World Vision

MEDICAL SERVICE VOLUNTEERS:

A model to improve health service delivery for mothers and newborns in South Sudan within the framework of health systems strengthening

MAY 2016

medical service volunteers

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Introduction

Following a protracted war for independence, health indicators for South Sudan are alarming - especially for women and newborns. The country has one of the highest reported maternal mortality ratios (730 per 100,000 live births[1]) in the world. The majority of women give birth at home, and only 17 per cent of births attended by a skilled health professional[2]. Even when women are able to access a health facility, the availability of routine maternal health services is often limited, unavailable or of poor quality. The situation is even more dire for women needing emergency obstetric care. Tragically, they die at home either from intra- or post-partum complications or at health facilities due to inadequate, unsafe or untimely care.

Newborns are also at great risk of dying due to the lack of access to or quality of neonatal services. In 2015, the neonatal mortality rate was 39.3 per 1,000 live births[3] , with leading causes of death being premature birth, birth asphyxia, and neonatal sepsis.

In the context of South Sudan, health service delivery for mothers and newborns is a daunting task hindered by chronic health staff shortages, poorly equipped health facilities, rough terrain and inclement weather that constrains health-seeking behaviour for months at a time. While the Government of South Sudan has prioritized maternal, newborn and child health in its Health Sector Development Plan, only 4 per cent of its spending goes toward health[4]. About 10 per cent of civil posts are filled by qualified health workers, equating to about 1.5 physicians and 2 midwives/nurses per 100,000 citizens[5].

1 http://www.who.int/gho/countries/ssd.pdf?ua=1

2 http://www.who.int/gho/countries/ssd.pdf?ua=1

3 http://apps.who.int/gho/data/node.country.country-SSD

4 http://www.who.int/maternal_child_adolescent/epidemiology/profiles/neonatal_child/ssd.pdf?ua=1

5 http://www.nationalplanningcycles.org/sites/default/files/country_docs/South%20Sudan/south_sudan_hsdp_-final_draft_january_2012.pdf

To support the Health Sector Development Plan of the National Ministry of Health (MOH) of the Republic of South Sudan, World Vision (WV) has been implementing a comprehensive Emergency Obstetric and Neonatal Care (EmONC) functionality improvement project at Kuajok Hospital, Gogrial State[6] (former Warrap State), South Sudan ("Kuajok Hospital project" or "project" herein after). The project is funded by the Health Pooled Fund (HPF) of South Sudan, a multilateral donor supported funding mechanism aimed at restoring and strengthening county and state level health services. Kuajok Hospital provides health services including EmONC, referrals and emergency care, surgery, as well as inpatient and outpatient care to a catchment population of 519,700 in and around Kuajok, the capital city of Gogrial State[6]. The State has a population of 2,070,516. World Vision South Sudan focuses on improving the availability and quality of EmONC services according to MOH adopted standards.

Method

The focus of this case study was to assess the feasibility and effectiveness of integrating a Medical Service Volunteer (MSV) model into a human resource capacity building approach of the Kuajok Hospital project, as well as to document its impact on maternal health outcomes. The study employed a mixed-method approach to collect qualitative and quantitative data.
A cost-benefit analysis was conducted by performing a retrospective review of the administrative cost incurred by World Vision for volunteer deployment, and of the value of time brought to the project by professional and internationally experienced medical volunteers based on the level and type of services rendered at the hospital. Further, a comparative cost analysis was done to assess the return on investment for engaging volunteers vs. regional or international consultants to provide similar services.

Dr. Catrina Funk observing practical training of health care staff. Kuajok Hospital, Gogrial State, South Sudan.

Qualitative data was collected within the last 12 months of project implementation, between January - December 2015. Sources of qualitative data included project design documents, project agreement, knowledge and skills gap assessment reports, volunteer engagement evaluation reports, volunteer debrief reports, project progress reports, and end-of-project review and lessons learned log. In addition, an in-depth interview was conducted with the Director General of the Kuajok Hospital(#1) and three online meetings were held involving staff from World Vision based in Juba (#2) and Kuajok Hospital (#2), staff from Medical Teams International (MTI) headquarters (#2), World Vision's MSV partner agency and MTI's professional medical volunteers (#3).
The study documented the process from design to close out as outlined in the MSV project lifecycle in Figure 2. A review of training and mentoring outputs and outcomes was conducted in collaboration with MTI, MTI's volunteers, World Vision South Sudan and the Kuajok Hospital staff.

6 Kuajok Hospital Project Annual Progress Report to Health Pooled Fund, August 2015, World Vison South Sudan, an unpublished internal document.

and evaluation officer on a monthly basis and information is fed by hospital medical staff. This data was aggregated in quarterly reports, which were further aggregated into a 12-month report for study purposes. Twelve maternal and newborn-specific variables were included in the analysis of this study. Major obstetric complications and seven absolute (life-threatening) obstetric indications that required obstetric surgery were defined according to the classifications included in the WHO/UN handbook for EmONC monitoring[7] . The data were analysed using Microsoft Excel 2010. No measures of statistical significance were calculated.

Intervention

As part of the project's implementation approach, World Vision applied the MSV model to improve maternal and newborn health service availability and quality at Kuajok Hospital. The MSV is a programming model developed with MTI, which places international medical volunteers ("MSVs" or "volunteers") in healthcare facilities to provide prioritised health service improvement activities in the realm of national MOH Health Systems Strengthening (HSS) framework. The model focuses on three main service domains: 1) in-service capacity building of health care staff, 2) health services upgrade/development, and 3) emergency health response.

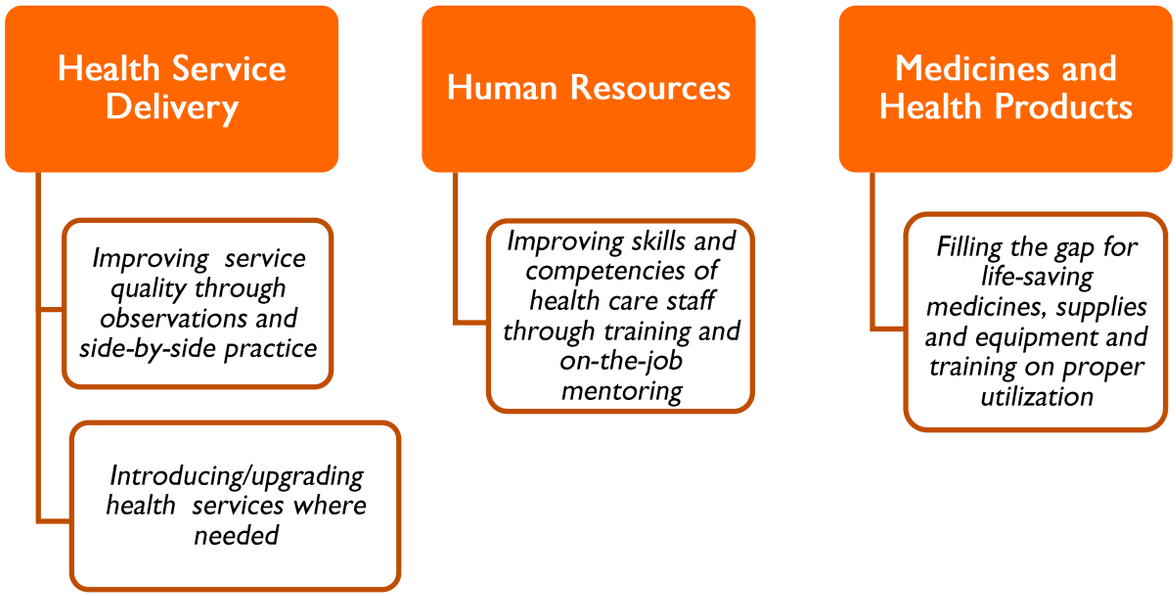
World Vision focused on the first two service domains of the model and tailored the project's implementation strategy to fit the fragile post-emergency context of South Sudan. To this end, the main interventions developed and implemented through the application of the MSV model at Kuajok Hospital included:

- In-service training of health care staff to fill identified knowledge and skills gaps;
- Providing on-the-job mentoring for health care staff to solidify knowledge and competencies;
- Filling the gap of essential medicines and supplies for EmONC, including training materials and limited essential medicines;
- Observing the quality of service delivery and providing targeted support including side-by-side practice with local health care staff.

These interventions were in support of the service delivery, human resources, and medicines and health products pillars of South Sudan's Health Sector Development Plan. Figure 1 below visually displays how the MSV interventions fit within these pillars.

7 http://www.unfpa.org/sites/default/files/pub-pdf/obstetric_monitoring.pdf

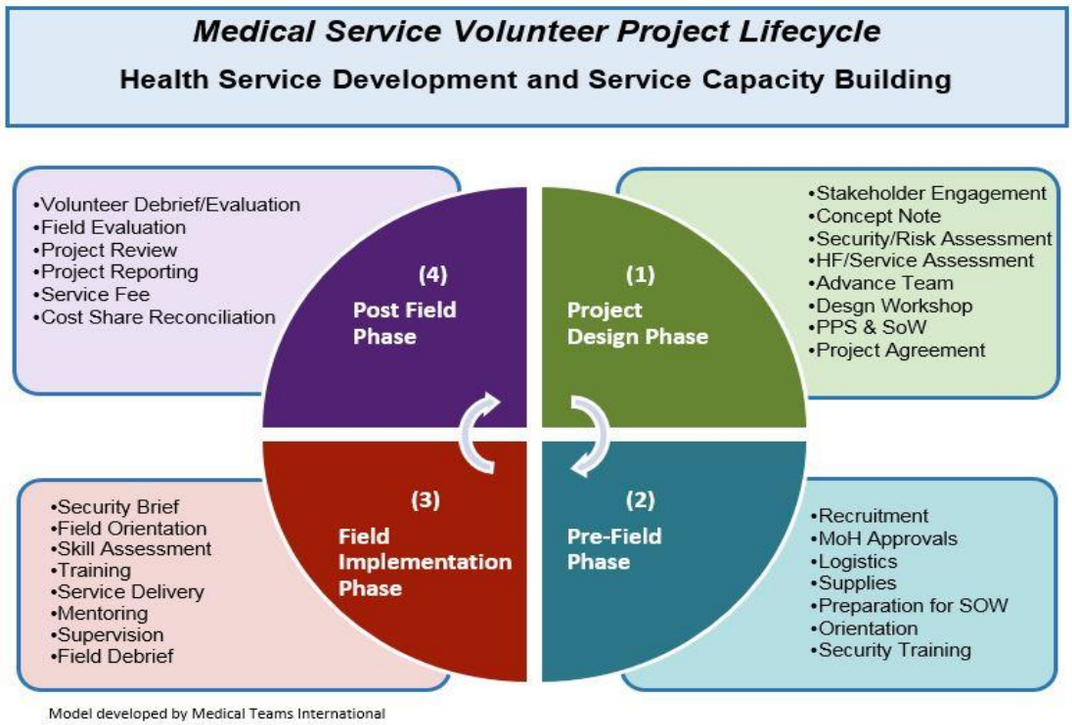
Figure 1: MSV Interventions Aligned with HSS Building Blocks



Process

The MSV interventions are a result of coordinated, multi-stakeholder and country driven processes that aim to ensure the technical soundness of the approach, feasibility for implementation, and potential for sustainability of services beyond the engagement of volunteers. The MSV project lifecycle, adapted from MTI's volunteer service model, involves the design, pre-field, field and post-field phases, each phase having its associated milestones. World Vision and MTI have developed a detailed business process that hinges on the MSV project lifecycle. Figure 2 below displays the MSV project lifecycle with four phases, and the associated steps of each phase. The implementation process and milestones of each phase were a part of this case study.

Figure 2: MSV Project Phases and Key Steps



Model developed by Medical Teams International

Registered nurse and MTI volunteer Brenda Maldonado demonstrates EmONC procedures using a manikin at Kuajok Hospital. While in South Sudan, Brenda assisted Dr. Akello, chief medical officer of the hospital, to perform an emergency C-section on a first-time mother with complicated labour, saving both the mother's and infant's lives. The patient was fortunate to make it to the hospital—many pregnant women in South Sudan can't access health care due to physical, financial, cultural and other barriers.

In South Sudan, the MSV model was implemented through a project agreement between MTI and World Vision South Sudan following project specific document preparation that provided background data and served as the basis for MSV project collaboration among stakeholders. MTI managed the recruitment, preparation for Scope of Work (SoW), logistics and deployment of qualified, licensed and internationally experienced medical volunteers. The overall process involved: training needs assessment; MSV SoW development and recruitment; MSV credentials, registration and SoW approval by MOH; training materials preparation based on MOH approved curriculum and guidelines; procurement of specific training supplies and a limited, but much needed supply of life saving medicines; security training and country and project orientation for MSVs; deployment and placement; periodic interactions during service; volunteer debrief; field evaluation; and project review and close-out.

MTI and World Vision South Sudan managed two deployments of medical volunteers in 2015. A registered nurse volunteered in the first deployment, followed by a second deployment of a paediatrician and an obstetrician gynaecologist. The three medical volunteers spent four weeks in country. MSVs worked side-by-side with hospital staff to implement their SoW, which purposefully aligned with the objectives of the Kuajok Hospital project. Training visuals and material that met MOH standards and addressed targeted training needs were identified and adapted by MTI, MSVs, World Vision South Sudan and hospital leadership. Training visuals and materials in EmONC by Jhpiego, Helping Babies Breathe, and Essential Care for Every Baby - all evidence-based teaching for low resourced environments - were provided by MTI and MSVs. Curriculum was co-delivered using participatory adult learning methodologies. The MSVs were very effective in relating to, engaging with and delivering training to hospital staff utilizing these training methodologies. Mentoring was guided by MOH clinical practice guidelines. MSVs supplied checklists for hospital staff to use for supportive supervision. Hospital management was engaged in decision making for services provided and debriefed with MSVs at the conclusion of their service. MSVs provided a report to the hospital management and World Vision South Sudan including training pre/post test scores, observations from the training experience, capabilities assessment, further skills building needs, and how to improve the overall quality of care.

Cost

The MSV model's cost structure is based on a shared-cost principle where World Vision, MTI and the volunteer each contribute toward the costs of deployment. Volunteers raise funds and cover 55 per cent of costs associated with deployment and local costs for a minimum of three weeks' service. The remaining balance after volunteers' contribution is shared by World Vision and and MTI at 34 per cent and 11 per cent respectively. The balance for World Vision is US$1922 for the deployment of each volunteer in a development programme setting, and is paid as a service fee to MTI.

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Results

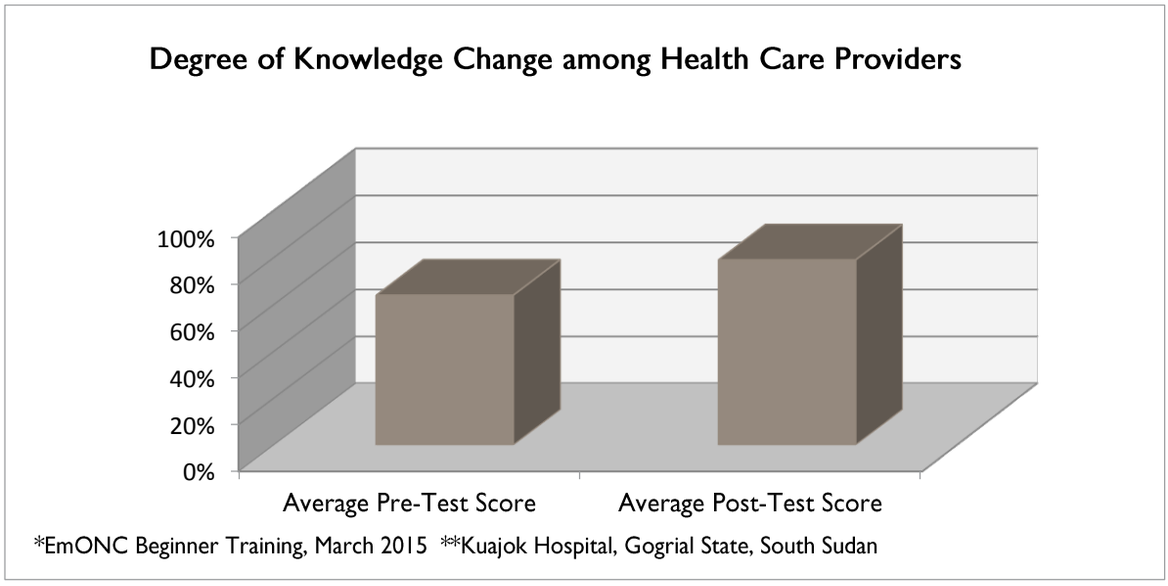
Training and Mentoring

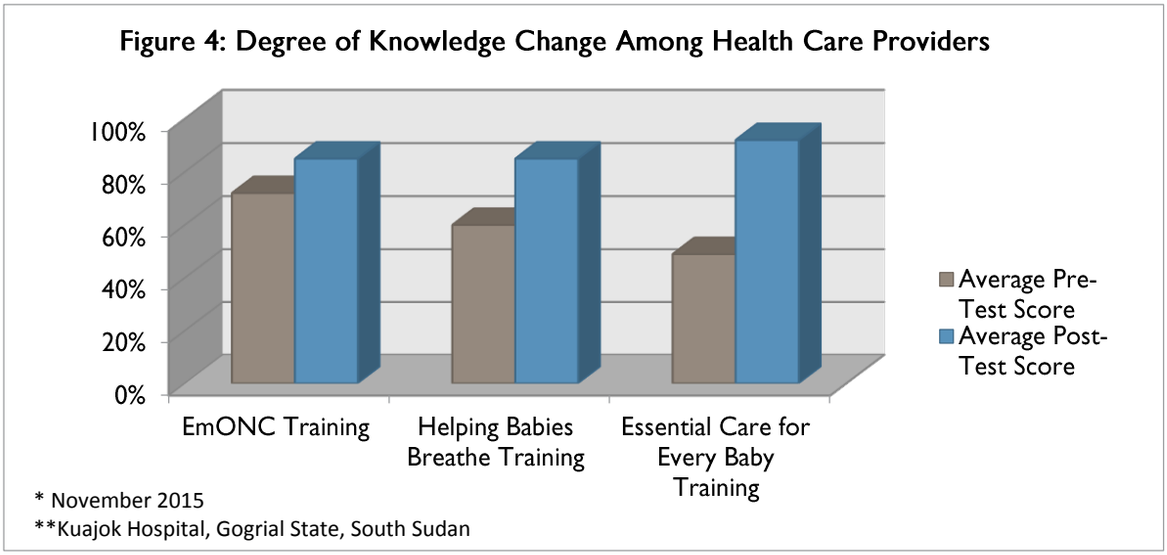
A total of four training programs (EmONC-Beginner and Refresher, Helping Babies Breathe and Essential Care of
Every Baby) were developed and implemented using MOH-accepted curriculum and materials. Training and
mentoring provided by MTI medical volunteers helped increase staff skills and competency in EmONC and Essential Newborn Care (ENC) services, and in correct utilization of live-saving medicines and equipment. The model directly contributed to meeting the project outcome of improved functionality of EmONC services. This implies the
continuous availability of services and supplies to conduct all signal functions of EmONC.

"World Vision is providing and facilitating continuing medical education to allow the trained staff access to more information. There is positive reinforcement through supportive supervision conducted by World Vision staff. World Vision is ensuring that requirements are maintained for the 9 signal components for comprehensive EmONC, and that they are always in place and performing well."

–Arthur Aseka, Hospital Project Coordinator, MSV Project Progress Report, February 2016

As evidenced by pre- and post-test survey results generated in 2015 and illustrated in Figures 3 and 4 below, the knowledge of health care providers was increased.





On-the job mentoring was provided for trained health care staff and observations shared with hospital administration for continuous supportive monitoring. Direct health services were also provided according to the practice area of the volunteers in conjunction to mentoring, and approved by MOH. Two obstetric and neonatal emergency cases were attended to and the lives of mothers and babies saved. Routine Antenatal Care services were also provided.

EmONC Functionality and Maternal Health Outcomes

As part of routine monitoring and reporting, World Vision has been assessing EmONC functionality services using quarterly data collected at the hospital level. A total of seven indicators to measure EmONC functionality of services were looked at for this case study as analysed in Table 1 below. A functioning basic or comprehensive EmONC service delivery point was defined as being able to provide the applicable signal functions, or life-saving obstetric interventions, as recommended by WHO[8]. The availability of partographs, blood pressure cuffs, and stethoscopes, which are essential to provide good delivery care, were also required.

Table 1: Maternal and Newborn Health Indicators, Kuajok Hospital, South Sudan, January - December 2015. Source: Project Quarterly Monitoring Report.

Indicators	Former Warrap State (present Gogrial State)	Global Target	Achievements	Numbers
1. Proportion of all births in EmONC facility	NA	To be set locally	2.8%	531/19,229
2. Met need for EmONC	NA	100%	13.2%	127/961
3. C-section rate	NA	5-15%	0.06%	11/19,229
4. Direct Obstetric Case Fatality	NA	<1%	5.5%	7/127

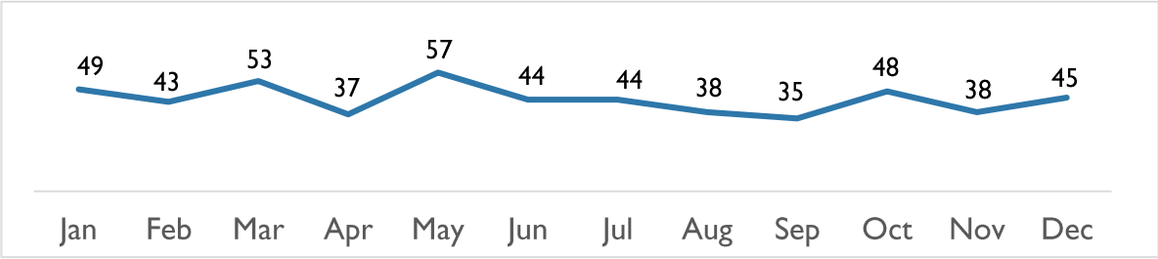
8 http://www.unfpa.org/sites/default/files/pub-pdf/obstetric_monitoring.pdf

5. Intrapartum and very early neonatal death	NA	To be set locally	2.8%	15/531
6. Maternal Mortality Ratio	2,173 per 100K*	70 per 100K	1,318 per 100K	7/531
7. Neonatal Mortality Rate	66 per 1000*	12 per 1000	54.6 per 1000	29/531

**Sudan Household Health Survey 2006*[9]

During the assessed period the number of deliveries at Kuajok Hospital increased to 531, corresponding to 2.8 per cent of the 19,229 deliveries expected to have occurred in the catchment area, with 80 per cent of these deliveries attended by skilled birth attendants.

Figure 5. Number of Hospital Deliveries Per Month, Kuajok Hospital, January -December 2015



Monthly average of deliveries was 44.3 per month (see Figure 5), with a maximum of 57 deliveries and a low of 35 deliveries. Caesareans were performed for 11 (2 per cent) deliveries, corresponding to 0.06 per cent of the expected number of deliveries in the catchment area. A total of 68 Dilation and Curettage (D&C) procedures and 31 blood transfusions were also performed. Among the 531 women who delivered at the institution, 29 neonatal deaths occurred, with 52 per cent (n=15) intrapartum and very early neonatal deaths. Of 961 women expected to have major obstetric complications during the period of assessment in the catchment area, 127 (13.2 per cent) received EmONC at the hospital. Based on 2006 maternal mortality estimates in former Warrap State, by providing EmONC services in this geographical area the intervention has the potential, given full coverage of obstetric complication, of achieving an estimated 39 per cent reduction in maternal mortality even though we found a case-fatality rate of 5.5 per cent. Abortion-related complications and maternal haemorrhage were the most common obstetric complications found (see Table 2 below).

Table 2: Number and Per Cent of Obstetric Complications, Kuajok Hospital, Gogrial State, South Sudan, 2015.

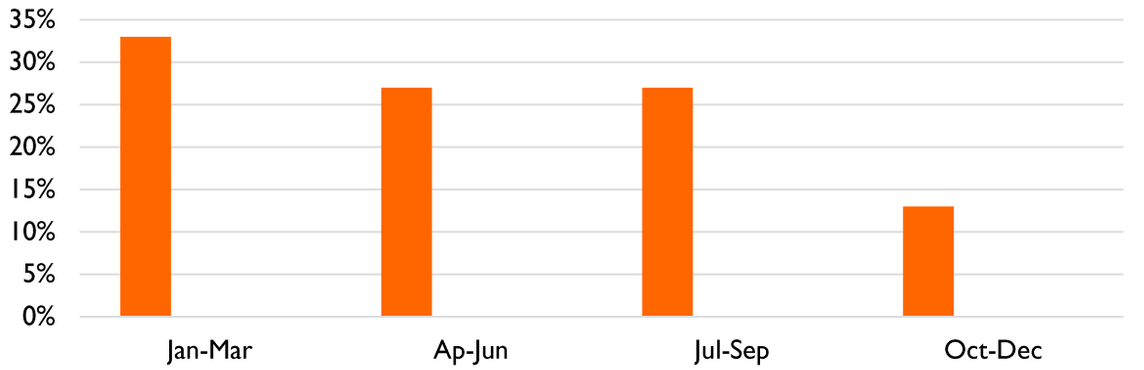
Obstetric Complication	Number and Percent
Abortion-related complication	65 (52%)
Haemorrhage	15 (13%)
Prolonged/Obstructed labour	15 (13%)
Postpartum sepsis	11 (10%)
Pre-eclampsia/Eclampsia	4 (4%)

9 http://www.southsudanmedicaljournal.com/assets/files/misc/SHHS.pdf

Other	8 (8%)

Likewise, newborn mortality at the hospital, if compared with state data from 2006, is almost 18 percent lower. Similarly, intrapartum and very early newborn deaths have experienced a substantial decrease during the last quarter of 2015 (See Figure 6 below).

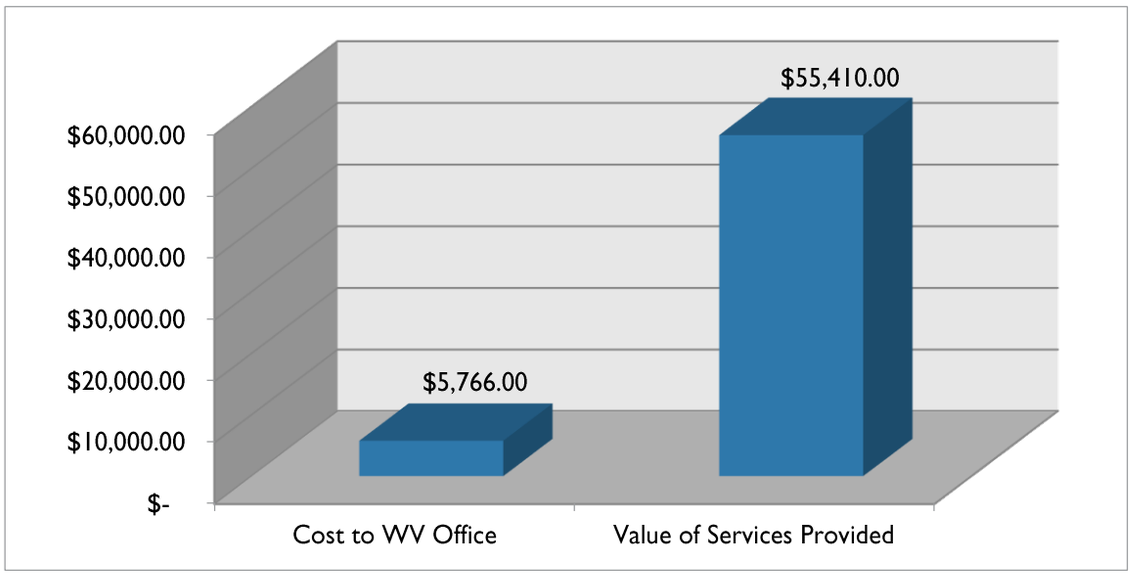
Figure 6. Per Cent of Intrapartum and Early Newborn Death by Quarter, 2015



Cost Analysis

The cost analysis included a review of volunteer deployment costs by World Vision for the service of each volunteer deployed by MTI and the value of time each volunteer contributed while serving at Kuajok Hospital. MTI has hourly rates established by the U.S. Independent Sector for different cadres of medical professionals to assess the value of time volunteered. The direct cost incurred by World Vision South Sudan to secure services of three licensed MTI medical volunteers for four weeks each was US $5,766. The combined value of volunteer professional time contributed by three medical volunteers was estimated to be US $55,410.

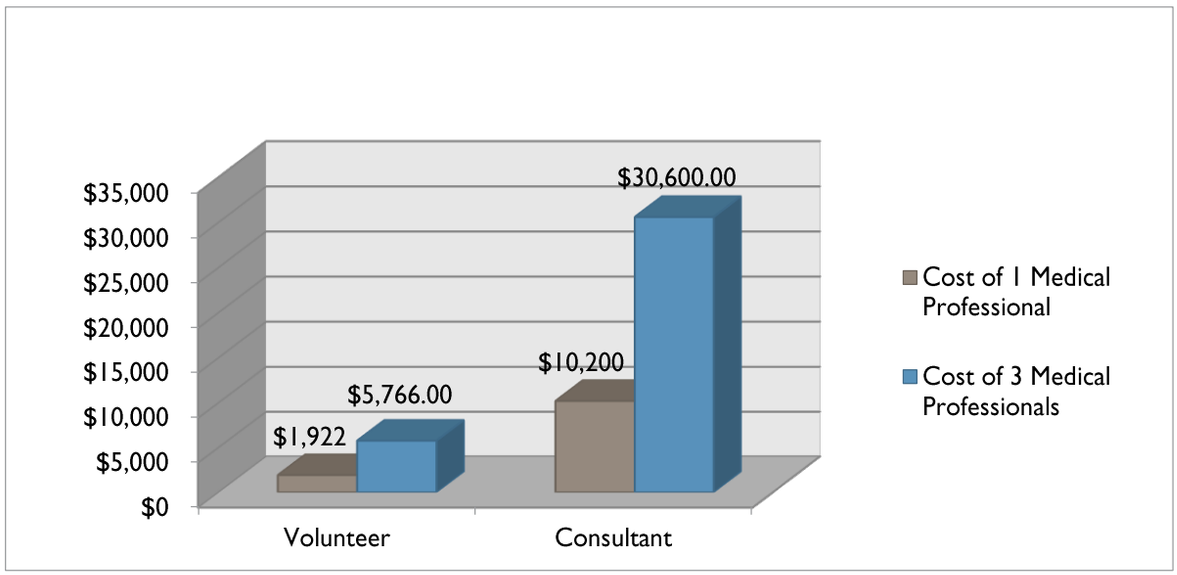
Figure 7. Cost for Volunteer Deployment and Value of Time Volunteered



Additionally, a comparative cost analysis was conducted using the minimum cost of hiring a medical consultant from outside of South Sudan for a 30-day period with comparable credentials to perform similar work as done by the three medical volunteers.

That cost came at US $30,600 (or US $10,200 per one consultant) in fees. This analysis clearly demonstrated enormous financial benefits to the project and the hospital to engage medical volunteers versus hiring medical consultants. It is also worth mentioning that according to the project experience, it has been extremely challenging to secure such consultants.

Figure 8. Cost Comparison Between Volunteer and Consultant Services



In addition to value of volunteer services, the hospital also received a donation of training equipment, medicines and supplies procured by MTI valued at US $14,154. Together with equipment and supplies value, the total value of contributions by MTI and MSVs to Kuajok Hospital amounted to US $69,564. This indicates an approximate 1:12 ratio of return on investment made by World Vision to apply the MSV model. Table 3 below breaks down these figures for each deployment.

Table 3. Breakdown of Value of Time, Medicines and Supplies Provided by Volunteers and MTI. Source: MTI

Contribution	Contribution Details	Value	Total Value
Pharmaceuticals & Supplies	1st deployment 2nd deployment	$8,736.78 $5,417.63	$14,154.41
Volunteer Time in SS	Brenda Maldonado, RN , 4 WKs	$7,810.40	$7,810
Volunteer Time in SS	Catrina Funk (MD, OB/Gyn), 4 WKs	$28,580	$28,580
Volunteer Time in SS	Jeff Whittall (MD, Pediatrician) 4 WKs	$19,020	$19,020
Total value of MSV time and supplies brought to Kuajok Hospital			$69,564.41

Conclusions

The experience shows that the MSV model is suited and feasible for fragile contexts where there is a chronic shortage of health care providers and low capacity of health care staff. The model proved to be effective in terms of 1) engaging well-prepared, highly specialised and internationally experienced medical volunteers, 2) conducting relevant and targeted trainings aligned with MOH guidelines, and 3) providing real time mentoring for local health care staff in their practice setting. While the impact of the model is still early to measure, the competency demonstrated by trained health care staff in performing EmONC and ENC services suggests that the interventions were effective.

"Besides the aspect of human and professional connections made, together with staff and volunteers we came out with a solution on how to adapt a new national treatment protocol to our situation. We keep reminding ourselves that because of the expert [paediatrician volunteer], we were able to do this and this really reflects the work that we did it together. So this [level of interaction] had a good impact on staff. In the areas of newborn resuscitation and treatment regimen for certain childhood diseases, we had very useful interactions with the paediatrician. Based on my observations, the staff is now more capable and confident in performing newborn resuscitation."

The model also demonstrated its cost effectiveness (value for money) and feasibility to be integrated into an ongoing project.

In terms of service quality, the observations of the hospital staff suggest that among other enablers, competency increase has contributed to timeliness, safety and effectiveness of care. As a result, the achievement of some of the EmONC functionality indicators described in Table 1 and Figure 6 can be attributed to the increased levels of staff competency.

At the health system level, the Gogrial State Health Department and the hospital administration showed great appreciation for the World Vision and MTI partnership and the work of volunteers through letters of appreciation and a request for continued deployment. They saw the MSV model as a conduit to strengthen service delivery for EmONC, which in turn contributes to the implementation of the National Health Sector Development Plan. It is also important to acknowledge that for the services to be available and of quality, other

"As a Medical Officer, I have not been to the Operating Theatre for a long time, but because of the training, my confidence in surgical kills has been enhanced." Another trainee commented: "I want more training to keep (the) knowledge. The training should be conducted every three months because it is helpful to the staff. "I wish that World Vision should continue to provide training course like this to bring up the standard of the health worker in Kuajok Hospital and provide us with equipment to follow the right procedures."

enabling factors also need to be in place. It is evident that supportive supervision of health care providers, proper retention and remuneration practices, availability and proper utilization of life-saving medicines and supplies, functioning infrastructure, and sanitation and hygiene conditions also contribute to quality of care. The Kuajok Hospital project had interventions in those areas including strengthening health governance and engagement of community in decision-making processes - for example, community engagement in the hospital board to advocate for patient-centred care. Thus, to sustain the gains achieved by the MSV model, it is key to strengthen other pillars of the health system and promote an approach that looks at the quality of care from the overall health systems perspective.

Dr. Jeff Whitall observing practical training in neonatal resuscitation using a manikin. ©

In summary, the case study concluded:

1. It is feasible to introduce EmONC services as part of the health systems strengthening approach in a fragile context serving displaced population.
2. The engagement of medical volunteers proved to be an effective model for improving staff skills and competencies in EmONC.
3. MSV interventions improved the functionality of EmONC services
4. Community-based demand creation interventions need to be strengthened.
5. Data collection on newborn health in EmONC needs to be enhanced.
6. A more rigorous monitoring of quality of services needs be in place for further strengthening of EmONC functionality and quality of care.

"The Health Sector Development Plan of South Sudan is starting off at the village level -- more emphasis is placed at the community level and then going upward from there. I think this is a good approach as preventive care is key. I am based at the hospital level and our main concern is having the expertise and means so that we can provide the best of care for people who come to us, and hopefully they can get better and go back to where they came from. So the MSV model is contributing to human resources aspect [of the Health Sector Development Plan of South Sudan] in that it helps us build the skills of those who directly provide care for those in need."

–Dr. Ring De Ciman, Director General of Kuajok Hospital

Acronyms:

D&C: Dilation and Curettage

EmONC: Emergency Obstetric and Neonatal Care

ENC: Essential Newborn Care

HF: Health Facility

HPF: Health Pooled Fund

HSS: Health Systems Strengthening

Jhpiego: Formerly known as Johns Hopkins Program for International Education in Gynaecology and Obstetrics. Now known simply as Jhpiego, an affiliate of John Hopkins University.

MOH: Ministry of Health

MNCH: Maternal, Newborn and Child Health

MSV: Medical Service Volunteer

MTI: Medical Teams International

PPS: Project Proposal Summary

SoW: Scope of Work

UN: United Nations

WHO: World Health Organization

medical service volunteers

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