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INNOVATX Global Health Case Competition 2026 – Presented by McMaster and Toronto Metropolitan University Friends of Médecins Sans Frontières

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Abstract
McMaster Friends of MSF (FoMSF) is a student-led club at McMaster University that supports Médecins Sans Frontières (MSF) Canada, a humanitarian medical organization providing emergency relief and healthcare support to countries across the world. In collaboration with Toronto Metropolitan University (TMU), McMaster FoMSF organized the 2026 INNOVATX Global Health Case Competition to provide undergraduate students with the chance to problem-solve, enrich their skills, and above all, gain valuable exposure to current global health contexts. This year's competition focused on maternal health among Rohingya women living in the Cox's Bazar refugee camps in Bangladesh, with particular attention to the social, political, environmental, and cultural factors contributing to maternal mortality and barriers to care. Participants were challenged to identify a key issue related to maternal health in this context and develop a feasible, culturally sensitive intervention that aligned with MSF's humanitarian principles and ongoing work in the region. After a round of written submissions and another round of live presentations, the briefing notes from the four winning teams have been published in this conference book. To learn more about McMaster FoMSF, TMU FoMSF, or the INNOVATX Global Health Case Competition, please visit our Instagram pages (@mac_fomsf) and (@tmufmsf).

Disclaimer: The views expressed throughout this case competition and publication are solely those of the INNOVATX participants and do not reflect those of McMaster FoMSF, TMU FoMSF, MSF Canada, McMaster University, Toronto Metropolitan University, or any other organization.

Keywords: global health; rohingya refugees; maternal health; maternal mortality; Cox's Bazar; humanitarian medicine; Médecins Sans Frontières; case competition; undergraduate research

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First Place

Reducing Preventable Maternal Mortality Among Rohingya Women in Cox's Bazar through a Community-Based, Women-Led Mobile Maternal Care Model

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Maternal mortality remains a critical health challenge among Rohingya women in the Cox's Bazar refugee camps in Bangladesh. The maternal mortality ratio is estimated at 400 per 100,000 live births, more than double the national average, reflecting the combined effects of displacement, poverty, and limited access to care. Women and girls comprise 52% of the refugee population, placing a large proportion at heightened reproductive risk. Overcrowding and food insecurity increase pregnancy-related risk while limiting timely access to maternal care. This proposal introduces Shanti Maternal Teams, a community-based maternal health intervention designed to improve access to safe, timely, and culturally appropriate care for Rohingya women. Each mobile clinic is staffed exclusively by trained Rohingya women, including midwives and community health workers, to reduce mistrust, address language barriers, and support women's autonomy in healthcare decision-making. By embedding care within the community, the model prioritizes accessibility for women facing social or mobility-related barriers to facility-based services. Maternal health services are delivered through a graduated approach that prioritizes community-based care while maintaining referral pathways. Mobile clinics serve as the first point of contact, providing routine antenatal and postnatal care, vaccination services, and mental health screening. Staffing clinics with trained Rohingya women supports relationship-building and enables culturally relevant health education delivered through peer-led discussions focused on nutrition and birth preparedness. All women attending clinics receive tier-matched maternal care kits adapted from UNICEF midwifery and clean delivery kits shown to reduce infection and improve maternal outcomes in low-resource settings. These kits include sanitary supplies and pictorial instructions in the local language, reinforced through guidance from trained midwives to support safer home-based deliveries when access to facilities is limited. Women identified as higher risk during screening are referred through established pathways to fixed health facilities, ensuring timely escalation of care while avoiding strain on hospital services. To support sustainability and operational reliability, clinics are powered by off-grid solar systems with battery storage, adapted from renewable energy models used in remote healthcare settings. Evidence from rural health centers in Uganda, Ethiopia, and India demonstrates that these systems provide consistent, low-maintenance, cost-effective electricity for medical equipment in settings with unreliable grid access. A train-the-trainer approach enables experienced Rohingya health workers to train new staff, strengthening local capacity and reducing long-term training costs. Fixed community communication points and limited telehealth hubs support follow-up care without reliance on personal mobile phones. The intervention is designed to remain financially feasible within humanitarian funding constraints, with an estimated annual operating cost of USD $1.35 million. Approximately 40% of funding supports clinical staffing and training, 25% supports mobile clinic operations, and 15% is allocated to standardized, tier-matched maternal care kits. An additional 10% supports solar and battery systems, with the remaining funds allocated to monitoring, evaluation, and administrative logistics. Funding would be sought through humanitarian grants, institutional partnerships, and sponsorship of maternal care kits. Together, Shanti Maternal Teams offers a feasible and scalable approach to reducing preventable maternal mortality among Rohingya women in refugee settings.

Second Place

Bringing Care Home: Reducing Rohingya Maternal Deaths through Community Health Workers in Cox's Bazar

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Cox's Bazar has a maternal mortality ratio for Rohingya women of 400 deaths/100,000 live births, an over 2X increase than the national maternal mortality ratio for Bangladesh. Over 900,000 refugees reside in >33 overcrowded refugee camps, of which ~52% are female, and approximately 30,000 pregnant women at any time. However, only 59.5% of these pregnant women deliver at adequate facilities. The primary causes of preventable maternal deaths (hemorrhage (48%), sepsis (20%), and hypertension (17%) can be addressed by implementing an effective low-cost community-based task-shifting model. Cultural and structural barriers to accessing maternal health care for Rohingya women exist. Many Rohingya women observe a policy of purdah (53% of respondents said women should never leave home and 42% said they spend 21–24 hours/day

indoors). Low literacy for women (73%), dependence upon males for decision making, as well as trauma associated with gender-based violence, also contribute to limited access to maternal health care in Cox's Bazar. Food insecurity as a result of WFP (United Nations World Food Program) food rations being cut to $8 per person/month has contributed to anemia in pregnant women (anemia in pregnant women = 30%). Pregnant women presenting to care do so late, and WHO statistics show that delayed access to health care accounts for >50% of all maternal deaths. Our intervention consists of training Rohingya women to provide community health worker services by delivering bundled services through home visits, enabling access to pregnancy care while respecting cultural considerations of purdah. In similar refugee sites in Chad, Sudan and Somalia, CHW programs have increased institutional deliveries from 29% to 67% and reduced neonatal mortality rates by 44%. The bundled services include: (a) the pre-distribution of misoprostol, which prevents severe postpartum bleeding (reducing severity by 80%) for approximately $6 per disability-adjusted life year; (b) delivery kits, which reduce neonatal infections (~$2.20); (c) iron and folic acid supplementation, which reduces anemia prevalence by approximately 73%; and (d) facilitation of referrals to MSF facilities in Kutupalong and Goyalmara. Cultural sensitivity is paramount in our intervention. CHWs will be recruited by community members in camp blocks, building upon the 500 community health volunteers who have previously served at that location. Traditional birth attendants will remain as referral sources and their role will not be replaced. Male engagement sessions led by faith-based leaders will help facilitate decision-making among families regarding female health and pregnancy care, following similar approaches in comparable Muslim populations. The UNFPA "shanti khana" for women will provide a meeting place for antenatal education and support to health workers. The intervention will utilize MSF's existing infrastructure and the logistics network currently in place by the Sexual Reproductive Health Working Group to coordinate services. Maternal and Infant Death Surveillance and Response (MIDS) tools will be used to evaluate the success of the program (e.g., MMR, facility delivery rates, ANC4+ coverage).

Third Place

Maternal Health of Rohingya Women in Cox's Bazar: An Integrative Community-Based Intervention

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Maternal mortality among Rohingya women living in the Cox's Bazar refugee camps in Bangladesh remains critically high, with an estimated maternal mortality ratio of 400 per 100,000 live births; more than double the national average in Bangladesh. High maternal mortality is driven by prolonged displacement, restrictive gender norms, overcrowded living conditions, inadequate water and sanitation infrastructure and limited access to timely and culturally appropriate maternal healthcare. The intersection of political, social, and cultural factors contributes to delayed healthcare, unsafe home births, infection-related complications and preventable maternal deaths. In this case study, we propose an integrative community-based intervention to mitigate barriers in maternal health of Rohingya Women in Cox's Bazar. Our target intervention focuses on training Rohingya Female Birth Companions (FBC) as trusted cultural mediators and medical assistants, with a secondary component of our intervention focusing on maternal WASH Zones near delivery facilities. This intervention aims to accommodate cultural norms, while maintaining standards of hygiene for pregnant Rohingya women. The conservative culture of Rohingya women limits women and girls seeking to access reproductive healthcare. Purdah, translating to "curtain", is a practice which restricts women from leaving home or interacting with male strangers. Rohingya women prefer female health providers, but these groups experience the greatest barriers to accessing timely maternal healthcare. Dependence on male relative company, limited health literacy and decision-making power increase chances of home births, risking care and infection rates. Our targeted intervention includes training Rohingya women as female birth companions. By assisting in providing reproductive health education, medical emergencies, and transportation facilitation, they can act as trusted cultural mediators. With a preference for female healthcare providers, this can increase access to medical facilities and early complication detection and reduce home births and infection related complications. Trust will become the foundation of effective care for the community, by the community. The supporting Maternal WASH component focuses on improving sanitation and hygiene around maternal care spaces, including access to clean water, private latrines, handwashing stations and safe postpartum bathing areas. These measures reduce infection, sepsis and postpartum complications, which are exacerbated by overcrowding and poor sanitation in the camps. Together, the integrated intervention addresses both social barriers to care seeking and environmental drivers of maternal mortality. The proposed intervention is financially and logistically feasible, leveraging MSF's existing maternal health and WASH infrastructure and avoiding reliance on national health system expansion, which is constrained by political and legal limitations on Rohingya rights. Implementation will occur through a phased rollout in high density camps with low rates of facility-based deliveries. Birth companions will receive standardized training and supervision through MSF's community. Program outcomes will be monitored using

indicators such as prenatal care and infection related maternal complications. Our integrative community-based intervention addresses both social barriers to care seeking and the environmental drivers of maternal mortality. Our intervention reduces preventable maternal deaths while strengthening the trust between Rohingya communities and humanitarian health services like MSF.

Fourth Place

An Education-Based and Technological Collaborative Effort for Safer, Healthier Rohingya Communities in Cox's Bazar

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Since the start of the Rohingya Crisis in 1978, close to a million people have been forced to flee Myanmar, with many finding refuge in Cox's Bazar, Bangladesh. Women and children, constituting 75% of this refugee population, are often subject to gender-based and sexual violence within their communities. As a Muslim community, the Rohingya peoples hold patriarchal values, therefore decisions made regarding women's health are often subject to male approval. An estimated 55 000 women are in need of basic or emergency obstetric care, with only 22% of births occurring in healthcare facilities, further contributing to maternal morbidity and mortality. Additionally, many pregnancies in Rohingya refugee camps are attributed to incidences of rape, often leading to gynecological injury, HIV infections, and survivor trauma. Most women with these injuries are unable to seek treatment, due to cultural-centered shame or accessibility to treatment. We propose the development of a comprehensive educational program coupled with a database, focused solely on teaching Rohingya women and girls how to recognize signs of maternal health crises, address sexual violence, gain appropriate consent, and identify the resources available to support them. This program will be conducted on a weekly basis for 1 hour, by female coordinators fluent in Rohingya, and well-versed in both cultural practices and a trauma-informed approach. In order to minimize financial constraint, we will host the program in the 6000+ previously established education centers by NGOs, of which women and girls are known to have the capabilities to frequent, despite cultural and safety implications in the camp. Through this program, women and girls will gain skills required to return to their communities and recognize issues as they arise. Every week, a portion of the session will focus on sharing concerns they have witnessed in the community, ranging from signs of fetal distress, abuse from others, etc. Following the reporting of such incidents in a safe and private manner, volunteer members will effectively document such information into a secure database, flagging cases of priority for current NGOs in the area to follow up on. This will strengthen fragmented communication between local and foreign organizations currently working across all 33 camps, divert efforts to priority cases, as well as maximize the efforts of foreign NGOs and external funding. Cases of priority would include, but are not limited to, domestic violence, pregnancies lacking prenatal healthcare, and human trafficking, which are known to be prevalent. Quarterly, volunteers will host a session with women and girls in the program to gain quantitative and qualitative oral feedback. Volunteers will then meet with local representatives and key stakeholders to discuss program efficiency in supporting the Rohingya community. By harnessing education, empowering Rohingya women and girls to better support their own community and coordinating NGO efforts to areas of most need through a database, we can work to improve the maternal health and sexual violence crisis in Cox's Bazar.

Conflicts of Interest
The authors declare that they have no conflict of interests.

Authors' Contributions
MM, DS, AS, SN: Co-led the organizing committee for the INNOVATX Global Health Case Competition; contributed to logistics, finances, and outreach; and provided final approval of the version to be published.

Acknowledgements
We thank Rachel Yantzi (McMaster University) and Puspita Hossain (McMaster University) for their support and contributions as keynote speakers. We thank Ritika Khetarpal (McMaster University), Mehnaz Munir (McMaster University), and Zahrah Khan (McMaster University) for their support and contributions as conference judges. We thank Mehnaz Munir (McMaster University), Amal Jawad, (McMaster University), Gautham Krishnaraj (McMaster University), Jannath Chhokar (University of Toronto), Patricia Ogba (McMaster University), Anna Skandalakis (McMaster University), Laurie Elit (McMaster University), Emmanuel Guindon (McMaster University), and Pushpita Samina (McMaster University)

for their support and contributions as abstract judges. In addition, we would like to acknowledge the support of Oliver Young (McMaster University), Katherine Vizard (McMaster University), Aariz Sardar (McMaster University) and Abdullah Khan (McMaster University) for their assistance in planning and running the event.

Funding
The INNOVATX Global Health Case Competition 2026 was funded by the McMaster Student Union (MSU).

Article Information
Managing Editor: Jeremy Y. Ng
Article Dates: Received May 14 26; Published May 26 26

Citation
Please cite this article as follows:
Muayad M, Shahryari D, Saquib A, Nagah S. INNOVATX Global Health Case Competition 2026 – Presented by McMaster and Toronto Metropolitan University Friends of Médecins Sans Frontières.
URNCST Journal. 2026 May 26: 10(5). https://urncst.com/index.php/urncst/article/view/1137
DOI Link: https://doi.org/10.26685/urncst.1137