

JUNE 2019

Post-Intervention Health Facility Assessment of Emergency Obstetric & Neonatal Care of the Saving Mothers, Giving Life-Supported Facilities in Cross River State, Nigeria

TECHNICAL REPORT | E2A PROJECT



ABOUT E2A

The Evidence to Action (E2A) Project is USAID's global flagship for strengthening family planning and reproductive health service delivery. The project aims to address the reproductive health care needs of girls, women, and underserved communities around the world by increasing support, building evidence, and leading the scale-up of best practices that improve family planning services. A Cooperative Agreement awarded in September 2011, E2A will continue until March 2021. E2A is led by Pathfinder International in partnership with ExpandNet and IntraHealth International.

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This publication was made possible through support provided by the Office of Population and Reproductive Health, Bureau for Global Health, U.S. Agency for International Development, under the terms of Award No. AID-OAA-A11-00024. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the U.S. Agency for International Development.

ACKNOWLEDGEMENTS

Pathfinder International and the Evidence to Action (E2A) Project gratefully acknowledge the generous support of the United States Agency for International Development (USAID) and Merck for Mothers for funding the implementation of the Saving Mothers, Giving Life (SMGL) Initiative in Cross River State, Nigeria. Our appreciation goes to the SMGL secretariat as well as partners from Uganda and Zambia for providing technical support and learning opportunities that informed our implementation.

We thank the Federal Ministry of Health and the Cross River State government for creating an enabling environment for the successful implementation of the Initiative.

We appreciate the support of We Care Solar and Project C.U.R.E. for the provision of lighting solutions and equipment/consumables, respectively, to the health facilities.

We thank the professional bodies—Society of Obstetrics and Gynecology of Nigeria (SOGON), Pediatric Association of Nigeria (PAN), Nigerian Society of Neonatal Medicine (NISONM), and the Association of General and Private Medical Practitioners of Nigeria (AGPMPN)—for their technical support in improving quality of maternal and newborn care services in Cross River State. We also appreciate the health care workers in Cross River State for their resilience and endurance, without which the project would not have succeeded.

We also thank the community-based organizations—Center for Health Works Development and Research Initiative, Association of Grassroots Counsellors of Health and Development Nigeria, and Greater Hands Foundation—for their work in the communities.

Lastly, we thank all the Pathfinder International and E2A staff, past and present, as well as the consultants for their immense contribution in making the project a success.

Contents

EXECUTIVE SUMMARY	8
PROJECT OVERVIEW	10
STUDY RATIONALE	12
METHODOLOGY.....	13
Study Objectives.....	13
Study Design.....	13
Data Collection Method.....	13
FINDINGS	16
Characteristics of Assessed Facilities.....	16
Delay 1: Recognizing the Need to Seek Care and Making the Decision to Do So.....	17
Delay 2: Physically Accessing Care When Necessary.....	19
Delay 3: Receiving Appropriate Care Once at a Health Facility.....	22
DISCUSSION	38
CONCLUSIONS & RECOMMENDATIONS	40

LIST OF TABLES

Table 1: Summary of facilities assessed.....	16
Table 2: Facilities reporting community outreaches.....	18
Table 3: Change in facility attendance for MNH services.....	19
Table 4: Change in EmONC status.....	20
Table 5: Recommended EmONC status and number of facilities.....	21
Table 6: Referral system.....	22
Table 7: Available facility infrastructure (n=98).....	23
Table 8: Change in human resource numbers (n=98).....	24
Table 9: Facilities reporting performance all of the signal functions.....	26
Table 10: Facilities reporting performance of other MNH services (n=98).....	27
Table 11: Facilities with MNH equipment - available and functioning (n=98).....	28
Table 12: Availability of current stock and stock-out of essential medicines and supplies (n=98).....	30
Table 13: Facilities with documents, protocols, and guidelines.....	32
Table 14: Facilities reporting maternal and neonatal death reviews.....	33
Table 15: Changes in quality of care indicators.....	34
Table 16: Achievement of project goals.....	36
Table 17: Provision of family planning services.....	37
Table 17: Facilities reporting Community Outreaches by facility type.....	42
Table 18: Facilities Reporting CBO Community Outreaches (by Topic, by Facility Type).....	43
Table 19: Percentage change with EmONC status (12 months preceding HFA).....	44
Table 20: Percentage change with EmONC status (3 months preceding HFA).....	44
Table 21: Facilities reporting performance of signal functions (12 months preceding assessment), by facility type.....	45
Table 22: Facilities Reporting Performance of Signal Functions (3 months preceding Assessment), by facility type.....	46
Table 23: Facilities reporting performance of other MNH services (by facility type).....	47
Table 24: Facilities with MNH equipment available and functioning, by facility type.....	48
Table 25: Facilities reporting current stock, by facility type.....	49
Table 26 Facilities reporting stock-out at any point in past 12 months, by facility type.....	50
Table 27: Maternal and neonatal death review.....	51

LIST OF FIGURES

Figure 1: Interventions in SMGL-supported facilities to address the three delays	11
Figure 2: Percentage of facilities with HMC at endline.....	19
Figure 3: Availability of vouchers or funds to pay for emergency referrals.....	21
Figure 4: Facilities conducting death audits/reviews.....	33
Figure 5: Causes of maternal deaths	35
Figure 6: Percentage of facilities that provided contraceptives in the past 3 months.....	36

ACRONYMS AND ABBREVIATIONS

ANC	Antenatal care
AMTSL	Active Management of the Third Stage of Labor
AVD	Assisted vaginal delivery
BEmONC	Basic Emergency Obstetric and Newborn Care
CBO	Community-based organization
CEmONC	Comprehensive Emergency Obstetric and Newborn Care
CHEW	Community Health Extension Worker
CRS	Cross River State
E2A	Evidence to Action
EmONC	Emergency Obstetric and Newborn Care
ETS	Emergency transport system
FBH	Faith-based hospital
FP	Family planning
GH	General hospital
HBB	Helping Babies Breathe
HFA	Health Facility Assessment
HMC	Hospital Management Committee
HMIS	Health Management Information System
IUD	Intrauterine device
LARC	Long-acting reversible contraceptive
LGA	Local government area
MMR	Maternal mortality ratio
MNH	Maternal and newborn health
MPDSR	Maternal and Perinatal Death Surveillance and Response
MVA	Manual vacuum aspiration
NHMIS	National Health Management Information System
NMR	Neonatal mortality rate

ODK	Open Data Kit
PfP	Private-for-profit
PHC	Primary health center
PMTCT	Prevention of mother-to-child transmission of HIV
SMGL	Saving Mothers, Giving Life
UNFPA	United Nations Population Fund
UNICEF	United Nations International Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

EXECUTIVE SUMMARY

PROJECT BACKGROUND

The Saving Mothers, Giving Life (SMGL) initiative was a public-private partnership aimed at reducing maternal and newborn mortality in sub-Saharan African countries by addressing the “three delays” associated with maternal and newborn deaths: delay in deciding to seek care, delay in reaching an adequate health facility, and delay in receiving adequate and quality care at the facility. In 2015, the initiative expanded to Nigeria, with implementation focused on 108 health facilities and their surrounding communities across all 18 local government areas (LGAs) of Cross River State (CRS). Using a systems strengthening approach to implement demand and supply side maternal and newborn health (MNH) interventions, SMGL aimed to reduce the institutional maternal mortality ratio in Nigeria by 25% and the institutional neonatal mortality rate by 35% by 2019.

PURPOSE OF THE ASSESSMENT

The purpose of the health facility assessment (HFA) was to assess the effectiveness of the SMGL initiative in improving MNH outcomes in Cross River State by comparing baseline and endline results, primarily focused on the third delay (receiving timely, quality care at the facility).

STUDY DESIGN, METHODS, AND LIMITATIONS

The study used a single-arm, pre/post-intervention design. The HFA was administered at baseline and endline through a standard structured questionnaire composed of seven modules, collecting data on: facility infrastructure; human resources; MNH-related medications, equipment, and supplies; emergency obstetrics and neonatal care (EmONC) signal functions; documents, protocols, and guidelines; and community mobilization. In addition, data on maternal and newborn morbidity and mortality, as well as MNH and family planning service uptake, were extracted from facilities’ monthly summary forms and registers. Data were entered into an electronic data collection tool (ODK), and data analysis was performed using Microsoft Excel and SPSS.

Baseline data were collected in December 2014 (for nine contiguous LGAs across the southern half of CRS) and in July 2015 (for nine contiguous LGAs across the northern half of CRS). Endline data were collected in March 2019. The SMGL initiative supported 108 facilities in the state, however, the results in this report reflect only 98 of the supported facilities at baseline and endline. Some facilities were not assessed due to security reasons or failure to provide consent to participate. There were some cases of missing data for indicators in the baseline HFA, therefore these indicators were excluded from this report. Additionally, the data extraction at baseline was in part reliant on the health management information system (HMIS), which had many shortcomings at that time.

FINDINGS

Of the 108 SMGL-supported facilities, this study assessed 68 of the 73 (93%) public facilities, 25 of the 30 (83%) private-for-profit facilities, and all 5 faith-based facilities.

Delay 1: Recognizing the Need to Seek Care and Making the Decision to Do So The SMGL initiative supported health facilities to conduct community outreach activities to raise awareness about the services they offer and the need for community members to access these services. The initiative also worked with community-based organizations in the state to improve demand for facility services. The HFA showed a significant increase in the percentage of facilities conducting outreaches. There was also significant increase in the percentage of facilities that were aware of the existence of community-based organizations that generate demand in the communities.

Delay 2: Physically Accessing Care When Necessary

The project addressed this delay at facility level by increasing the coverage of EmONC services, providing support for emergency transport and strengthening the referral system. The assessment showed an increase in the proportion of facilities with vouchers or funds for emergency transportation (from 3% to 57%, p-value=0.000). The initiative was also able to make care more accessible by increasing the number of facilities that reported providing all Basic EmONC (from 16% to 30%, p-value=0.02) and Comprehensive EmONC services (from 0% to 18%, p-value=0.000) in the past year. There was also a significant increase in the proportion of facilities providing obstetric and neonatal care 24/7 (p-value=0.0469). In addition, there was a significant increase in the use of cell phones for making referrals and in the availability and use of the referral register (p-value=0.000)

Delay 3: Receiving Appropriate Care Once at a Health Facility

To address this delay, SMGL provided basic facility upgrades, solar lamps (through partnership with We Care Solar), and health equipment (through partnership with Project C.U.R.E). In addition, trainings on EmONC, essential newborn care, postpartum family planning, postabortion care, general family planning (including long-acting reversible contraceptive methods [LARCs]), and use of the Maternal and Perinatal Deaths Surveillance and Response tools were provided to facility staff. Finally, MNH guidelines and protocols were distributed to health facilities.

The HFA showed improvement in the availability of MNH equipment, medications, supplies, guidelines, and protocols in the health facilities compared to baseline. There were significant changes in the number of facilities carrying out formal and scheduled neonatal death audits, although these numbers remain low. SMGL's support led to an improvement in some quality of care indices. For example, the proportion of live births put to breast and kept warm (skin-to-skin kangaroo care) within 30 minutes of birth in a health facility increased by 158% and the percentage of women who received uterotronics in the third stage of labor increased by 84%.

Despite the challenges faced during implementation, the project made notable accomplishments, contributing to a 12% increase in women attending antenatal care at a health facility, a 32% increase in women delivering in the facilities, and a 132% increase in women attending postnatal care in the facility. By the end of the project, the facility maternal mortality ratio was reduced by 66% and the facility neonatal morality rate was reduced by 47%, compared with baseline figures.

Increasing Access to Family Planning

Recognizing that contraceptive use can reduce maternal deaths by preventing unwanted or high-risk pregnancies, the SMGL initiative had a robust family planning component, with a focus on provision of LARCs. The project was able to significantly increase the percentage of facilities that had offered LARCs in the last three months (p-value=0.0084). There was also an 869% increase in couple years of protection from baseline.

CONCLUSION

The SMGL initiative, in cooperation with the government of CRS, improved health outcomes for mothers and newborns in supported facilities and provided evidence for its district strengthening approach. Sustaining the gains achieved by the initiative will require commitment from stakeholders at the state and local government levels. Concerted effort should be made to institutionalize the strategies of the SMGL initiative for a strengthened health system. The SMGL experience in CRS has yielded valuable lessons and highlighted innovations that should be strengthened. Sustainability was a key consideration of SMGL from the outset, and the CRS government was a critical stakeholder, deeply involved in all SMGL activities. The government of CRS is thus strongly positioned to take over and expand parts of the initiative to the entire state, while sustaining and building on the gains achieved in the supported facilities in CRS.

PROJECT OVERVIEW

In 2012, 11 organizations came together to establish Saving Mothers, Giving Life (SMGL), a public-private partnership committed to the ambitious goal of dramatically reducing maternal and newborn mortality in sub-Saharan Africa. SMGL began in Uganda and Zambia and, after promising early results, the initiative expanded to Nigeria in 2015.

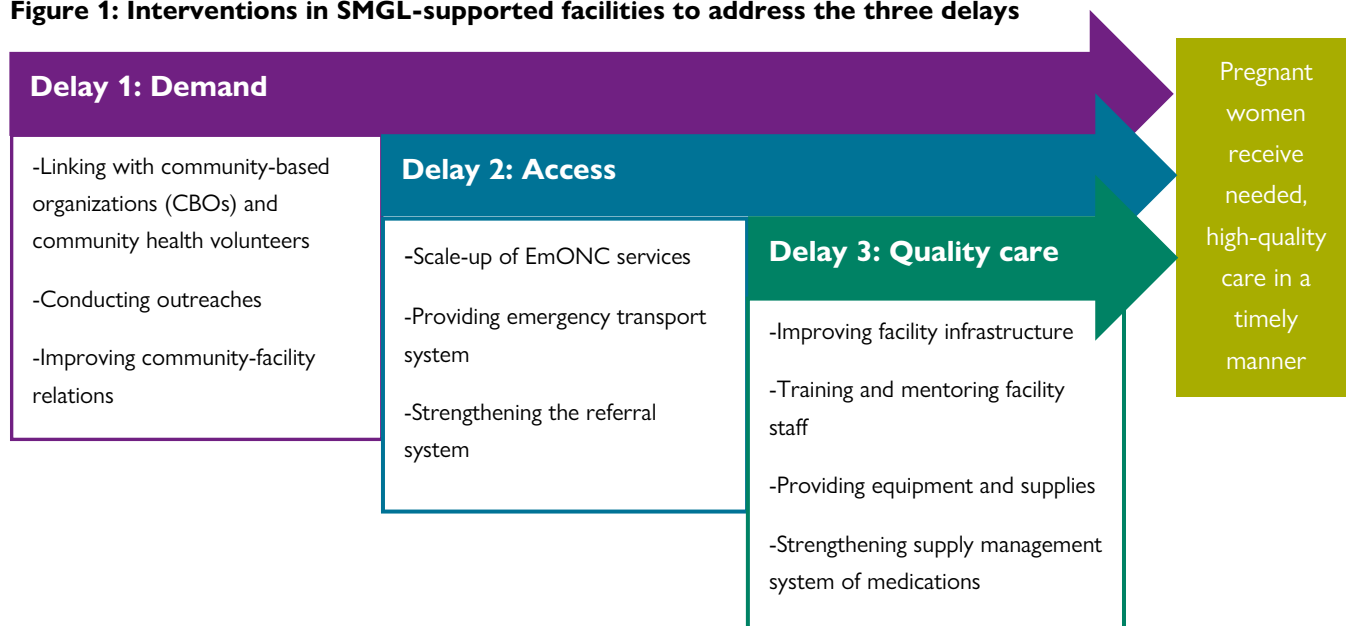
In Nigeria, the SMGL Initiative was implemented in partnership with the government of Cross River State (CRS), supported by Pathfinder International through Evidence to Action (E2A), a USAID flagship program. The initiative implemented a model maternal and newborn health (MNH) intervention that applied a systems approach to ensuring every pregnant woman has access to clean and safe normal delivery services and, in the event of an obstetric complication, lifesaving emergency care within two hours of the onset of complications. The model serves to strengthen existing health networks so they can address delays in pregnant women seeking appropriate services, reaching those services, and receiving timely, quality care. The model also focuses attention on the most vulnerable period for mother and baby: labor, delivery, and the first 48 hours postpartum, which includes immediate postpartum family planning (FP) provision. In addition, with funding from Merck for Mothers, a complementary program was implemented to increase access to and quality of comprehensive MNH care by engaging private-for-profit (PfP) facilities to support women through pregnancy and delivery, and to strengthen the formal links between private and public providers and facilities, thereby offering the women of CRS and their families a total market response to addressing MNH needs.

The SMGL initiative sought to address the three delays in accessing lifesaving emergency obstetric care: delay in seeking appropriate services, delay in reaching services, and delay in receiving timely, quality care. Efforts deliberately targeted the most critical periods associated with maternal and newborn death, particularly the times around labor, delivery, and the first 48 hours postpartum. Special efforts were made to ensure service delivery standards are met and activities (such as demand generation, systems strengthening, capacity building, service delivery, commodities logistics management, and referral systems) are properly coordinated and harmonized.

In addition, the initiative implemented integrated, holistic, and evidence-based FP/sexual and reproductive health strategies for providing quality services and offering FP services through several

channels. Figure 1 below highlights the various interventions implemented at health facility level to address the three delays.

Figure 1: Interventions in SMGL-supported facilities to address the three delays



By 2019, it was expected that SMGL implementation would bring about a 25% reduction in the maternal mortality ratio (MMR) and a 35% reduction in the neonatal mortality rate (NMR) from the 2014 baseline values for supported facilities. In addition, the project expected to contribute to an increase in modern contraceptive prevalence and a reduction in unmet need in the state. The initiative's specific objectives were:

- Increase timely utilization of institutional delivery services;
- Ensure women and their newborns are offered other key health services in an integrated manner, including the use of lifesaving innovations;
- Improve the quality of maternity care and institutional delivery services, including emergency obstetric and neonatal care (EmONC);
- Strengthen the capacity of the health system to capture, evaluate, and report on birth outcomes using community and facility health information systems, and strengthen essential drugs/commodity logistics systems;
- Strengthen the capacity of the Ministry of Health to engage the private sector to reach state MNH goals.

SMGL supported 73 facilities in 2016, but increased its support to 97 facilities in 2017 and to 108 facilities in 2018 (73 public, 5 faith-based, and 30 private-for-profit facilities) in the 18 local government areas (LGAs) of CRS.

STUDY RATIONALE

Despite continuous efforts to improve MNH outcomes in Nigeria, some important indicators remain poor. According to the 2013 Nigeria Demographic and Health Survey, the MMR for the country is 576 per 100,000 live births and the NMR is reported at 37 per 1,000 live births.¹ In Cross River State, the focus state for the SMGL initiative, the 2017 Multi-indicator Cluster Survey more recently reported that the NMR is 32 deaths per 1,000 live births.² While a reasonably high percentage (81%) of pregnant women in the state receive antenatal care (ANC) from a skilled provider, only 64.6% are assisted in childbirth by a skilled provider.² Reasons for not delivering at the facility range from high cost of services to lack of transportation to and far distance from health facilities.¹ These health concerns are possibly further exacerbated by poor quality of care at health facilities and religious beliefs that drive women to unskilled/semi-skilled providers who put them at risk of losing their lives. Furthermore, the modern contraceptive prevalence rate in CRS is only 16.1% and unmet need for FP is 26.2%.² There is a need for innovation in maternal and reproductive health interventions so that Nigeria does not lag in meeting the targets of the Sustainable Development Goal 3 - Ensure healthy lives and promote wellbeing for all at all ages by 2030.

Maternal and neonatal deaths at the time of and immediately following delivery are largely preventable using the nine evidence-based lifesaving interventions, called “signal functions,” which comprise EmONC services.³ Basic EmONC (BEmONC) facilities provide seven of the signal functions: (1) administer parenteral antibiotics, (2) administer uterotonic drugs for active management of the third stage of labor (AMTSL) and prevention of postpartum hemorrhage, (3) use parenteral anticonvulsants for the management of pre-eclampsia/eclampsia, (4) perform manual removal of placenta, (5) perform removal of retained products, (6) perform assisted vaginal delivery, and (7) perform basic neonatal resuscitation. Comprehensive EmONC (CEmONC) facilities perform the seven basic signal functions, plus two more: cesarean delivery (C-section) and blood transfusion.⁴

In December 2014 and July 2015, a baseline health facility assessment (HFA) was conducted prior to implementation of SMGL in 812 facilities that provided any delivery services in CRS. The HFA found a facility MMR of 876 per 100,000 live births and a facility early neonatal mortality rate (first 24 hours) of 15 per 1,000 live births in the state.⁵ The findings of the baseline HFA served as the platform for adapting the SMGL global programming model, determining implementation coverage and activities, and providing baseline data for SMGL project indicators. At the end of the project, Pathfinder International conducted another HFA to assess the changes in MNH outcomes in SMGL-supported facilities in CRS.

METHODOLOGY

Study Objectives

The objective of the study is to assess the effectiveness of SMGL-supported facilities in addressing the three delays to accessing lifesaving EmONC (delay in seeking appropriate services, delay in reaching services, and delay in receiving timely, quality care) compared to baseline.

Study Design

The study is a comparative study using a pre/post-implementation design. Baseline (pre-intervention) and endline (post-intervention) data on facility characteristics, services, and availability of equipment, medication, and supplies were collected during the HFA and facility service delivery data were collected using the National Health Management Information System (NHMIS) tools.

Data Collection Method

Health facility assessment

In December 2014, baseline HFAs were conducted in 268 public and private facilities offering delivery services in nine contiguous LGAs across the southern half of CRS. A similar approach was replicated in the remaining 544 facilities in nine LGAs in June 2015. The endline HFA (conducted in collaboration with the government of CRS) was based on the baseline HFA; the same tools were used, but the endline assessment collected data only from project-supported facilities. Data collection for the endline HFA was conducted in March 2019.

Review of project data

A data extraction form was used for the baseline HFA to extract data from the NHMIS service delivery monthly summary forms and registers. This provided annual data on antenatal, delivery, and postnatal care; maternal and neonatal mortality; and FP uptake. At endline, project data (which was already collected using the NHMIS tools) were used.

Study Sites

The SMGL initiative supported 108 facilities in Cross River State. However, baseline data was only available for 100 of these facilities. At endline, only 106 of the supported facilities were assessed due to security issues in the catchment communities of 2 facilities. This report focuses on the 98 supported facilities (56 primary health centers, 12 general hospitals, 25 private-for-profit, and 5 faith-based hospitals) that were part of both baseline and endline assessments.

Data Collection Instrument

A standard structured questionnaire was used for the baseline and endline HFAs. Though revisions were made to the baseline questionnaire for use in the endline, a purposive review ensured that all elements of the baseline questionnaire were retained in content and structure to preserve comparability, with supplementary questions to provide additional data, information, and context deemed important for demonstrating outcomes as a consequence of the initiative's strategy, beyond the comparative analysis of pre- and post-intervention data.

The questionnaire was, however, changed in form to allow for its digitization. Electronic data collection using the Open Data Kit (ODK) for the endline HFA ensured greater validity of assessment data, and greater efficiencies with respect to data collection and entry.

The baseline and endline questionnaires consisted of seven modules:

- Introduction and Consent
- Identification of Facility and Infrastructure
- Human Resources
- Maternal and Newborn Health Care Medications, Equipment, and Supplies
- Emergency Obstetric and Neonatal Care Signal Functions and Other Essential Services
- Documents, Protocols, and Guidelines
- Community Mobilization

Composition of Field Team

The field team members were supervisors and data collectors/research assistants. The supervisors were selected from a pool of mid- to senior-level health officials from the Ministry of Health and the State Primary Health Care Development Agency. The endline assessment mirrored the baseline assessment by pairing one supervisor with a team of two data collectors, for a total of 15 teams. Supervisors led field work, ensuring data collectors visited facilities according to schedule, and responded to challenges that arose during interviews and data collection, and gaining entry into facilities. A Lead Supervisor managed the entire process, ensured proper logistics support, and addressed technical issues.

Data collectors consisted of recent graduates from tertiary institutions in Nigeria who were on national service (youth corps) and others who had some prior survey experience, having worked as data collectors for previous HFAs.

Training of Field Team

Field teams were trained to ensure a thorough understanding of the assessment process and the assessment instrument, as well as to improve their interviewing skills and their ability to conduct health facility inventories, observe physical conditions of the health facilities, and review registers. The training ensured that the necessary skills for electronic data collection were strengthened. A four-day training (consisting of plenary sessions, small group discussions, and field practice) was conducted. A one-day training for supervisors prepared them to effectively lead their teams. To assess level of understanding and promote participation, supervisors were assigned sessions to lead under the guidance of the facilitators (Pathfinder program and monitoring, evaluation, and learning staff).

Data Collection

For the endline assessment, data collection started on March 18, 2019, the week after the training workshop. Data were collected electronically using ODK on tablets. The team supervisors reviewed completed tools daily for data quality checks, recommending follow-up actions as necessary. The Lead Supervisor reviewed submissions as they were made, provided real-time feedback, and, with team supervisors, ensured necessary follow-up actions were taken immediately.

Data Quality Assurance

Several quality assurance measures were implemented to ensure that data were of high quality. In addition to the training described above, supervisors and Pathfinder staff monitored fieldwork to ensure completeness of data and adherence to assessment guidelines. The digitized tool with built-in

quality checks minimized data capture errors, allowing data to be reviewed as soon as they were submitted by the Lead Supervisor and corrections to be made. A data quality consultant also collected data independently in randomly selected facilities. These data were not significantly different from those collected by the research assistants. Field teams also met daily to review their work, discuss problems and challenges, explore ways to improve data-collection activities, and plan for the following day. Data cleaning was also done prior to data analysis.

Data Analysis

Data analysis examined data from the endline HFA and service delivery data from SMGL-supported facilities and compared with data from the baseline assessment, which were extracted from the two phases of the baseline HFA, for SMGL-supported facilities. Given the need to ensure comparability, only the 98 facilities that were assessed during both the baseline and endline HFAs were included in the analysis.

The data analysis compared findings at baseline to findings at endline. The focus was on determining significant changes, similarities, and differences. Descriptive statistics (counts and percentages) were used to analyze data. A review of select routine service delivery data was also used to determine the effect of the changes in target facilities on service delivery uptake. A two-tailed t-test of percentages was used to determine the significance of differences between baseline and endline values where appropriate. All required analysis was carried out using Microsoft Excel and SPSS.

Ethical Considerations

Ethical clearance was obtained from the Research and Ethical Committee, Cross River State Ministry of Health, and an Institutional Review Board (IRB) waiver was obtained from PATH, as the study did not involve human subjects.

Study Limitations

This study only assesses the work done at facility level and therefore does not provide a comprehensive assessment of the effect of the SMGL initiative in addressing the three delays in CRS.

As discussed above, although the initiative supported 108 facilities, this assessment includes only 98 facilities. During the endline HFA, two facilities could not be assessed due to security risks in catchment area communities. Additionally, eight facilities were not included in the baseline HFA for various reasons, including insecurity issues and failure to consent to participate because the facility head was unavailable and could not be reached to provide clearance for the assessment to take place.

There were some cases of missing data in the baseline HFA, therefore the comparative analysis in this report includes only indicators with data from both baseline and endline HFAs. Additionally, the extraction of facility data at baseline was reliant on the NHMIS, which had some shortcomings at that time.

It is also noteworthy that, although SMGL implementation began at the supported health facilities at different times between 2016 and 2018, the baseline HFA was conducted in late 2014 and mid-2015, which was in some cases, years before project implementation actually began in the facilities. Finally, the lack of comparison facilities does not allow attribution of outcomes to the SMGL initiative.

FINDINGS

Study results are presented in order of the three delays and include data from the HFA core questionnaire as well as routine service delivery data relevant to each delay. The findings in this report only assess the changes from baseline and endline and do not look at the life of project data. Unless otherwise indicated, the baseline values are from December 2014 (for facilities located in the Abi, Akamkpa, Akpabuyo, Bakassi, Biase, Calabar Municipal, Calabar South, Odukpani, and Yakurr) and June 2015 (for facilities located in Bekwarra, Boki, Etung, Ikom, Obanliku, Obubra, Obudu, Ogoja, and Yala). The endline values are from March 2019 for all facilities.

Characteristics of Assessed Facilities

Out of the 108 facilities supported in the state, 68 of the 73 (93%) public facilities (primary health centers [PHCs] and general hospitals [GHs]), 25 of the 30 (83%) PFP facilities, and all 5 faith-based hospitals [FBHs) were assessed. These facilities began receiving SMGL support at various points over a three-year period from 2016 to 2018. Table 1 details the characteristics of facilities assessed.

Table 1: Summary of facilities assessed

LGA	Designation		Facility Type				Totals (by year of activation)*			
	Rural	Urban	GH	PHC	FBH	PFP	2016	2017	2018	All
Abi	2	0	1	1	0	0	1	1	0	2
Akamkpa	2	1	1	2	0	0	3	0	0	3
Akpabuyo	4	0	1	3	0	0	3	1	0	4
Bakassi	1	0	0	1	0	0	1	0	0	1
Bekwarra	7	0	1	4	0	2	3	2	2	7
Biase	3	0	1	2	0	0	3	0	0	3
Boki	4	0	0	3	0	1	4	0	0	4
Calabar Municipal	1	6	2	1	0	4	7	0	0	7
Calabar South	0	4	0	2	0	2	4	0	0	4
Etung	5	0	0	5	0	0	2	3	0	5
Ikom	5	8	0	4	1	8	9	1	3	13
Obanliku	5	1	1	4	1	0	4	2	0	6
Obubra	9	0	1	6	0	2	4	4	1	9
Obudu	3	3	0	4	1	1	4	2	0	6

LGA	Designation		Facility Type				Totals (by year of activation)*			
	Rural	Urban	GH	PHC	FBH	PfP	2016	2017	2018	All
Odukpani	1	1	0	2	0	0	2	0	0	2
Ogoja	3	4	1	3	1	2	5	1	1	7
Yakurr	9	0	1	5	0	3	6	2	1	9
Yala	6	0	1	4	1	0	4	2	0	6
Totals	70	28	12	56	5	25	69	21	8	98

*Facilities activation involved the formal process of bringing onboard facilities to be provided direct support by the project

Primary health centers make up the highest number of facilities assessed, at 57%. Of the facilities assessed, 26% were private-for-profits and 12% were general hospitals. A majority of the facilities assessed were located in rural areas (71%) and began receiving SMGL support in 2016 (70%).

Delay 1: Recognizing the Need to Seek Care and Making the Decision to Do So

The first delay in accessing emergency care relates to the ability to identify the need to seek emergency obstetric and newborn care. A health facility can contribute to improving this delay through community mobilization and outreach activities. Health facilities were supported to conduct community outreach to generate awareness about the services they offer and the need for community members to access these services. The initiative also worked with community-based organizations (CBOs) in the state to improve demand for facility services. During the HFA, facility focal persons were asked about their community outreach activities to increase demand for and use of selected services and their awareness of CBOs working to improve community health and to increase demand for services by linking communities to facilities.

Table 2 presents the findings. Significant differences exist between baseline and endline values, with the exception of the areas of HIV testing and prevention of mother-to-child transmission (PMTCT), likely because these were not the focus of the initiative.

Table 2: Facilities reporting community outreaches

	Baseline	Endline	% Change	P-Value
Facilities that carry out community outreach (sometimes and frequently) to increase demand and use for (n=98):				
Male involvement in MNH	52%	78%	26%	0.0002*
Newborn care	60%	83%	22%	0.0005*
Facility-based deliveries	62%	82%	19%	0.0021*
ANC	66%	85%	18%	0.0023*
Family planning	63%	80%	16%	0.0091*
HIV testing	68%	72%	4%	0.5419
PMTCT	66%	69%	3%	0.6544
Facilities that are aware of existence of and/or activities conducted by (sometimes and frequently) of community-based organizations to create demand for services on (n=98):				
Newborn care	44%	68%	24%	0.0009*
Male involvement in MNH	39%	61%	22%	0.0024*
Facility-based deliveries	51%	69%	18%	0.0109*
ANC	50%	67%	17%	0.0167*
Family planning	49%	65%	16%	0.0248*
PMTCT	48%	56%	8%	0.2637
HIV testing	52%	58%	6%	0.3996

*Statistically significant at p-value <0.05

Table 3 on the next page also shows that there were notable increases in the number of women accessing the facility for various MNH services. The most notable increase was the number of women attending postnatal care in assessed facilities, which increased by 132%. The changes suggest an increased demand for facility-based services among community members.

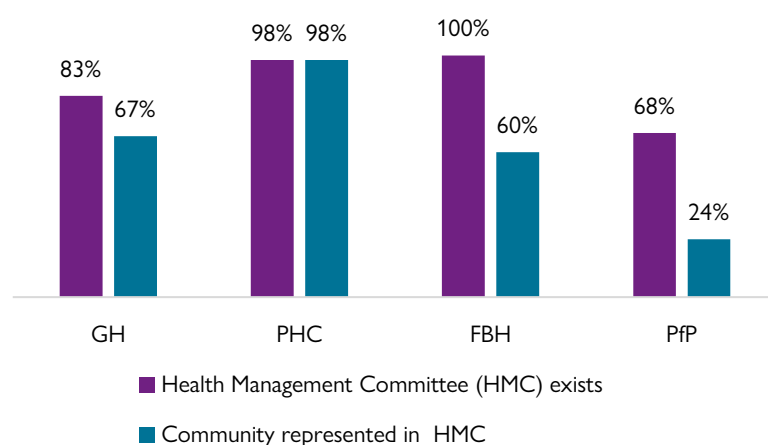
Table 3: Change in facility attendance for MNH services

Indicator	Baseline ¹	Endline ²	% Change
Number of women attending ANC at the facility	66,963	74,911	12%
Number of women who had 4th ANC visit	6,117	8,988	47%
Number of women attending postnatal care at the facility	3,149	7,298	132%
Number of women delivering in a facility	13,472	17,727	32%

¹Jan-Dec 2015 (69 facilities); Jan-Dec 2016 (21 facilities), Jan-December 2017 (8 facilities)

²April 2018-March 2019 (98 facilities)

The SMGL initiative worked to improve community–facility relations as part of the strategy to address the three delays. This is demonstrated by the existence of facility Health Management Committees (HMCs). Though data are not available for comparison with the baseline, the endline data show the existence of HMCs as well as community representation within the HMCs. Figure 2 below shows the percentages of facilities with HMCs and community representation in these HMCs. PHCs have a high proportion of HMCs and community participation, which is unsurprising given that they are meant to be closely integrated within the communities they serve. Other facilities, particularly PFPs, have the lowest community representation in the HMC and need to interact and integrate more with their communities.

Figure 2: Percentage of facilities with HMC at endline

Delay 2: Physically Accessing Care When Necessary

The second delay examines a woman’s ability to access care once the decision has been made to do so. This includes issues of distance to and accessibility of a nearby health facility, as well as cost and resources needed to reach the appropriate facility. The SMGL initiative addressed this delay at facility level by increasing the coverage of EmONC services, while also providing support for an emergency transport system (ETS) and strengthening the referral system.

A facility's EmONC designation depends on the availability of services and whether they have been performed within a reference period. Health facilities that performed all BEmONC functions except assisted vaginal delivery (AVD) are classified as BEmONC-AVD.

Table 4 details the proportion of facilities providing all EmONC signal functions between baseline and endline values 3 and 12 months prior to the assessment. Over the course of a year, there were significant changes in facility status overall, signifying an increase in the availability and use of services. However, the status within 3 months prior to assessment was not found to be significantly different, possibly due to a lack of need for all seven or nine signal functions during that shorter time period.

Table 4: Change in EmONC status

	Baseline	Endline	% Change	P-Value
Percentage of facilities providing all EmONC signal functions (12 months preceding HFA) n=98				
BEmONC	16%	30%	13%	0.0209*
BEmONC-AVD	28%	45%	17%	0.0143*
CEmONC	0%	18%	18%	0.000*
Percentage of facilities providing all EmONC signal functions (3 months preceding HFA) n=98				
BEmONC	9%	10%	1%	0.8116
BEmONC-AVD	18%	20%	2%	0.7216
CEmONC	0%	9%	9%	0.0027*

*Statistically significant at p value <0.05

The World Health Organization (WHO) recommends that for every 500,000 people there should be at least five facilities offering BEmONC and one facility offering CEmONC.³ Although only looking at 98 SMGL-supported facilities in CRS, the table below shows that the initiative increased the number of facilities that provide CEmONC services in the state and has therefore ensured that Cross River State surpasses the WHO recommendation for CEmONC facilities. Furthermore, SMGL nearly doubled the number of facilities offering BEmONC services by the end of the project.

Table 5: Recommended EmONC status and number of facilities

	Baseline	Endline
Population of Cross River State	3,648,404*	4,097,143**
Number of facilities providing all BEmONC signal functions		
Recommended by WHO	37	41
Actual (12 months preceding HFA)	16	30
% of recommended number reached	43%	73%
Number of facilities providing all CEmONC signal functions		
Recommended by WHO	8	9
Actual (12 months preceding HFA)	0	18
% of recommended number reached	0%	200%

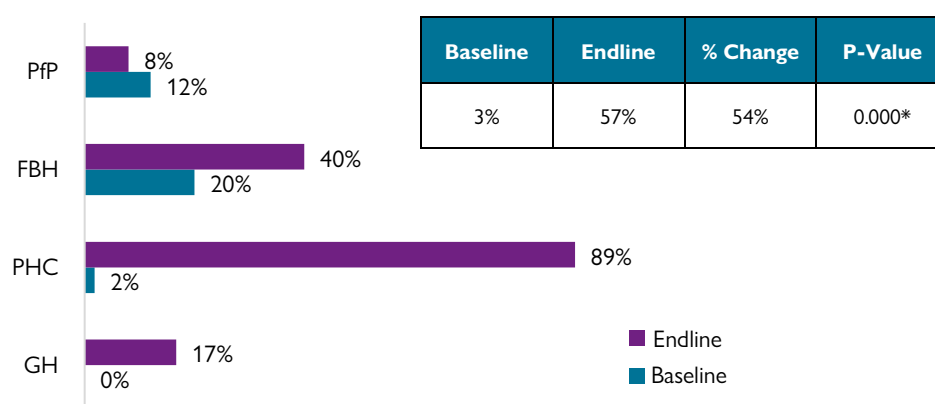
* Cross River State, Demographic Estimates, 2014: Nigeria National Census, 2006 projections

** Cross River State, Demographic Estimates, 2018: Nigeria National Census, 2006 projections

The SMGL initiative collaborated with the host communities of project-supported facilities to set up ETS to help address delays in reaching the health facility. One of the outcomes of the ETS intervention is the availability of emergency referral funds at the facilities, which were used to pay for transport of pregnant women from the community to the facility, and for emergency referrals between facilities.

Figure 3 shows the change in the number of facilities with vouchers or funds for emergency transportation. There was a significant increase in facility-supported ETS (from 3% to 57%) in SMGL-supported facilities. This increase was most significant in the PHCs.

Figure 3: Availability of vouchers or funds to pay for emergency referrals



The initiative also worked to improve access to services by ensuring that all supported facilities were available 24/7 and strengthening the referral system in cases where pregnant women need to be moved from a BEmONC facility to a CEmONC facility. Table 6 shows that the use of cellphones for referrals and referral registers significantly increased from baseline.

Table 6: Referral system

	Baseline	Endline	% Change	P-Value
Obstetric and neonatal care is available 24/7	96%	100%	4%	0.0469*
Cellphone owned by facility and used for referral in past month	9%	62%	53%	0.000*
Cellphone owned by individual staff member and used for referral in past month	49%	74%	26%	0.0004*
Referral register is available and used	48%	82%	34%	0.000*

**Statistically significant at p value <0.05*

Delay 3: Receiving Appropriate Care Once at a Health Facility

The third delay relates to the care a woman receives once she arrives at a health facility. This section examines SMGL’s impact on the capacity of facilities to provide quality EmONC services. The section examines the differences between baseline and endline in health resources and staffing; equipment, supplies, and essential drugs; performance of EmONC signal functions and other MNH services; and quality assurance measures.

General facility infrastructure

Obstetric care requires standard infrastructural capabilities (e.g., water, electricity, latrines). The SMGL initiative provided basic facility upgrades and, through partnerships with We Care Solar, improved availability of backup electricity. The table below shows the availability of basic infrastructure at baseline and endline. From baseline values to endline values, there was a significant increase in availability of electricity and water, as well as availability of a functioning toilet.

Table 7: Available facility infrastructure (n=98)

	Baseline	Endline	% Change	P-Value
Electricity available and functioning	51%	76%	24%	0.0004*
Backup power available and functioning	73%	82%	8%	0.133
No electricity interruption for obstetric services	20%	57%	37%	0.000*
Water available for client and staff use	84%	97%	13%	0.0022*
Water system functioning in operating theatre	31%	34%	3%	0.6544
Water system functioning in delivery room	49%	79%	30%	0.000*
No interruption of water supply	42%	80%	38%	0.000*
Functioning toilet for client use	60%	94%	34%	0.000*

*Statistically significant at p value <0.05

Human Resources and Staffing

Adequate human resources for health is critical to maintain successes and results achieved by SMGL and other programs. Throughout the life of the project, the initiative delivered trainings to over 1,500 facility staff on topics including: EmONC; emergency life-saving skills; postabortion care; long-acting reversible contraceptives (LARCs); Maternal and Perinatal Death Surveillance and Response (MPDSR); and NHMIS. However, from baseline to endline, SMGL-supported facilities saw a drop in most staff cadres, with the exception of Community Health Extension Workers (CHEWs), which increased (see Table 8). This has also led to a reduction in the number of trained staff available at the facilities, despite the initiative's involvement in staff training in CRS.

Table 8: Change in human resource numbers (n=98)

	GH			PHC			FBH			PfP			Total		
	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change
All Staff	859	812	-5%	628	574	-9%	342	290	-15%	614	467	-24%	2443	2143	-12%
Medical Officer	37	31	-16%	10	4	-60%	11	16	45%	43	37	-14%	101	88	-13%
Youth Corp Doctor	8	6	-25%	1	2	100%	2	5	150%	5	1	-80%	16	14	-13%
Registered Nurse-Midwife	530	486	-8%	123	46	-63%	72	80	11%	126	58	-54%	851	670	-21%
Community Health Officer	20	0	-100%	42	58	38%	2	0	-100%	47	5	-89%	111	63	-43%
Specialist in Obstetrics & Gynecology	2	1	-50%	0	0	0%	3	2	-33%	8	10	25%	13	13	0%
Specialist in Pediatrics	1	1	0%	0	0	0%	0	0	0%	5	4	-20%	6	5	-17%
CHEW	8	9	13%	159	259	63%	45	81	80%	98	91	-7%	310	440	42%
Junior CHEW	4	3	-25%	83	77	-7%	31	24	-23%	22	42	91%	140	146	4%
Auxiliary Nurse	14	3	-79%	83	3	-96%	38	5	-87%	57	70	23%	192	81	-58%

Total Number of Staff Trained in Labor and Delivery / BEmONC Availability in the Facility															
All Staff	293	136	-54%	294	245	-17%	86	58	-33%	185	146	-21%	858	585	-32%
Medical Officer	26	16	-38%	9	4	-56%	7	3	-57%	35	27	-23%	77	50	-35%
Youth Corp Doctor	6	3	-50%	1	0	-100%	0	0	0%	2	0	-100%	9	3	-67%
Registered Nurse-Midwife	258	114	-56%	114	43	-62%	46	44	-4%	76	30	-61%	494	231	-53%
Community Health Officer	2	0	-100%	34	44	29%	2	0	-100%	23	4	-83%	61	48	-21%
Specialist in Obstetrics & Gynecology	1	1	0%	0	0	0%	3	1	-67%	6	10	67%	10	12	20%
Specialist in Pediatrics	0	1	~	0	0	0%	0	0	0%	0	4	~	0	5	~
CHEW	0	1	~	136	140	3%	28	7	-75%	43	52	21%	207	200	-3%
Junior CHEW	0	0	0%	0	14	~	0	3	~	0	8	~	0	25	~
Auxiliary Nurse	0	0	0%	0	0	0%	0	0	0%	0	11	~	0	11	~

Performing Signal Functions

Despite the significant changes in the number of facilities reporting a B/CEmONC status, the overall proportions remained low at endline, the highest of which was 45% of facilities designated as BEmONC-AVD 12 months preceding assessment. However, a review of the signal functions individually showed that there were more facilities that reported performing at least 1 of 7 signal functions, with 95% and 93% of facilities reporting the administration of uterotonics within 12 and 3 months of the survey, respectively. Comparing baseline and endline values, newborn resuscitation with bag and mask saw the most significant change within 12 and 3 months of the assessment. Table 9 details the changes on reported performance of signal functions at assessed facilities.

Table 9: Facilities reporting performance all of the signal functions

	12 months preceding Assessment				3 months preceding Assessment		
	Baseline	Endline	% Change	P-Value	Endline	% Change	P-Value
BEmONC signal functions (n=98)							
Newborn resuscitation with bag and mask	39%	84%	45%	0.000*	69%	38%	0.000*
Assisted vaginal delivery (vacuum or forceps)	33%	47%	14%	0.0468*	30%	7%	0.2032
Parenteral anticonvulsants	47%	59%	12%	0.094	35%	0%	1.00
Parenteral antibiotics	83%	89%	6%	0.2276	84%	5%	0.3685
Uterotonic drugs (oxytocin or misoprostol)	90%	95%	5%	0.1855	93%	7%	0.1116
Manual removal of the placenta	77%	80%	3%	0.6098	60%	0%	1.00
Removal of retained products of conception (MVA)	69%	73%	4%	0.5379	51%	-6%	0.4004
CEmONC signal functions (n=42)**							
Blood transfusion related to labor and delivery	86%	89%	2%	0.6716	71%	-2%	0.6008
Cesarean delivery	86%	89%	2%	0.6716	88%	0%	0.6265

*Statistically significant at p value <0.05 ; ** These exclude the BEmONC facilities.

Performing Other MNH Interventions

Facilities reported providing other MNH services including skin-to-skin kangaroo care, application of the Helping Babies Breathe (HBB) protocol, and intensive care for preterm/low birth weight babies.

Table 11 shows the difference in percentages of facilities that routinely offer these other MNH services. The most significant change occurred with the routine use of a partograph to manage labor (a focus issue for SMGL). Facilities reporting use of a partograph increased by 49% from baseline values. Significant changes also occurred across facilities reporting increased use of the HBB protocol, provision of LARCs (in last 3 months preceding the assessment), and the routine practice of skin-to-skin kangaroo care. Given the already high proportion of facilities at baseline (>90%) that were practicing AMTSL and conducting HIV rapid tests for mothers with unknown HIV status in the maternity/labor ward (in last 3 months preceding the assessment), an increase of 3% is not surprising. The number of facilities providing special/intensive care to preterm or low birth weight babies (in last 3 months preceding the assessment) fell by 2%, however, pointing to a possible decline in the required skillset.

Table 10: Facilities reporting performance of other MNH services (n=98)

	Baseline	Endline	% Change	P-Value
Routinely use a partograph to manage labor	50%	99%	49%	0.000*
Routinely practice the HBB protocol	73%	97%	23%	0.000*
Routinely practice skin-to-skin kangaroo care	88%	96%	8%	0.0403*
Routinely practice AMTSL	97%	100%	3%	0.0856
Carried out rapid HIV test for mothers with unknown HIV status in the maternity/labor ward in last 3 months	91%	94%	3%	0.4263
Provided special/intensive care to preterm or low birth weight babies in last 3 months	28%	26%	-2%	0.7528

*Statistically significant at p value <0.05

Availability of MNH Equipment

In the absence of necessary equipment, trained health facility staff find it difficult to provide quality labor and delivery services, including emergency obstetric care. Over the life of the program, SMGL made substantial investments in supported facilities, directly by providing basic equipment to GHs, PHCs and FBHs, and through a partnership with Project C.U.R.E., which donates medical supplies and equipment to developing countries around the world, delivered donated equipment to supported facilities.

To determine the change in health facility readiness to provide quality labor and delivery services, the availability of equipment needed for quality services was assessed and compared with baseline values.

Table 11: Facilities with MNH equipment - available and functioning (n=98)

Equipment	Uses	Baseline	Endline	% Change	P-Value
Adult ventilator (ambu) bag	Provide pressure ventilation to laboring women who are not breathing or not breathing adequately	18%	61%	43%	0.000*
Blood pressure cuff	Take blood pressure measurement by fastening it around the arm	58%	97%	39%	0.000*
Point-of-care hemoglobin testing machine	Measure the count of hemoglobin in the red blood cells	23%	62%	39%	0.000*
Assisted delivery packs (obstetric vacuum or forceps)	Help deliver baby during contraction especially when the baby is in an awkward position or the mother is becoming exhausted	40%	76%	36%	0.000*
Suction equipment for newborn airway (neonatal suction device)	Clear the upper airways of newborns suffering from birth asphyxia	63%	98%	35%	0.000*
Autoclave	Sterilize tools used during labor and delivery	34%	44%	10%	0.1529
Newborn scale	Weigh newborns after delivery	78%	97%	19%	0.0001*
Labor/delivery table	Enhance relaxation of mothers going through labor/delivery process	81%	98%	17%	0.0001*
Fetal stethoscope (pinard horn)	Monitor fetal heart rate	80%	92%	12%	0.0164*
Adult stethoscope	Listen to the internal sounds of the mother	80%	90%	10%	0.0514
Filled oxygen cylinder carrier and key to open valve	Allows easy movement and deployment of oxygen supply to mothers during delivery	22%	33%	10%	0.0862
(Rectal) thermometer for newborn	Take the temperature of a newborn	41%	40%	-1%	0.8868

*Statistically significant at p value <0.05

Availability of MNH Medicines and Supplies

In addition to obstetric equipment, a facility's capacity is also measured by its stock of essential medicines and supplies. The initiative provided some supplies directly and worked with the CRS government to strengthen the supply of essential medications. Supported facilities showed a significant change in both current stock and stock-out trends in the 12 months preceding the endline HFA across most MNH medications and supplies (see Table 12), including neonatal resuscitation packs, partographs, magnesium sulfate (injection), and misoprostol, all essential for the management of labor and delivery and the early postpartum period. It is also noteworthy that less than 5% of facilities at the endline assessment reported a stock-out of neonatal resuscitation packs, partographs, misoprostol, non-sterile protective clothing, puncture-proof sharps containers, or oxytocin.

Ampicillin (injection for newborn) and Ampicillin (for adults) stocks remain a concern. Facilities reporting a stock-out of the former dropped marginally by 1% point from baseline values, remaining high at over 70% of facilities reporting stock-outs within the preceding 12 months of assessment. Moreover, more facilities (by 3% points) reported stock-outs of the latter within the preceding 12 months of assessment.

Table 12: Availability of Current Stock and Stock-Out of Essential Medicines and Supplies (n=98)

Medications & Supplies	Uses	Facilities reporting current stock				Facilities reporting stock out at any point in past 12 months			
		Baseline	Endline	% Change	P-Value	Base line	Endline	% Change	P-Value
Magnesium sulfate (injection)	Prevent and treat seizures in pregnant women with pre-eclampsia or eclampsia	48%	86%	38%	0.000*	48%	15%	-33%	0.000*
Misoprostol	Induction of labor, cervical ripening before surgical procedures, and treatment of postpartum hemorrhage	60%	96%	36%	0.000*	36%	4%	-32%	0.000*
Hydrocortisone (injection)	Improve outcomes for preterm infants when preterm birth is inevitable	73%	94%	20%	0.0001	27%	7%	-19%	0.000*
Aminophylline (injection)	Prevent cessation of breathing in preterm newborns	29%	44%	15%	0.0304*	63%	58%	-5%	0.4749
Ampicillin (injection for newborns)	Parenteral antibiotics used to treat different types of infections	7%	24%	17%	0.0012*	73%	72%	-1%	0.8756
Ampicillin (for adults)		52%	57%	5%	0.483	41%	44%	3%	0.6714
Gentamycin injection		76%	96%	20%	0.0001*	28%	5%	-22%	0.0000*
Cefotaxime injection (for newborn)		13%	26%	12%	0.0227	69%	73%	4%	0.5370
Oxytocin	Induce labor, strengthen labor contractions during childbirth, and control bleeding after childbirth	88%	98%	10%	0.0066*	18%	2%	-16%	0.0002*

Tetanus toxoid vaccine	Protect against maternal and neonatal tetanus	81%	90%	9%	0.0751	24%	7%	-17%	0.0012
Partographs	Detect whether labor is progressing normally or abnormally	59%	96%	37%	0.000*	39%	2%	-37%	0.000*
Puncture-proof sharps containers	Keep single-use syringes and needles, scalpel blades, and other sharp items safe until disposal	84%	99%	15%	0.0002*	17%	1%	-16%	0.0001*
Uterine evacuation packs	Evacuate the uterus	45%	61%	16%	0.026*	45%	32%	-13%	0.063
Neonatal resuscitation packs	Help newborns establish spontaneous breathing and facilitate oxygen delivery to their organs and tissues	43%	96%	53%	0.000*	50%	4%	-46%	0.000*
Manual vacuum aspiration (MVA) packs	Remove uterine contents through the cervix	47%	71%	24%	0.0008*	47%	24%	-22%	0.0009*

**Statistically significant at p value <0.05*

Availability of Protocols and Guidelines

Health facilities should have protocols and guidelines on various aspects of maternal and newborn health care for easy reference. The SMGL initiative printed and distributed standard protocols and guidelines to supported facilities. Table 13 shows the availability of documents, protocols, and/or guidelines within reach in the maternity ward. There was a significant increase in the number of facilities with protocols for kangaroo care and HBB available, corresponding with the increase and high proportion of facilities routinely practicing these protocols (see also Table 11, Figure 14).

Table 13: Facilities with documents, protocols, and guidelines

	Baseline	Endline	% Change	P-Value
Facilities with documents, protocols, and guidelines in the maternity ward (within reach OR on walls) for (n=98):				
Kangaroo care	32%	97%	65%	0.000*
Postabortion care	16%	72%	56%	0.000*
Immediate basic newborn care or HBB	58%	97%	39%	0.000*
Management of obstetric and newborn complications	71%	97%	26%	0.000*
Management of malaria in pregnancy	68%	90%	21%	0.0002*
Management of obstetric hemorrhage	78%	96%	18%	0.0002*
Management of pre-eclampsia/eclampsia	78%	96%	18%	0.0002*
Infection prevention for HIV (universal precautions)	77%	87%	10%	0.07

*Statistically significant at p value <0.05

Maternal and Neonatal Death Review

SMGL supported the CRS government to set up MPDSR Committees in all general, faith-based, and PFP hospitals (CEmONC facilities) to ensure that maternal and neonatal deaths are audited/reviewed. While there was a significant increase in the number of facilities that carried out the necessary reviews, reviews that took place routinely on a scheduled basis were not as widespread (see Table 14).

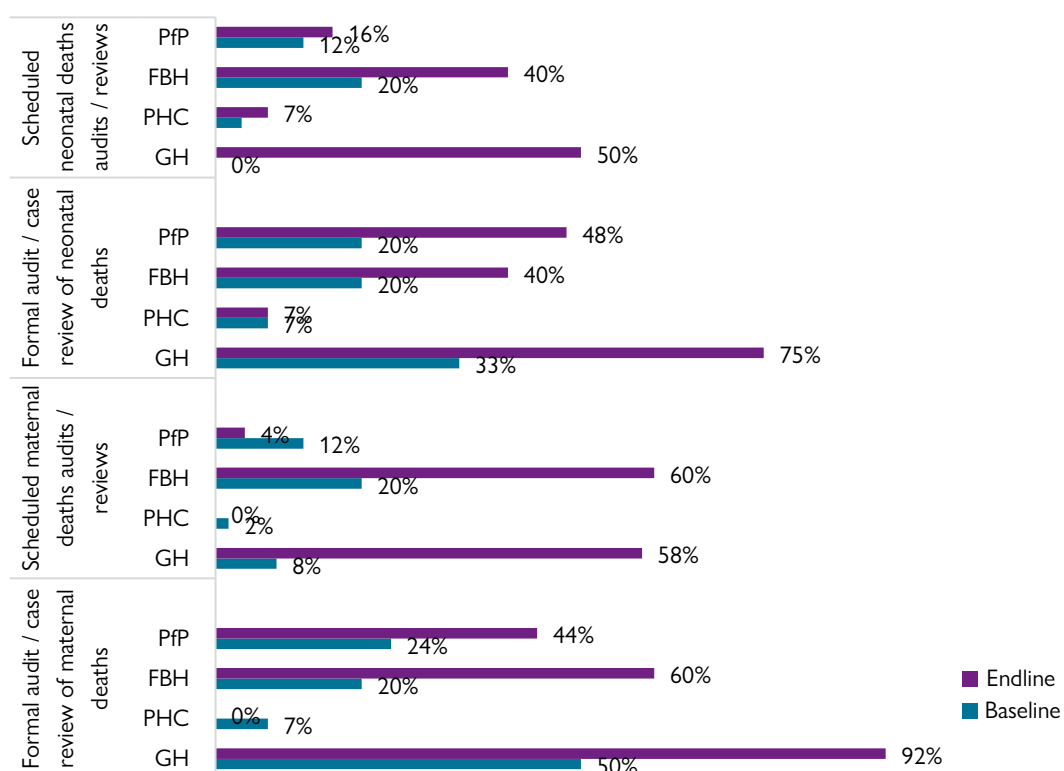
Table 14: Facilities reporting maternal and neonatal death reviews

	Baseline	Endline	% Change	P-Value
Facilities reporting maternal and neonatal death reviews (n=42)**				
Formal audit or case review of maternal deaths done	33%	70%	38%	0.0014*
Maternal death audits/reviews done on a scheduled basis	13%	43%	30%	0.0038*
Formal audit or case review of neonatal deaths done	25%	58%	33%	0.0037*
Neonatal death audits/reviews done on a scheduled basis	10%	35%	25%	0.0090*

*Statistically significant at p value <0.05 **

The figure below details the changes in the proportion of facilities conducting death audits/reviews and those that conducted reviews on a scheduled basis, with GHs showing the greatest increases from baseline to endline. Although PHCs were not a focus for MPDSR, figure 4 shows an increase in neonatal death audits in PHCs.

Figure 4: Facilities Conducting Death Audits/Reviews



Changes in Quality of Care

Table 15 below shows the steady improvement in quality of care indicators from endline to baseline. Figure 5 shows the different causes of maternal deaths at baseline and endline. At baseline, the most frequent cause of death was obstructed labor, but this was reduced from 49% to 12% at endline. However, the proportion of deaths caused by sepsis increased from 3% at baseline to 19% at endline.

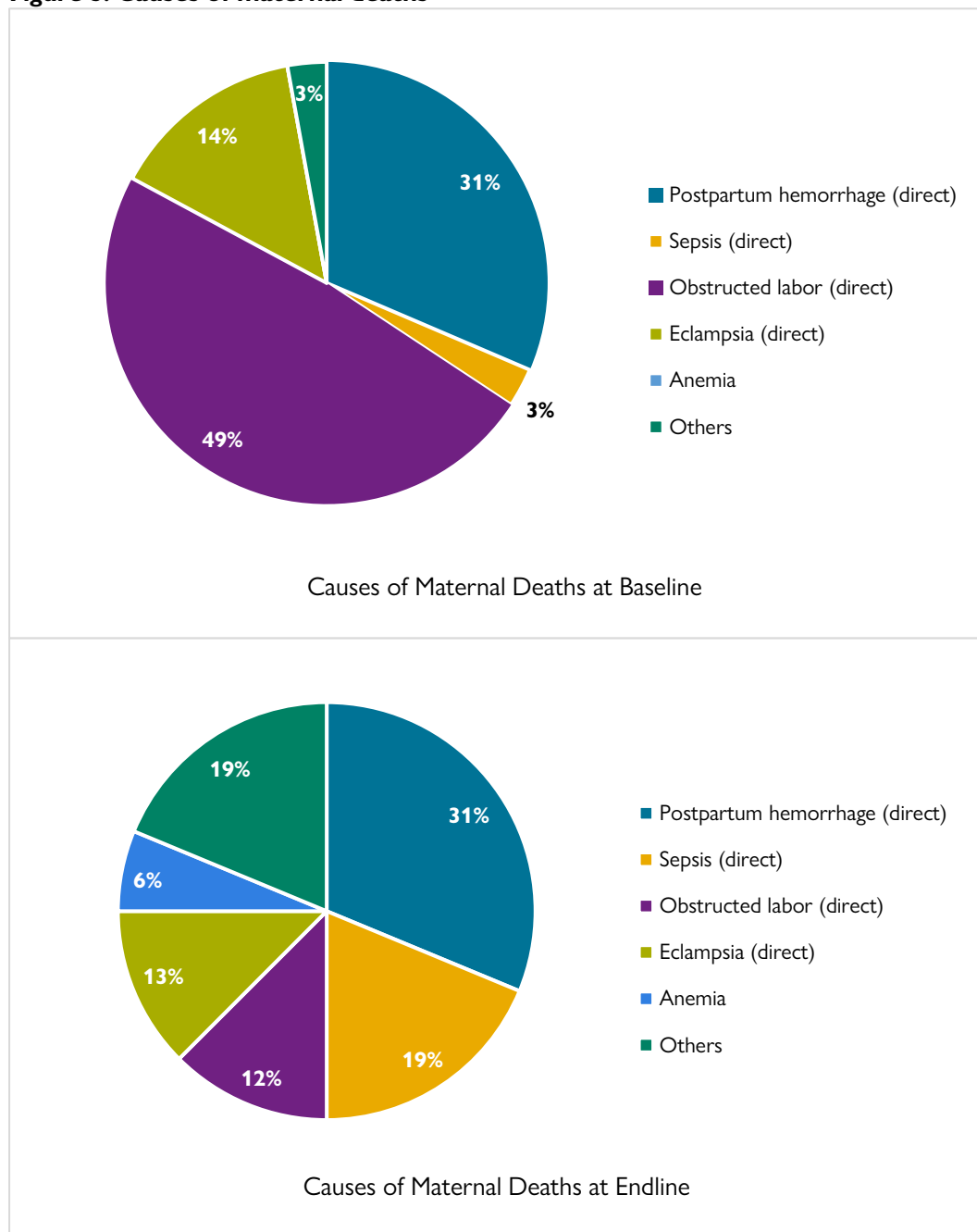
Table 15: Changes in Quality of Care Indicators

Indicators	Baseline	Endline	% Change
Percentage of live births put to breast and kept warm within 30 minutes of birth in a health facility	38%	98%	158%
Percentage of newborns not breathing or having great difficulties breathing who were resuscitated and able to breathe	85%	97%	14%
Percentage of women who delivered who received uterotonics in the third stage of labor (AMTSL)	54%	99.6%	84%
Percentage of live births performed as C-sections	0.3%	15%	4900%
Number of maternal deaths	35	16	-54%
Number of births in supported facilities	13,675	18,042	32%
Percentage of all births that are livebirths	95%	97%	2%
Percentage of all births that are fresh stillbirths	3%	1%	-67%
Percentage of all births that are macerated stillbirths	2%	2%	0%

¹Jan-Dec 2015 (69 facilities); Jan-Dec 2016 (21 facilities), Jan-December 2017 (8 facilities)

²April 2018-March 2019 (98 facilities)

Figure 5: Causes of maternal deaths



Others include ectopic pregnancy, ruptured uterus, retained products of conception, malaria, HIV.

The SMGL project goal was to reduce the facility maternal mortality ratio by 25% and the neonatal mortality rate by 35% from the baseline values by 2019. Table 16 shows that the project surpassed this goal by reducing MMR by 66% and NMR by 47%.

Table 16: Achievement of project goals

Indicator	Baseline	Endline	% Change
Facility Maternal Mortality Ratio per 100,000 live births	313	106	-66%
Facility Neonatal Mortality Rate per 1,000 live births (pre-discharge)	58	31	-47%

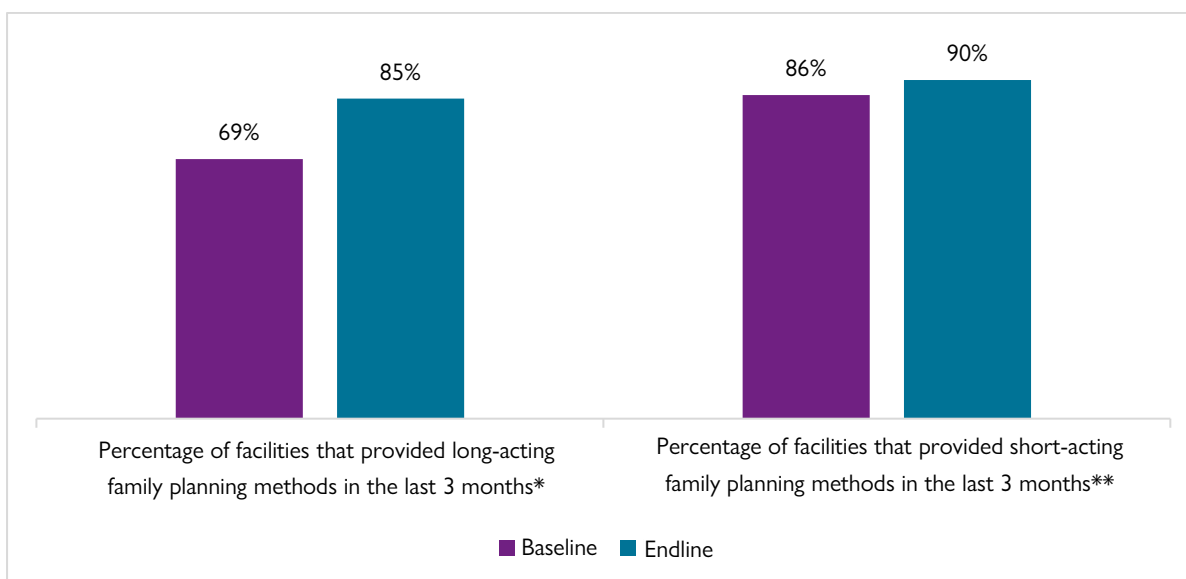
¹ Jan-Dec 2015 (73 facilities); Jan-Dec 2016 (24 facilities), Jan-December 2017 (11 facilities)

² April 2018- March 2019 (108 facilities)

Increasing Access to Family Planning

The SMGL initiative had a robust FP component, with a focus on increasing access to LARCs. Figure 6 shows that, compared to baseline figures, there was a statistically significant difference in the percentage of facilities that reported providing LARCs in the 3 months prior to the HFA.

Figure 6: Percentage of facilities that Provided Contraceptives in the Past 3 Months



*p-value 0.0084; **p-value 0.3899

Table 17 below also shows a consistent increase in the provision of family planning services from baseline, with the exception of sterilization procedures.

Table 17: Provision of Family Planning Services

Indicator	Baseline ¹	Endline ²	% Change
Number of women who accept a short-acting, long-acting, or permanent modern method of contraception from facility after giving birth during the postpartum period	727	15,558	2040%
Couple Years of Protection	4,572	44,324	869%
Number of units of FP methods provided to postpartum clients:			
Intrauterine device (IUD)	348	692	99%
Implant	110	8,358	7498%
Standard days method	13	300	2208%
Sterilization	27	20	-26%
Oral contraceptives	186	3,499	1781%
Condoms (male and female)	199	78,426	39310%
Injectable	338	1,664	392%

¹Jan-Dec 2015 (69 facilities); Jan-Dec 2016 (21 facilities), Jan-December 2017 (8 facilities)

²April 2018-March 2019 (98 facilities)

DISCUSSION

Reducing maternal and newborn mortality and morbidity is complex. However, most agree that the factors responsible for women not receiving the lifesaving care they need can be thought of in terms of three overarching categories, known as the “Three Delays.”⁶ These delays to lifesaving care occur at the individual, community, and facility levels. The HFA aimed to assess the extent to which the SMGL initiative was able to contribute to addressing these delays at facility level.

To address Delay One and ensure that women in need of emergency obstetric care know when and where to seek care, the initiative engaged in community-based efforts. To increase awareness of danger signs in pregnancy and labor and to mobilize communities toward increased uptake of facility-based services, the project engaged CBOs and traditional birth attendants for sensitizations and patient escort services, in addition to holding regular townhall meetings with community gatekeepers. This HFA did not assess the work done at community level, so cannot provide robust information on the improvements made. However, the assessment does show that there was an increase in the number of health facilities that carried out community outreach activities and were linked with CBOs. The awareness creation and established linkages suggest stronger connections between the facility and community, with the expectation that community members are now better informed of the health services available and when to seek emergency obstetric and newborn care. The established Health Management Committees were also expected to help boost confidence in health facilities, contribute to improving quality of services, and influence knowledge, attitude and practices for care-seeking behavior. These interventions may have contributed to the increases seen in women accessing MNH services in SMGL supported health facilities. Receiving care in a health facility during the antenatal, delivery and postpartum period is essential in identifying complications and averting both maternal and neonatal deaths.

The SMGL initiative was able to address delay two at facility level by increasing access to ETS. It was also addressed by bringing emergency services closer to women and families by: ensuring availability of 24/7 hour MNH services in all supported facilities and increasing the coverage of EmONC services in the state. The project ensured that, per WHO recommendations, CRS has at least one facility providing CEmONC services for every 500,000 people. SMGL also brought the state much closer to achieving the recommendation that for every 500,000 people there should be at least five facilities offering BEmONC services. The assessment also found a significant increase in the use of cellphones for referral and the referral register. Availability of an effective and functioning referral system between primary and secondary public and private facilities, is paramount to reducing maternal mortalities and morbidities.

Ensuring quality emergency obstetric and newborn care at the facility is important in addressing delay three. The HFA data revealed significant increases in the availability of basic obstetric supplies, functioning equipment and essential medicines when comparing baseline and endline. Recognizing budgetary constraints often derail plans for strengthening the readiness of facilities to provide quality MNH services, improvements achieved in this area were often a result of the various partnerships forged under the project, such as with We Care Solar (to make electricity available), Project C.U.R.E. (to disseminate donated medical supplies and equipment) and the government of CRS (to strengthen supply-chain forecasting of required medicines).

In order for facilities to provide high-quality and appropriate care, they need to have sufficient human resources for health. Even though past investments have been made in the training of health workers, there has been a decline in the number of health workers available in many facilities. The period of project implementation was marked by staff retirements and re-distribution of healthcare workers by the state government without recruitment and adequate replacement. Overall, the human resources profile of the SMGL supported facilities, which likely reflects the HRH profile of CRS, shows a continuous trend of decreasing. This could reflect a state-wide need to emphasize strengthening HRH.

A key part of monitoring clinical outcomes and services is conducting maternal and neonatal death reviews, which can be used to help explain why the deaths occurred and findings are used to prevent future deaths by improving quality of care and other interventions. There were significant changes in the number of facilities carrying out formal and scheduled neonatal deaths audits. However, the overall percentage of facilities carrying out these audits, as well as maternal deaths audits, remains low.

There was a notable increase in several quality of care indicators when compared to baseline. The HFA found an 84% increase in the percentage of women who received uterotonics, the most important component of AMTSL. The WHO recommends AMTSL as a critical intervention to prevent postpartum hemorrhage, establishing it as a routine standard in facilities providing delivery care.⁷ Another quality of care indicator showing tremendous improvement is the percentage of births that were delivered using C-sections from 0.3% to 15%. UNICEF/WHO/UNFPA recommend a C-section rate of 5–15% of all births, based on estimates from a variety of sources. Rates lower than 5% may indicate inadequate availability and/or access to emergency obstetric care. Rates higher than 15% suggest overuse of the procedure for non-emergency reasons.⁴ Additionally, the assessment found a reduction in the percentage of fresh still births, which is an indicator of the quality of care during labor and delivery.⁸

Globally, FP is recognized as a key lifesaving intervention for mothers and their children. Family planning can avert more than 30% of maternal deaths and 10% of childhood mortality if couples can space their pregnancies more than two years apart.⁹ In addition, postabortion FP is an important component of FP programming and service delivery, in concert with providing access to the widest available range of contraceptive options, including LARCs (e.g., IUDs and implants).¹⁰ Taking advantage of the national task-shifting policy, which permits CHEWs to provide certain contraceptive methods (implants and injectables), SMGL trained CHEWs to provide LARCs, thereby increasing access to more contraceptive methods. The initiative also focused on postpartum family planning. These two interventions contributed to significant improvements in the uptake of contraceptive methods.

The respective 66% and 47% decrease in facility-based MMR and NMR attest to the success of the initiative in surpassing the project goal. It is important to note that these only reflect the situation in SMGL-supported facilities, which represent only about 10% of health facilities in Cross River State. However, according to the National Demographic Health Survey 2018,¹ the NMR in Nigeria increased slightly from 37 in 2013 to 38 in 2018, which indicates that the decrease in SMGL-supported facilities was substantially higher compared with national levels.

The positive results from the HFA are encouraging, but because there were no comparison facilities assessed, it is not possible to attribute the outcomes documented solely to the SMGL initiative.

CONCLUSIONS & RECOMMENDATIONS

The endline HFA aimed to assess the effectiveness of the SMGL initiative in improving the capacity of supported facilities to provide quality maternal and newborn health services and improve health outcomes. By comparing baseline and endline findings, the assessment was able to demonstrate the changes observed in SMGL-supported facilities and the initiative's contribution to addressing the three delays to accessing maternal and newborn health services.

The SMGL initiative, in cooperation and collaboration with the government of CRS, set out to improve health outcomes for mothers and newborns, and to provide evidence for its district strengthening approach. Significant results were achieved during the initiative's short life, but only a small proportion of the state's health facilities received SMGL support. Sustaining the gains achieved under SMGL will require commitment from stakeholders at the state and local government levels. Concerted efforts should be made to institutionalize the SMGL strategies to strengthen the health system. A great deal has been learned through the SMGL experience in CRS and several innovations identified should be strengthened. The government of CRS has been a critical stakeholder and deeply involved in all SMGL activities. Given the government's engagement and the sustainability lens that was applied to the program from the onset, the government is well positioned to take over and expand the initiative to the entire state, while sustaining and building on the gains achieved in the SMGL-supported facilities.

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Appendix 1: Tables Showing Data by Facility Type

Table 18: Facilities reporting Community Outreaches by facility type

	GH (n=12)			PHC (n=56)			FBH (n=5)			PFP (n=25)			Total (n=98)		
	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change
Male involvement in maternal and neonatal health	42%	67%	25%	64%	95%	31%	40%	80%	40%	32%	44%	12%	49%	77%	28%
Newborn care	33%	83%	50%	77%	98%	21%	60%	80%	20%	36%	48%	12%	57%	78%	21%
Facility-based deliveries	33%	67%	34%	82%	100%	18%	60%	80%	20%	32%	48%	16%	59%	77%	18%
Antenatal care	58%	83%	25%	79%	100%	21%	80%	80%	0%	40%	52%	12%	63%	80%	17%
Family planning	42%	67%	25%	82%	100%	18%	20%	40%	20%	40%	48%	8%	60%	75%	15%
HIV testing	58%	58%	0%	80%	91%	11%	60%	60%	0%	48%	40%	-8%	64%	68%	4%
PMTCT	50%	67%	17%	79%	84%	5%	60%	80%	20%	48%	36%	-12%	63%	65%	2%

Table 19: Facilities Reporting CBO Community Outreaches (by Topic, by Facility Type)

	GH (n=12)			PHC (n=56)			FBH (n=5)			PfP (n=25)			Total (n=98)		
	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change
Newborn care	58%	75%	17%	59%	77%	18%	0%	60%	60%	12%	48%	36%	41%	64%	23%
Male involvement in maternal and neonatal health	42%	58%	16%	57%	75%	18%	0%	40%	40%	4%	36%	32%	37%	58%	21%
Facility-based deliveries	58%	67%	9%	70%	80%	10%	20%	60%	40%	12%	48%	36%	48%	65%	17%
Antenatal care	67%	58%	-9%	66%	80%	14%	20%	60%	40%	12%	44%	32%	47%	63%	16%
Family planning	58%	58%	0%	66%	79%	13%	0%	20%	20%	16%	48%	32%	46%	62%	16%
PMTCT	58%	67%	9%	64%	63%	-1%	20%	40%	20%	12%	40%	28%	45%	53%	8%
HIV testing	58%	58%	0%	71%	68%	-3%	20%	40%	20%	12%	40%	28%	49%	55%	6%

Table 20: Percentage change with EmONC status (12 months preceding HFA)

	GH (n=12)			PHC (n=56)			FBH (n=5)			PfP (n=25)			Total (n=98)		
	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change
BEmONC	33%	75%	42%	2%	16%	14%	40%	100%	60%	36%	24%	-12%	16%	30%	14%
BEmONC-AVD	67%	100%	33%	4%	30%	26%	40%	100%	60%	60%	40%	-20%	28%	45%	17%
CEmONC	0%	75%	75%	0%	0%	0%	0%	60%	60%	0%	24%	24%	0%	18%	18%

Table 21: Percentage change with EmONC status (3 months preceding HFA)

	GH (n=12)			PHC (n=56)			FBH (n=5)			PfP (n=25)			Total (n=98)		
	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change
BEmONC	8%	25%	17%	0%	2%	2%	40%	60%	20%	24%	12%	-12%	9%	10%	1%
BEmONC-AVD	42%	67%	25%	0%	7%	7%	40%	60%	20%	44%	20%	-24%	18%	20%	2%
CEmONC	0%	25%	25%	0%	0%	0%	0%	60%	60%	0%	12%	12%	0%	9%	9%

Table 22: Facilities reporting performance of signal functions (12 months preceding assessment), by facility type

	GH (n=12)			PHC (n=56)			FBH (n=5)			PfP (n=25)			Total (n=98)		
	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change
Newborn resuscitation with bag and mask	75%	100%	25%	16%	84%	68%	40%	100%	60%	72%	72%	0%	37%	79%	42%
Assisted vaginal delivery (Vacuum or forceps)	33%	75%	42%	18%	29%	11%	100%	100%	0%	52%	64%	12%	31%	44%	13%
Parenteral anticonvulsants	100%	100%	0%	16%	52%	36%	100%	100%	0%	80%	48%	-32%	44%	56%	12%
Parenteral antibiotics	100%	100%	0%	71%	84%	13%	100%	100%	0%	96%	92%	-4%	78%	84%	6%
Uterotonic drugs (oxytocin or misoprostol)	100%	100%	0%	84%	96%	12%	100%	100%	0%	96%	92%	-4%	85%	89%	4%
Manual removal of the placenta	100%	100%	0%	64%	73%	9%	60%	100%	40%	96%	80%	-16%	72%	75%	3%
Removal of retained products of conception (MVA)	83%	100%	17%	55%	61%	6%	60%	100%	40%	96%	84%	-12%	65%	69%	4%
Blood transfusion related to labor and delivery	75%	92%	17%	4%	4%	0%	60%	60%	0%	76%	60%	-16%	37%	38%	1%
Cesarean delivery	92%	100%	8%	0%	0%	0%	60%	60%	0%	92%	80%	-12%	37%	38%	1%

Table 23: Facilities Reporting Performance of Signal Functions (3 months preceding Assessment), by facility type

	GH (n=12)			PHC (n=56)			FBH (n=5)			PfP (n=25)			Total (n=98)		
	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change
Newborn resuscitation with bag and mask	67%	92%	25%	13%	68%	55%	40%	80%	40%	56%	60%	4%	30%	65%	35%
Assisted vaginal delivery (vacuum or forceps)	8%	33%	25%	13%	16%	3%	80%	60%	-20%	40%	52%	12%	21%	28%	7%
Parenteral anticonvulsants	67%	75%	8%	11%	23%	12%	100%	80%	-20%	60%	32%	-28%	33%	33%	0%
Parenteral antibiotics	100%	92%	-8%	63%	80%	17%	100%	80%	-20%	100%	88%	-12%	74%	79%	5%
Uterotonic drugs (oxytocin or misoprostol)	100%	92%	-8%	77%	96%	19%	100%	100%	0%	96%	84%	-12%	81%	88%	7%
Manual removal of the placenta	83%	83%	0%	45%	48%	3%	60%	80%	20%	84%	72%	-12%	57%	57%	0%
Removal of retained products of conception (MVA)	67%	75%	8%	38%	38%	0%	60%	60%	0%	96%	68%	-28%	54%	48%	-6%
Blood transfusion related to labor and delivery	75%	92%	17%	4%	4%	0%	60%	60%	0%	76%	60%	-16%	32%	30%	-2%
Cesarean delivery	92%	100%	8%	0%	0%	0%	60%	60%	0%	92%	80%	-12%	36%	34%	-2%

Table 24: Facilities reporting performance of other MNH services (by facility type)

	GH (n=12)			PHC (n=56)			FBH (n=5)			PfP (n=25)			Total (n=98)		
	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change
Routinely use a partograph to manage labor	58%	100%	42%	55%	100%	45%	40%	100%	60%	36%	96%	60%	47%	93%	46%
Routinely practice the Help Babies Breathe (HBB) protocol	67%	92%	25%	75%	98%	23%	80%	100%	20%	72%	96%	24%	69%	91%	22%
Routinely practice skin-to-skin mother care (or kangaroo)	92%	100%	8%	86%	100%	14%	100%	100%	0%	88%	84%	-4%	83%	90%	7%
Routinely practice AMTSL	100%	100%	0%	95%	100%	5%	100%	100%	0%	100%	100%	0%	91%	94%	3%
Carried out rapid HIV test for mothers with unknown status in maternity/labor ward in last 3 months	92%	100%	8%	91%	91%	0%	80%	100%	20%	92%	96%	4%	86%	88%	2%
Provide special/intensive care to preterm or low birth weight baby in last 3 months	50%	58%	8%	18%	13%	-5%	60%	80%	20%	32%	28%	-4%	26%	24%	-2%

Table 25: Facilities with MNH equipment available and functioning, by facility type

	GH (n=12)			PHC (n=56)			FBH (n=5)			PfP (n=25)			Total (n=98)		
	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change
Adult ventilator (ambu) bag	33%	83%	50%	2%	54%	52%	40%	100%	60%	44%	60%	16%	17%	58%	41%
Blood pressure cuff	50%	100%	50%	52%	98%	46%	100%	100%	0%	68%	92%	24%	55%	91%	36%
Assisted delivery (obstetric vacuum or forceps)	42%	100%	58%	23%	80%	57%	80%	100%	20%	68%	48%	-20%	38%	71%	33%
Suction equipment for cleaning the newborn airway	58%	100%	42%	57%	100%	43%	100%	100%	0%	72%	92%	20%	60%	92%	32%
Autoclave	67%	92%	25%	16%	21%	5%	40%	60%	20%	56%	68%	12%	32%	41%	9%
Newborn scale	83%	100%	17%	77%	98%	21%	80%	100%	20%	72%	96%	24%	72%	92%	20%
Labor/delivery table	83%	100%	17%	80%	100%	20%	100%	100%	0%	76%	92%	16%	76%	92%	16%
Fetal stethoscope	75%	100%	25%	84%	93%	9%	100%	100%	0%	68%	84%	16%	75%	87%	12%
Adult stethoscope	75%	100%	25%	84%	93%	9%	100%	100%	0%	72%	72%	0%	75%	85%	10%
Filled oxygen cylinder carrier and key to open valve	33%	67%	34%	9%	9%	0%	40%	60%	20%	44%	64%	20%	21%	31%	10%
Rectal thermometer for newborn	33%	17%	-16%	34%	45%	11%	60%	20%	-40%	56%	44%	-12%	38%	38%	0%

Table 26: Facilities reporting current stock, by facility type

	GH (n=12)			PHC (n=56)			FBH (n=5)			PfP (n=25)			Total (n=98)		
	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change
Magnesium sulfate (Injection)	83%	100%	17%	32%	86%	54%	80%	100%	20%	60%	76%	16%	45%	81%	36%
Misoprostol	42%	100%	58%	52%	96%	44%	60%	100%	40%	88%	92%	4%	57%	90%	33%
Hydrocortisone (injection)	83%	92%	9%	59%	93%	34%	100%	100%	0%	96%	96%	0%	69%	88%	19%
Ampicillin (injection for newborn)	17%	33%	16%	4%	16%	12%	0%	20%	20%	12%	40%	28%	7%	23%	16%
Ampicillin (for adult)	58%	42%	-16%	48%	59%	11%	40%	80%	40%	60%	56%	-4%	49%	54%	5%
Oxytocin	92%	100%	8%	80%	100%	20%	100%	100%	0%	100%	92%	-8%	83%	92%	9%
Tetanus toxoid vaccine	75%	100%	25%	79%	93%	14%	80%	60%	-20%	88%	84%	-4%	76%	85%	9%
Partographs	67%	100%	33%	68%	100%	32%	40%	100%	60%	40%	84%	44%	56%	90%	34%
Puncture-proof sharps containers	92%	100%	8%	77%	98%	21%	80%	100%	20%	96%	100%	4%	79%	93%	14%
Uterine evacuation packs	75%	100%	25%	14%	38%	24%	60%	80%	20%	96%	92%	-4%	42%	58%	16%
Neonatal resuscitation packs	58%	100%	42%	30%	98%	68%	20%	100%	80%	68%	88%	20%	40%	90%	50%
Manual vacuum aspiration packs	58%	92%	34%	30%	68%	38%	60%	80%	20%	76%	68%	-8%	44%	67%	23%

Table 27 Facilities reporting stock-out at any point in past 12 months, by facility type

	GH (n=12)			PHC (n=56)			FBH (n=5)			PfP (n=25)			Total (n=98)		
	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change
Magnesium sulfate (injection)	8%	0%	-8%	68%	20%	-48%	20%	0%	-20%	28%	16%	-12%	45%	14%	-31%
Misoprostol	42%	0%	-42%	43%	5%	-38%	40%	20%	-20%	16%	0%	-16%	34%	4%	-30%
Hydrocortisone (injection)	17%	8%	-9%	39%	9%	-30%	0%	0%	0%	8%	4%	-4%	25%	7%	-18%
Ampicillin (injection for newborn)	75%	67%	-8%	82%	82%	0%	80%	60%	-20%	52%	56%	4%	69%	68%	-1%
Ampicillin (for adult)	42%	58%	16%	45%	45%	0%	60%	20%	-40%	28%	40%	12%	38%	41%	3%
Oxytocin	17%	0%	-17%	29%	2%	-27%	0%	0%	0%	0%	4%	4%	17%	2%	-15%
Tetanus toxoid vaccine	17%	0%	-17%	30%	5%	-25%	20%	40%	20%	16%	8%	-8%	23%	7%	-16%
Partographs	25%	0%	-25%	38%	0%	-38%	60%	0%	-60%	44%	8%	-36%	37%	2%	-35%
Puncture-proof sharps containers	17%	0%	-17%	23%	2%	-21%	40%	0%	-40%	0%	0%	0%	16%	1%	-15%
Uterine evacuation packs	17%	8%	-9%	70%	50%	-20%	40%	0%	-40%	4%	8%	4%	42%	30%	-12%
Neonatal resuscitation packs	25%	0%	-25%	64%	2%	-62%	80%	0%	-80%	24%	12%	-12%	47%	4%	-43%
MVA packs	33%	17%	-16%	64%	29%	-35%	60%	0%	-60%	12%	24%	12%	44%	23%	-21%

Table 28: Maternal and neonatal death review

	GH (n=12)			PHC (n=56)			FBH (n=5)			PFP (n=25)			Total (n=98)		
	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change	Baseline	Endline	% Change
Formal audit or case review of maternal deaths	50%	92%	42%	7%	0%	-7%	20%	60%	40%	24%	44%	20%	16%	24%	8%
Maternal death audits/reviews done on a scheduled basic	8%	58%	50%	2%	0%	-2%	20%	60%	40%	12%	4%	-8%	6%	11%	5%
Formal audit or case review of neonatal deaths	33%	75%	42%	7%	7%	0%	20%	40%	20%	20%	48%	28%	13%	26%	13%
Neonatal death audits/reviews done on a scheduled basic	0%	50%	50%	4%	7%	3%	20%	40%	20%	12%	16%	4%	6%	15%	9%

Appendix II: List of SMGL Facilities

S/N	LGA	Facility	Year Activated	Facility Settlement	Facility Type	EmONC Status
1	Ikom	HFCH Ikom	2016	Urban	FBH	CEmONC
2	Obanliku	NKST Obanliku	2016	Rural	FBH	BEmONC
3	Obudu	Sacred Heart Hospital Obudu	2016	Urban	FBH	CEmONC
4	Ogoja	Catholic Maternity Hospital Monaiya	2016	Urban	FBH	CEmONC
5	Yala	Elahen Health Center	2016	Rural	FBH	BEmONC
6	Abi	Eja Memorial Hospital Itigidi	2017	Rural	GH	CEmONC
7	Akamkpa	GH Akamkpa	2016	Urban	GH	CEmONC
8	Akpabuyo	St. Joseph Hospital	2016	Rural	GH	CEmONC
9	Bekwarra	GH Bekwarra	2018	Rural	GH	CEmONC
10	Biase	Cottage Hospital Akpet	2016	Rural	GH	CEmONC
11	Cal Mun	General Hospital Calabar	2016	Urban	GH	CEmONC
12	Cal Mun	Police clinic	2016	Urban	GH	CEmONC
13	Obanliku	General Hospital, Sankwala	2016	Urban	GH	CEmONC

S/N	LGA	Facility	Year Activated	Facility Settlement	Facility Type	EmONC Status
14	Obubra	GH Obubra	2016	Rural	GH	CEmONC
15	Ogoja	General Hospital Ogoja	2016	Urban	GH	CEmONC
16	Yakurr	G H Ugep	2016	Rural	GH	CEmONC
17	Yala	Lutheran Hospital Yahe	2016	Rural	GH	CEmONC
18	Abi	PHC Igbo-Imabana	2016	Rural	PHC	BEmONC
19	Akamkpa	PHC Iko Ekperem	2016	Rural	PHC	BEmONC
20	Akamkpa	PHC Aningege	2016	Rural	PHC	BEmONC
21	Akpabuyo	PHC Idundu	2016	Rural	PHC	BEmONC
22	Akpabuyo	PHC Ikot-offiong ambai	2016	Rural	PHC	BEmONC
23	Akpabuyo	PHC IKOT NAKANDA	2017	Rural	PHC	BEmONC
24	Bakassi	PHC Ikang	2016	Rural	PHC	BEmONC
25	Bekwarra	Gakem PHC	2016	Rural	PHC	BEmONC
26	Bekwarra	Model PHC Abouchiche	2016	Rural	PHC	BEmONC
27	Bekwarra	PHC Ugboro	2017	Rural	PHC	BEmONC
28	Bekwarra	PHC Ukpah Bekwarra	2017	Rural	PHC	BEmONC

S/N	LGA	Facility	Year Activated	Facility Settlement	Facility Type	EmONC Status
29	Biase	PHC Adim	2016	Rural	PHC	BEmONC
30	Biase	PHC Iwuru	2016	Rural	PHC	BEmONC
31	Boki	CHC Bateriko	2016	Rural	PHC	BEmONC
32	Boki	CHC Okundi	2016	Rural	PHC	BEmONC
33	Boki	Model PHC Katchuan Iruan	2016	Rural	PHC	BEmONC
34	Cal Mun	PHC Ikot -Omin	2016	Urban	PHC	BEmONC
35	Cal South	PHC Akani- Esuk	2016	Urban	PHC	BEmONC
36	Cal South	PHC Ekpo Abasi	2016	Urban	PHC	BEmONC
37	Etung	PHC Abia	2016	Rural	PHC	BEmONC
38	Etung	PHC Bendeghe-Ekeim	2016	Rural	PHC	BEmONC
39	Etung	PHC Agbokim Waterfalls	2017	Rural	PHC	BEmONC
40	Etung	PHC Ajassor	2017	Rural	PHC	BEmONC
41	Etung	PHC Etomi	2017	Rural	PHC	BEmONC
42	Ikom	CHC Ikom	2016	Urban	PHC	BEmONC
43	Ikom	PHC Emangabe	2016	Rural	PHC	BEmONC

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44	Ikom	PHC Edor	2017	Rural	PHC	BEmONC
45	Ikom	PHC Okuni	2016	Rural	PHC	BEmONC
46	Obanliku	CHC Sankwala	2016	Rural	PHC	BEmONC
47	Obanliku	PHC Shikpeche Bishiri	2016	Rural	PHC	BEmONC
48	Obanliku	Bayayam PHC	2017	Rural	PHC	BEmONC
49	Obanliku	Utanga PHC	2017	Rural	PHC	BEmONC
50	Obubra	PHC Ochong	2016	Rural	PHC	BEmONC
51	Obubra	PHC Ofatura	2016	Rural	PHC	BEmONC
52	Obubra	MCHC Obubra	2017	Rural	PHC	BEmONC
53	Obubra	PHC Ababene model	2017	Rural	PHC	BEmONC
54	Obubra	PHC Apiapum	2017	Rural	PHC	BEmONC
55	Obubra	PHC Iyamoyong	2017	Rural	PHC	BEmONC
56	Obudu	PHC Obudu	2016	Urban	PHC	BEmONC
57	Obudu	PHC Utugwan	2016	Rural	PHC	BEmONC
58	Obudu	Bebuabie Primary Health Centre	2017	Rural	PHC	BEmONC

S/N	LGA	Facility	Year Activated	Facility Settlement	Facility Type	EmONC Status
59	Obudu	PHC Ohong Obudu	2017	Rural	PHC	BEmONC
60	Odukpani	PHC Akpap OKONYONG	2016	Rural	PHC	BEmONC
61	Odukpani	PHC Odukpani	2016	Urban	PHC	BEmONC
62	Ogoja	PHC Ekumtak	2016	Rural	PHC	BEmONC
63	Ogoja	PHC Ibilo	2016	Rural	PHC	BEmONC
64	Ogoja	Idum PHC	2017	Rural	PHC	BEmONC
65	Yakurr	PHC Ekorì	2016	Rural	PHC	BEmONC
66	Yakurr	PHC Idomi	2016	Rural	PHC	BEmONC
67	Yakurr	PHC M̀kpani	2016	Rural	PHC	BEmONC
68	Yakurr	PHC Ntan kpo	2017	Rural	PHC	BEmONC
69	Yakurr	PHC Ugep	2017	Rural	PHC	BEmONC
70	Yala	CHC Oba	2016	Rural	PHC	BEmONC
71	Yala	CHC Wanikade	2016	Rural	PHC	BEmONC
72	Yala	PHC Okuku	2017	Rural	PHC	BEmONC
73	Yala	PHC Olachor	2017	Rural	PHC	BEmONC

S/N	LGA	Facility	Year Activated	Facility Settlement	Facility Type	EmONC Status
74	Bekwarra	Adibe Private and Maternity	2016	Rural	Private	CEmONC
75	Bekwarra	Owoche Private Clinic	2018	Rural	Private	CEmONC
76	Boki	Omega Clinic	2016	Rural	Private	CEmONC
77	Cal Mun	Amazing Grace Specialist Hospital	2016	Urban	Private	CEmONC
78	Cal Mun	Emmanuel Infirmary	2016	Urban	Private	CEmONC
79	Cal Mun	Faith Foundation Specialist Hospital	2016	Urban	Private	CEmONC
80	Cal Mun	Victoria Itam Hospital	2016	Rural	Private	CEmONC
81	Cal South	Evangel Model Clinic	2016	Urban	Private	CEmONC
82	Cal South	Peace Medical Center	2016	Urban	Private	CEmONC
83	Ikom	Goshen Maternity	2016	Urban	Private	CEmONC
84	Ikom	Melrose Hospital	2016	Urban	Private	CEmONC
85	Ikom	Awukam clinic	2018	Urban	Private	CEmONC
86	Ikom	Bakor Hospital	2018	Rural	Private	CEmONC
87	Ikom	Benson Clinic	2016	Urban	Private	CEmONC
88	Ikom	County Specialist Hospital	2016	Urban	Private	CEmONC

S/N	LGA	Facility	Year Activated	Facility Settlement	Facility Type	EmONC Status
89	Ikrom	Eyo Medical center	2018	Rural	Private	CEmONC
90	Ikrom	Integrity Hospital	2016	Urban	Private	CEmONC
91	Obubra	Dr. Eyaba memorial clinic	2018	Rural	Private	CEmONC
92	Obubra	Ekana Medical Center	2016	Rural	Private	CEmONC
93	Obudu	Obudu Clinic	2016	Urban	Private	CEmONC
94	Ogoja	Luksana foundation medical clinic	2018	Urban	Private	CEmONC
95	Ogoja	Santa Maria Clinic	2016	Urban	Private	CEmONC
96	Yakurr	Ansor Clinic	2016	Rural	Private	CEmONC
97	Yakurr	Angels Family Clinic	2018	Rural	Private	CEmONC
98	Yakurr	Danex Medical Center	2016	Rural	Private	CEmONC
Facilities excluded from analysis						
99	Abi	PHC Itigidi	2017	Rural	PHC	BEmONC
100	Abi	PHC Ebom	2016	Rural	PHC	BEmONC
101	Boki	PHC Bunyia Irruan	2017	Rural	PHC	BEmONC
102	Odukpani	PHC Atan Eki	2016	Rural	PHC	BEmONC

S/N	LGA	Facility	Year Activated	Facility Settlement	Facility Type	EmONC Status
103	Yakurr	PHC NKo	2017	Rural	PHC	BEmONC
104	Biase	Aya Medical Center	2016	Rural	Private	CEmONC
105	Boki	Josephine Idah Health Center	2018	Rural	Private	CEmONC
106	Calabar Municipal	Arubah Specialist Hospital	2018	Urban	Private	CEmONC
107	Calabar Municipal	Bakor Medical Clinic	2016	Urban	Private	CEmONC
108	Yakurr	Simba Clinic and Maternity	2018	Rural	Private	CEmONC



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