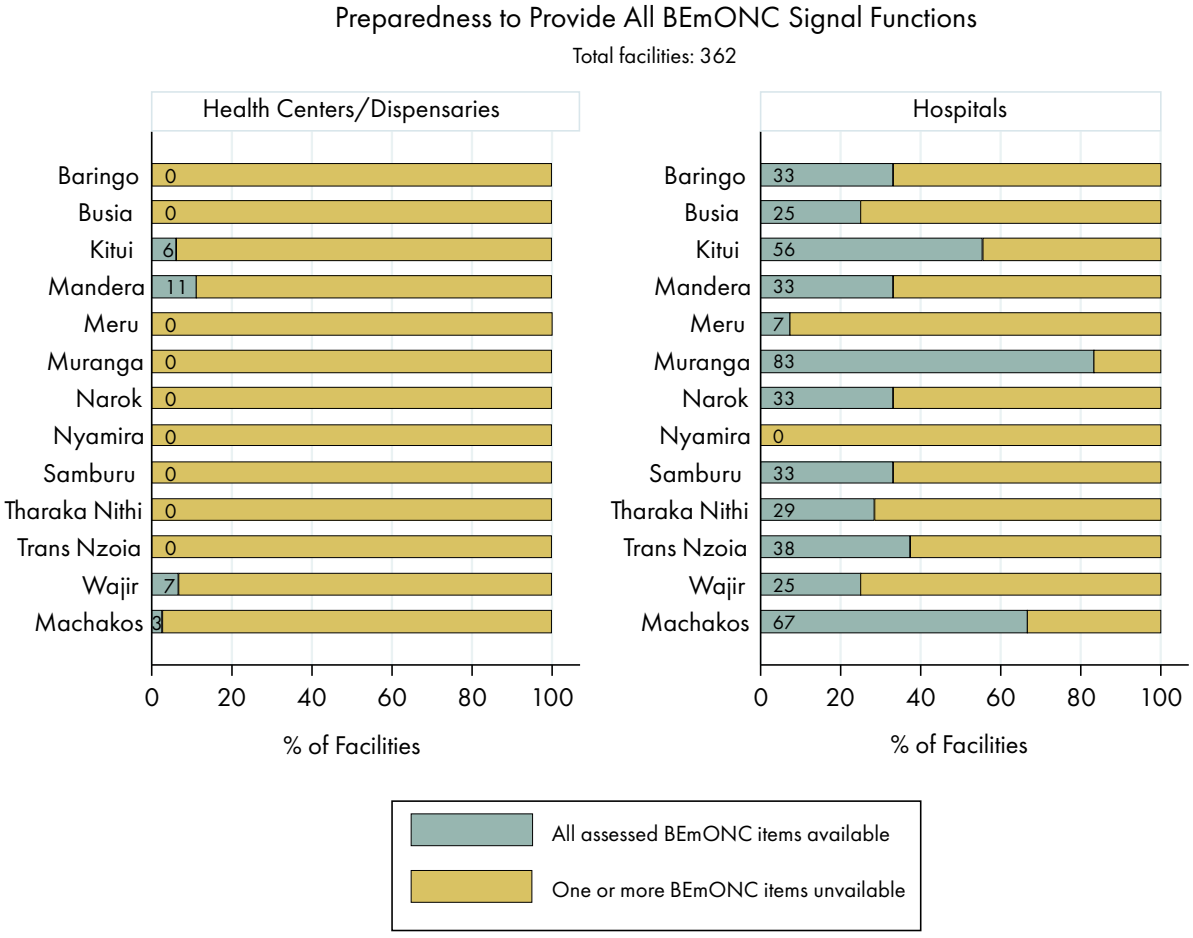
The availability of the national guidelines on quality emergency obstetric and neonatal care varied markedly across counties. In health centers and dispensaries, availability ranged from 15 percent (Nyamira County) to 73 percent (Samburu County). In hospitals, the guidelines were present in only 17 percent of facilities in Nyamira County and 100 percent of facilities in Baringo, Murang'a, Samburu, Tharaka Nithi, and Machakos counties.

Preparedness to Perform All BEmONC Signal Functions

A summary score of preparedness to provide all seven BEmONC signal functions was calculated for all health facilities in each county. Preparedness of a facility was defined as the availability of all seven BEmONC items listed in Table 2, and then expressed as a proportion of all the facilities assessed in that county. Facilities that lacked even one of the seven items were considered unable to fully provide BEmONC signal functions. Health centers and dispensaries in all counties except Kitui, Mandera, Wajir, and Machakos were observed to lack at least one of the items assessed. Only three counties

(Kitui, 56%; Murang'a, 83%; and Machakos, 67%) were found to have all the items assessed for provision of the seven BEmONC signal functions in more than half of the hospitals assessed (Figure 5).

Figure 5: Proportion of Health Facilities Prepared to Provide Seven BEmONC Signal Functions



Discussion

This survey provides a detailed assessment of the availability of maternal and child health equipment and commodities essential for the delivery of EmONC services in a representative selection of high-burden regions across Kenya. With growing urgency from the government and partners to accelerate the decline in maternal and newborn mortality, data of this nature provides useful insights into existing needs to guide the appropriate distribution of limited resources.

The availability of basic items required to address the major causes of maternal and newborn mortality was found to vary across health facilities in the 13 counties assessed. Although overall capacity to provide the EmONC signal functions was observed to be suboptimal in many facilities, the availability of specific items varied widely. It was further noted that health centers and dispensaries were generally less equipped than hospitals to provide the BEmONC signal functions.

Antibiotics (essential for the management of puerperal sepsis) and oxytocin (necessary for managing PPH) were found to be present in most facilities. Together, these conditions account for one third of maternal deaths annually. These findings are positive indicators of the preparedness of health facilities to attend to the two emergencies. But the high burden of these conditions is affected by additional factors, including seeking appropriate and timely care. Indeed, previous work conducted in western Kenya (former Nyanza Province) has shown that socioeconomic and demographic factors play important roles in determining the use of maternal health care services.[12]

Assisted vaginal delivery through the use of forceps and vacuum extraction is a safe and valuable intervention that has been linked to improved maternal and fetal outcomes and reduced rates of Caesarean section delivery when appropriately applied to women experiencing obstructed labor. Performance of this signal function was generally poor across counties. This finding is a cause for concern, given the limited capacity of referral and performance of Caesarian delivery across the country.

Although many hospitals were equipped with manual vacuum aspiration kits for the removal of retained products of conception, health centers and dispensaries lacked this lifesaving equipment. Making this equipment available at low-level facilities and conducting training on its use presents an immediate opportunity for reducing mortality due to abortion.

Perinatal asphyxia is associated with high newborn mortality and serious long-term complications. Newborn resuscitation is a critical skill required for the management of newborns who experience difficulty initiating breathing at birth. Pediatric Ambu bags, required for resuscitation, were found to be widely available across the facilities assessed. Scaling up of this signal function should focus on increasing availability of this equipment at all health facilities, as well as appropriate training of staff on newborn resuscitation.

The results in this report complement findings of previous local studies. The Kenya Service Provision Assessment survey found only 3 percent of health facilities with capacity to provide BEmONC.[13] The Kenya Service Availability and Readiness Assessment Mapping—a recent, comprehensive, nationwide health facility survey—found essential medicines for maternal care, including antibiotics, anticonvulsants, and antihypertensive drugs, to be available in only 24 percent of primary healthcare facilities and 29 percent of hospitals.[14] In a cross-sectional study conducted in 40 health facilities in Malindi County, none of the included facilities was prepared to provide the complete range of seven BEmONC signal functions, primarily for lack of equipment to perform assisted vaginal delivery.[15]

The wide variation observed in performance across counties suggests the need for individualized approaches to improving care based on identified gaps. A major objective of this survey was to highlight areas of need in order to facilitate the development of actionable interventions for improvement of maternal and newborn care by the primary consumers of the findings: national and county government

[12] Owino B. 2000. "The Use of Maternal Health Care Services. Socio-economic and Demographic Factors—Nyanza, Kenya." IFRA (French Institute for Research in Africa) Les Cahiers 21: 81–122.
[13] National Coordinating Agency for Population and Development (Kenya) Ministry of Medical Services (Kenya), Ministry of Public Health and Sanitation (Kenya), Kenya National Bureau of Statistics, ICF Macro. 2010. Kenya Service Provision Assessment Survey 2010. Available at: http://www.popline.org/node/227181.
[14] Government of Kenya, Ministry of Health. 2014. Kenya Service Availability and Readiness Assessment Mapping (SARAM) Report, 2013. Available at: http://www.who.int/healthinfo/systems/sara_reports/en/.
[15] Echoka E, Kombe Y, Dubourg D, Makokha A, Evjen-Olsen B, Mwangi M, et al. 2013. "Existence and Functionality of Emergency Obstetric Care Services at District Level in Kenya: Theoretical Coverage Versus Reality." *BMC Health Services Research* 13:113.

health officials and clinical managers in the health facilities assessed. In order to achieve this, support was provided to each of the 13 counties to hold meetings shortly after the survey for the dissemination of the results to a wide range of stakeholders. The major outputs from the meetings were action plans documenting the activities to be conducted over the subsequent months to improve capacity to provide quality maternal and newborn care at the county and facility levels. Accountability was ensured through documentation of clearly defined, time-bound activities with responsibilities assigned to specific individuals. The engagement of senior county officials, health facility managers, health workers, and health record information officers during the development of the survey tools, management of the data, and dissemination of the findings are believed to have contributed substantially to the success of this exercise. The inclusion of almost 30 percent of the counties in Kenya extends the utility of these results to the national government as well as local and international partners.

The poor quality of health information is a major weakness of health systems in developing countries, including Kenya. Reliability of data on maternal and newborn indicators has been highlighted as a specific challenge. The capacity to collect, analyze, and report data was enhanced in the participating counties through the basic training provided on the survey tools, basic data management, and the generation of automated reports using Microsoft Excel dashboards. This was evidenced by the dramatic improvement in the quality of data presented in this report when compared to the initial exercise. The tools and training materials developed for this survey are currently being packaged in a BEmONC toolkit for use by other teams involved in similar exercises.

Limitations

The survey's cross-sectional design limits conclusions about the availability of the items assessed to the time when the survey was conducted. This may mask conditions where items have generally been available and were only lacking at the time of the survey and vice versa. This weakness can be minimized by conducting assessments at regular intervals, a practice which also allows for the examination of trends in performance over time.

The survey only collected data on the availability of items required to provide EmONC. While these "structure-related" indicators represent the basic elements for the provision of quality care, it is not possible to determine whether the items that were found to be available were put to correct and appropriate use—arguably a more useful measure. This would require assessing the items related to the "process of care," such as healthcare workers' actual knowledge, attitudes, and skills (competence). Although considerably more demanding, this approach provides crucial information on the ingredients required to achieve the ultimate goal of reducing maternal and newborn mortality. A revised tool designed for this purpose is currently under development for use in subsequent surveys.

Conclusions

This report provides important insights into the availability of essential items required for providing EmONC in Kenyan health facilities. Key items are lacking in many facilities and relatively few have all the required commodities and equipment to provide EmONC. As the government and partners seek to address the high burden of maternal and newborn mortality through interventions, such as increasing coverage of EmONC, there is a growing need for reliable and timely assessments to track progress. Data from such assessments can further be used to match the allocation of resources with existing needs.

Next Steps

Implementation of the EmONC scale-up, moving forward, will likely be driven by the findings discussed in this report and future, similar assessments. Assessment tools will undergo continuous refinement to respond to the data requirements of those directly involved in the scale-up of the intervention. A major priority is the incorporation of activities focusing on quality improvement and development of appropriate indicators for monitoring the process of care. Future efforts will be directed toward improving the efficiency of reporting and the quality of data collected. More facilities will be covered, in line with the ultimate goal of attaining universal national coverage of EmONC.

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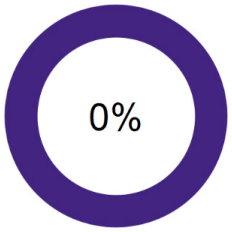
Appendix 1: County Profiles

This section provides details of the proportion of health workers trained in BEmONC and the availability of essential items required to provide BEmONC (health center/dispensaries) and CEmONC (hospitals) and other maternal, newborn, and child health services in each of the 13 counties assessed. For each county, pie charts display the overall proportion of health facilities that were found to have all the items required to provide the seven BEmONC signal functions (health centers/dispensaries) and the nine CEmONC signal-function (hospitals). (Note: In the following tables, "MVA" stands for "manual vacuum aspiration" and "BP" stands for "blood pressure.")

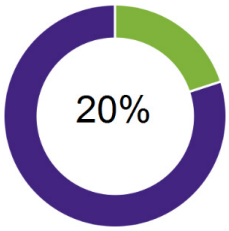
Baringo County

	Dispensaries/ Health Centers	Hospitals
Total Health Facilities	223	7
Facilities Surveyed	14	5
%	6.3	71.0

BEmONC–ready Facilities (Dispensaries/Health Centers)



CEmONC–ready Facilities (Hospitals)



EmONC Signal Functions

Indicator	Proportion Achieved (%)	
	Dispensaries/ Health Centers	Hospitals
Staff trained	13	39
Guidelines available	43	100
Injectable antibiotics	14	60
Oxytocin	93	100
Magnesium sulphate	57	80
Elbow-length gloves	71	60
MVA kit	21	100
Vacuum extractor	14	80
Neonatal ambubag	93	100
Caeserian delivery set	0	60
Blood transfusion	0	60

MNCH Equipment

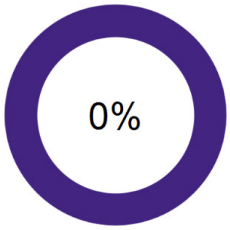
Item	Availability (%)	
	Dispensaries/ Health Centers	Hospitals
Fetoscope	100.0	100
Suction machine	92.9	100
Adult ambubag	78.6	80.0
Oropharyngeal airway	35.7	60.0
Patella hammer	0.0	20.0
Thermometer	53.8	60.0
Speculum	92.9	100
Stethoscope	78.6	40.0
BP machine	78.6	80.0
Infant weighing scale	92.9	100
Adult weighing scale	57.1	60.0
Colored bins	42.9	80.0
Instrument tray	71.4	25.0
8″ Bowl	33.3	40.0
10″ Kidney dish	7.1.4	100

Item	Availability (%)	
	Dispensaries / Health Centers	Hospitals
Toothed dissecting forceps	64.3	60.0
Mayo scissors	61.5	60.0
Cord scissors 4″	85.7	80
Needle holder 7″	100	80.0
Artery forceps straight 8″	71.4	80.0
Episiotomy scissors	71.4	80.0
Gallipot	57.1	0.0
Vaginal examination pack	7.7	40.0
Suction tube	66.7	75.0
Cutdown tray	0.0	25.0
Newborn resuscitaire	0.0	25.0
Newborn towels	0.0	0.0
Oxygen source	36.4	80.0
Gynaecological exam light	36.4	80.0

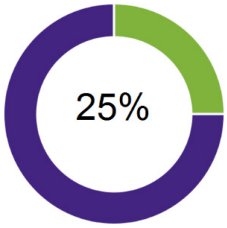
Busia County

	Dispensaries/ Health Centers	Hospitals
Total Health Facilities	88	7
Facilities Surveyed	35	4
%	39.8	57.1

BEmONC–ready Facilities (Dispensaries/Health Centers)



CEmONC–ready Facilities (Hospitals)



EmONC Signal Functions

Indicator	Proportion Achieved (%)	
	Dispensaries/ Health Centers	Hospitals
Staff trained	38	36
Guidelines available	40	50
Injectable antibiotics	11	50
Oxytocin	97	100
Magnesium sulphate	69	75
Elbow-length gloves	14	50
MVA kit	46	75
Vacuum extractor	14	50
Neonatal ambubag	60	100
Caeserian delivery set	6	33
Blood transfusion	3	75

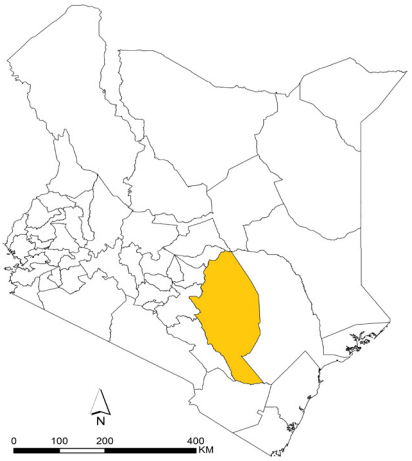
MNCH Equipment

Item	Availability (%)	
	Dispensaries/ Health Centers	Hospitals
Fetoscope	100	100
Suction machine	57.1	100
Adult ambubag	58.8	100
Oropharyngeal airway	18.8	75
Patella hammer	8.6	25
Thermometer	82.9	100
Speculum	94.3	100
Stethoscope	88.6	100
BP machine	88.6	100
Infant weighing scale	85.7	100
Adult weighing scale	91.4	50
Colored bins	82.4	100
Instrument tray	81.8	100
8" Bowl	54.5	75
10" Kidney dish	84.8	100

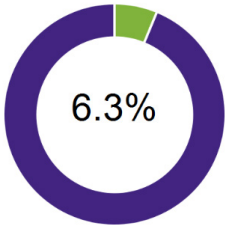
Item	Availability (%)	
	Dispensaries/ Health Centers	Hospitals
Toothed dissecting forceps	79.4	50
Mayo scissors	73.5	50
Cord scissors 4"	76.5	50
Needle holder 7"	82.4	75
Artery forceps straight 8"	84.8	75
Episiotomy scissors	88.2	75
Gallipot	88.2	100
Vaginal examination pack	29.4	50
Suction tube	36.4	75
Cutdown tray	2.9	0
Newborn resuscitaire	5.7	25
Newborn towels	33.3	25
Oxygen source	33.3	25
Gynaecological exam light	22.2	25

Kitui County

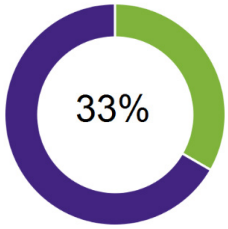
	Dispensaries/ Health Centers	Hospitals
Total Health Facilities	376	14
Facilities Surveyed	32	9
%	8.5	64.3



BEmONC–ready Facilities (Dispensaries/Health Centers)



CEmONC–ready Facilities (Hospitals)



EmONC Signal Functions

	Proportion Achieved (%)	
Indicator	Dispensaries/ Health Centers	Hospitals
Staff trained	21	15
Guidelines available	72	78
Injectable antibiotics	41	100
Oxytocin	100	100
Magnesium sulphate	78	100
Elbow-length gloves	41	78
MVA kit	38	100
Vacuum extractor	31	78
Neonatal ambubag	84	78
Caeserian delivery set	9	44
Blood transfusion	6	33

MNCH Equipment

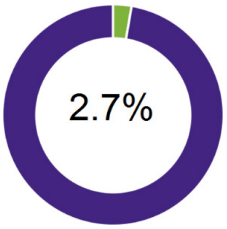
	Availability (%)	
Item	Dispensaries/ Health Centers	Hospitals
Fetoscope	100	100
Suction machine	84	100
Adult ambubag	66	100
Oropharyngeal airway	41	67
Patella hammer	22	11
Thermometer	97	100
Speculum	94	100
Stethoscope	97	100
BP machine	97	100
Infant weighing scale	94	100
Adult weighing scale	100	89
Colored bins	59	83
Instrument tray	91	89
8″ Bowl	75	78
10″ Kidney dish	94	100

	Availability (%)	
Item	Dispensaries/ Health Centers	Hospitals
Toothed dissecting forceps	84	100
Mayo scissors	88	88
Cord scissors 4″	88	89
Needle holder 7″	91	89
Artery forceps straight 8″	88	100
Episiotomy scissors	88	100
Gallipot	88	89
Vaginal examination pack	53	56
Suction tube	56	89
Cutdown tray	9	11
Newborn resuscitaire	9	44
Newborn towels	22	44
Oxygen source	28	56
Gynaecological exam light	19	56

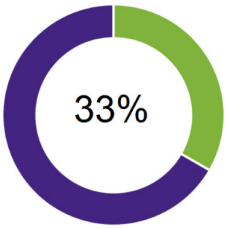
Machakos County

	Dispensaries/ Health Centers	Hospitals
Total Health Facilities	320	10
Facilities Surveyed	37	6
%	11.7	60

BEmONC–ready Facilities (Dispensaries/Health Centers)



CEmONC–ready Facilities (Hospitals)



EmONC Signal Functions

Indicator	Proportion Achieved (%) Dispensaries/ Health Centers	Hospitals
Staff trained	0	7
Guidelines available	49	100
Injectable antibiotics	51	100
Oxytocin	89	100
Magnesium sulphate	59	100
Elbow-length gloves	27	83
MVA kit	41	100
Vacuum extractor	24	67
Neonatal ambubag	89	100
Caeserian delivery set	8	67
Blood transfusion	8	50

MNCH Equipment

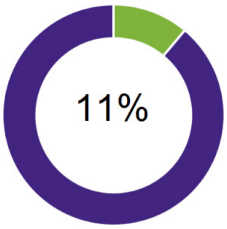
Item	Availability (%) Dispensaries/ Health Centers	Hospitals
Fetoscope	97	100
Suction machine	76	100
Adult ambubag	70	100
Oropharyngeal airway	43	50
Patella hammer	16	33
Thermometer	95	100
Speculum	95	100
Stethoscope	95	100
BP machine	97	100
Infant weighing scale	100	100
Adult weighing scale	100	67
Colored bins	54	100
Instrument tray	97	100
8" Bowl	78	67
10" Kidney dish	95	100

Item	Availability (%) Dispensaries / Health Centers	Hospitals
Toothed dissecting forceps	86	100
Mayo scissors	76	83
Cord scissors 4"	89	100
Needle holder 7"	92	100
Artery forceps straight 8"	92	83
Episiotomy scissors	95	100
Gallipot	92	100
Vaginal examination pack	46	67
Suction tube	70	83
Cutdown tray	8	0
Newborn resuscitaire	30	67
Newborn towels	27	67
Oxygen source	43	100
Gynaecological exam light	51	100

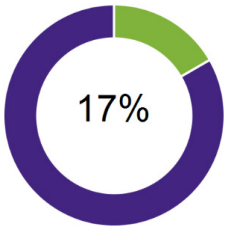
Mandera County

	Dispensaries/ Health Centers	Hospitals
Total Health Facilities	78	6
Facilities Surveyed	27	6
%	34.6	100.0

BEmONC–ready Facilities (Dispensaries/Health Centers)



CEmONC–ready Facilities (Hospitals)



EmONC Signal Functions

Indicator	Proportion Achieved (%)	
	Dispensaries/ Health Centers	Hospitals
Staff trained	28	27
Guidelines available	26	50
Injectable antibiotics	96	100
Oxytocin	96	100
Magnesium sulphate	81	100
Elbow-length gloves	48	83
MVA kit	44	100
Vacuum extractor	22	50
Neonatal ambubag	52	83
Caeserian delivery set	11	50
Blood transfusion	15	83

MNCH Equipment

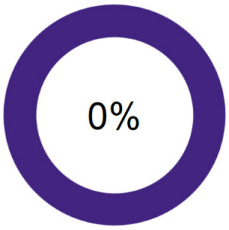
Item	Availability (%)	
	Dispensaries/ Health Centers	Hospitals
Fetoscope	100	100
Suction machine	37	100
Adult ambubag	33	33
Oropharyngeal airway	11	17
Patella hammer	22	33
Thermometer	93	100
Speculum	74	100
Stethoscope	96	100
BP machine	96	100
Infant weighing scale	67	100
Adult weighing scale	100	100
Colored bins	11	50
Instrument tray	59	100
8" Bowl	44	83
10" Kidney dish	78	100

Item	Availability (%)	
	Dispensaries/ Health Centers	Hospitals
Toothed dissecting forceps	48	83
Mayo scissors	41	83
Cord scissors 4"	63	100
Needle holder 7"	78	100
Artery forceps straight 8"	70	100
Episiotomy scissors	89	100
Gallipot	82	100
Vaginal examination pack	23	50
Suction tube	48	83
Cutdown tray	0	33
Newborn resuscitaire	7	33
Newborn towels	4	0
Oxygen source	7	67
Gynaecological exam light	11	67

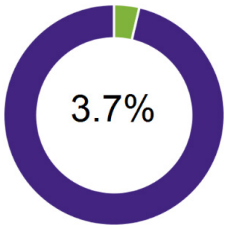
Meru County

	Dispensaries/ Health Centers	Hospitals
Total Health Facilities	396	27
Facilities Surveyed	28	27
%	7.1	100.0

BEmONC–ready Facilities (Dispensaries/Health Centers)



CEmONC–ready Facilities (Hospitals)



EmONC Signal Functions

Indicator	Proportion Achieved (%)	
	Dispensaries/ Health Centers	Hospitals
Staff trained	16	9
Guidelines available	45	63
Injectable antibiotics	32	44
Oxytocin	95	93
Magnesium sulphate	55	63
Elbow length gloves	5	56
MVA kit	36	52
Vacuum extractor	14	26
Neonatal ambubag	73	81
Caeserian delivery set	9	25
Blood transfusion	5	41

MNCH Equipment

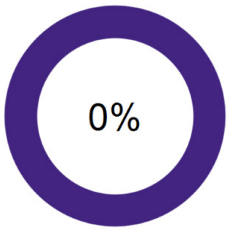
Item	Availability (%)	
	Dispensaries/ Health Centers	Hospitals
Fetoscope	100	100
Suction machine	76	93
Adult ambubag	81	77
Oropharyngeal airway	33	60
Patella hammer	25	33
Thermometer	80	96
Speculum	100	100
Stethoscope	86	88
BP machine	86	100
Infant weighing scale	95	96
Adult weighing scale	76	79
Colored bins	43	75
Instrument tray	75	92
8" Bowl	40	79
10" Kidney dish	91	96

Item	Availability (%)	
	Dispensaries/ Health Centers	Hospitals
Toothed dissecting forceps	81	89
Mayo scissors	76	92
Cord scissors 4"	76	88
Needle holder 7"	86	88
Artery forceps straight 8"	81	92
Episiotomy scissors	86	96
Gallipot	100	96
Vaginal examination pack	47	63
Suction tube	58	92
Cutdown tray	5	24
Newborn resuscitaire	22	71
Newborn towels	33	73
Oxygen source	50	88
Gynaecological exam light	30	88

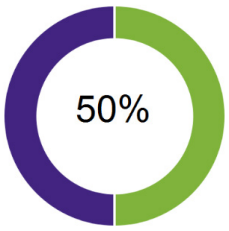
Murang'a County

	Dispensaries/ Health Centers	Hospitals
Total Health Facilities	270	10
Facilities Surveyed	3	6
%	1.1	60

BEmONC–ready Facilities (Dispensaries/Health Centers)



CEmONC–ready Facilities (Hospitals)



EmONC Signal Functions

Indicator	Proportion Achieved (%)	
	Dispensaries/ Health Centers	Hospitals
Staff trained	50	69
Guidelines available	67	100
Injectable antibiotics	0	100
Oxytocin	100	100
Magnesium sulphate	100	100
Elbow-length gloves	67	83
MVA kit	67	100
Vacuum extractor	0	83
Neonatal ambubag	100	100
Caeserian delivery set	0	50
Blood transfusion	0	50

MNCH Equipment

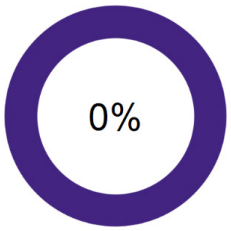
Item	Availability (%)	
	Dispensaries/ Health Centers	Hospitals
Fetoscope	100	100
Suction machine	67	100
Adult ambubag	100	100
Oropharyngeal airway	67	83
Patella hammer	0	17
Thermometer	100	100
Speculum	100	100
Stethoscope	100	100
BP machine	100	100
Infant weighing scale	100	100
Adult weighing scale	100	100
Colored bins	100	100
Instrument tray	67	100
8" Bowl	67	100
10" Kidney dish	100	100

Item	Availability (%)	
	Dispensaries/ Health Centers	Hospitals
Toothed dissecting forceps	100	100
Mayo scissors	67	100
Cord scissors 4"	67	83
Needle holder 7"	100	100
Artery forceps straight 8"	67	100
Episiotomy scissors	67	100
Gallipot	100	100
Vaginal examination pack	67	100
Suction tube	67	100
Cutdown tray	0	33
Newborn resuscitaire	33	17
Newborn towels	33	83
Oxygen source	100	100
Gynaecological exam light	100	100

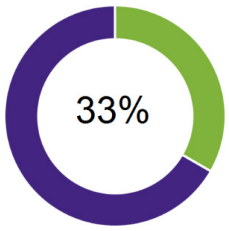
Narok County

	Dispensaries/ Health Centers	Hospitals
Total Health Facilities	151	9
Facilities Surveyed	10	3
%	6.6	33.3

BEmONC–ready Facilities (Dispensaries/Health Centers)



CEmONC–ready Facilities (Hospitals)



EmONC Signal Functions

Indicator	Proportion Achieved (%)	
	Dispensaries/ Health Centers	Hospitals
Staff trained	17	0
Guidelines available	20	67
Injectable antibiotics	0	33
Oxytocin	90	100
Magnesium sulphate	50	100
Elbow length gloves	10	67
MVA kit	40	100
Vacuum extractor	20	33
Neonatal ambubag	80	100
Caeserian delivery set	0	33
Blood transfusion	0	33

MNCH Equipment

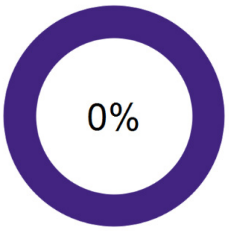
Item	Availability (%)	
	Dispensaries/ Health Centers	Hospitals
Fetoscope	80	100
Suction machine	80	100
Adult ambubag	80	100
Oropharyngeal airway	30	33
Patella hammer	10	0
Thermometer	60	67
Speculum	90	100
Stethoscope	60	67
BP machine	60	67
Infant weighing scale	60	100
Adult weighing scale	70	33
Colored bins	60	67
Instrument tray	80	100
8" Bowl	20	67
10" Kidney dish	90	67

Item	Availability (%)	
	Dispensaries/ Health Centers	Hospitals
Toothed dissecting forceps	80	33
Mayo scissors	80	67
Cord scissors 4"	50	33
Needle holder 7"	80	67
Artery forceps straight 8"	70	67
Episiotomy scissors	90	100
Gallipot	80	100
Vaginal examination pack	40	33
Suction tube	60	100
Cutdown tray	0	50
Newborn resuscitaire	0	33
Newborn towels	20	67
Oxygen source	40	100
Gynaecological exam light	30	100

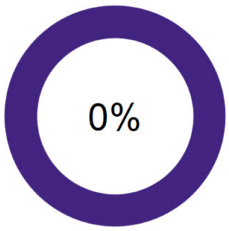
Nyamira County

	Dispensaries/ Health Centers	Hospitals
Total Health Facilities	125	8
Facilities Surveyed	26	6
%	20.6	75.0

BEmONC–ready Facilities (Dispensaries/Health Centers)



CEmONC–ready Facilities (Hospitals)



EmONC Signal Functions

Indicator	Proportion Achieved (%)	
	Dispensaries/ Health Centers	Hospitals
Staff trained	25	65
Guidelines available	15	17
Injectable antibiotics	35	50
Oxytocin	96	100
Magnesium sulphate	42	50
Elbow length gloves	19	67
MVA kit	31	67
Vacuum extractor	12	17
Neonatal ambubag	85	83
Caeserian delivery set	0	0
Blood transfusion	0	17

MNCH Equipment

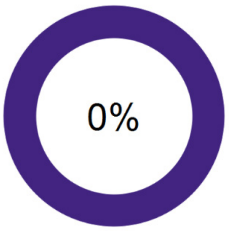
Item	Availability (%)	
	Dispensaries/ Health Centers	Hospitals
Fetoscope	96	100
Suction machine	62	100
Adult ambubag	42	100
Oropharyngeal airway	23	100
Patella hammer	12	0
Thermometer	89	100
Speculum	89	100
Stethoscope	92	100
BP machine	89	83
Infant weighing scale	85	100
Adult weighing scale	92	50
Colored bins	35	83
Instrument tray	73	83
8" Bowl	46	67
10" Kidney dish	77	100

Item	Availability (%)	
	Dispensaries/ Health Centers	Hospitals
Toothed dissecting forceps	62	83
Mayo scissors	58	33
Cord scissors 4"	65	33
Needle holder 7"	73	83
Artery forceps straight 8"	69	67
Episiotomy scissors	77	83
Gallipot	85	100
Vaginal examination pack	39	33
Suction tube	54	100
Cutdown tray	4	0
Newborn resuscitaire	-	-
Newborn towels	-	-
Oxygen source	-	-
Gynaecological exam light	-	-

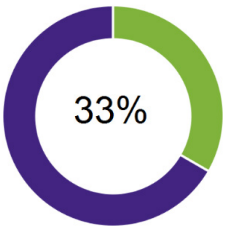
Samburu County

	Dispensaries/ Health Centers	Hospitals
Total Health Facilities	75	3
Facilities Surveyed	15	3
%	20.0	100.0

BEmONC–ready Facilities (Dispensaries/Health Centers)



CEmONC–ready Facilities (Hospitals)



EmONC Signal Functions

Indicator	Proportion Achieved (%)	
	Dispensaries/ Health Centers	Hospitals
Staff trained	43	20
Guidelines available	73	100
Injectable antibiotics	27	67
Oxytocin	100	100
Magnesium sulphate	47	100
Elbow length gloves	33	100
MVA kit	20	100
Vacuum extractor	0	67
Neonatal ambubag	73	100
Caeserian delivery set	0	67
Blood transfusion	0	67

MNCH Equipment

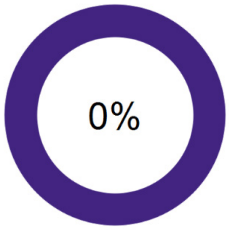
Item	Availability (%)	
	Dispensaries/ Health Centers	Hospitals
Fetoscope	100	100
Suction machine	73	100
Adult ambubag	87	100
Oropharyngeal airway	7	67
Patella hammer	13	33
Thermometer	93	100
Speculum	93	100
Stethoscope	100	100
BP machine	100	100
Infant weighing scale	100	100
Adult weighing scale	100	100
Colored bins	60	100
Instrument tray	87	67
8" Bowl	60	67
10" Kidney dish	93	100

Item	Availability (%)	
	Dispensaries/ Health Centers	Hospitals
Toothed dissecting forceps	80	67
Mayo scissors	60	67
Cord scissors 4"	67	100
Needle holder 7"	80	100
Artery forceps straight 8"	80	100
Episiotomy scissors	100	67
Gallipot	93	100
Vaginal examination pack	40	67
Suction tube	60	67
Cutdown tray	0	33
Newborn resuscitaire	7	100
Newborn towels	33	33
Oxygen source	20	67
Gynaecological exam light	47	67

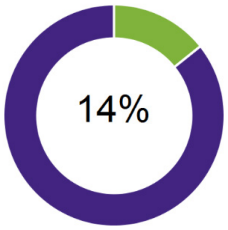
Tharaka Nithi County

	Dispensaries/ Health Centers	Hospitals
Total Health Facilities	118	8
Facilities Surveyed	13	7
%	11.0	88.0

BEmONC–ready Facilities (Dispensaries/Health Centers)



CEmONC–ready Facilities (Hospitals)



EmONC Signal Functions

Indicator	Proportion Achieved (%)	
	Dispensaries/ Health Centers	Hospitals
Staff trained	29	7
Guidelines available	54	100
Injectable antibiotics	8	86
Oxytocin	85	86
Magnesium sulphate	38	100
Elbow length gloves	23	86
MVA kit	38	86
Vacuum extractor	15	29
Neonatal ambubag	92	100
Caeserian delivery set	0	43
Blood transfusion	0	43

MNCH Equipment

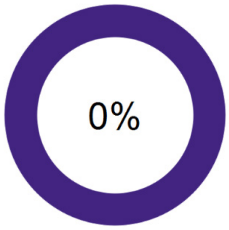
Item	Availability (%)	
	Dispensaries/ Health Centers	Hospitals
Fetoscope	77	100
Suction machine	92	100
Adult ambubag	69	86
Oropharyngeal airway	23	57
Patella hammer	8	20
Thermometer	76	100
Speculum	100	100
Stethoscope	69	86
BP machine	69	86
Infant weighing scale	100	100
Adult weighing scale	69	71
Colored bins	46	83
Instrument tray	69	100
8″ Bowl	77	71
10″ Kidney dish	100	100

Item	Availability (%)	
	Dispensaries/ Health Centers	Hospitals
Toothed dissecting forceps	100	86
Mayo scissors	85	86
Cord scissors 4″	85	86
Needle holder 7″	100	100
Artery forceps straight 8″	100	86
Episiotomy scissors	92	100
Gallipot	100	100
Vaginal examination pack	62	100
Suction tube	69	71
Cutdown tray	0	27
Newborn resuscitaire	15	71
Newborn towels	0	57
Oxygen source	39	86
Gynaecological exam light	39	86

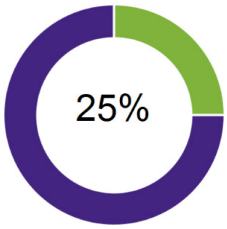
Trans Nzoia County

	Dispensaries/ Health Centers	Hospitals
Total MoH Facilities	129	9
Facilities Surveyed	23	8
%	17.8	88.9

BEmONC–ready Facilities (Dispensaries/Health Centers)



CEmONC–ready Facilities (Hospitals)



EmONC Signal Functions

Indicator	Proportion Achieved (%)	
	Dispensaries/ Health Centers	Hospitals
Staff trained	32	6
Guidelines available	48	38
Injectable antibiotics	57	88
Oxytocin	100	100
Magnesium sulphate	61	75
Elbow length gloves	26	63
MVA kit	70	100
Vacuum extractor	9	75
Neonatal ambubag	74	100
Caeserian delivery set	0	50
Blood transfusion	0	75

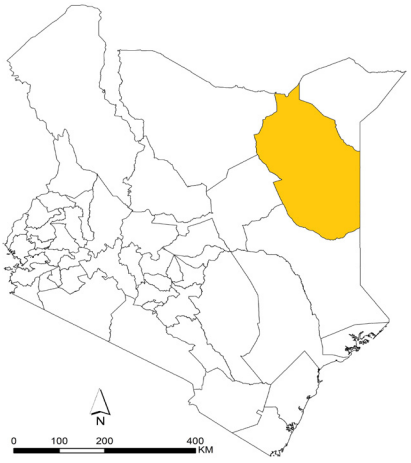
MNCH Equipment

Item	Availability (%)	
	Dispensaries/ Health Centers	Hospitals
Fetoscope	100	100
Suction machine	78	100
Adult ambubag	65	100
Oropharyngeal airway	41	75
Patella hammer	22	63
Thermometer	100	100
Speculum	100	100
Stethoscope	100	100
BP machine	100	100
Infant weighing scale	100	100
Adult weighing scale	100	100
Colored bins	57	63
Instrument tray	96	100
8″ Bowl	87	100
10″ Kidney dish	100	100

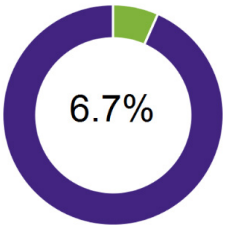
Item	Availability (%)	
	Dispensaries/ Health Centers	Hospitals
Toothed dissecting forceps	96	100
Mayo scissors	78	75
Cord scissors 4″	87	75
Needle holder 7″	91	100
Artery forceps straight 8″	91	100
Episiotomy scissors	83	100
Gallipot	100	100
Vaginal examination pack	52	100
Suction tube	65	100
Cutdown tray	4	38
Newborn resuscitaire	13	63
Newborn towels	9	75
Oxygen source	26	100
Gynaecological exam light	48	100

Wajir County

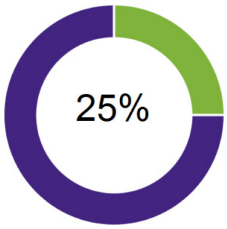
	Dispensaries/ Health Centers	Hospitals
Total MoH Facilities	124	11
Facilities Surveyed	15	8
%	12.1	72.7



BEmONC–ready Facilities (Dispensaries/Health Centers)



CEmONC–ready Facilities (Hospitals)



EmONC Signal Functions

	Proportion Achieved (%)	
Indicator	Dispensaries/ Health Centers	Hospitals
Staff trained	15	25
Guidelines available	40	25
Injectable antibiotics	87	100
Oxytocin	100	100
Magnesium sulphate	80	88
Elbow length gloves	33	50
MVA kit	53	100
Vacuum extractor	20	25
Neonatal ambubag	73	75
Caeserian delivery set	7	25
Blood transfusion	7	50

MNCH Equipment

	Availability (%)	
Item	Dispensaries/ Health Centers	Hospitals
Fetoscope	93	100
Suction machine	40	75
Adult ambubag	20	75
Oropharyngeal airway	27	50
Patella hammer	7	0
Thermometer	93	88
Speculum	80	88
Stethoscope	100	75
BP machine	100	100
Infant weighing scale	87	100
Adult weighing scale	100	100
Colored bins	33	38
Instrument tray	67	100
8" Bowl	47	50
10" Kidney dish	87	100

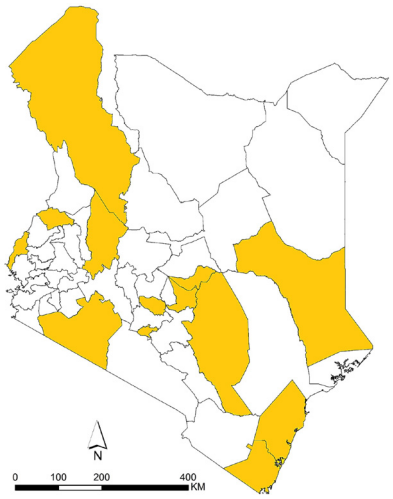
	Availability (%)	
Item	Dispensaries/ Health Centers	Hospitals
Toothed dissecting forceps	73	88
Mayo scissors	40	100
Cord scissors 4"	80	88
Needle holder 7"	93	100
Artery forceps straight 8"	67	88
Episiotomy scissors	87	88
Gallipot	93	88
Vaginal examination pack	20	25
Suction tube	60	75
Cutdown tray	8	0
Newborn resuscitaire	13	13
Newborn towels	13	0
Oxygen source	6	25
Gynaecological exam light	13	25

Appendix 2: Summary of Baseline (Phase I) Method and Results

Aim: To provide a baseline assessment of preparedness to provide BEmONC in preparation for scale-up in targeted counties

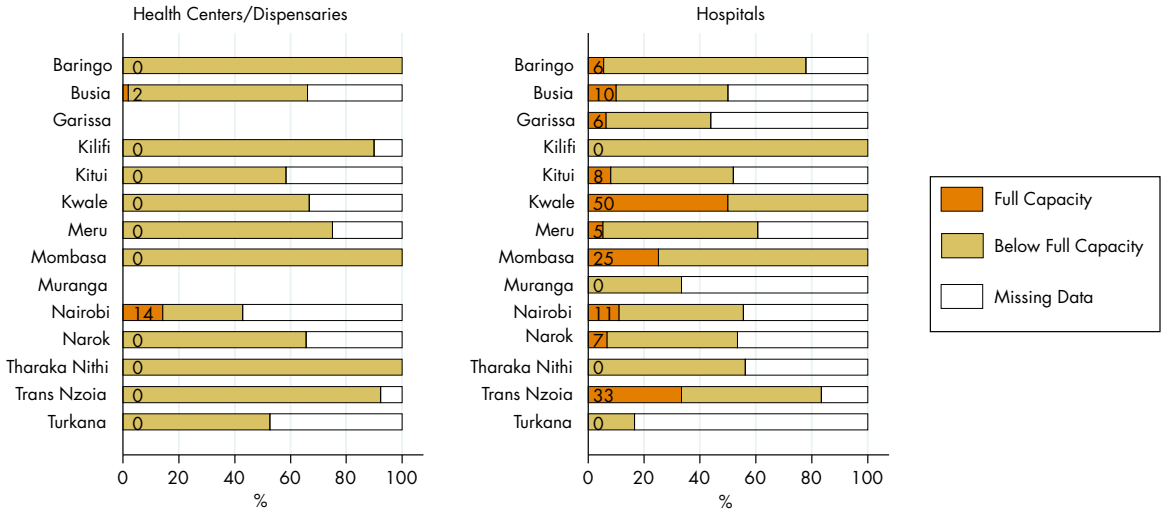
Counties Assessed

County	Health Centers/ Dispensaries	Hospitals	Total
Baringo	1	18	19
Busia	50	20	70
Garissa	0	32	32
Kitui	12	26	38
Meru	12	41	53
Murang'a	0	6	6
Narok	33	14	47
Tharaka Nithi	3	16	19
Trans Nzoia	13	6	19
Turkana	19	6	25
Nairobi	7	9	16
Mombasa	8	4	12
Kilifi	10	1	11
Kwale	6	4	10
Total	**174**	**203**	**377**

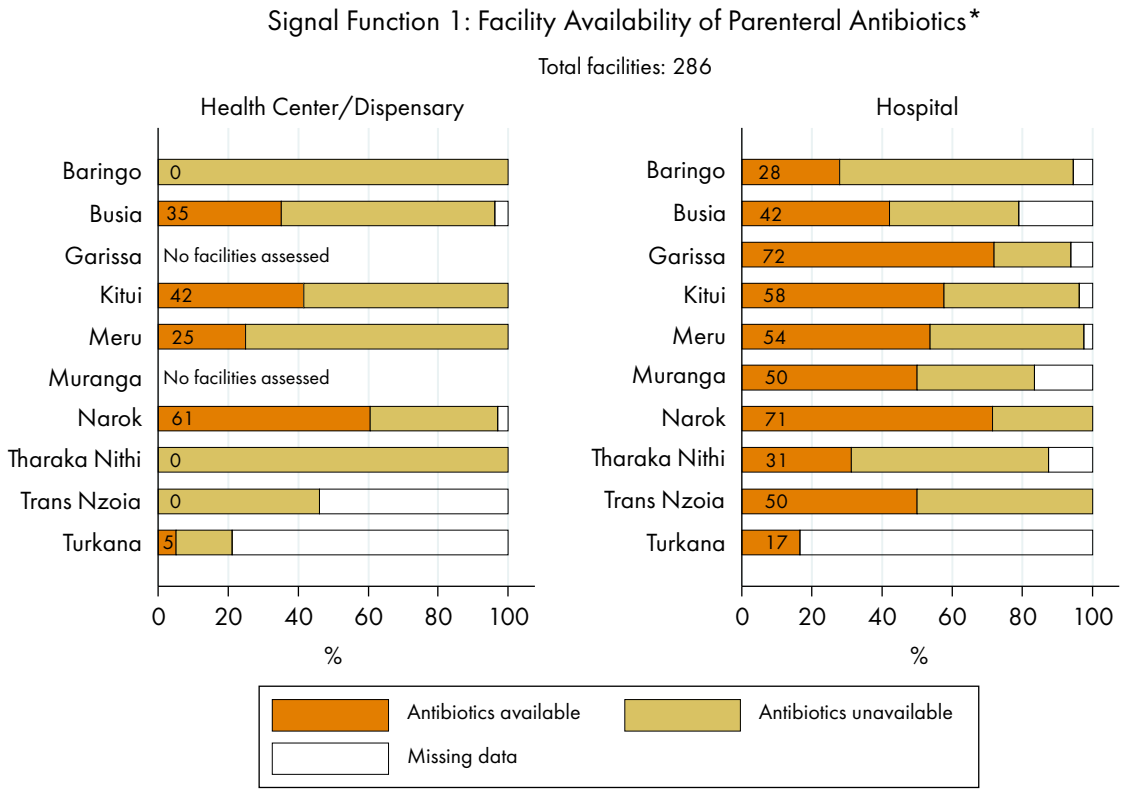


Method

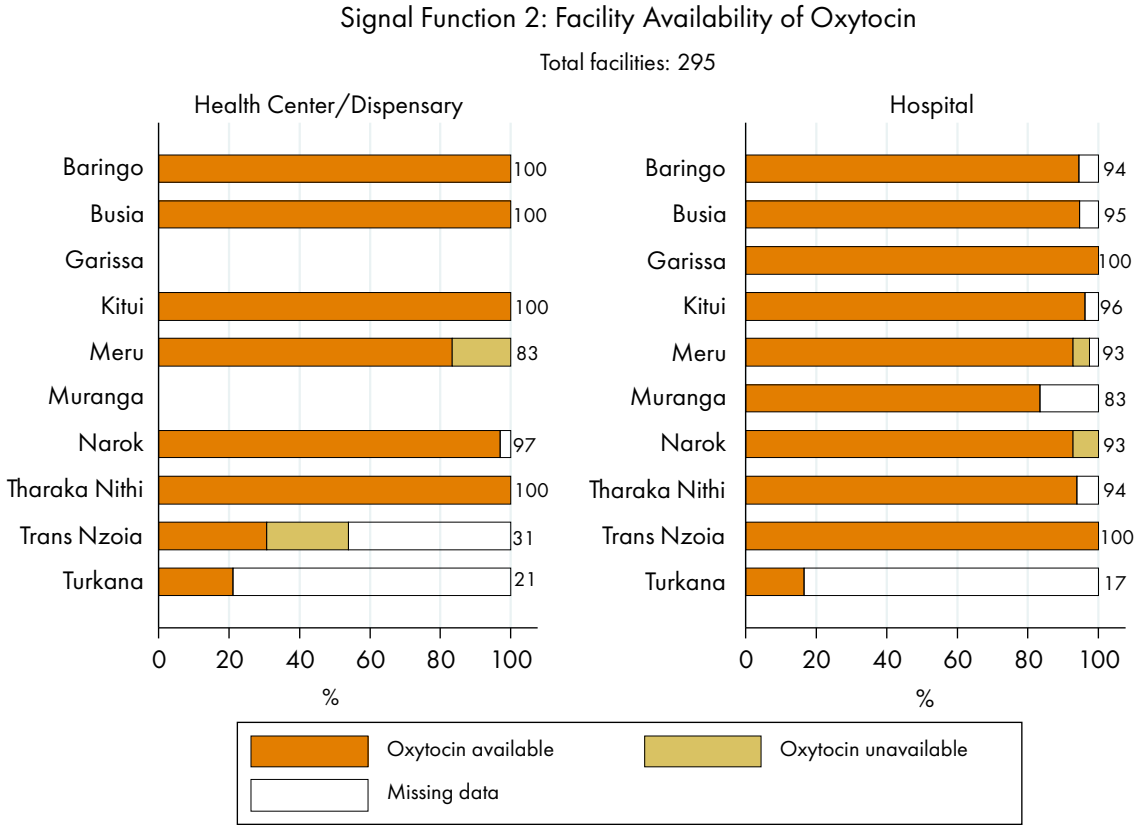
- Data collection and reporting undertaken between August and December 2013
- Assessment tool formatted in Microsoft Excel
- No formal training or orientation given on data management for the assessment
- Data cleaning and analysis conducted by MEASURE Evaluation
- Results shared with county health management teams, ministry of health, and partners



- Capacity of the targeted counties to provide the seven BEmONC signal functions—assessed by the availability of essential equipment and commodities—was low, with health centers and dispensaries generally performing poorer than hospitals
- Interpretation of the findings was hampered by the high frequency of missing data

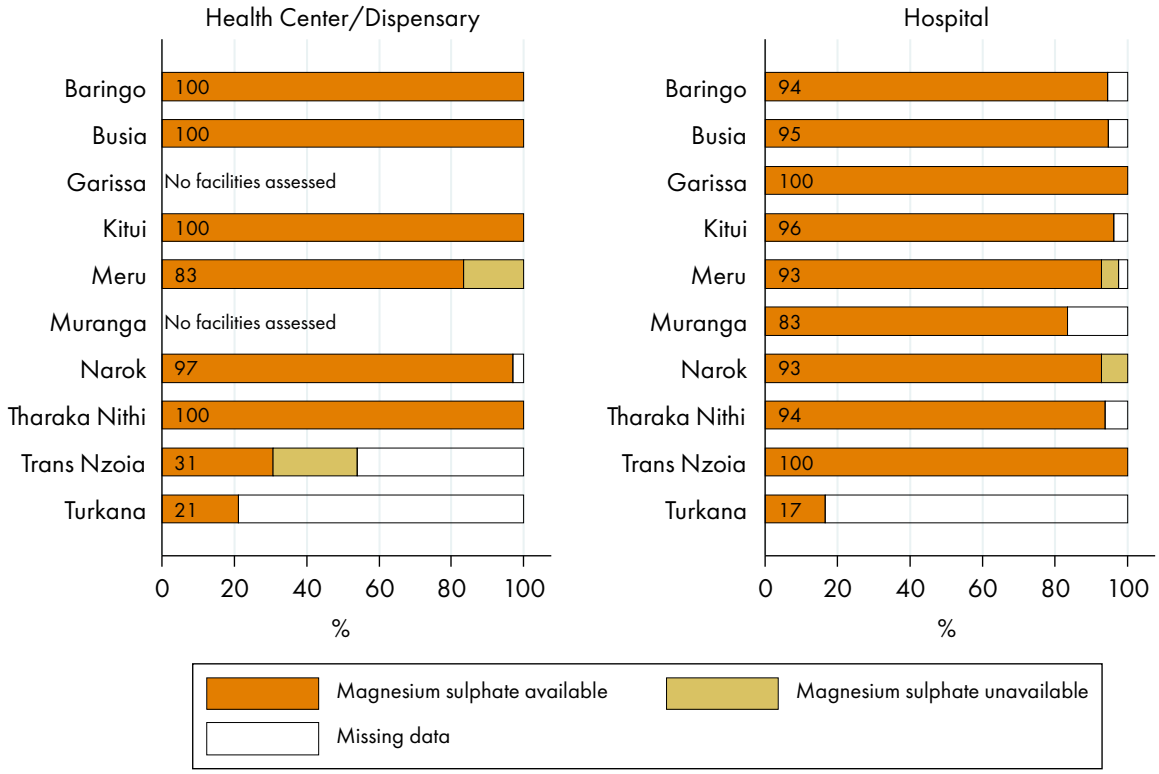


*Crystalline penicillin/Ampicillin + Gentamicin + Metronidazole



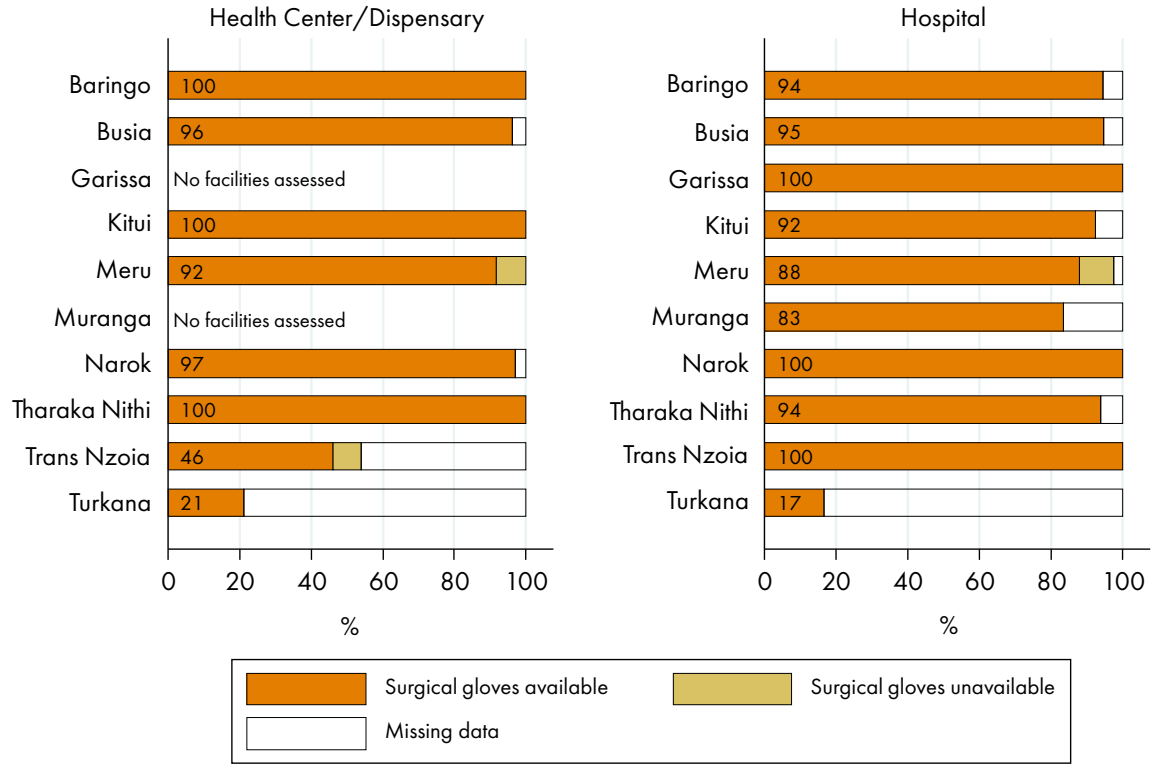
Signal Function 3: Availability of Magnesium Sulphate

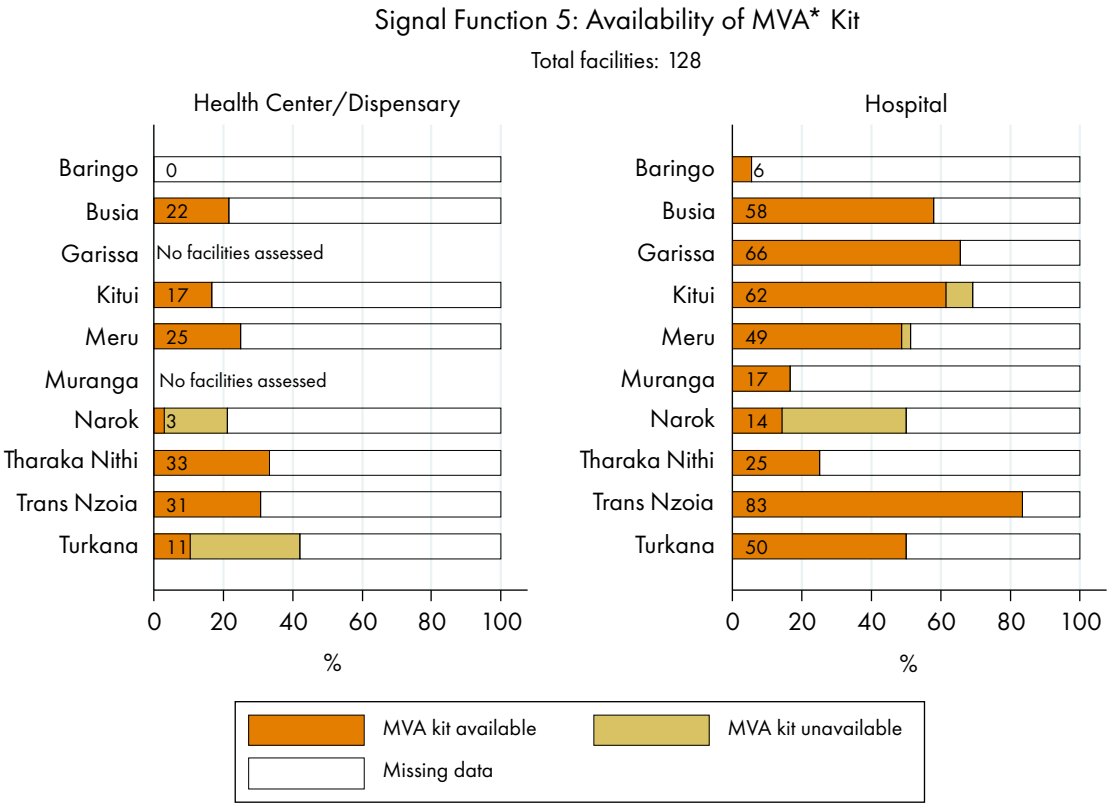
Total facilities: 289



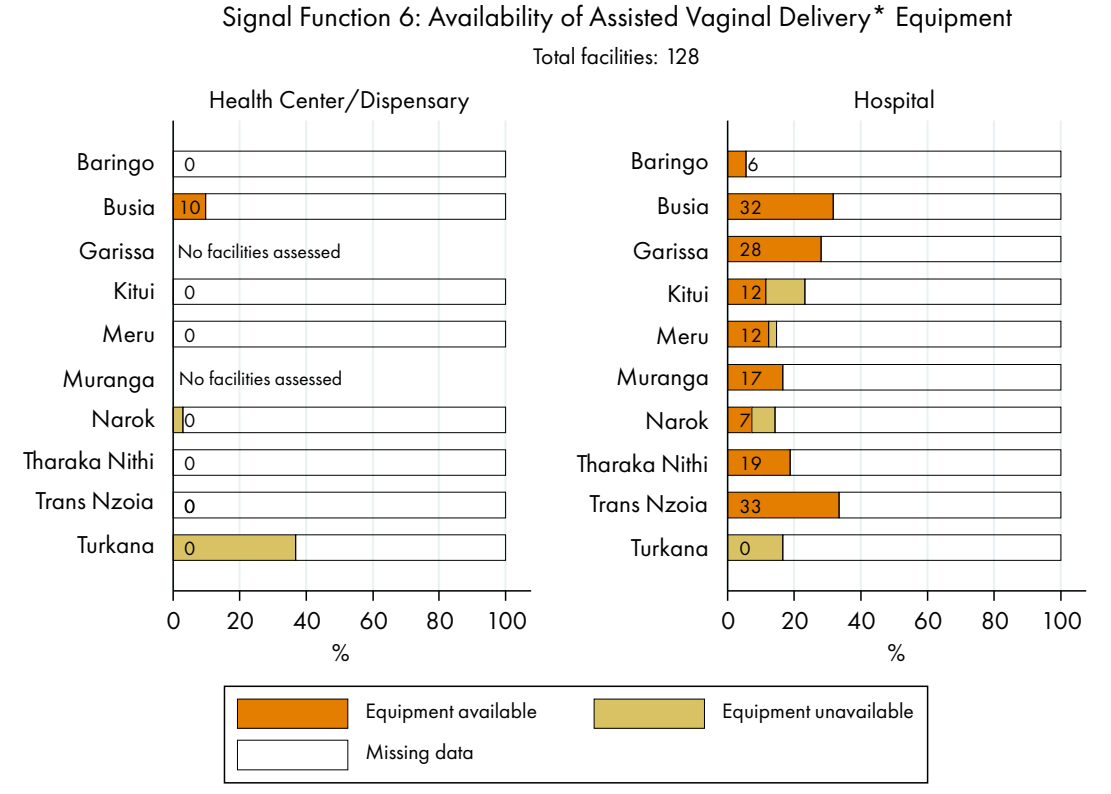
Signal Function 4: Availability of Surgical Gloves

Total facilities: 289

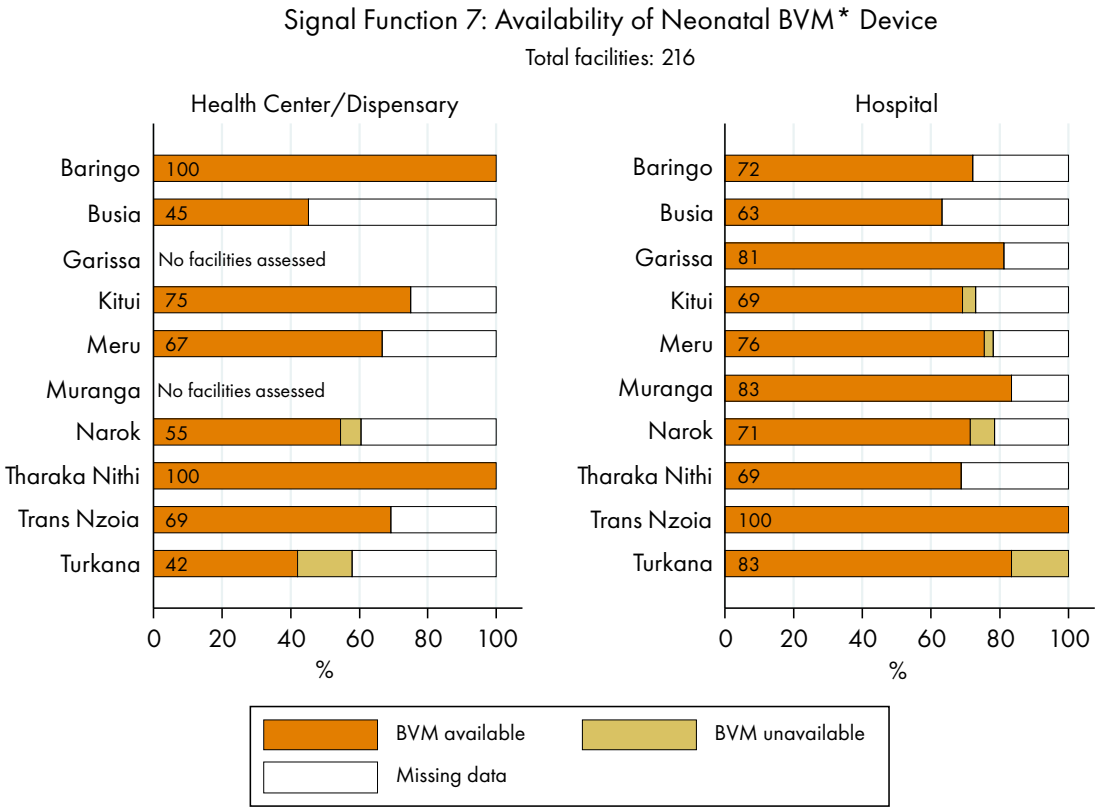




*Manual Vacuum Aspiration



*Vacuum-Assisted Vaginal Delivery



*Bag Valve Mask

Appendix 3: Health Facility Profiles (Phase II)

BEmONC Health Facility Profile, Phase II

The facility profiles provide summaries for data collected from each facility assessed in the county on the availability of selected items required for the provision of the seven BEmONC signal functions.

BEmONC signal function (SF)	Item assessed
(1) Administration of parenteral antibiotics	Availability of (crystalline penicillin/ampicillin + gentamicin + metronidazole) OR (ceftriaxone + metronidazole)
(2) Administration of uterotonic drugs	Availability of oxytocin
(3) Administration of parenteral anticonvulsants	Availability of magnesium sulfate
(4) Manual removal placenta	Availability of elbow-length gloves
(5) Removal of retained products	Availability of manual vacuum aspiration kits
(6) Performance of assisted vaginal delivery	Availability of vacuum extractor for assisted vaginal delivery
(7) Performance of basic neonatal resuscitation	Availability of neonatal gag valve mask device
Guidelines	National guidelines for quality obstetrics and perinatal care
Training	Proportion (%) of health workers working in maternity/ newborn departments trained on the harmonized BEmONC training course in the preceding 12 months

BEmONC Health Facility Profile, Phase II

Baringo County (1 of 1)

Facility name	% Trained	Guidelines	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7
Kabartonjo DH	25	1	0	1	1	1	1	1	1
Kipsaraman	50	1	0	1	0	1	0	0	1
Barwessa	0	1	1	1	1	1	0	0	1
Kuikui	0	0	0	1	1	1	0	0	1
Tenges	17	1	0	1	0	1	0	0	0
Mogorwa	0	1	1	1	1	1	0	0	1
Kabarnet DH	6	1	1	1	1	0	1	1	1
Sirwa Disp	M	0	0	1	1	0	0	0	1
Emining HC	0	0	0	1	1	0	1	1	1
Nguberet HC	0	1	0	1	0	1	0	0	1
Kisanana HC	M	0	0	M	1	0	0	0	1
Chemolingot Hosp	100	1	0	1	0	0	1	1	1
Kimalel HC	0	1	0	1	0	1	0	0	1
Marigat Hosp	20	1	1	1	1	1	1	1	1
Kiptuno Disp	0	0	0	1	0	1	0	0	1
Torongo HC	0	M	0	1	1	0	1	0	1
Timboroa HC	0	0	0	1	1	1	1	1	1
Esageri HC	M	0	0	1	0	1	0	0	1
Eldama Ravine Hosp	79	1	1	1	1	1	1	1	1
Mercy Hosp	M	1	0	1	0	0	1	0	1

SF – Signal function; 1 – Able to perform; 0 – Unable to perform; M – Missing data

BEmONC Health Facility Profile Phase II

Busia County (1 of 2)

Facility name	% Trained	Guidelines	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7
Alupe SDH	63	0	0	1	1	1	0	0	1
Obekai Disp.	M	0	0	1	1	0	0	0	0
Apokor Disp.	M	1	0	1	1	0	0	0	0
Amukura HC	50	1	0	1	1	0	1	1	1
Ochude Disp.	M	0	0	1	0	0	0	0	0
Among'ura Comm. Disp.	M	0	0	1	0	0	0	0	0
Morukarisa Disp.	M	1	0	1	0	0	0	1	1
Amaase HC	M	0	0	1	1	0	0	1	1
Okook Disp.	M	0	0	1	1	0	0	0	0
Lukolis Model HC	M	1	0	1	1	0	1	0	1
Ngelechom Comm. Disp.	M	0	1	1	0	0	0	0	0
Nambale HC	89	1	0	1	0	0	1	0	1
Lupida HC	0	0	0	1	1	0	1	0	1
Madende MHC	0	0	0	1	1	1	1	0	0
Lwanyange Disp.	M	0	0	1	0	0	0	0	M
Malanga Disp.	0	0	0	1	0	0	M	0	1
Khayo Disp.	100	0	0	1	1	1	0	0	0
Igara Disp.	100	0	0	1	1	0	1	0	1
St.Clares Med.Centre	0	0	1	1	0	0	0	0	0

SF – Signal function; 1 – Able to perform; 0 – Unable to perform; M – Missing data

BEmONC Health Facility Profile, Phase II

Busia County (2 of 2)

Facility name	% Trained	Guidelines	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7
Sioport DH	0	1	1	1	0	0	1	1	1
HFHN	14	0	1	1	1	1	1	1	1
Nambuku MHC	0	1	0	1	1	0	1	1	1
Nangina Disp.	0	1	0	1	1	0	0	0	1
Rumbiye Disp.	0	1	0	1	1	0	0	0	1
Namboboto Disp.	20	0	0	1	1	0	1	0	0
Buduta Disp.	0	0	0	1	1	0	1	0	1
Busembe Disp.	33	1	0	1	1	0	1	0	1
Namuduru Disp.	0	0	0	1	1	0	0	0	1
Ageng'a Disp.	0	1	0	1	1	0	0	0	1

SF – Signal function; 1 – Able to perform; 0 – Unable to perform; M – Missing data

BEmONC Health Facility Profile, Phase II

Kitui County (1 of 3)

Facility name	% Trained	Guidelines	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7
Kanyangi	M	0	1	1	1	0	0	0	1
Katumbu	M	0	0	1	0	0	0	0	0
Nzangathi HC	0	1	0	1	0	0	0	0	1
Yanzuu HC	25	1	0	1	1	1	0	0	1
Kanziku	50	1	1	1	1	0	0	0	1
Kaumu	0	1	0	1	1	0	1	0	1
Aic Mulango	0	1	0	1	1	0	0	1	1
Kasyala	100	1	1	1	0	0	0	0	1
Voo HC	33	1	1	1	1	1	0	1	1
Mbitini HC	0	1	0	1	1	1	1	1	1
Mutomo Mission	14	1	1	1	1	0	0	0	1
Kiseuni	0	0	0	1	1	0	0	0	0
Jordan H.	10	0	1	1	0	0	1	0	1
Neema H.	7	1	1	1	1	1	1	0	1
Ngomeni HC	50	1	1	1	1	0	1	0	1
Kitui DH	6	1	1	1	1	1	1	1	1
Tseikuru SDH	20	1	1	1	1	1	1	0	0
Ikutha HC	0	1	0	1	1	1	0	1	1

SF – Signal function; 1 – Able to perform; 0 – Unable to perform; M – Missing data

BEmONC Health Facility Profile, Phase II

Kitui County (2 of 3)

Facility name	% Trained	Guidelines	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7
Mutito SDH	33	1	1	1	1	0	1	1	0
Ilengi Disp.	100	0	0	1	1	0	0	0	1
Chuluni Disp.	100	0	0	1	0	0	0	0	0
Kauwi SDH	20	0	1	1	1	1	0	0	1
Kanyangi SDH	0	1	1	1	1	1	1	1	1
Kwa Mutonga Disp	0	1	0	1	1	1	0	0	1
Katse HC	25	1	1	1	1	1	1	1	1
Kyethani Disp	0	1	0	1	1	0	1	1	1
Mwingi DH	M	1	1	1	1	1	1	1	1
Tharaka HC	50	1	0	1	1	0	0	1	1
Kisasi HC	25	1	1	1	1	0	1	0	1
Katulani SDH	25	1	1	1	1	1	1	1	1
Nuu SDH	25	1	1	1	1	1	1	1	1
Kaningo HC	50	0	0	1	1	0	0	0	0
Kakeani Disp.	33	0	0	1	1	1	0	1	1
Muthale Mission	14	1	1	1	1	1	1	1	1
Kavuta Disp.	50	1	0	1	0	0	1	0	1
Nzatani Disp.	0	1	0	1	0	0	0	0	0

SF – Signal function; 1 – Able to perform; 0 – Unable to perform; M – Missing data

BEmONC Health Facility Profile, Phase II

Kitui County (3 of 3)

Facility name	% Trained	Guidelines	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7
Nguni HC	0	1	1	1	1	1	1	0	1
Kyuso DH	13	0	1	1	1	0	1	1	1
Migwani S.D.H	M	0	1	1	1	1	1	0	1
Waita HC	33	1	0	1	1	1	0	1	1
Winzeeyi HC	50	1	0	1	1	1	1	0	1

SF – Signal function; 1 – Able to perform; 0 – Unable to perform; M – Missing data

BEmONC Health Facility Profile, Phase II

Machakos County (1 of 3)

Facility name	% Trained	Guidelines	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7
Wamunyu HC	0	0	0	1	M	0	0	0	1
Miu HC	0	0	1	1	1	1	0	0	0
Masii HC	0	1	0	0	0	0	0	0	1
Katulani HC	0	1	1	1	0	0	0	0	1
Mbiuni HC	0	1	1	1	1	1	0	1	1
Muthetheni HC	0	0	1	1	1	0	0	0	0
Kaviani HC	0	0	0	1	1	1	1	0	1
Thinu HC	0	1	0	1	1	0	1	0	1
Mitaboni	M	1	0	1	1	0	1	0	1
Ithaeni Dispensary	0	1	0	1	0	1	1	0	1
Kathiani Hospital	0	0	1	1	1	0	1	0	1
Makadara HC	M	1	1	1	0	0	1	1	1
Machakos Level 5	M	1	1	1	1	1	1	1	1
Mutituni HC	0	0	1	1	1	0	0	0	1
Muumadu	M	1	0	1	1	0	0	0	1

SF – Signal function; 1 – Able to perform; 0 – Unable to perform; M – Missing data

BEmONC Health Facility Profile, Phase II

Machakos County (2 of 3)

Facility name	% Trained	Guidelines	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7
Shalom Comm Hosp	M	1	1	1	1	1	1	1	1
Athi River Complex	M	1	1	1	1	0	1	1	1
Kinanie Model HC	M	1	0	1	0	0	0	0	1
Athi River HC	M	1	1	1	1	0	M	M	M
Assisi Nursing Home	0	0	1	1	1	0	1	0	1
Athi River M. Services	M	1	1	1	1	1	1	1	1
Matuu Level 4	8	1	1	1	1	0	1	0	1
Mwala Sub County	0	1	1	1	1	1	1	1	1
Yatta	0	0	0	1	M	1	0	0	1
Kisiiki	M	1	1	1	1	0	0	0	1
Ikombe Dispensary	M	0	1	1	0	1	0	0	1
Ndalani Dispensary	0	0	1	1	1	0	0	0	1
Kithimani Dispensary	0	0	1	1	1	0	0	1	1
Masinga	0	1	1	1	1	1	1	0	1
Ekalakala HC	0	0	0	1	0	1	1	0	1
Kivaa HC	0	0	0	1	1	0	0	1	1
Kithyoko HC	M	0	0	0	1	0	0	1	1
Nguluni HC	0	0	1	M	M	0	1	1	1

SF – Signal function; 1 – Able to perform; 0 – Unable to perform; M – Missing data

BEmONC Health Facility Profile, Phase II

Machakos County (3 of 3)

Facility name	% Trained	Guidelines	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7
Kyeleni HC	0	0	0	1	1	0	0	0	1
Donyo Sabuk N. Home	0	0	1	1	1	0	1	1	1
St Mark Maternity	0	1	1	1	0	0	0	0	0
Matungulu HC	0	0	1	1	1	1	1	0	1
Kituluni Dispensary	0	0	0	0	0	0	0	0	1
Kivaani HC	0	1	0	1	1	0	0	0	1
Miu	M	1	0	1	0	0	0	0	1
Kakuyuni HC	0	1	0	1	0	1	1	0	1
Kangundo DH	4	1	1	1	1	1	1	1	1
Mukunike	M	1	0	1	0	0	1	0	1

SF – Signal function; 1 – Able to perform; 0 – Unable to perform; M – Missing data

BEmONC Health Facility Profile, Phase II

Mandera County (1 of 2)

Facility name	% Trained	Guidelines	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7
Eymole Disp.	0	0	1	1	1	1	0	0	0
Banissa SCH	20	0	1	1	1	1	1	0	1
Derkale	0	0	1	1	0	0	0	0	0
Kiliweheri HC	M	0	1	1	1	0	0	0	0
Gither Disp.	67	1	1	1	1	0	0	0	1
Burduras HC	100	1	0	1	1	0	0	0	1
Dandu HC	50	1	1	1	1	1	0	1	1
Takaba DH	40	1	1	1	1	1	1	0	1
Wargadud HC	33	1	1	1	1	1	1	0	1
Fincharo Disp.	0	0	1	0	0	1	0	1	1
Adra HC	M	0	1	1	0	0	0	0	0
Shimbir Fatuma HC	33	0	1	1	1	0	1	0	1
Garsesala Disp.	50	0	1	1	1	0	0	0	1
Borehole 11 HC	67	0	1	1	1	1	1	1	1
Kotulo HC	50	1	1	1	1	1	1	0	1
Elwak DH	33	1	1	1	1	1	1	1	1
Rhamu SDH	43	1	1	1	1	1	1	1	1
Kalicha Disp.	0	0	1	1	0	0	0	0	0

SF – Signal function; 1 – Able to perform; 0 – Unable to perform; M – Missing data

BEmONC Health Facility Profile, Phase II

Mandera County (2 of 2)

Facility name	% Trained	Guidelines	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7
Girrsa Disp.	0	0	1	1	0	0	0	0	0
Ashabito HC	50	1	1	1	1	1	1	1	1
Rhamudimtu HC	33	1	1	1	1	0	0	1	1
Olla HC	0	0	1	1	1	1	0	0	0
Sala HC	0	0	1	1	1	0	1	0	0
Warankara HC	25	0	1	1	1	1	1	0	0
Lafey SDH	10	0	1	1	1	1	1	0	0
Fino HC	0	0	1	1	1	1	1	0	0
Bluelight NH	33	0	1	1	1	0	1	0	0
Alsiha NH	25	0	1	1	1	1	0	0	0
Shafshafey HC	0	0	1	1	1	0	0	0	0
Neboi Disp.	0	0	1	1	1	0	1	0	1
Hareri Disp.	0	0	1	1	1	1	1	1	1
Khalalio Disp.	33	0	1	1	1	1	1	0	1
Mandera County Ref Hosp	27	0	1	1	1	0	1	1	1

SF – Signal function; 1 – Able to perform; 0 – Unable to perform; M – Missing data

BEmONC Health Facility Profile, Phase II

Meru County (1 of 3)

Facility name	% Trained	Guidelines	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7
Consolata Hospital	14	1	1	1	0	0	1	1	1
Kinoro SDH	13	1	0	1	0	0	1	0	1
Uruku HC	0	0	0	1	0	0	1	0	1
Kanyakine SDH	18	1	1	1	1	1	1	0	1
Mitunguu Disp.	0	1	0	1	0	0	0	0	0
Mikumbune SDH	33	1	0	0	0	0	0	0	1
Githongo Dist Hosp	40	1	1	1	1	1	1	0	1
Gatimbi HC	33	0	0	1	1	0	1	0	1
Kaongo HC	11	1	0	1	1	0	0	0	0
Cottolengo M. Hosp	10	1	1	1	1	1	1	0	1
St. Theresa Riiji HC	0	1	0	1	0	1	1	0	0
Naari SDH	10	1	0	1	1	1	1	0	1
Imau SDH	17	0	0	1	0	1	0	1	1
St Theresa Hosp Kiirua	M	0	1	1	1	1	1	1	1
Kiirua HC	0	0	0	1	0	0	0	0	0
Mboroga HC	0	0	0	1	1	0	0	1	1
Kibirichia SDH	14	1	0	1	0	1	0	0	1

SF – Signal function; 1 – Able to perform; 0 – Unable to perform; M – Missing data

BEmONC Health Facility Profile, Phase II

Meru County (2 of 3)

Facility name	% Trained	Guidelines	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7
Ruiri RHDH	11	1	0	1	0	0	0	0	1
Kiburine Disp.	M	M	M	M	M	M	M	M	M
Giaki SDH	M	1	0	1	0	0	0	0	0
Meru SCH	5	1	0	1	1	0	1	1	1
Kirindine	M	0	1	1	1	0	0	0	1
Kangeta HC	M	0	0	1	0	0	1	1	1
Tuura HC	33	M	M	1	M	M	0	M	1
Maua Cottage	M	1	1	1	0	0	1	1	1
Nthambiro HC	20	0	0	1	0	0	0	1	1
Nyambene Nursing Home	M	0	1	1	1	0	1	0	1
Nyambene D Hospital	M	0	1	1	1	1	1	1	1
Maua Methodist	7	1	1	1	1	1	M	1	1
Miathene	0	1	1	1	0	1	1	M	1
Mworenkanga HC	100	0	0	1	1	0	M	M	M
Akachui HC	0	0	0	1	M	0	1	M	1
Kirindine Nursing Home	M	0	1	1	1	0	M	M	1
Kunati	M	0	0	0	0	0	M	M	M

SF – Signal function; 1 – Able to perform; 0 – Unable to perform; M – Missing data

BEmONC Health Facility Profile, Phase II

Meru County (3 of 3)

Facility name	% Trained	Guidelines	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7
Uringu HC	0	0	0	1	1	0	0	0	1
Kunene Disp.	0	1	0	1	1	0	0	0	0
Mbeu SDH	0	0	0	1	1	1	0	0	1
Mikinduri SDH	15	1	1	1	1	1	0	0	1
Woodlands Hospital	0	M	1	1	0	0	1	0	1
PCEA Kiengu Matand Nurs	0	1	1	1	1	0	1	1	1
Kawira MNH	0	1	0	1	1	0	1	0	1
Kiengu MNH	50	0	1	1	0	0	1	0	0
Mutuati SDH	0	1	0	1	1	1	1	1	1
Laare HC	29	1	0	1	1	1	0	0	1
St. John of God Hospital	13	1	1	1	1	1	1	0	1
Muthara SDH	0	1	1	1	1	1	0	0	1
Mutionjuri HC	0	1	0	1	1	0	0	0	0
Mituntu HC	0	0	0	1	0	0	0	0	1
Karama HC	0	1	0	1	1	0	0	0	1
Kathigu HC	0	1	0	1	1	0	0	M	1
Gundua HC	0	0	1	1	0	1	0	0	1
Ruiri Mission	0	0	1	1	1	0	0	0	1
Mituungu Medical	17	0	1	1	0	0	1	0	1
Mikinduri Catholic HC	0	1	1	1	1	0	1	0	1
St. Luke Cottage	0	0	1	1	0	0	1	0	1

SF – Signal function; 1 – Able to perform; 0 – Unable to perform; M – Missing data

BEmONC Health Facility Profile, Phase II

Murang'a County (1 of 1)

Facility name	% Trained	Guidelines	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7
Kangema	75	1	1	1	1	1	1	1	1
Maragua SCH	44	1	1	1	1	1	1	1	1
Muriranjas SCH	60	1	1	1	1	1	1	1	1
Makuyu HC	50	0	M	1	1	1	1	0	1
Kandara SCH	100	1	1	1	1	0	1	0	1
Kigumo	33	1	1	1	1	1	1	1	1
Sabasaba HC	50	1	M	1	1	0	1	0	1
Maragua Ridge	50	1	M	1	1	1	0	0	1
Muranga County Ref Hosp	83	1	1	1	1	1	1	1	1

SF – Signal function; 1 – Able to perform; 0 – Unable to perform; M – Missing data

BEmONC Health Facility Profile, Phase II

Narok County (1 of 1)

Facility name	% Trained	Guidelines	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7
Narok Dist. Hosp.	0	1	1	1	1	1	1	1	1
Nairagie Enkare HC	0	1	0	1	1	0	1	0	1
Enabebel HC	0	0	0	1	0	0	0	1	1
Ololulunga Dist. Hosp.	0	0	0	1	1	1	1	0	1
Ntulele Disp.	0	0	0	1	0	0	0	0	1
Olokurto HC	0	0	0	1	1	0	1	0	1
Naroosura HC	0	0	0	1	0	0	1	0	1
Baraka HC	0	0	0	1	1	0	0	0	1
Sogoo HC	100	1	0	1	1	0	1	0	1
Olchorro HC	0	0	0	1	0	0	0	0	1
Sekenani HC	100	0	0	1	1	1	0	1	1
Entasekera HC	0	1	0	0	0	0	1	0	0
Sakutiek HC	0	0	0	1	1	0	0	0	0

SF – Signal function; 1 – Able to perform; 0 – Unable to perform; M – Missing data

BEmONC Health Facility Profile, Phase II

Nyamira County (1 of 2)

Facility name	% Trained	Guidelines	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7
Nyamusi SDH	M	0	1	1	1	1	0	0	1
Ekerenyo SDH	50	0	1	1	1	1	1	0	1
Nyagancha	M	0	0	1	1	1	0	0	1
Magombo HC	0	0	1	1	1	0	0	0	1
Keroka DH	63	0	0	1	0	0	1	1	1
Manga DH	44	1	1	1	0	1	1	0	1
Nyangena SDH	100	0	0	1	1	1	0	0	1
Gesima HC	33	0	0	1	0	1	0	0	1
Mochenwa HC	0	0	0	1	1	1	0	0	1
Rigoma Disp.	0	0	0	1	1	0	1	0	1
Nyamakoroto	M	0	0	1	1	0	0	0	0
Bosiang HC	50	0	1	0	1	0	1	0	1
Nyangweta HC	0	1	0	1	1	0	0	0	0
Rangenyo	0	0	0	1	0	0	0	0	1
Embonga HC	0	1	0	1	0	0	0	0	1
Nyamira HC	50	0	1	1	0	0	1	1	1
Ogango HC	0	0	1	1	0	0	1	0	1

SF – Signal function; 1 – Able to perform; 0 – Unable to perform; M – Missing data

BEmONC Health Facility Profile, Phase II

Nyamira County (2 of 2)

Facility name	% Trained	Guidelines	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7
Tinga HC	56	0	1	1	0	1	1	0	1
Kianginda HC	0	0	0	1	0	0	0	0	1
Nyamira Adv. MC	0	0	1	1	1	0	0	0	1
Etono HC	M	0	0	1	1	0	0	0	1
Riechieri	0	0	0	1	0	0	0	0	1
Matongo	0	0	0	1	0	0	0	0	1
Kenyoro	67	0	1	1	0	1	0	1	1
Magwagwa	0	0	0	1	0	0	0	0	1
Chepngombe	100	1	1	1	1	0	1	1	1
Isoge HC	0	0	1	1	0	0	1	0	1
Mwongori Disp.	0	1	0	1	0	0	0	0	1
Raitigo	0	0	0	1	0	0	0	0	0
Endiba HC	M	0	0	1	0	0	1	0	0
Amatierio HC	M	0	0	1	0	0	1	0	1
Ikobe HC	0	0	0	1	1	0	0	0	0

SF – Signal function; 1 – Able to perform; 0 – Unable to perform; M – Missing data

BEmONC Health Facility Profile, Phase II

Samburu County (1 of 1)

Facility name	% Trained	Guidelines	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7
Maralal Dist. Hosp.	19	1	1	1	1	1	1	0	1
Loosuk HC	50	1	0	1	1	1	0	0	0
Porro HC	100	1	0	1	1	0	0	0	1
Suguta Marmar HC	M	M	0	1	0	1	1	0	1
Morijo Catholic Disp	M	0	0	1	1	0	0	0	0
Kisima HC	13	1	0	1	1	1	0	0	1
South Horr HC	50	1	1	1	0	0	0	0	0
Lesirikan HC	50	1	0	1	0	1	0	0	1
Nachola Disp.	M	1	0	1	0	0	0	0	1
Baragoi Hosp.	0	1	0	1	1	1	1	1	1
Sererit Disp.	M	0	1	1	0	0	0	0	1
Sereolipi HC	100	1	0	1	0	0	1	0	1
Archers Post HC	50	1	0	1	1	0	0	0	1
Catholic Hospital Wamba	25	1	1	1	1	1	1	1	1
Wamba HC	33	1	1	1	1	1	1	0	1
Swari HC	0	1	0	1	0	0	0	0	1
Ngilai Disp	0	0	0	1	1	0	0	0	0
Lodungokwe HC	0	1	1	1	0	0	0	0	1

SF – Signal function; 1 – Able to perform; 0 – Unable to perform; M – Missing data

BEmONC Health Facility Profile, Phase II

Tharaka Nithi County (1 of 1)

Facility name	% Trained	Guidelines	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7
Tharaka Dist. Hosp.	11	1	1	1	1	1	1	1	1
Kibung'a Sub Dist. Hosp.	100	1	1	1	1	1	1	1	1
Chuka Dist. Hosp.	0	1	1	1	1	1	1	0	1
Kiamuchairu HC	0	1	0	1	1	0	0	0	1
Muthambi HC	11	1	0	1	1	1	1	0	1
Baragu HC	100	0	0	1	0	1	0	0	1
Mukui Disp.	0	1	0	1	0	0	0	0	1
Kieni Model	33	1	0	1	0	0	0	0	1
Magutuni Dist. Hosp.	0	1	1	1	1	1	1	0	1
ST.Orsola Mission Hosp.	50	1	1	1	1	0	0	0	1
Tunyai HC	100	0	0	1	1	0	1	0	1
Mukothima HC	0	0	0	0	0	0	1	1	1
Mpukoni HC	33	1	0	1	1	0	1	0	1
Kajuki HC	0	1	0	1	0	0	0	0	1
Consolata Cottage	100	1	0	1	0	1	0	0	1
Kibugua HC	50	1	0	1	0	1	1	1	1
Gatunga Mission	100	1	1	0	1	1	1	0	1
Chiakariga HC	0	0	0	1	1	0	1	0	1
Kathangachini HC	0	0	1	1	1	0	0	0	1
Gatunga Model HC	0	0	0	0	0	0	0	0	0

SF – Signal function; 1 – Able to perform; 0 – Unable to perform; M – Missing data

BEmONC Health Facility Profile, Phase II

Trans Nzoia County (1 of 2)

Facility name	% Trained	Guidelines	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7
Chepsiro Disp.	0	0	0	1	1	0	1	0	0
Cherangani HC	100	1	1	1	1	0	1	0	1
Wiyeta Disp.	0	1	1	1	1	0	0	0	0
Geta Disp.	0	1	1	1	0	1	0	0	1
Suwerwa	0	0	1	1	0	0	1	0	1
Kapsara District Hosp.	100	1	1	1	0	0	1	1	1
Nzoia Disp.	0	0	1	1	1	1	1	0	0
Kaplamai HC	67	1	1	1	1	1	1	0	1
Kaibei Disp.	0	1	1	1	0	0	0	0	1
Kwanza HC	100	1	1	1	1	1	1	0	1
Kapsitwet Disp.	100	0	0	1	1	0	0	0	0
Endebess DH	100	0	1	1	1	1	1	1	1
Chepchoina Disp.	0	0	0	1	0	0	1	0	1
Kapkoi Disp.	100	0	0	1	1	0	1	0	1
Mahoh Medical C	0	0	1	1	0	0	1	0	0
Andersen	0	0	1	1	1	0	1	1	1
Kolongolo Disp	0	1	1	1	1	0	0	0	0
Saboti SDH	0	1	1	1	0	1	1	1	1

SF – Signal function; 1 – Able to perform; 0 – Unable to perform; M – Missing data

BEmONC Health Facility Profile, Phase II

Trans Nzoia County (2 of 2)

Facility name	% Trained	Guidelines	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7
Kiminin HC	0	0	0	1	0	0	0	0	1
Kitale NH	0	0	1	1	1	1	1	1	1
Sr. Fredas	0	0	1	1	1	0	1	0	1
Cherangani NH	0	1	1	1	1	1	1	1	1
St. Raphael	0	1	0	1	1	0	0	0	1
Bondeni Disp.	100	0	0	1	0	0	1	0	1
Gituamba HC	0	1	0	1	0	0	1	1	1
Tulwet	0	1	0	1	1	1	1	0	1
Matunda HC	100	0	1	1	1	0	1	0	1
Bikeke	0	0	0	1	1	1	1	0	1
Weonia	100	1	1	1	0	0	1	0	1
Kiminin Cottage	0	0	1	1	1	0	1	0	1
Kitale DH	0	0	0	1	1	1	1	1	1

SF – Signal function; 1 – Able to perform; 0 – Unable to perform; M – Missing data

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