Emergency Obstetric Care Project
Impact Report

Reproductive Health Response in Conflict Consortium

April 2006

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Acronyms

AIDS	Acquired immune deficiency syndrome
AMDD	Averting maternal death and disability
ANC	Antenatal care
ARC	American Refugee Committee
BCC	Behavior change communication
CO	Clinical Officer
CPD	Cephalo-pelvic disproportion
EmOC	Emergency obstetric care
FEMME	Foundations for Enhanced Management of Maternal Emergencies
FGM	Female genital mutilation
HIV	Human immunodeficiency virus
ICPD	International Conference on Population and Development
IDP	Internally displaced people
IEC	Information, education, communication
IRC	International Rescue Committee
IV	Intravenous
MCHW	Maternal child health worker
MTC	Mae Tao Clinic
MOH	Ministry of health
MSK	Marie Stopes Kenya
MSSSL	Marie Stopes Society Sierra Leone
MVA	Manual vacuum aspiration
NGO	Nongovernmental organization
NWFP	Northwest Frontier Province
OT	Operating theatre
PAC	Postabortion care
PHCC	Primary health care center
PMTCT	Prevention of mother-to-child transmission
PPH	Post-partum hemorrhage
PRB	Population Reference Bureau
RH	Reproductive health
RHRC Consortium	Reproductive Health Response in Conflict Consortium
TBA	Traditional birth attendant
UN	United Nations
UNFPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children’s Fund
WHO	World Health Organization
WRA	White Ribbon Alliance

Summary

Recognizing that emergency obstetric care (EmOC) is critical to reducing maternal death and disabilities, the Reproductive Health Response in Conflict (RHRC) Consortium implemented 12 emergency obstetric care (EmOC) projects from May 2000 to December 2005 in the following nine conflict-affected countries: Bosnia and Herzegovina, Kenya, Liberia, Pakistan, Sierra Leone, Southern Sudan, Tanzania, Thailand and Uganda. The Consortium received funding and technical support from the Columbia University Averting Maternal Death and Disability (AMDD) program. The overall goal of the project was to reduce maternal morbidity and mortality in select conflict-affected settings by improving the availability of EmOC. Another aim of the project was to institutionalize EmOC within RHRC agencies by modeling how to improve the availability of basic and comprehensive EmOC at clinics and hospitals. The specific project purpose was to increase the availability of EmOC in select conflict-affected settings.

Main Program Activities

Based upon EmOC needs assessments in each setting, various combinations of the following activities made up the core interventions of pilot projects:

- Upgrade the physical facilities.
- Provide facility set-up, including essential equipment, supplies and medicines.
- Enhance staff capacity through training, recruitment, teambuilding and staff placement for ongoing-readiness and twenty-four hour coverage seven days per week.
- Augment the means of communication and transportation.
- Improve data collection and record keeping.
- Improve community outreach through information, education and communication (IEC) and behavior change communication (BCC) strategies.
- Support cost-sharing mechanisms.

Major Achievements

1. Increased institutionalization of EmOC services among RHRC Consortium agencies in conflict-affected settings.
2. Increased technical support, materials and supplies at 31 health facilities including 11 hospitals and 20 clinics.
3. Increased the number from three at baseline to 10 out of a total of 11 hospitals with the means to support *comprehensive* EmOC and from two at baseline to 10 out of a total of 20 clinics to support *basic* EmOC. While all of the health facilities assisted did not become fully functioning basic EmOC facilities, they were all closer to having the capacity to support these services (see Annexes D and E).
4. Increased women's use of EmOC services in most projects although the level of increase varied between sites and facilities. Some projects demonstrated a sustained increase in

the numbers of deliveries in EmOC facilities, obstetric complications treated and cesarean sections performed.
5. Increased the use of United Nations (UN) process indicators to document baseline findings and monitor progress.
6. Communities successfully experimented with cost sharing such as a subsidized fee for EmOC services and community cost sharing to purchase an ambulance.
7. Demonstrated that improving EmOC for conflict-affected populations is not only critical but also feasible for both local and international NGOs working in humanitarian settings.

Lessons Learned

1. The AMDD Building Blocks Framework, based on an ascending pyramid of activities, demonstrated a useful approach for prioritizing interventions in these 12 conflict-affected settings.
2. UN Process Indicators must be integrated into routine health information systems and it is critical to train project staff in the collection, calculation and application of these indicators to monitor the progress of services.
3. Standard case definitions for diagnosis, for example, of abortion complications, and use of standardized data collection tools are important to ensure good quality data and to allow comparison over time and between project sites.
4. Targeted funding, including for technical assistance, is necessary to improve EmOC services in conflict-affected settings.
5. Modeling EmOC services in the field can facilitiate replication of EmOC services and therefore some level of institutionalization about the importance of identifying the need for these services and obtaining funding to implement them in any health sector response.
6. Improving EmOC services often strengthens the overall health facility infrastructure with far-reaching impact on health services in general.
7. Technical support is an important component of capacity building.
8. Programs that link communities with functioning referral systems promote sustainability and utilization of EmOC services.
9. Staff training on use of current EmOC standards and guidelines is critical to improving quality of care.
10. Shortages of skilled and competent staff in developing countries can be addressed by the deployment of midlevel providers to perform life saving services. This is only appropriate with adequate competency-based training, supervision and referral support. One short-term solution is to second expatriate personnel to the local referral facilities to initiate services in a timely manner.
11. It is important to recognize and work with traditional birth attendants (TBAs) because cultural traditions, financial issues, distance and security problems result in their active role in addressing maternal health needs in humanitarian programs.
12. Men, who are often left out of safe motherhood outreach programs, are willing to be involved in providing support, particularly for emergency referrals.
13. Community involvement can lead to sustainable solutions to problems such as the emergency referral system.

Constraints

1. Baseline data was either non-existent or very poor from approximately 80 percent of health facilities, limiting the capacity to compare findings from baseline to the end of the projects and the overall strength of the data.
2. Security incidents, for example, due to the resurgence of fighting in Liberia, the health facilities assisted by this project were partially destroyed requiring significant inputs to re-establish services.
3. The magnitude of the deficiency in material resources and systems, for example, lack of transportation due to a lack of vehicles, fuel and an ongoing maintenance requirements.
4. Frequent staff turnover in humanitarian settings also causing difficulties maintaining new health workers access to material resources such as EmOC guidelines.
5. While training is essential and was provided to varying degrees at the project sites, it requires extensive time and was beyond the scope of many of the pilot projects.
6. Ministry of Health (MOH) polices in several of the project countries did not officially allow for basic EmOC service provision at the peripheral level.
7. Limited project time. More time was needed to address interventions at higher levels of the AMDD Building Blocks Framework. Ongoing readiness of EmOC 24 hours per days, seven days per week, clinical support, quality improvements and patient utilization were often not adequately addressed or reported within the project time frames.

Recommendations

1. Ensure that staff with the necessary clinical qualifications and experience to address EmOC are on any emergency response team or already available in the field. Once in the field, agency staff should give immediate attention to the availability of EmOC services, starting with an assessment of the capacity of existing clinics and hospitals to provide basic and comprehensive EmOC.
2. To address the shortage of skilled and competent staff in the short term, provide funding support to second staff to health facilities as needed. For the long term, support training, supervision and referral back-up of midlevel health providers.
3. Establish consistent standards such as EmOC case definitions, protocols and data collection systems.
4. Train staff, including ongoing mentoring and supervision on EmOC standards and guidelines, and ensure staff have adequate supplies and materials to adhere to the standards.
5. Identify regional training centers and bring all relevant partners together for competency-based training.
6. To reduce barriers to women's use of EmOC service ensure that service providers speak all of the existing languages and that they are culturally acceptable to the clients.
7. Support TBAs to facilitate an effective referral system as part of the broader strategy of maternal mortality reduction.
8. Link EmOC/Safe Motherhood programs with family planning services.
9. Improve data collection, analysis and dissemination of UN process indicators and other indicators that accurately reflect all interventions, by: providing staff training; integrating

the indicators with the overall health information system; and including data from all health facilities serving the beneficiary population.

10. Strengthen partnerships with organizations such as the United Nations High Commissioner for Refugees (UNHCR), the safe motherhood / RH working group within the USAID child survival network, the Initiative for Maternal Mortality Programme Assessment, University of Aberdeen, United Kingdom Project, and the new ACCESS program.
11. Participate in and advocate for the formation of country- and regional-level safe motherhood, newborn and child health workshops.
12. Document strategies with high impact to promote replication and scale up of successful approaches.

Main Report

I. Introduction

RHRC - The Reproductive Health Response in Conflict Consortium

The Reproductive Health Response in Conflict Consortium, originally called the Reproductive Health for Refugees Consortium, was founded in 1995 with the purpose of responding to the reproductive health needs of refugee and IDP populations worldwide. The members of the RHRC Consortium are the American Refugee Committee; CARE; Columbia University; International Rescue Committee; JSI Research and Training Institute; Marie Stopes International; and the Women's Commission for Refugee Women and Children.

Mission Statement

The RHRC Consortium is dedicated to the promotion of reproductive health among all persons affected by armed conflict. The RHRC Consortium promotes sustained access to comprehensive, high quality reproductive health programs in emergencies and advocates for policies that support the reproductive health of persons affected by armed conflict. The RHRC Consortium believes all persons have a right to good quality reproductive health care and that reproductive health programs must promote rights, respect and responsibility for all. To this end, the RHRC Consortium adheres to three fundamental principles:

- Using participatory approaches to involve the community at all stages of programming;
- Encouraging reproductive health programming during all phases of emergencies, from the initial crisis to reconstruction and development; and
- Employing a rights-based approach in all of its work, as articulated in the 1994 International Conference on Population and Development Programme of Action.

The RHRC Consortium Emergency Obstetric Care (EmOC) project, as a part of Columbia University's Averting Maternal Death and Disability (AMDD) Program, implemented 12 pilot emergency obstetric care (EmOC) projects in the following nine countries: Bosnia and Herzegovina, Kenya, Liberia, Pakistan, Sierra Leone, Southern Sudan, Tanzania, Thailand and Uganda. The total targeted beneficiary population included approximately 28,525 women of reproductive age and the indirect beneficiary population included approximately 3.8 million community members (see Annex A).

The overall goal of the project was to reduce maternal morbidity and mortality in select conflict-affected settings by improving the availability of EmOC. Another aim of the project was to institutionalize EmOC within RHRC Consortium agencies by modeling how to improve the availability of basic and comprehensive EmOC at clinics and hospitals. The specific project purpose was to increase the availability of EmOC in select conflict-affected settings.

Program Objectives

To upgrade, rehabilitate and construct health centers and/or hospitals to ensure 24-hour quality emergency obstetric service delivery.
To ensure adequate obstetric equipment, supplies and health staff skilled in the use and maintenance of equipment and supply management systems.
To establish and review emergency obstetric service delivery protocols to ensure the provision, monitoring and evaluation of basic EmOC at the health center level and comprehensive EmOC at the hospital level.
To upgrade level of competency of service providers through training, teamwork and supervision.
To improve data collection and analysis, and monitoring and evaluation of basic and comprehensive EmOC service delivery.
To advocate to other nongovernmental organizations (NGOs), policy makers, donors and others to improve conflict-affected women's access to EmOC.

Baseline Situation Analysis

Prior to implementing the projects, the RHRC Consortium EmOC Technical Advisor and RHRC Consortium project staff conducted assessments at each project site using the standard tools developed by the AMDD program at Columbia University and developed project plans based on findings from the assessments. The Women's Commission, on behalf of the RHRC Consortium, published and widely disseminated the assessment findings in the report *Emergency Obstetric Care: Critical Need Among Populations Affected by Conflict*. [1]

In situations of internal displacement the devastation of war often results in a complete gutting of existing health facilities such that only the walls may be standing, if there is a facility at all. And refugees often flee to and are settled in the poorest, most remote and deprived areas of government services in a host country. Health facilities in these settings have frequently been neglected and lack adequate materials and supplies while many exist without basics such as water, electricity and reliable staffing.

Table 1. EmOC Signal Functions

Basic EmOC

1. Administer parenteral antibiotics
2. Administer parenteral oxytocic drugs
3. Administer parenteral anticonvulsants for pre-eclampsia and eclampsia
4. Perform manual removal of placenta
5. Perform removal of retained products
6. Perform assisted vaginal delivery

Comprehensive EmOC

The common problems and gaps in services identified in the assessments are categorized by those identified at health facility and community levels.

- **Health facility level**: The majority of health centers were not providing basic EmOC and few hospitals were providing comprehensive EmOC such as safe blood transfusions or conducting cesarean sections with regularity. Facility structures, equipment, medicines, supplies, clean water, electricity and health workers' practice of universal precautions against blood and other infectious diseases were generally inadequate. Findings also included a

[1] http://www.rhrc.org/pdf/EmOC_03-10-04.pdf

general shortage of qualified staff at health facilities. In addition, EmOC standards, guidelines and protocols were unavailable at most facilities. In most settings transportation and communication to support the referral system for women suffering from obstetric complications to health facilities was a major problem. Finally, there was poor data collection, analysis and use.

- **Community level:** Even though many women attended antenatal care clinics, it was common for them to deliver at home. There was generally low community awareness about the danger signs in pregnancy,

childbirth and postpartum. Men from many of the focus group discussions stated they would like to be more involved in safe motherhood activities but didn't know what to do.

Maternal deaths and disabilities are caused by three major delays[2]:

1) A delay in the decision to seek care;
2) A delay in transportation to a health care facility; and
3) A delay in receiving appropriate care at the health care facility level.

The RHRC Consortium adopted the AMDD program approach to prioritize the third delay by improving health facilities and health workers' readiness to provide good quality basic and comprehensive emergency obstetric care at the facilities. As the facilities and staff were prepared to receive women and girls suffering from complications of pregnancy and delivery, community transportation schemes were improved and community mobilization activities were undertaken to address the first two delays.

Program Monitoring and Evaluation

The UN guidelines'[3] Process Indicators and Signal Functions for basic and comprehensive EmOC facilities were used to monitor achievement of the program objectives. Information such as the number of deliveries at health facilities; cesarean sections performed, blood transfusions administered, obstetric complications managed; manual vacuum aspiration (MVA) procedures performed; and maternal deaths were also collected. This information, in addition to the population for the geographic area and the crude birth rate (CBR) are used to calculate UN Process Indicators. (See Table 2.) However, in many cases it was difficult to calculate the indicators because there were other facilities providing EmOC services in the geographic area and these statistics were not gathered.

[2] Thaddeus S. and Maine D. (1994) 'Too far to walk: maternal mortality in context.' *Soc Sci Med.* Apr; 38(8):1091-110. PMID: 8042057.
[3] Guidelines for Monitoring the Availability and Use of Obstetric Services. UNICEF, WHO and UNFPA. October 1997

Table 2. UN Process Indicators and Minimum Acceptable Levels

Indicator	Minimum acceptable level
Amount of essential obstetric care - Basic EmOC facilities - Comprehensive EmOC facilities	For every 500,000 population, there should be: - At least four Basic EmOC facilities - At least one Comprehensive EmOC facility
Geographical distribution of EmOC facilities	Minimum level for amount of EmOC services is met in sub national (e.g. provincial) areas
Proportion of all births in Basic and Comprehensive EmOC facilities	At least 15% of all births in the population take place in either Basic or Comprehensive EmOC facilities
Met need for EmOC: Proportion of women estimated to have complications treated in EmOC facilities	At least 100% of women estimated to have obstetric complications are treated in EmOC facilities
Cesarean sections as a percentage of all births	As a proportion of all births in the population, Cesarean sections account for not less than 5% nor more than 15%
Case fatality rate	The case fatality rate among women with obstetric complications in EmOC facilities is less than 1%

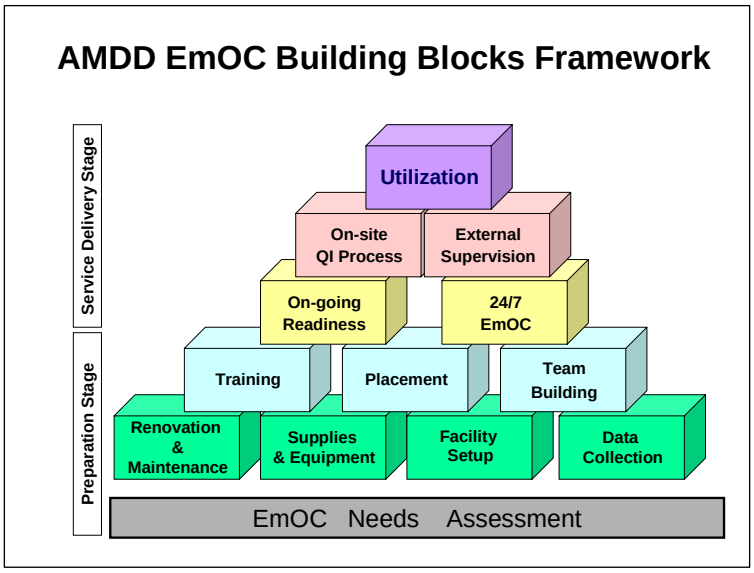
Method of Impact Assessment

The impact assessment is based on site visits and the review of project reports conducted by the RHRC Consortium EmOC technical advisor (TA). The EmOC TA visited nine of the twelve pilot projects at the end of 2003 to review progress on achieving the goals and objectives of the individual projects and discussed next steps to promote sustainable activities with field staff. Indicators used to measure the effect of the projects included both the availability of signal functions, UN process indicators and findings related to project-specific indicators.

II. EmOC Pilot Projects

Implementation Strategies

Priorities for program activities were identified based upon AMDD's pyramid shaped model shown below, where the lower tiers are the essential foundation for building functioning EmOC services. The devastation of war left some facilities with barely four walls standing and this focused interventions on construction, renovation, maintenance and general facility setup. Data collection was also challenging because data needed for the UN Process Indicators was typically not a component of the health surveillance system and therefore not routinely collected by staff. Moreover, standard practice in humanitarian emergencies indicates that maternal deaths are not collected in the weekly disease outbreak reports; instead they are buried in the broad category of "other deaths."



A total of 20 health centers and 11 hospitals were targeted for intervention. Supporting work within both health centers and hospitals in the same project area allowed for the identification of problems and subsequent improvements to the referral system, which facilitated increased coordination between health workers providing basic and comprehensive EmOC services in these areas.

Program Inputs

1. Physical Facility Upgrade

The table in Annex B summarizes the physical upgrades carried out by the pilot projects. A total of 10 hospitals and 16 health centers received infrastructure support that included the addition of new rooms, reorganization of patient flow, renovation of water supply systems, provision of solar panels and generators for electricity.

2. Equipment, Supplies and Medications

Medical equipment, supplies and medicines, such as MVA kits from Ipas and magnesium sulfate, a drug used for pre-eclampsia and eclampsia, were supplied to all RHRC Consortium project sites. Basic supplies such as gloves and disinfectants were also required in most of the health facilities to ensure infection prevention standards were initiated and maintained. Certain projects, such as in Liberia and Uganda, experienced recurrent conflicts resulting in attacks on health facilities and it was necessary to provide supplies and equipment repeatedly.

3. Data Collection and Record Keeping

The importance of data collection and record keeping was emphasized with staff in all projects. Sources for the EmOC TA data collection included clinic log books, operating theatre registers, delivery registers, inpatient records and TBA records. UNHCR developed a standardized form for use by implementing partners in Pakistan that contains most of the data required to monitor the UN Process Indicators. Although staff in the Uganda project conducted a specific training on the UN Process Indicators most of the projects did not include this training because it had frequently not been planned and budgeted.

Although Maternal Death Reviews (MDR) and "near-miss" investigations were planned for many of the pilot projects, staff at most of the project sites found it challenging to carry out the investigations in a non-threatening manner. However, Uganda's EmOC program staff implemented MDR systematically.

4. Staff Recruitment and Capacity Building through Training

Recruitment of midwives was a component of several projects. In Liberia the project supported recruitment of physicians for two hospitals. Approximately half of the project sites relied on a consultant physician and midwife trainers to work with hospital staff. Due to endemic shortages of trained professional staff, the length of time it takes to train physicians and midwives and the widespread use of TBAs especially in rural areas, most of the pilot project activities included training and support of paraprofessionals such as TBAs, maternal child health workers, community health workers and medics.

Training health care staff as a group to foster a team approach to managing obstetric emergencies was also a key strategy. Employment and training of staff with relevant cultural and linguistic diversity in Kenya and Pakistan facilitated the needs of specific refugee populations in these projects. Post-training technical assistance was incorporated as often as possible into the pilot projects. For example, post-abortion care (PAC) trainers working in Thailand and Bosnia Herzegovina returned to provide on-the-job mentoring and supervision as well as follow-up training. A table in Annex C lists training topics covered in the pilot projects.

5. Transportation and Communication

Delays in getting to health centers and hospitals are major causes of maternal deaths; therefore, a key activity in the pilot projects was to ensure communication systems and emergency transportation and communications systems. Communication equipment was both repaired and purchased. Almost all project sites had new ambulances or a vehicle repaired. Motorcycles and radios (codan) for communication were provided to some facilities in Liberia. The project in Uganda used cell phones for communication between the hospital and health facility efficiently.

However, communication remained a problem for three of the counties assisted in Liberia because of a supply problem with a collaborating partner. In addition, two projects in Liberia had to close prematurely due to resurgence of the civil war and when IRC reinitiated its program in Liberia it had to start from the very beginning.

6. Community Outreach

Information, education and communication were conducted using a variety of methods such as workshops, individual counseling sessions, community mobilization events and group education sessions at the health facility. Local drama and film productions were successfully used in Liberia and Sierra Leone. In some sites, it was necessary to ensure that education materials were adapted and translated into the language of the refugee population. Many of the project sites were introduced to the White Ribbon Alliance[4] materials on community mobilization.

One group of men in Uganda felt they were only involved in safe motherhood when there was an emergency and said they would like to be more involved throughout their wife's pregnancy. Including men in antenatal care provides an excellent entry point to develop birth plans.

7. Cost Sharing Mechanisms, Subsidies and New Funding

In early emergency situations and protracted conflicts, where health care services are available, they are often free of charge. However, over the long –term, health workers are frequently unable to sustain quality services at health facilities without additional funding from the government and/or ongoing funding from international organizations. This reflects the need to plan ahead for the sustainability of these life-saving services.

The issue of sustainability was considered in planning each RHRC Consortium project. For example, in Pakistan, IRC assessed the refugees' ability to pay for services and discussed the results with UNHCR to determine a user fee for clients. In Sierra Leone and Kenya, the hospital and clinic run by Marie Stopes offices operated on a subsidized fee for services. In Sierra Leone, a minimal fee to use the ambulance service, comparable to that charged by the government, was introduced.

In Liberia, building upon a traditional community savings mechanism, IRC worked with community savings groups to save money to purchase an ambulance for obstetric emergencies. IRC matched the funds raised by the community. In Bosnia and Herzegovina, a revolving fund to cover the cost of medicines and care for uninsured patients was also instituted.

Program Results

Demonstrating one of the most import objectives of the project, to promote institutionalization of EmOC programming among RHRC Consortium agencies, the Consortium member agencies leveraged at least US$ 4 million in new funding from UNFPA, Europe Aid, BPRM, UNHCR,

[4] The White Ribbon Alliance for Safe Motherhood is a part of The Centre for Development and Population Activities (CEDPA), which is a non-profit organization. It promotes a "zero tolerance" policy against preventable deaths. Safe motherhood programs that include the essential components of: (a) ensuring that there are skilled providers present at each birth; (b) a well functioning referral system, and (c) quality obstetric services to treat women in the event of a complication are the answer to ending this silent and shameful epidemic.

international organizations and government agencies to strengthen existing EmOC activities and establish new projects.

A project evaluation that involved site visits and a review of project reports indicated there was significant progress made in each project towards providing EmOC. Indicators used to measure the outcome of the projects included availability of signal functions at each of the facilities assisted, data to monitor the UN Process Indicators and project-specific indicators such as training of health workers, number of women attending antenatal care, cases referred to health facilities by TBAs, family planning users and STIs treated.

Improved Coverage of EmOC

Based upon pre- and post-intervention assessments of signal functions provided at the facilities assisted, there was significant progress made in the number of health facilities providing EmOC services. Although staff at 11 health centers were unable to provide all the six basic EmOC signal functions, they were all closer to completing them by the end of the project (Table 4). At baseline, there were three fully functioning Comprehensive EmOC facilities and two Basic EmOC facilities. At the end of the project there were ten functioning each of Comprehensive and Basic EmOC facilities. In addition there was one health center performing five of the six signal functions, and another one performing four of the six signal functions upon completion of the pilot project activities (Table 3).

Table 3. Comparison of Comprehensive and Basic EmOC Facilities between Baseline and Project Evaluation

Type of Health Facility	Baseline (2001)	Evaluation 2003/2004
Number of Comprehensive EmOC Facilities	3	10
Number of Basic EmOC Facilities	2	10

Challenges in data collection

There were difficulties in collecting information on all EmOC signal functions. For example, EmOC signal functions must have been delivered within the past three months to be considered functioning and this information was not always apparent. It was also unclear if evidence-based practices such as using magnesium sulfate for pre-eclampsia and eclampsia were followed in practice even when it was available at the facilities. In addition, the health facility functioning form (see Annex F) was not completed for the facilities in Liberia and Sierra Leone and the information was gleaned from reports.

Three hospitals, Kajo Keji in Southern Sudan and Umphang and Kwai River Mission hospitals in Thailand, were included in the project activities but not in the analysis because an international agency was already supporting the hospital in Kajo Keji and the hospitals in Thailand received supplies to compensate the increase caseload of the displaced population but declined technical assistance.

Use of EmOC Services

Data collected from each of the projects included: 1) number of births, 2) number of obstetric complications managed, 3) number of cesarean sections, and 4) number of maternal deaths. In

addition, at some facilities extensive data was also collected on safe motherhood-related indicators, blood transfusions administered and the number of referrals.

In order to calculate the UN Process Indicators, the total population of the catchment area, crude birth rate (CBR), total number of deliveries at EmOC facilities, number of obstetric complications managed and number of maternal deaths must be known. Table 6 and 7 below summarize information required to calculate the UN Process indicators.

The EmOC TA conducted project assessments of UN Process Indicators between 2002 and 2004. The coverage of basic and comprehensive EmOC services must be interpreted with the understanding that there were other facilities providing services for the same population whose statistics are not included in the calculation. Specifically, the numbers of births, complications managed, cesarean sections and maternal deaths depend on the quality of data collection and recording. Quite often maternal deaths were under-reported or not reported at all. In addition, at some health centers, a trained TBA or other paraprofessional often conducted deliveries.

The indicator for "met need" is one of the most critical indicators in monitoring EmOC programs; however, obstetric complications are interpreted differently by individual staff and by each site. For example in Kajo Keji, Southern Sudan, the abortion data was not broken down by complicated (those requiring a "signal function" treatment) or noncomplicated abortions (those not requiring this treatment). During the project review, it was clear that most sites needed further assistance with data collection, monitoring and evaluation.

Humanitarian relief programs are unique in that they frequently must be more dynamic and urgently responsive than development programs due to continuously changing environments and populations, often a result of rapidly changing security situations. Therefore, many of the pilot projects provided data on indicators relevant to their activities. For example, in southern Sudan where years of civil conflict has destroyed the health infrastructure, depleted supplies and medicines, and greatly reduced the number of professional staff, activities began with training paraprofessionals to provide services in remote areas. Therefore, these settings were not conducive for supporting all six signal functions in the Primary Health Care Centers. In the following section, project-specific indicators have been highlighted to demonstrate some outcomes of the pilot projects. The data may reflect low percentages and numbers, but the reader must keep in mind that these percentages are calculated without the data of all facilities in the catchment area providing EmOC service. During the project review, the EmOC TA explained how to collect data that would allow staff to calculate more accurate UN Process Indicators. Please refer to Annex B for the timeline of the 12 pilot projects.

Client Satisfaction

The project EmOC improvements helped many refugee women and their babies. Behind the happy stories told are improved competency of staff and quality of care including the availability of drugs and supplies.

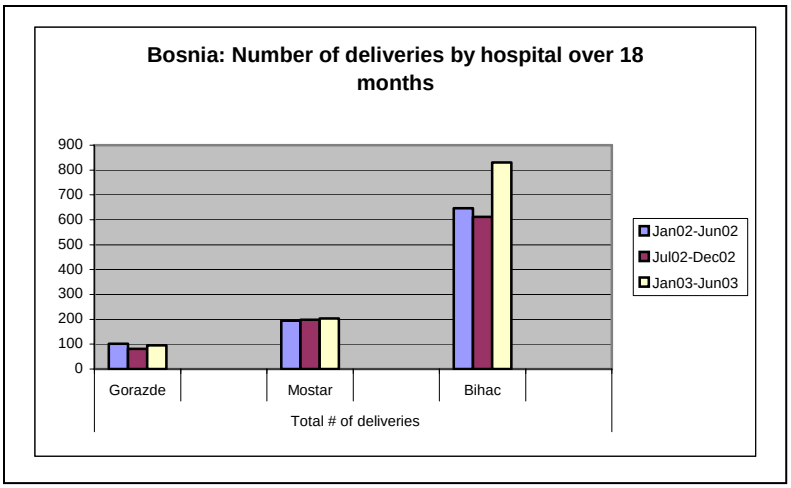
"Thanks to Karnplay Clinic EmOC program (in Liberia) and Sanniquellie Hospital for saving my life. Had it not been for the EmOC program and EmOC community-based saving scheme, I would be dead by now. I refused to attend clinic despite advise from the TBA but when my water bag burst, the baby hand came outside and I was rushed to Karnplay Clinic. Karnplay could not handle my case and I was again referred to Sanniquellie Hospital for surgery. We didn't have any means of transport to the hospital. While discussing what to do, my husband was informed about the EmOC transport saving scheme. We then borrowed money from the fund that enabled me to reach the hospital. The EmOC program saved our lives."
40-year-old mother of 10 children

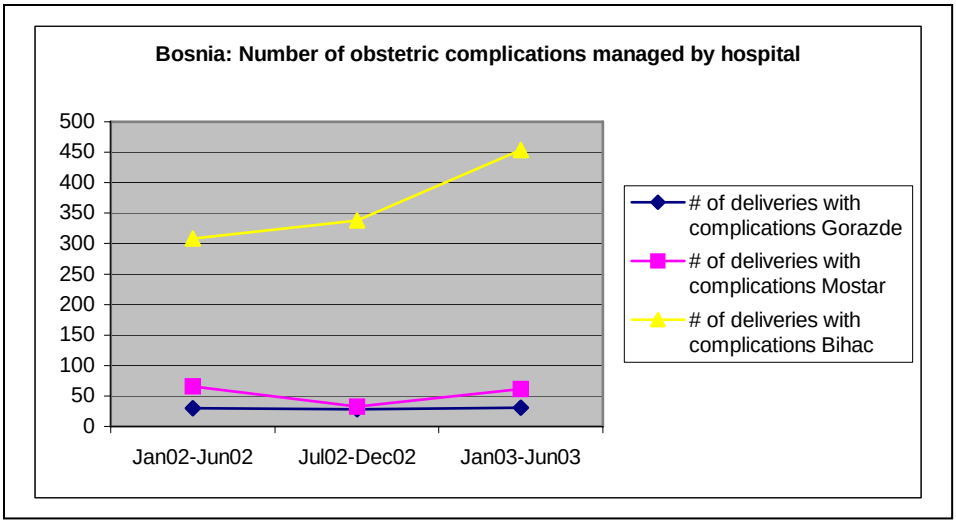
Wah Wah is a 38-year-old Burmese woman working as a gardener in Thailand. She has five children ages 7 to 20 years old. Wah Wah started using Depo-Provera for contraception. After five years, she stopped using Depo-Provera because she thought she could no longer get pregnant. However, Wah Wah did not get her period for two months, so she went to the traditional birth attendant to find out if she was pregnant. The traditional birth attendant gave her a vaginal exam and inserted a stick into her vagina and uterus "to make her period come." Two weeks later she started to bleed, and after 2 or 3 days of bleeding she came to the Mae Tao Clinic with a fever. The clinic staff found the stick, which had induced an abortion at three months. Wah Wah had septicemia for which she was given antibiotics and was counseled regarding contraception in order to avoid future pregnancy. Wah Wah planned to discuss this option with her husband.

Country Case Studies

Bosnia and Herzegovina

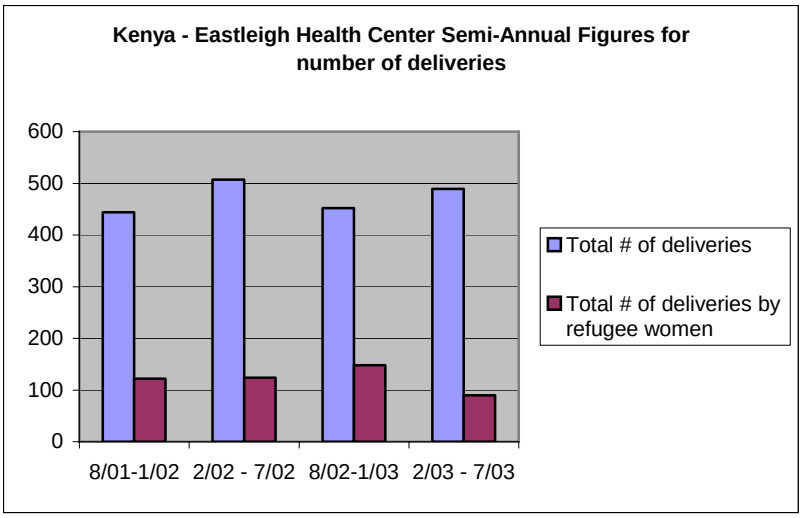
Progress achieved with improved utilization of EmOC was uneven among the three project health facilities in Bosnia. Over an 18-month period, the number of deliveries at the Bihac referral hospital increased by approximately 25 percent. However, the number of deliveries in health facilities and the number of obstetric complications treated did not improve in the other two health facilities.





Kenya

The number of refugee women attending the Eastleigh clinic increased during the first part of the project. Ethiopian and Somali health workers (two nurses and a physician) were employed to encourage refugees to use clinic services. However, the number of refugee women attending the clinic declined in the last semester and staff attributed this to an increase in the number of refugees who returned to refugee camps or gaining asylum in other countries. Project staff also reported that there was a significant decrease in the number of refugees in the neighborhood leading to difficulties in retaining refugee service providers.



Liberia

The table below presents EmOC statistics for services provided at three health facilities supported by the project in Nimba County over a one-year period. The number of cesarean sections performed increased between February and July 2002 compared to the preceding six months. However, other indicators on utilization of EmOC decreased. The increase in maternal deaths in the second six-month period was possibly due to improved reporting and recording of maternal deaths. A majority of the maternal deaths were due to ectopic pregnancies and two were due to delayed transport.

Table 8. Comparison of using of EmOC services during 2001/2002 period, Liberia

	August 01-January 02	**February – July 02**	**Total**
Number of deliveries	149	96	245
Number of complicated deliveries*	58	37	95
Number of cesarean sections conducted at the hospital	27	52	79
Number of cases needing blood transfusions	62	30	92
Number of maternal deaths	1	6	7

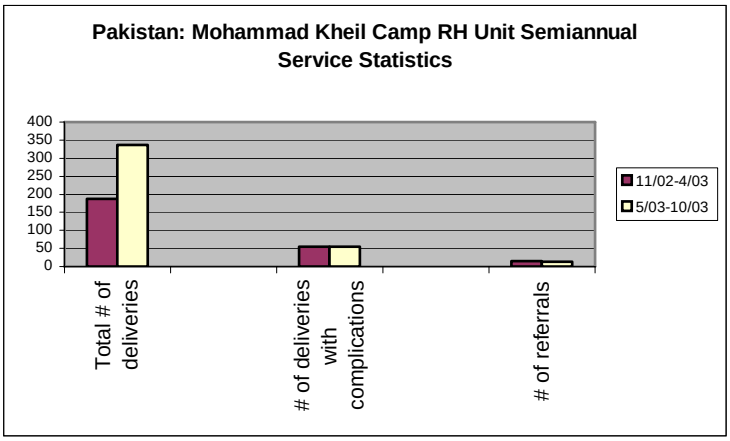
In Grand Gedeh, Montserrado and Sinoe Counties, three hospitals and six health centers were assisted, with the following results:

- 351 women were delivered by trained TBAs

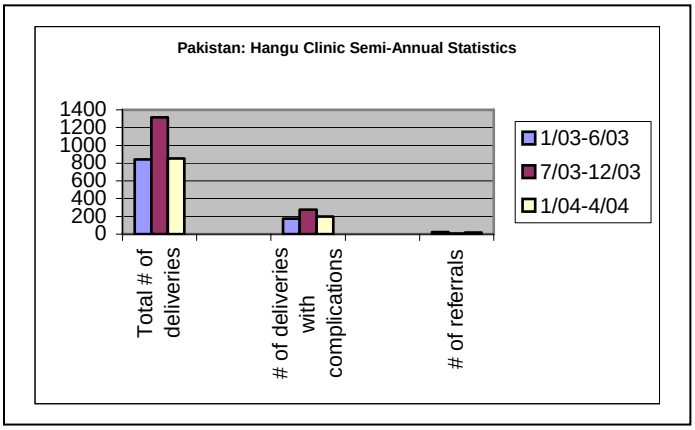
- 15 women with obstetric complications were referred by trained TBAs
- 35 women and men received safe blood transfusions from the time the blood transfusion kits were supplied

Pakistan

In Baluchistan, the American Refugee Committee (ARC) operates a reproductive health unit for Afghan refugees staffed with two female physicians and a number of female nurses. The health facility reported a significant increase in the number of deliveries at the health facility. Anecdotally, women said they liked coming to the clinic to deliver their babies because they were treated well there.

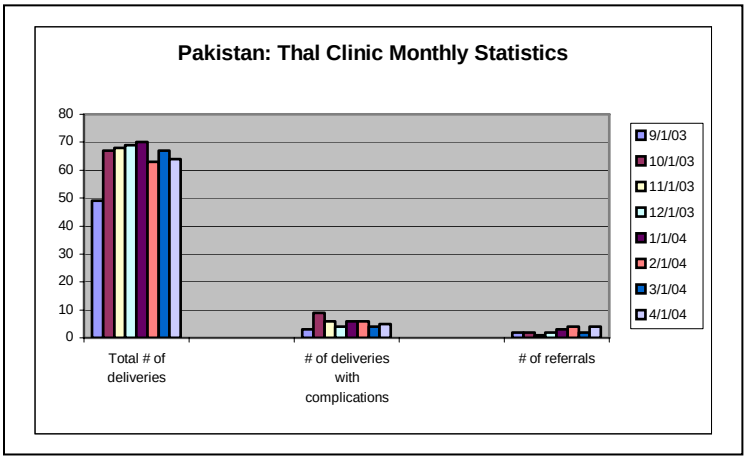


In Northwest Frontier Province, IRC constructed a reproductive health clinic in Hangu and provided EmOC services to a population of 99,650. Over a ten-month period, they were also able to establish a second RH clinic in Thal that serves a population of 104,228 with Basic EmOC services. These population figures include refugee as well as local populations.



The RHRC Consortium pilot project supported materials, equipment and training of staff at the Hangu clinic. It should be noted that the third set of semi-annual statistics include four months as opposed to six months of data.

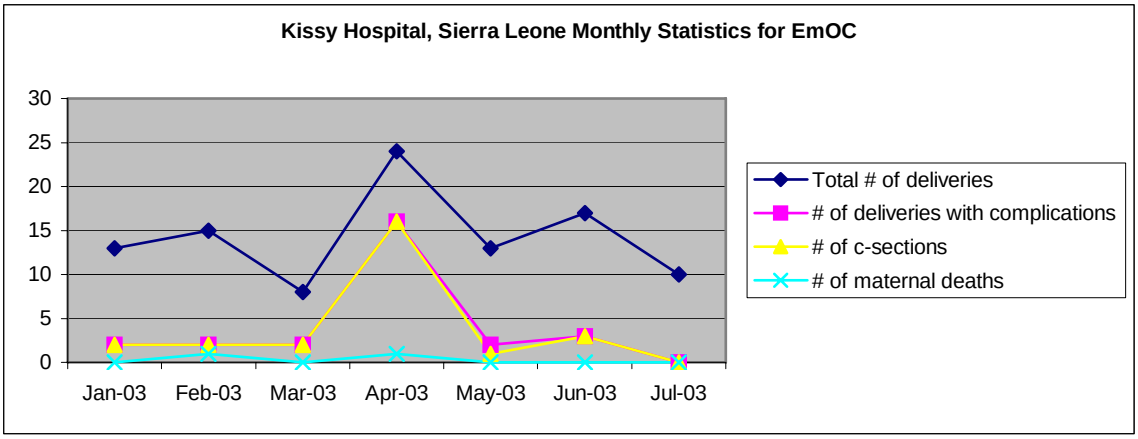
At the Thal clinic, there was a significant increase in the number of women admitted to the clinic for delivery services starting the second month of operation. As noted on the bar chart, the clinic maintained a stable



number of deliveries over an eight-month period. The number of deliveries with complications also increased starting the second month of operation. This project did not start until July 2003 due to insecurity.

Sierra Leone

The number of deliveries at Kissy Hospital in Freetown, Sierra Leone, was relatively stable throughout the project period with the exception of April 2003 when there was a national strike among health workers. At this time there was a spike in the number of deliveries, c-sections and deliveries with complications because this is a private facility and more people came to this hospital while other facilities were not functioning.



Southern Sudan

A major component of the pilot project was to train maternal child health workers (MCHWs). The staff did not complete the training until after the life of the project; therefore it is difficult to draw any conclusions about project effect from facility-based statistics. However, the following data from the two primary health care centers (PHCC) in Kajo Keji County may serve as a reference point for monitoring future EmOC activities. Data from the referral hospital supported by Médecins San Frontières are also included.

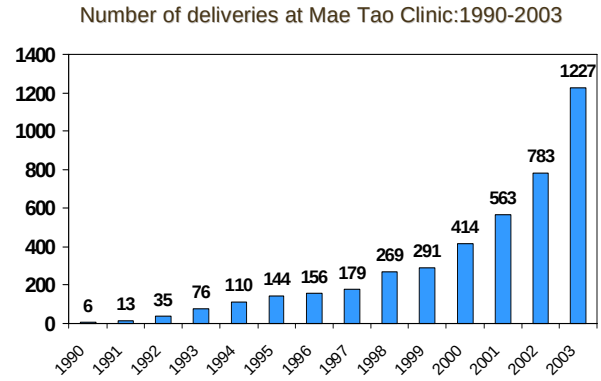
Table 9. Use of EmOC services in three health facilities, Southern Sudan, 2002-2003

Name of Facility	Date	# of births	# of obstetric complications	# of c-sections	# of maternal deaths
Mangalatore PHCC	4/02-9/02	89	9 (abortion related)	-	1
	10/02-3/03	98	5 (abortion related)	-	0
Bamurye	4/02-9/02	177	16 (abortion related)	-	0
	10/02-3/03	175	9 (abortion related)	-	2
Kajo Keji Hospital (MSF)	2003	155	13*+ 46 c-sections = 59	46	1 (from post-partum hemorrhage)

** Obstetric complication definition is limited to eclampsia, post-partum hemorrhage, sepsis and abortion*

Thailand

Mae Tao Clinic received funding and support from the Women's Commission for Refugee Women and Children for both the EmOC pilot project and an RHRC Consortium monitoring and evaluation project simultaneously. The two projects complemented each other, resulting in a significantly improved data collection system that demonstrates a steep rise in number of IDPs from Burma and ethnic Burmese women delivering at the clinic.



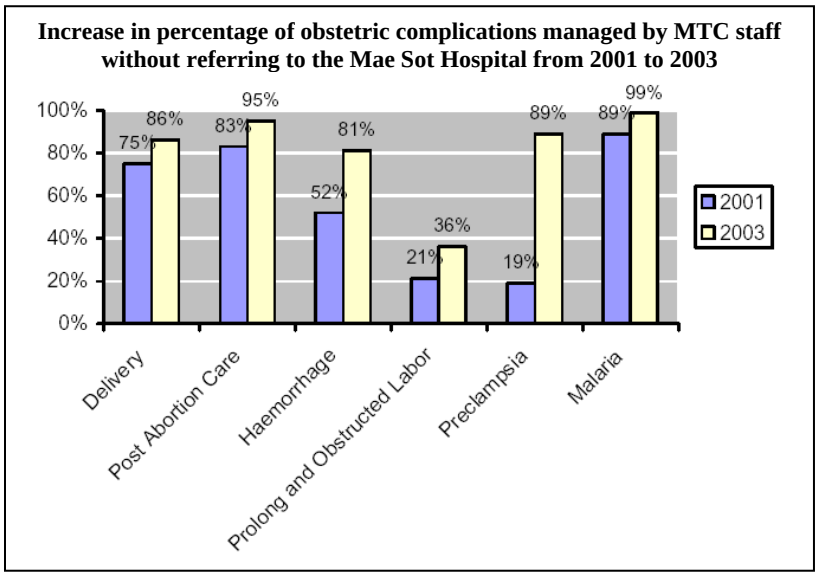
Source: Mae Tao Clinic Project Report, 2003

In addition to increased numbers of deliveries at the clinic, the table below illustrates the increase in number of obstetric complications managed at the clinic.

Table 10. Summary of EmOC Indicators for 2002 and 2003, Mae Tao Clinic.

	2002	2003
Obstetric complications managed		
Post-abortion care	193	352
Pre-eclampsia	28	33
Antepartum and postpartum hemorrhage	14	54
Prolonged/obstructed labor	27	82
Puerperal sepsis	13	15
Ectopic pregnancy	-	9

The bar graph below illustrates the increase in percentage of obstetric complications that Mae Tao Clinic staff were able to manage without referring to the Mae Sot Hospital from 2001 to 2003.

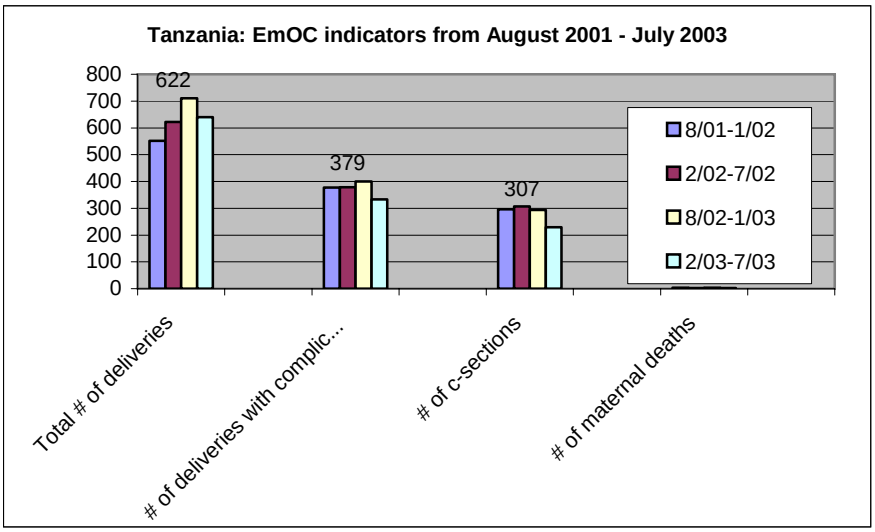


There was a significant increase from 2002 in the number of prolonged/obstructed labor cases the clinic staff were able to manage. The addition of a vacuum extractor to the facility and training in MVA has likely reduced the number of referrals for obstructed labor and complications of abortion. In addition, since establishing improved capacity to administer blood transfusions at the clinic, 20 women presenting to the reproductive health

inpatient department received a blood transfusion in 2003. An ongoing major constraint at the clinic is a lack of qualified staff on duty 24 hours a day, seven days a week, which is necessary to further decrease referrals to the local hospital.

ARC is working in three camps along the Thai-Burma border and participated in the EmOC pilot project by sending staff from their RH centers to a PAC training at the Mae Tao Clinic. In addition, ARC facilitated support to the Thai referral hospitals by supplementing the hospitals with EmOC medicines, supplies and equipment following assessment visits to the hospitals and discussions with staff. Following the PAC training, ARC staff and Aide Médicale International (AMI) staff performed seven MVAs over a six-month period at Umpiem Mai Camp. During the project review, the EmOC TA was only able to visit Umpiem Mai Camp and, therefore, data for the other two camps is not available**.**

Tanzania



In Tanzania, the total number of deliveries at Kibondo Hospital increased and then dropped slightly in the last semester of the project, most likely due to the decrease in refugee camp population as refugees returned to Burundi in greater numbers over the last year.

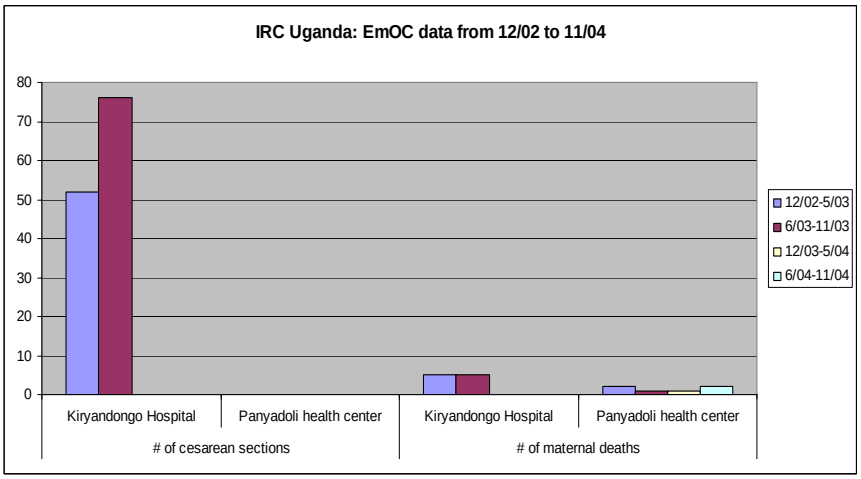
> *Case Study: Traditional birth attendants (TBAs) link the community to the health system-Tanzania*
> Two years ago most refugee women preferred to deliver at home under the supervision of TBAs because they wanted to be cared for by somebody known to them. Many women ended up losing their babies, primarily due to prolonged labor and poor management of the second stage of labor. Training TBAs in better delivery practices did not result in an improvement in their practices because TBAs preferred to retain the traditional practices inherited from their mentors. Attempts at educating mothers against delivering at home and about the danger signs failed as well. However, with support from the World Health Organization and the U.S. Bureau for Population, Refugees and Migration, the TBAs were integrated into the health system where their role was changed from

assisting with home deliveries to linking the health facility with the community. TBAs were assigned the role of monitoring pregnant mothers in the community and following these women to ensure that each expectant mother received immunization and attended at least three antenatal visits. TBAs were also allowed to refer their clients in labor and to deliver them in the hospital under supervision of a trained midwife. This new "monitoring" role significantly motivated TBAs and led to an increase in hospital deliveries from 54 percent in 1999 to over 90 percent in 2001, resulting in significant reductions in stillbirths, birth-related complications and maternal mortality.

Uganda

Over a one-year time period, the number of deliveries at each of the four health facilities in Uganda increased by approximately 50 percent. The number of obstetric complications managed at both facilities also increased; however, the definition staff used for obstetric complications was broader than the UN Process Indicators and this possibly skewed the results.

In addition, after the hospital received infrastructure support and new equipment, the number of cesarean sections performed at the district hospital increased over a12-month period.



III. Partnerships

The network of partners within the AMDD program provided humanitarian programs with invaluable technical support. For example, EngenderHealth and Ipas provided quality training in PAC including training on procedures such as MVA. The trainers continued to support trainees with onsite technical support and supervision. Ipas donated MVA kits to three projects in Thailand and Pakistan that did not have resources to procure the supplies.

During an assessment in southern Sudan the EmOC TA facilitated communications between CARE, ARC and UNICEF and they are currently exploring areas for collaborative initiatives such as training and sharing resource materials.

The RHRC Consortium supported a team of one physician, one midwife and an anesthetist from Guinea to participate in a five-week EmOC competency-based training- of-trainers conducted by JHPIEGO for UNFPA / AMDD programs in francophone West Africa. Two of the three trainees subsequently added signal functions to the clinical services for refugees at a clinic in Kissidougou to support basic EmOC at the camp. In addition, two of the trainees subsequently conducted a basic RH training for over 100 health staff from hospitals and clinics in the Guinea Forest Region with UNFPA funding support for supplies and equipment.

New linkages are under development with the RHRC Consortium and the Partnership for Maternal, Newborn, and Child Health formerly called the Partnership for Safe Motherhood and Newborn Health. Information, education and communication materials from the White Ribbon Alliance (WRA) have been distributed to ARC and CARE in South Sudan and IRC in DRC where staff were encouraged to develop community mobilization strategies and to consider entering the annual competition hosted by WRA for best practices in community mobilization.

IV. EmOC Technical Advisor

An essential component of the RHRC Consortium EmOC Project was the employment of an EmOC Technical Advisor (TA) to support the development and sustainability of EmOC services. The role of the EmOC TA evolved over the life of the project. Initially, the EmOC TA conducted needs assessments and supported the development and implementation of pilot projects at 12 sites. Since January 2004, while funding support for each of the pilot projects ended, the EmOC TA continued to provide TA for project staff as they integrated their activities into existing health programs. Specifically, the EmOC TA performed the following activities:

Field support through onsite and virtual assistance

The EmOC TA shared a scope of work with Consortium member field offices and collaborating agencies such as UNHCR, WHO's Department of Health Action in Crisis and UNFPA. During the final year of the project, four visits were made to Consortium member project sites. Virtual assistance was provided to approximately eight of the pilot projects.

In addition, four new participatory EmOC assessments using the AMDD assessment tools were conducted in the following locations: 1) ARC South Sudan; 2) CARE South Sudan; 3) ARC Guinea; and 4) IRC DRC. The program in DRC had funding for an EmOC project while the other three were planning to apply for funds or to integrate EmOC activities within an existing budget.

The EmOC assessments in southern Sudan were done in consultation with UNICEF, which conducted an EmOC assessment in 2003. Findings from this assessment were used to direct this second assessment.

In South Kivu, DRC, IRC appeared to be the only international organization focusing on EmOC. IRC used findings from the assessment to guide its action plan.

The EmOC TA facilitated an integrated approach to improve EmOC services by creating and strengthening partnerships at the local, national and international levels. Although some of the projects involved assistance for refugees in camps, activities were carried out in collaboration with the relevant local authorities. For example, in Thailand, hospital staff at the referral hospital participated in the PAC training conducted by Engenderhealth for staff from a local clinic, refugee camp RH clinics and an international NGO partner's staff. In Uganda, IRC employed MOH RH trainers to conduct life saving skills in safe motherhood training for its staff at the district hospital and camp health center.

Provision of EmOC resource materials

All projects at a minimum received the appropriate number of the following documents:

- *Management of Complications of Pregnancy and Childbirth* by WHO
- CD-ROM entitled *Emergency Obstetric Care Resources and Tools* by AMDD and JHPIEGO

- *AMDD Workbook Using the UN Process Indicators of Emergency Obstetric Services Questions and Answers* by AMDD
- *Setting Priorities in International Reproductive Health Programs: A Practical Framework* by Columbia University
- *Infection Prevention* by EngenderHealth
- *Basic Maternal and Newborn Care: A Guide for Skilled Providers* by JHPIEGO

Advocacy and fund raising

The EmOC TA also conducted presentations on the RHRC Consortium EmOC pilot projects for a variety of US-based international organizations and donors to promote EmOC programming in humanitarian emergencies. These presentations generated significant interest in the AMDD approach to EmOC and were followed by lively discussions, particularly with regard to the use of UN Process Indicators for monitoring and the sustainability of the RHRC Consortium EmOC projects.

The EmOC TA steered the development of a "*Field-friendly step-by-step guide for EmOC*" in consultation with key partners. Multiple organizations were contacted to assure this guide would not be a duplication of an existing guide.

V. RHRC Consortium

While the Consortium and its individual member agencies have been working in safe motherhood activities, this project showed that EmOC was grossly neglected in the humanitarian programs assessed prior to implementing the pilot projects. Furthermore, the EmOC project supported Consortium member organizations and local staff implementing humanitarian programs to identify EmOC problems among conflict-affected women in the communities they assist and to develop strategies to address their needs and implement good quality EmOC projects.

Fulfilling one of the major aims of the project, IRC institutionalized EmOC services within their RH programs as they recently sought and received significant new funding from European Donors for EmOC programs in eight countries with some of the highest maternal mortality ratios in the world such as DRC, South Sudan, Sierra Leone and Liberia. RHRC Consortium members implementing some of the pilot projects for examples in Tanzania and Uganda have received funding to expand their activities, while others are continuing some of the activities through their ongoing PHC programs until they access other resources. Marie Stopes Kenya and Marie Stopes Sierra Leone are able to continue their activities via cross-subsidization from other parts of their programs. However, the project in Bosnia was forced to close with the completion of their pilot project due to a lack of resources.

Consortium member agencies have gained knowledge about EmOC to support advocacy on EmOC to conflict-affected populations, donors, government representatives, humanitarian actors and United Nations agencies. For example, EmOC was emphasized in the minimum initial service package (MISP) for RH assessment conducted by the Women's Commission and UNFPA as a component of the Inter-agency working group (IAWG) Inter-agency Global Evaluation of Reproductive Health in Refugee Settings on the Chad border with Darfur, Sudan in April 2004. The findings from this assessment have been documented in the report, *Lifesaving Reproductive Health Care: Ignored and Neglected: An Assessment of the Minimum Initial Service Package (MISP) of Reproductive Health for Sudanese Refugee in Chad*. Members of the Consortium also participated on the steering committee of the *Inter-agency Global Evaluation of Reproductive Health Services for Refugees and Internally Displaced Persons*, and advocated the importance of highlighting the EmOC gaps as identified throughout the assessment, in the final report and recommendations.

Consortium member agencies have also influenced external agencies and institutions to address EmOC. For example, IRC established the first EmOC facility in Hangu, Pakistan to serve Afghan refugees in June 1996. Due to the recent success of this project, IRC was called upon to provide technical guidance to three agencies that have initiated replicating its EmOC project. In addition, the project raised the visibility of MSI programs and helped establish linkages with similar programs within countries where they work.

The RHRC Consortium AMDD project supported organizations to improve the quality of their EmOC. Several organizations have also improved policies and procedures such as their MVA procedure and PAC policies based on their participation in the EmOC training in Thailand.

Sustainable interventions to support EmOC services were demonstrated in some projects. For example, EmOC technical assistance and training at Mae Tao Clinic resulted in significant increases in the number of deliveries and obstetric complications, including PAC with women's acceptance of a family planning method, managed at the Clinic. In Liberia, IRC staff mobilized the community to raise funds ($1,900) with IRC matching them, to support the transportation of women suffering from obstetric complications to health facilities.

VI. Conclusions

Health Facility Level

- The AMDD model for EmOC works in humanitarian programs.
- UN Process Indicators are valuable for monitoring EmOC activities.
- Other indicators suitable for humanitarian programs are needed to monitor quality and community level activities.

In conclusion, 11 hospitals and 20 health centers were directly assisted in the RHRC Consortium AMDD project within nine conflict-affected countries. There was a significant increase in the number of EmOC signal functions available in the pilot project sites. While all of the facilities assisted did not reach fully functioning EmOC facilities, they were all closer to having the capacity to provide these services. It was less feasible to develop fully functioning EmOC facilities in areas with extremely limited infrastructure and few qualified personnel in-country. These sites require sustained, long-term input to make them fully functioning. Based upon the AMDD model for implementation of EmOC, RHRC Consortium member representatives completed activities in the pilot projects in the areas of: renovation and maintenance; supplies and equipment; facility setup; data collection; training; placement of qualified staff; team building; ongoing readiness; and 24/7 EmOC. Some projects implemented most of these activities while others focused primarily on supplies, equipment and training. In order to promote project sustainability, staff at the field sites continue to need assistance with facility setup, continuous quality improvement, referral support such as ambulances and radio communication equipment, data collection, analysis and use, training and placement of qualified staff in addition to the other essential activities required to improve utilization of EmOC services.

Providing staff with the current EmOC standards and guidelines and training them to use the guidelines are critical to improving quality of care. As a basic foundation for providing EmOC, all staff must be trained in infection prevention protocols and supported with the supplies required to adhere to these standards. Infection prevention was an essential component of most of the training conducted in the pilot projects. The manual *Infection Prevention* developed by Engenderhealth is a useful tool to support this training. While training was provided to varying degrees at the project sites, it requires extensive time including continuous onsite mentoring and supervision and was beyond the capacity of staff at many of the pilot projects. Therefore, RHRC member agencies are currently seeking funding to continue building their staff capacity to provide EmOC.

In order to monitor the effect of EmOC activities, the UN Process Indicators must be more integrated into monitoring and evaluation plans. As a part of initiating EmOC, all staff should be trained in the UN Process Indicators and how to collect data and calculate these indicators to ensure more accurate data are used for monitoring and evaluation. Some project staff, for example staff working at the Mae Tao Clinic and the IRC project in Uganda, have made significant progress in more accurately measuring this data while staff at a new IRC project in DRC included all of the UN Process Indicators in their monitoring and evaluation plan.

To support a successful referral system program staff should assess the needs from the community to the hospital where comprehensive EmOC services are available. Camp settings provide an excellent opportunity to develop a functioning referral system for EmOC. Frequently, comprehensive EmOC facilities are located outside the camps and function as an integral component of the host country's health system. In all health programs, assessing EmOC services at health facilities should include referral facilities, the referral system itself and community-based safe motherhood activities. These components are all essential to the development of an effective EmOC program that will address needs from the community to the comprehensive EmOC facility to prevent maternal and infant morbidity and mortality. Assessing and supporting referral facilities and the referral system itself allows for collaborative linkages with the MOH and builds sustainable capacity while facilitating support to the local population in addition to the conflict-affected population. For example, in Kibondo District, Tanzania, transport, communication and Basic EmOC services are provided in the camp facilities. Refugee women suffering obstetric emergencies requiring comprehensive EmOC are quickly transferred to the Kibondo District Hospital by an ambulance based in the camps. In this pilot project, IRC supported a new water system, which also supported sustainable interventions for the MOH at this district hospital and improved the quality of care for the local population.

One response to the lack of qualified staff at many of the pilot project sites has been to train a variety of paraprofessionals to improve their EmOC knowledge and skills. For example, in southern Sudan maternal child health workers, hospital auxiliary nurses, hospital auxiliary midwives and hospital-enrolled nurses have been trained. The competency of these categories of health staff must be assessed to determine their capacity to implement various EmOC activities.

The EmOC assessment conducted in three camps in Guinea demonstrated that targets set for the UN Process Indicators are achievable, especially in tightly controlled refugee camp situations. However, many humanitarian programs are not in stable refugee camp environments and involve work with populations either enduring sporadic attacks or recovering from war. These populations may be internally displaced within their own country, living in communities torn up by conflict or living among the general population in another country. In these situations, providing quality EmOC services is a greater challenge and requires creativity in responding to needs as quickly as possible.

Community Level

In addition to the facility-based interventions, community mobilization about safe motherhood to support early referral of women suffering obstetric complications is also critical. Due to a critical shortage of skilled professionals, TBAs continue to play an active role in humanitarian programs addressing maternal morbidity and mortality. Community-based safe motherhood activities usually involve TBAs who play a key role in the community and have the confidence of many community members. For financial reasons, women and their families often first turn for help to a family member, then a TBA and use the health facility as the last resort. Many mothers also prefer to give birth with TBAs due to traditional beliefs, security and/or transport problems and poor access to health services.[5]

[5] Mae Tao Clinic Annual Report for 2003.

To reduce maternal and neonatal morbidity and mortality along the Thai-Burma border, the Mae Tao Clinic trained 178 TBAs and 32 TBA trainers in eight migrant worker areas in Tak province and in seven IDP areas on the Burmese side of the Tak provincial border. In Afghan refugee camps in Baluchistan, ARC trained over 200 TBAs for a population of approximately 100,000 as part of their strategy to gain trust from the community. The TBAs conduct home deliveries and refer the complicated cases to the newly constructed RH Unit in Surkhab Camp. Anecdotally, this has proved to be a very effective strategy based upon the low number of maternal and neonatal deaths. Fully monitoring the UN Process Indicators in this setting would help determine the real impact of these interventions on reducing maternal morbidity and mortality.

Based upon focus group discussions in a variety of humanitarian programs settings, men have consistently stated they would like to be more involved in reducing maternal deaths in their communities. Traditionally, they have been left out of many of the safe motherhood outreach programs.

The WRA has developed some excellent strategies for community mobilization and humanitarian programs should seek to liaise with this alliance as they develop their community activities.

The EmOC project proved that improving EmOC for conflict-affected populations is not only critical but also feasible for both local and international NGOs working in humanitarian settings.

Annex A: Project beneficiary population and facilities

Project Sites	RHRC Agency	Approx # Population Served	Approx # (WRA)[6]	Approx # Pregnant Women [i]	Approx # Expected to Have Complications[ii]	Health Facilities
1. Bosnia and Herzegovina	IRC	392 000 conflict-affected in Bihac, Gorazde, Mostar	98 000	19 600	2 940	3 hospitals
2. Kenya	MSI	246 420 refugees from Somalia, Sudan, Ethiopia and surrounding community Eastleigh District	61 605	12 321	1 848	1 clinic
3. Liberia	ARC	Sinoe, Grand Gedeh, Monserrado Counties – 1 216 318 IDPs, returnees and surrounding population	304 079	60 815	9 122	3 hospitals 6 clinics
4. Liberia	IRC	Part of Nimba County – 116 861 IDPs, returnees and surrounding population	29 215	5 843	876	1 hospital 2 clinics
5. Pakistan	ARC	Baluchistan (3 refugee camps) – 90 000 Afghan refugees and surrounding population	22 5 00	4 500	675	1 clinic
6. Pakistan	IRC	Thal area – 104 228 Hangu area – 99 650 Afghan refugees and surrounding population	26 057 24 912	5 211 4 982	781 747	2 clinics
7. Sierra Leone	MSI	Freetown – IDPs and surrounding population	125 000	25 000	3 750	1 hospital
8. Southern Sudan	ARC	Kajo Keji County – 150 000 IDPs and surrounding population	37 500	7 500	1 125	3 clinics
9. Tanzania	IRC	Kibondo District – 405 000 in five camps with refugees from Burundi, Democratic Republic of Congo and Rwanda, and surrounding population	101 250	20 250	3 037	1 hospital
10. Thailand	ARC	Tak Province – 34 906 refugees from Burma in three camps in Umpiem Mai, Nu Po and Ban Don Yang	8 726	1 745	261	1 hospital 3 clinics
11. Thailand	WC	Mae Sot, Mae Tao Clinic – 250 000 IDPs from Burma and migrant populations	62 500	12 500	1 875	1 clinic
12. Uganda	IRC	198 000 refugees from Sudan in camps and surrounding community	49 500	9 900	1,485	1 hospital 1 clinic
TOTALS		3 803 385	950 844	190 167	28,525	11 hospitals 20 clinics

[6] Women of reproductive age (WRA) is based on 25% of population.

Annex B: Summary of Infrastructure Support Provided by the Projects

Country	Transportation	Communication	Electricity / Water	Construction / Renovation
Bosnia and Herzegovina Bihac, Gorazde and Mostar Hospitals				Equipment such as two examination tables, basic renovations to delivery room at Bihac
Kenya Eastleigh Maternity Clinic				Outpatient section modified to improve patient flow and increase confidentiality
Liberia Nimba County (1 hospital – Sanniquellie, and 2 clinics – Gblarlay and Karnplay)	Through community savings and IRC contributions, two ambulances for the clinics were purchased Motorcycle was provided to one clinic	Codan radio and motorcycle for Gblarlay Clinic for emergency referrals	Fuel supplied to hospital for surgeries; Water pipes attached to hospital	
Liberia Grand Gedeh (Zwedru Hospital), Sinoe (Greenville Hospital) and Montserrado (JFK Hospital) Counties and six clinics (Bensonville, Burnersville, Juason, Payne Town, Ziah Town and Toe Town)	Two motorcycles		Two generators provided for Greenville and Zwedru Hospitals	
Pakistan Thal Clinic	Ambulance purchased		Generator	Facility fully renovated and equipped to provide Basic EmOC services
Pakistan Hangu Clinic			Generator	
Pakistan Mohammad Khail RH Unit	Infrastructure support provided by other funds and resources			
Sierra Leone Kissy Hospital in Freetown	Ambulance purchased			
Southern Sudan Kajo Keji County	Bicycles for trained TBAs provided	VHF Radio	Solar panels	Constructed incinerators
Tanzania Kibondo Hospital	4 ambulances repaired – based at hospital and district health centers		Water tank constructed and smaller tank repaired	One staff house constructed
Thailand Mae Tao Clinic (MTC)	Support funds for referrals to local Thai Hospital for Comprehensive EmOC			Reproductive health building / maternity constructed allowing for separate inpatient and outpatient services and improve patient flow
Uganda Masindi District - Kiryandongo Hospital and Panyadoli Health Center (HC)	Ambulance for HC		Generator for hospital Generator for HC – partially funded by this grant	Construction of new maternity and renovations of HC, partially funded by this grant; renovation of maternity ward at hospital

Annex C: Subjects Covered in Training Courses by Country

Country	Trainees	Topics Covered	Trainers / Curriculum Used
Bosnia and Herzegovina	Midwives, doctors, nurses	PAC, MVA, Counseling techniques, Infection prevention	Ipas curriculum
Kenya	Nurses, doctors, and care assistants	Infection prevention, EmOC – PAC, Neonatal resuscitation	Curriculum developed by MSI
Liberia Montserrado, Grand Gedeh and Sinoe Counties	Surgical technicians, TBAs	General safe motherhood / EmOC	-
Liberia Nimba County	Certified midwives, registered nurses, physician assistants Anesthetist, OT technician and OT aides	EmOC refresher course, Prevention and management of obstetric complications Operating theatre procedures	
Pakistan Northwest Frontier Province	Female doctor, resource technical officer, lady health visitors/nurses and TBAs	Health information system, Infection prevention, Obstetric complications, EmOC, PAC counseling and MVA procedure	IRC curriculum
Pakistan Baluchistan	Project staff (doctors, CHWs, TBAs, lady health visitors/nurses)	Postpartum care, Newborn care, Ultrasound training (for the 2 doctors), Management of obstetric emergencies	UNHCR guidelines
Sierra Leone	Midwives and doctors	Flow charts in obstetric and neonatal emergency care, PAC, Record keeping and partograph, Obstetric emergencies, Skills training in performing C-sections, Repair of perineal lacerations	MOH, MSI Consultant, Trainers from the College of Health and Allied Health Sciences
Southern Sudan	Maternal child health workers (MCHW) Medical Assistants, Nurses, MCHWs and CHWs (25 participants)	General maternal child health training – eight-month training with six months theory/practical and two months of fieldwork Two week training emergency obstetric care and infection control	MCHW training school in Southern Sudan Arua Hospital in Northern Uganda
Tanzania	Nurse/midwives, nurses and nursing assistants 2 Nurse anesthetists trained Doctors, COs and nurse/midwives Midwives and clinical officers Midwives and COs	Basic communication skills, Monitoring a patient, Documentation and reporting, Admission of mother in labor, Management of labor, Care of the newborn, pre and post-operative care On-the-job training for nine months Neonatal resuscitation Use of the partograph, Management of hemorrhage, pre-eclampsia/eclampsia and puerperal sepsis Life Saving Skills Training – Two weeks	Conducted by Nurse/Midwife Trainer Consultant Anesthetist Trainer Consultant - Surgeon Trainer Consultant National trainers
Thailand	Medics and Medic/Midwives Umpiem Mai, Ban Don Yang and Nu Po Camps and Mae Tao Clinic	PAC, including the MVA procedure, with one refresher course	EngenderHealth Trainer, RHRC EmOC TA
Uganda	Maternity staff at health center and hospital Maternity staff at health center and hospital	Management of labor, Partograph, Principles of blood drawing, Introduction to the UN Process Indicators, Verbal autopsy for maternal deaths, Health education, Introduction to EmOC Two-week life saving skills in safe motherhood course	IRC staff MOH RH Trainers

Annex D : Summary of EmOC Signal Functions Available at Start of Project

Country	6 – 8 Signal Functions							
	Administer parenteral antibiotics	**Administer parenteral oxytocic drugs**	**Administer parenteral anticonvulsants**	**Perform manual removal of placenta**	**Perform removal of retained products**	**Perform assisted vaginal delivery**	**Perform surgery (C-Section)**	**Perform blood transfusion**
Bosnia 3 hospitals	shortages	shortages	shortages +	*	* -	*	*	*
Kenya 1 maternity nursing home	*****	*****	***** **+**	*	*	*	*	*
Liberia Nimba County (1 hospital and 2 clinics)	Lack detailed data but it was evident that the signal functions were not consistently available at any of the facilities due to a lack of supplies, medicines, functioning equipment and trained staff.							
Grand Gedeh, Sinoe, Monsterrado Counties (3 hospitals and 6 clinics)	Lack detailed data but it was evident that the signal functions were not consistently available at any of the facilities due to a lack of supplies, medicines, functioning equipment and trained staff. JFK hospital in Monsterrado had all 8 signal functions but was closed for renovation. Grand Gedeh Hospital did not have a doctor.							
Pakistan Hangu**	*****	*****	***** **+**	*****	***** **-**	*****		
Thal Clinic	(nonexistent facility at the time of the assessment)							
Mohammad Khail RH unit	*	*	*	*	* -			
Sierra Leone Kissy Hospital	*	*	* +	*	*	*	*	*****
Southern Sudan 3 health clinics	shortages		shortages +	*****				
Tanzania	shortages	shortages	shortages +	*****	***** **-**	*****	sometimes	sometimes
Thailand MTC	shortages	shortages	shortages +	*****	***** **-**			
ARC MCH Centres – Umpiem, Ban Don Yang and Nu Po Camps	Patients referred to different health centre in camp or hospital					MVA at health centre	Refer out	
Mae Sot Hospital	*	*****	*	*****	*****	*****	*****	*
Uganda Kiryandongo Hospital	shortages	shortages	shortages +	*****	***** **-**	*****	*****	sometimes
Panyadoli Health Centre	*		* +	*****	*****			

* *Existing service*

** *Data for the Hangu Clinic was included as these services are planned for the new Thal Clinic*

\+ *No magnesium sulfate*

\- *No manual vacuum aspiration (MVA) kits*

Annex E: Summary of EmOC Signal Functions Available at End of Project

Country	6 – 8 Signal Functions							
	Administer parenteral antibiotics	**Administer parenteral oxytocic drugs**	**Administer parenteral anticonvulsants**	**Perform manual removal of placenta**	**Perform removal of retained products**	**Perform assisted vaginal delivery**	**Perform surgery (C-Section)**	**Perform blood transfusion**
Bosnia 3 hospitals	*	*	Magnesium sulfate available but staff not familiar with it	*	MVA kits available, but prefer EVA	*	*	*
Kenya 1 maternity nursing home	*****	*****	*****	*	*	*	*	*
Liberia Nimba County (1 hospital and 2 clinics)	Lack detailed data but it was evident that the signal functions were not consistently available at any of the facilities due to a lack of supplies, medicines, functioning equipment and trained staff.							
Grand Gedeh, Sinoe, Monsterrado Counties (3 hospitals and 6 clinics)	Lack detailed data but it was evident that the signal functions were not consistently available at any of the facilities due to a lack of supplies, medicines, functioning equipment and trained staff. JFK hospital in Monsterrado had all 8 signal functions but was closed for renovation. Grand Gedeh Hospital did not have a doctor.							
Pakistan Hangu**	*****	*****	*****	*****	*****	*****		
Thal Clinic	(nonexistent facility at the time of the assessment)							
Mohammad Khail RH unit	*	*	*	*	* -			
Sierra Leone Kissy Hospital	*	*	* +++	*	*	*	*	*****
Southern Sudan 3 health clinics	*		* +++	*****				
Tanzania	*	*	* (Diazepam given more frequently)	*****	* (1 MVA kit owned by health worker)	* Vacuum extractor	*	*
Thailand MTC	*	*	*	*****	*****	*****		*
ARC MCH Centres – Umpiem, Ban Don Yang and Nu Po Camps	Patients referred to different health centre in camp or hospital					MVA at health centre	Refer out	
Mae Sot Hospital	*	*****	*	*****	*****	*****	*****	*
Uganda Kiryandongo Hospital	*	*	*	*****	*****	*****	*****	* (can be delayed)
Panyadoli Health Centre	*	* (Ergome-trine only)	*		*****			

Existing service* * Data for the Hangu Clinic was included as these services are planned for the new Thal Clinic*
+ No magnesium sulfate *- No manual vacuum aspiration (MVA) kits*

Annex F: Facility Functioning Assessment Form

Name of facility:
Location of facility:
Contact information:

1. Type of facility: a) Hospital ___ b) Maternity ___ c) Health Center __ (check one) d) Clinic ___ e) Other (specify) _____
2. Type of operating agency: a) Government ___ b) Private ___ (check one)
3. Hours of Service:

Check Yes or No for <u>each</u> of the following items (a-h)		
4. Were the following services performed at least once during the last three months?	**Yes**	**No**
a) Parenteral antibiotics		
b) Parenteral oxytocics (ergometrine only)		
c) Parenteral sedatives / anticonvulsants		
d) Manual removal of placenta (know how but refer to the hospital)		
e) Removal of retained products (only with assistance from MD, one midwife trained in MVA)		
f) Assisted vaginal delivery (Refer to Hosp, no one trained for this)		
g) Blood transfusion		
h) Cesarean section		

Box: Determination Of EmOC status
(Use Q4, check ONE)

- If **All** of 4a-h = Yes, check:
___ COMPREHENSIVE EmOC

- If **All** of 4a-f = Yes, **AND** 4g **OR** 4h = No, check:
___BASIC EmOC

- If **ANY** of 4a-f = No, check:
___**NOT** EmOC

5. What sources of data were used to complete this form?
(*e.g., maternity ward register, delivery book, general admissions register, patient notes, staff interviews, etc…)*

6. Date of Assessment:
Conducted by: (Name and Title)

Annex G: Summarizing Population and Key Characteristics

Country / Site	Population Served	Crude Birth Rate per 1,000*	Total # of deliveries in 2000	% of births attended by skilled personnel**	Maternal Mortality Ratio (MMR)***	Infant Mortality Rate (IMR)****
Bosnia and Herzegovina	Bihac, Gorazde, Mostar Cantons – 392,000	10	1,070	97	31/100,000	14
Kenya	Eastleigh Neighborhood – 246,420	28.5 (PRB 2001 estimate)	1,354	44	1,000/100,000 580/100,000 (DHS, 1998)	57.99 (PRB 2001 estimate) 69
Liberia	Sinoe, Grand Gedeh, Monserrado Counties – 1,216,318	49	-	-	760/100,000	147
Liberia	Part of Nimba County– 116,861		-			
Pakistan	Baluchistan (3 refugee camps) – 90,000	37 (Pk) 42 (Afg)	- -	18 (Pakistan) - (Afghanistan)	500/100,000 (Pakistan) 1700/100,000 (Afghanistan)	87 (Pakistan) 162 (Afghanistan)
Pakistan	Thal area – 104,228 Hangu area – 99,650					
Sierra Leone	Freetown section – 500,000	47	-	-	2,000/100,000	177
Southern Sudan	Kajo Keji County – 150,000	39 (Sudan)	-	-		77 (Sudan)
Tanzania	Kibondo District and five camps – 405,000	40	1,410	36	1,500/100,000 529/100,000 (DHS, 1996)	100
Thailand	ARC – three camps (Umpiem Mai, Nu Po, and Ban Don Yang) – 34,906	13	-	-	44/100,000 Burma -	20 (Thailand) 83 (Burma)
Thailand	Mae Tao Clinic – 250,000		414			
Uganda	198,000 (Kiryadongo and Refugee Settlement in Masindi District)	47.5 (Uganda Bureau of Stats)	Kiryandongo Hosp – 704 (7/01-7/02)	38	880/100,000 505/100,000 (DHS, 2001)	86

** World Population Data Sheet, Population Reference Bureau (PRB) 2003*
*** Women of Our World, PRB 2002*
**** Maternal Mortality in 2000: Estimates Developed by WHO, UNICEF, and UNFPA*
***** State of the World Population 2003, UNFPA*

Annex H: Availability and use of EmOC in project areas by selected countries

Indicator	Kenya	Pakistan	Pakistan	Tanzania	Thailand	Uganda	South Sudan	South Sudan
Area	Eastleigh	Northwest Frontier Province	Baluchistan	Kibondo District	Mae Tao Clinic		Kajo Keji County,	North Bor County
Period of assessment	8/02-7/03	11/03-4/04	11/02-10/03	8/02-7/03	2003	12/02-11/03	2004	2004
Population	246,420	203,878	90,000	405,000	284,906	198,000	166,643	150,000
Basic EmOC for every 500,000 population	2	5.2 other local facilities exist too	5.6 does not include the host pop	-	2 for Burmese refugees and IDPs	2.5	0	0
Comprehensive EmOC for every 500,000 population	-	-	-	1.2 refugees and local	-	2.5 refugees and local	3	0
Proportion of all births EmOC facilities	13.6%	43%	15%	8%	4%	1.6%	4%	0.5%
Proportion of women with complications treated in EmOC facilities	-	56%	20%	30%	11%	2.2%	21%	2%
Cesarean sections as a % of all births	-	0.8%	-	3%	-	0.9%	0.6%	0%
Case fatality rate	-	0% (do not have maternal mortality data for referrals)	0% (incomplete data, no data on 28 referrals)	0.8%	0%	4%	0.9%	9%

Annex I: Timelines of Individual Pilot Projects

Project	**1st Qtr '01**	**2nd Qtr '01**	**3rd Qtr '01**	**4th Qtr '01**	**1st Qtr '02**	**2nd Qtr '02**	**3rd Qtr '02**	**4th Qtr '02**	**1st Qtr '03**	**2nd Qtr '03**	**3rd Qtr '03**	**4th Qtr '03**	**1st Qtr '04**	**1st Qtr '05**
1. Bosnia														
2. Kenya														
3. Liberia – Montserrado, Grand Gedeh and Sinoe Counties														
4. Liberia – Nimba County														
5. Pakistan – NWFP														
6. Pakistan – Baluchistan														
7. Sierra Leone														
8. Southern Sudan														
9. Tanzania														
10. Thailand – Mae Tao Clinic														
11. Thailand – Burmese Refugee Camps														
12. Uganda														

[i] Based on 20% of WRA.
[ii] Based on 15% of all pregnant women.