

## RESEARCH BRIEF

### BACKGROUND

South Sudan reports some of the worst health indicators globally, including high rates of maternal and newborn mortality. The latest UN reports estimate there are 1,223 maternal deaths per 100,000 live births (2020);<sup>1</sup> 39 newborn deaths per 1000 live births (2022);<sup>2</sup> and 26 stillbirths per 1000 births (2021).<sup>3</sup> Despite efforts to strengthen access to maternal and newborn health (MNH) services, complications during pregnancy and childbirth represent a leading cause of death among women in the country.<sup>4</sup>

With only 3.5 health workers per 10,000 people and more than 56% of the population living more than 5 kilometers from a health facility, quality care remains inaccessible to many.<sup>5,6</sup> The latest national household health survey (conducted in 2010) indicated that less than 20% of deliveries occur with a skilled birth attendant.<sup>7</sup> These factors – and many others – contribute to the high rates of maternal and newborn complications, morbidities, and mortality.

This brief outlines a multi-year initiative to design, test, and evaluate the feasibility and effectiveness of community-delivered MNH services to reduce risk and expand access to life-saving care in South Sudan.

### Expanding MNH care across communities in South Sudan

In resource-constrained settings like South Sudan, community-based maternal and newborn care (CBMNC) can help expand access to life-saving services and dramatically improve MNH outcomes. Evidence demonstrates that CBMNC programs can reduce maternal deaths by 20% and newborn deaths by 25%.<sup>8</sup> Countries including Bangladesh, Ethiopia, Malawi, Nepal, and Uganda have nationally-scaled CBMNC programs and have seen a reduction of under-five mortality rates partially attributable to such initiatives. While the content of the programs differ by location, interventions span antenatal and postnatal periods including health education and promotion and both preventive and curative services. The CBMNC model is not about discouraging facility-based care, but about reducing risk by ensuring life-saving services reach women and babies who cannot or do not reach a facility. Despite the proven value of CBMNC, little research has been conducted on how to implement these programs in fragile and conflict-affected settings like South Sudan.

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**Community health systems can help governments quickly pivot to provide essential care when facility-based services are disrupted, as demonstrated during the COVID-19 pandemic.**

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The government of South Sudan has already demonstrated a commitment to delivering MNH services at the community-level through the Boma Health Initiative's (BHI) Safe Motherhood Module but identified bottlenecks – weak/disrupted supply chain, funding gaps, health worker attrition, limited capacity of community/Boma Health Workers, and low uptake/acceptance of community health services – have hindered implementation.<sup>8</sup>

## A MULTI-YEAR INITIATIVE TO EXPAND CARE IN SOUTH SUDAN

Recognizing the low rates of institutional deliveries coupled with the high rates of preventable maternal and newborn mortality, the IRC is working closely with the MoH to support and strengthen the implementation of existing community-MNH interventions while also exploring strategies and innovations to expand the package to save the most lives. This is being done through a multi-year initiative including formative research, program design, program implementation, and research and evaluation.

### Study overview

The research and evaluation component is led by the International Rescue Committee (IRC) as part of the EQUAL research consortium funded by UK International Development from the UK government. Specifically, EQUAL aims to determine baseline rates of key essential newborn care and other key MNH indicators including the early initiation of breastfeeding, clean umbilical cord care, and newborn thermal care; to estimate the change in rates attributable to the new CBMNC program and attributable cost; and to document operational challenges and solutions tested while implementing a CBMNC program.

### Study location

The service delivery program and subsequent research and evaluation will be conducted in Aweil East located in the Northern Bahr el-Ghazal region near the border of Sudan and South Sudan. It has historically been impacted by violence, particularly with other counties and between Misseryia and Rizequat pastoralists from Sudan and Dinka from Northern Bahr el-Ghazal. The area has experienced years of crisis levels of food insecurity and recurrent disease outbreaks including from COVID-19, measles, and cholera. Aweil East has a traditionally high unmet need for comprehensive sexual and reproductive health services – including MNH care – and experiences low rates of institutional deliveries.

### Design and methodology

Each pillar of the initiative is outlined in Figure 1 and is being conducted in collaboration with local and national stakeholders to ensure all activities are context-appropriate and demand-driven.

### EQUAL PROJECT OVERVIEW





**Funder:** UK International Development from the UK government

**Length:** July 2021 – April 2026

**Locations:** DRC, Nigeria, Somalia, and South Sudan

**Partners:** Institute of Human Virology Nigeria, International Rescue Committee, Johns Hopkins Center for Humanitarian Health, Somali Research and Development Institute, and Université Catholique de Bukavu.

Figure 1

Project Component	
	<p><b>Constrained Optimization</b></p> <p>The IRC worked with the University of Chicago, Booth School of Business to utilize constrained optimization – a mathematical modeling approach to help national stakeholders prioritize interventions by taking into account local constraints. This includes the cost of commodities and services, time and capacity of Boma Health Workers, bandwidth for training, existing policies, and more.</p>
	<p><b>Program design and delivery</b></p> <p>The IRC in South Sudan took the findings/recommendations from the constrained optimization activities to design a comprehensive community-MNH care program. Program interventions include community distribution of misoprostol to prevent and treat postpartum hemorrhage, chlorhexidine to promote clean cord care, the prevention of malaria through the use of long-lasting insecticidal nets (LLIN), the provision of iron and folic acid (IFA) for the prevention of anemia in pregnancy, and health education related to thermal care (skin-to-skin contact), breastfeeding counselling and promotion (early and exclusive), and healthy diet messaging. Beginning in 2024, the IRC will work with Boma Health Workers to deliver these services in Aweil East.</p>
	<p><b>User-centered design</b></p> <p>The IRC will use qualitative research to uncover client's needs, values, and existing behaviors, building and testing solutions that leverage these insights. In South Sudan, the focus will be on identifying and prototyping solutions to the barriers identified over the course of program implementation.</p>
	<p><b>Research &amp; Evaluation</b></p> <p>EQUAL will conduct implementation research on the IRC's CBMNC program in Aweil East. This will increase understanding of the factors – including those unique to humanitarian contexts – that affect the process and results of a community-based MNH care program delivering evidence-based, life-saving services in areas with limited access to health facilities.</p>

## Results to date

**Overview:** The IRC undertook formative working using user-centered design methods to better understand existing practices of home deliveries; to identify gaps in the quality and safe of maternal and newborn care provided; to explore factors influencing decisions for where to give birth; and to understand the existing role of Boma Health Workers in providing quality safe maternal and newborn care to women in their boma who give birth at home. Gathering these insights was deemed critical to designing the community-based MNH care program and to ultimately improving MNH outcomes.

### Study design:

- **Methodology:** Interviews leveraging open-ended questions and visual cue cards to understand a client's pregnancy journey.
- **Target population:** Women who gave birth in the past 6 months; women who are or have previously been traditional birth attendants, Boma Health Workers; women who have witness their daughters/daughters-in-law give birth at home.
- **Study locations:** Madhol and Baach Bomas in Aweil East.

**Conclusions:** The findings outlined in Figure 2 outline the reported pregnancy journey against the recommended pregnancy journey. Findings will be used to iteratively refine the program design and to inform additional implementation research questions.

Figure 2



Figure 2	 Ideal journey  Reported
Confirm pregnancy after missing period	Confirm pregnancy after symptoms
Screen for & take precautions against anaemia, malaria etc.	<ul style="list-style-type: none"> <li>• Visit health centre for curative medication</li> <li>• Consume food perceived as strengthening</li> <li>• BHWs refer women who look weak for ANC</li> </ul>
Assess due date, baby's position, and test blood pressure	Skipped for women who skip ANC visits close to date of delivery
Prepare supplies in case of emergency out-of-facility delivery	Only prepare commodities to manage blood and odour after home delivery
Call for appropriate assistance as soon as water breaks	<ul style="list-style-type: none"> <li>• Delays calling for labour assistance</li> <li>• TBA called for any uncomplicated cases</li> <li>• Fears not making it to a facility in time</li> <li>• TBA fears shifting woman to the facility when baby's bottom, shoulder, or hand is out</li> </ul>
Remove fluid & blood from airway of the newborn after delivery	<ul style="list-style-type: none"> <li>• Cord clamped with available thread/cloth</li> <li>• Cord cut with available blade</li> </ul>
Tie & cut umbilical cord with sterile instrument after 2-3 minutes	If baby does not cry, TBA blows its nose or sucks the mouth and splashes or pours water
Rub baby's back if it is not crying	<ul style="list-style-type: none"> <li>• TBA gives 'strengthening' foods/drinks with severe bleeding/delayed placenta delivery</li> <li>• Try to control bleeding by tying arms or legs</li> </ul>
Distribute misoprostol in case of heavy bleeding	Placenta buried
Dispose placenta in sterile manner	Mother given the baby after both cleaned
Place baby on mother's abdomen or chest and cover	Only visible signs such as bleeding/wounds & lack of crying or temperature considered dangerous but no other assessments done
Woman and baby checked for danger signs	<ul style="list-style-type: none"> <li>• Breastfeeding begins after both cleaned</li> <li>• If struggle with breastfeeding, fed cow's milk</li> <li>• Baby given salty water to prevent 'false teeth'</li> </ul>
Support with bleeding within 1st hour	Baby given warm water bath to remove the 'slippery dirt' and smeared with oil
Amniotic fluid may be wiped off baby if needed	<ul style="list-style-type: none"> <li>• Cord covered with available cloth</li> <li>• Applies oil, ash of cow dung, salt and local herbs to the cord to make soft and enhance healing</li> </ul>
Apply chlorhexidine daily on the umbilical cord stump for one week	Take baby to clinic or facility if visibly sick, otherwise skipped
Mother and baby receive postnatal counselling and checks	

## Next steps

The baseline survey and program implementation will begin in mid-2024.

For more information visit [www.EQUALresearch.org](http://www.EQUALresearch.org) and contact Naoko Kozuki, EQUAL Research Director ([naoko.kozuki@rescue.org](mailto:naoko.kozuki@rescue.org)) and Kadra Noor, IRC South Sudan Maternal and Child Health Coordinator ([kadranoor.abdullahi@rescue.org](mailto:kadranoor.abdullahi@rescue.org)) or email [Equal@rescue.org](mailto:Equal@rescue.org)

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## References

- <sup>1</sup> Trends in maternal mortality 2000 to 2020: estimates by WHO, UNICEF, UNFPA, World Bank Group and UNDESA/Population Division. Geneva: World Health Organization; 2023. Licence: CC BY-NC-SA 3.0 IGO.
- <sup>2,3</sup> United Nations Inter-agency Group for Child Mortality Estimation (2024).
- <sup>4</sup> deVries, N. (2017, November 9). Making childbirth safer in South Sudan. Retrieved from UNICEF website: <https://www.unicef.org/stories/making-childbirth-safer-south-sudan>
- <sup>5,6</sup> Lajul, G., & Morton, H. (2022). BOMA HEALTH INITIATIVE SUCCESSES AND OPPORTUNITIES IN SOUTH SUDAN. In Health Pooled Fund South Sudan. Crown Agents. Retrieved from Crown Agents website: <https://hpfsouthsudan.org/wp-content/uploads/2022/04/The-Boma-Health-Initiative-1.pdf>
- <sup>7</sup> UNICEF. (2015). South Sudan (SSD) - Demographics, Health & Infant Mortality - UNICEF DATA. Retrieved from UNICEF DATA website: <https://data.unicef.org/country/ssd/>
- <sup>8</sup> Lassi, Z. S., & Bhutta, Z. A. (2015). Community-based intervention packages for reducing maternal and neonatal morbidity and mortality and improving neonatal outcomes. The Cochrane database of systematic reviews, 2015(3), CD007754. <https://doi.org/10.1002/14651858.CD007754.pub3>
- <sup>9</sup> Gilmartin C., Collins D., and Driwale A. South Sudan Boma Health Initiative Costing and Investment Case Analysis. 2019 Management Sciences for Health. Arlington, USA.

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