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REPORT FROM THE FIELD

It Takes More than a Village: Building a Network of Safety in Nepal's Mountain Communities

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Abstract *Purpose* This report from the field details the ways that one small maternal child health NGO, which began its work in Tibet and now works in the mountain communities of Nepal, has established a model for integrated healthcare delivery and support it calls the "network of safety." *Description* It discusses some of the challenges faced both by the NGO and by the rural mountain communities with whom it partners, as well as with the government of Nepal. *Conclusion* This report describes and analyzes successful efforts to reduce maternal and infant mortality in a culturally astute, durable, and integrated way, as well as examples of innovation and success experienced by enacting the network of safety model.

Keywords Nepal · Global health and development · Maternal and infant outcomes · Mountain communities · Healthcare delivery systems · Cultural sensitivity

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Significance

This work is significant because it provides examples of a successful model of maternal child healthcare in mountain communities.

Remote mountain communities can be particularly difficult for delivering women. In high altitude environments (over 3000 m), physiological risks for delivering women increase, especially for individuals who are not native to such environments [4, 5, 16]. Such risks include pregnancy-induced hypertension, pre-eclampsia, and low birthweight/small-for-gestational-age infants.[1] Emergency evacuation to more well-equipped facilities is often challenging if not treacherous, especially if physical infrastructure such as motorable roads or airstrips are unreliable or nonexistent. Fundamental support, including clean water and electricity, are often absent in remote mountain regions of poor countries. Mountain environments can limit the provision of basic health care in situ as well as compromise communication efforts between periphery and center when it comes to meeting health care needs. Sometimes this manifests in shortages of essential medicines and other supplies, in the difficulty of transporting supplies to build a birth center, or in retaining qualified staff. While acknowledging the importance of altitude and infrastructural obstacles in safe maternal health, we want in this Report from the Field to highlight some of the links between infrastructure and the impacts that *social ecologies of risk and care*[2] have on maternal and neonatal outcomes. To do so, we use examples

[1] http://www.summitpost.org/pregnancy-and-altitude/286351.

[2] See [10] on the social ecologies concept as related to maternal health and death in Mongolia and Craig et al. [7] on impacts of mountain environments in Nepal on patterns of resort for health seeking behavior.

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from one NGO that has focused solely on delivering women in mountain environments, specifically in the Nepal and Tibet Himalaya.

Cultural differences and linguistic divides between mountain communities and urban centers can hinder the provision of care for women and children. So too can traditional cultural hierarchies, especially between and within ethnic groups, caste groups, gender and age groups. The potential for patriarchal social relations to negatively impact birth outcomes is a common problem. In our experience, provisioning maternal health in remote mountain regions requires building a network that extends far beyond the village, starting with families and reaching up to tertiary care facilities and government ministries. Networks should involve local initiatives and social organization. Successful health networks are not only about making roads and clinics but also helping communities to navigate the sometimes treacherous risks created by social hierarchies, miscommunication, bureaucratic barriers, and points of cultural conflict in the delivery of care. The network of safety considers navigation of *social* infrastructures to be an essential ingredient of effective material infrastructural support. This is especially true in remote mountain areas, where supporting a network helps to overcome obstacles imposed by a history of marginalization by the state in terms of the provision of basic services. What follows is a brief overview of how this strategy works.

One heart world-wide (OHW) began its program in Nepal in 2010, after having successfully developed similar programs in the Tibet (3500–4000 m) Autonomous region, China, over the previous decade. The organization is currently working in Baglung (650–4300 m elevation) and Dolpa (1525–7625 m) districts of Nepal, Over these past two decades, OHW has developed an approach, the 'network of safety,' to address the particular challenges of serving women and infants in mountain communities. Many of the regions where OHW works are at once geographically remote and socioeconomically disadvantaged. As we describe above and in other work [2, 3] such regions are often marked by a lack of paved roads, little to no transport for emergencies, and minimal functioning government supported health care resources, including lack of essential drugs. Some communities where OHW works practice agro-pastoralism, such that members of households, including pregnant women, are 'on the move' for trading or in high altitude pastures during the summer months. Extreme weather conditions add to the on-the-ground complexities of serving mountain communities, which are also marked, even in proximal regions of Nepal, by a great deal of cultural and sociolinguistic diversity: communities of belonging distinguished by a deep valley or a high mountain pass.

Addressing maternal and child health issues in Nepal has a long history, some of which replicates MCH international health history elsewhere in the world [17]. Institutions such as United States Agency for International Development (USAID) have been partnering with Nepali government and non-governmental actors for more than four decades in the area of MCH to implement a wide range of interventions: support for Female Community Health Volunteers (FCHV), vitamin A supplementation, immunization and family planning support, integrated management of childhood illnesses, and safe motherhood programs. With respect to the Millennium Development Goals 4 and 5, Nepal has been lauded as a country that has had remarkable success. In the 20 years between 1996 and 2006, the MMR has been reduced from 539 per 100,000 to 281 per 100,000; under-5 child mortality has seen similar advances, from 118 per 1000 live births in 1996 to 54 per 1000 live births in 2011 [12, 14].[3] Programs such as the Aama Initiative, begun in 2007, have helped to subsidize (and, in some senses, incentivize) the cost of institutional deliveries. Between 2006 and 2011, the proportion of deliveries assisted by a skilled birth attendant (SBA) rose from 19 to 36 %.[4] These results are deeply connected to increasing female literacy and education, as well as efforts at poverty alleviation [11]. And yet these positive effects have been uneven: mountain communities as well as the poor and socially marginalized, including *dalit* women, continue to bear the greatest structural and embodied burdens: more deaths and poorer outcomes overall [13].

Thus, despite many areas of improvement in maternal and infant health, the gap between government policy and actual services delivered in remote mountain regions of Nepal remains wide. Often, resources are channeled to districts where there is a greater population density and greater infrastructural accessibility. Some might also argue that, although the government of Nepal goes to great lengths to provide services, it is simply too expensive and resources are too sparse to reach remote areas. OHW is committed to working with governmental partners at all levels, recognizing that reproducing parallel health systems on a solely NGO model does not produce durable and sustainable health systems (cf. [8]). Likewise, the Network is attentive to—and builds on—lessons learned about 'continuum of care' models in the country [6].

In the mountain communities where OHW works, the network of safety approach provides a model for intervention that is flexible and that focuses on being responsive to the particular needs of each community. The Network emphasizes cultural respect, local ownership, education and both physical and social infrastructures. Education includes community and provider trainings that are aimed at mothers, husbands, health workers, and other stakeholders, all the way to policy makers in the government. The aim here is to *scale*

[3] See https://www.usaid.gov/nepal/maternal-and-child-health as well as the 2013 *Lancet* series on maternal and child health and mortality.

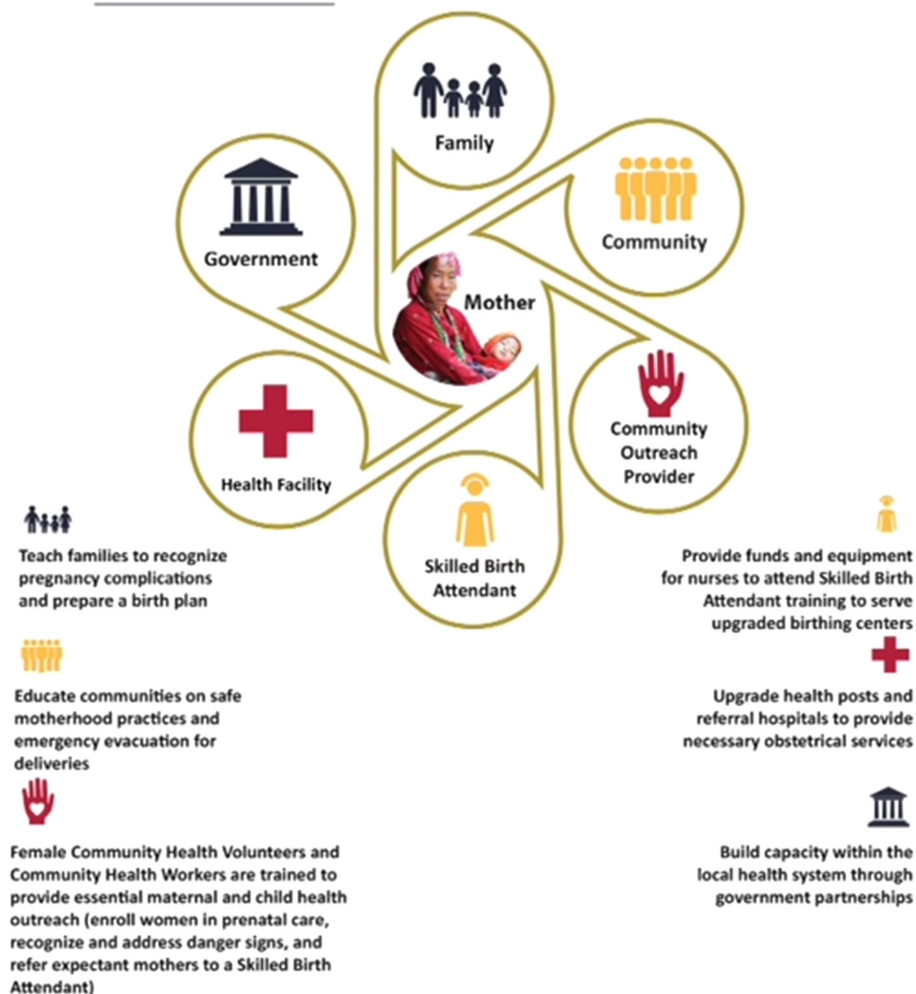
[4] http://blogs.worldbank.org/health/maternal-and-child-health-nepal.

across rather than 'scale up' [3]. This means prioritizing bonds of knowledge trust, and infrastructure that move in specific and unique ways from households to referral hospitals and halls of government—and back again—as opposed to exporting and imposing the same specific tactics across diverse regions and communities.

Similarly, the network pays attention to the qualitative experience. Every individual served by the network 'counts.' In an era in which global health success has become dominated by quantitative metrics and the push to 'go to scale' OHW maintains that an 'n of one' is still a crucial index of success [3, 9]. The organization emphasizes a 'high touch' local approach to project management and impact evaluation, rather than relying more exclusively on large-scale statistical or experimental platforms for survey data collection.

Collaboration with district-level partners on MCH strategic plans paves the way for systemic change, from supporting village-based FCVH to working with the Ministry of health and population (MOHP_ to consider national MCH policies such as the inclusion of misoprostol on Nepal's 'essential medicines' list. OHW also addresses infrastructural gaps and obstacles to safe delivery by investing in the improvement in health facilities; again, this usually involves partnering with government institutions even if they are at some distance from the intervention site. Sometimes the organization finds itself in the position of being a 'culture broker,' navigating between government policies and Kathmandu-based expectations and local lived realities, including what matters most to, and what remains most difficult for, pregnant and delivering women and their families.

The network of safety attempts to surround a mother and her child with the resources and skills needed for health and safety, depicted schematically in this image.



The network of safety is capable of addressing problems mountain communities face in relation to access, diversity, and geography. As a practice, the network aims to attune to the physical, political-economic, and cultural structures that shape people's lives. Whenever OHW begins work in a new place, we use ethnographic research methods to understand the specific histories, diverse experiences, and challenges within specific community. The OHW approach focuses on one community or catchment area at a time, trying to build a complete network in a small area, rather than trying to scale up quickly or provide a single, vertical intervention across a vast region or population. In this sense, the organization's aim is akin to Partners in Health's human rights approach that devotes attention to multiple problem-solving tasks in one area before moving to another.[5]

OHW relies on local knowledge and resources to build from the ground up. This focus helps ensure that programs resonate with community needs and desires; such an approach helps to mitigate points of conflict, contradiction, or confusion over program activities. Take the community health worker described in the vignette below, for instance, who became interested in working with OHW after OHW's founder (Samen) introduced the project to a group of male health post directors. She asked the men about their involvement in safe deliveries by first asking them to imagine how their lives would be different if their own mothers had died in childbirth. They then began to talk in new ways about how they have contributed the problems women faced in not having safe deliveries. This was a pivotal moment: now they wanted to be part of the solution.

> "On our last visit to Baglung District, we had to drive 6 h from Kathmandu over a bumpy, winding dirt road, across rivers … you know, remote. When we finally got up to one particular village in the mountains, the senior auxiliary health worker came out to meet us. He began to tell us about how our program was working. He knew all the statistics about who delivered and how many delivered, and all the progress they had made. He said that as a leader in the community he established a no-home births policy. 'No women should deliver at home, and no one should deliver alone,' he said. He went around to every household in the community and collected money and with that money he built a birthing center. This was probably also related to the fact that our organization had promised to supply the equipment for the center. Another man in the village donated his land for the building site. He was not wealthy. Together the community built this space. It was one of the best I have ever seen: well constructed, clean, organized, attached bathroom, a separate room for intake and prenatal care, a room for labor and delivery, and a room for postpartum care. All of the decisions and effort that created this facility were initiated by the men in this community. Not just the raising of the money and setting the policy, but the community outreach as well. The district health officer was a man. The head of the hospital was a man. Most health post supervisors were men. The person who donated the land was a man. In many ways it is always men who are decision-makers about health care for women. So, of course, men will be the driving force for change."

The network of safety model is nimble. Needs will be different, even in neighboring communities—in terms of infrastructure, culture, or accessibility—and the network adapts (cf. [1]). This becomes important in mountain communities, where cultural, religious, and economic conditions can vary dramatically from one valley to the next. For instance, in Dolpa district, as one moves up in altitude, communities change from middle hill villages that are largely Hindu sedentary farmers to higher elevation villages, home to largely culturally Tibetan Buddhist pastoralists, farmers and traders. In one Nepali administrative unit there is immense diversity. Attitudes toward delivery in these areas include some common ideas about the physical and spiritual 'pollution' brought on by childbirth, but 'pollution' is conceived of differently across geographic and cultural terrain. Hindu communities focus on practices of female seclusion and keeping men at a distance, while Buddhist households focus on protecting specific household spaces rather than keeping men away from childbirth. Using the network's adaptive tactics can mean recruiting and training different key players in caregiving in each community and working *with* rather than against non-biomedical understandings of what makes a birth 'safe' [2].

Similarly, villages in OHW catchment areas may have radically different profiles when it comes to existing health care infrastructure. These differences manifest as OHW has moved from working in communities in places like Baglung or Sindhupalchowk districts in Nepal's mid-hills—'mountains' themselves by any standard—to the high altitude extremes of villages and hamlets in upper Dolpa, on the Tibet (China) border. In some areas, OHW programs are often the only interventions and resources the villages have had, despite the fact that government health services should, theoretically, be available. Initially the

[5] Partners in health human rights approach https://donate.pih.org/page/s/declaration.

Network approach focuses on setting up personnel and facilities. This often means obtaining commitments from the local, regional or national governments to provision clinics and pay skilled birth attendants (SBAs) who are initially trained by OHW. Often, however, the kinds of resources each village has, or has access to, varies, requiring distinct approaches to training and infrastructural support. Villages that have SBAs already, for instance, may need refresher training and support, whereas villages with no such health care workers will need recruitment, more training, and ongoing support. OHW works hard to recruit, retain, and support local women as SBAs wherever possible, as this increases community trust and facilitates communication.

The same is true for infrastructure in clinics, medicines, technologies and the financing for such resources. Each community may have distinct starting points, necessitating a flexible approach to investments in each place. Over time, OHW efforts can lead to further growth in primary care services. In upper Dolpa District, for instance, government health workers were virtually nonexistent prior to the work of OHW; now there are equipped health posts and health workers who provide a range of support, from family planning and childhood immunizations to general medical support and referral. In this way, the network and OHW's approach also reflects forms of public–private partnership to build and implement working health systems, with care for women and children at its core.[6] Tailoring the network to local circumstances creates a sense of community ownership, which is vital to sustainability. This too helps people to gradually trust biomedical care in areas where it has either not existed or been ephemeral and unreliable in the past.

Problems of heath care accessibility and the provision of emergency evacuations in mountain regions are daunting at best for OHW teams. They can also be absolutely terrifying for the trained birth attendants who are given the job of keeping women alive in Himalayan communities. Often there is no option for emergency evacuation. Approaching these problems from the perspective of a network of safety means determining contingency plans for different cultural, geographic, and socioeconomic terrain, and for various medical emergencies. To this end, one of the education goals is to create channels of communication that allow birth attendants to reach out to other community members to learn who has animals that can be used for transport or teams of men who can carry women to facilities. OHW stresses the importance of sharing information about deliveries when they are in progress so that such resources can be mobilized. An important focus here is also on helping people recognize problems in delivery earlier, so that it is possible to get women to a skilled and equipped clinic in time.

[6] Diagonal HC models stuff from *Re-imagining GH*.

Even with efforts to get women to clinics if needed for delivery, timing can be a challenge. An OHW-trained skilled birth attendant in a high altitude village in Dolpa recalled a frightening incident in which she was called to help a mother who was partway through her delivery of a stillborn. Faced with one of the most dreadful and difficult scenarios of her life, the birth attendant had to find a way to extract the dead baby with rudimentary instruments and without anesthesia. She saved the mother's life but wonders to this day if she could have done more, and deals with the ongoing stress and anxiety over the thought of this happening again. Having to make such decisions about how to save lives is often radically different than being a healthcare worker in one of Nepal's urban areas, let alone in a fully industrialized and well-resourced context. And yet, this birth attendant was able to act in ways that saved a mother's life, and was then given ultrasound training and use of a handheld ultrasound device so that she could recognize complications sooner and refer or evacuate before this sort of event occurred. This tactic also helped bolster her sense of confidence and, crucially, local trust in her abilities.

The network of safety model often takes the OHW team in unexpected directions that pose new challenges, and ones that are often unique to a given village or moment in time. We see this quality as resonating with the reality of the communities where OHW works. That is, in mountain communities, people have learned to adapt to demanding environments, to survive and even thrive in some of Earth's most uncompromising locales. People who are used to facing these challenges are often quite receptive toward working with an organization whose approach embraces a sense of adaptability that rewards local resilience. These qualities as well as ethics of mutual aid and social support are valuable and instructive models for OHW, and for the kind of work that is involved in keeping women alive and improving their chances for survival in mountain regions. In turn, people with whom OHW partners often value an organization that acknowledges the gaps—geographic, economic, cultural, political—between remote places and urban centers, even as it works to close these gaps.

In summary, this Report offers some key insights about the challenges and achievements of working in mountain communities. These dynamics not only include those of geography, but also of social and cultural, political and economic conditions which shape pregnancy and birth in high country. Although OHW offers only one among many possible approaches to improving maternal and infant outcomes in underserved mountain communities, the results of these efforts have so far been quite good. For more details on project impact, we refer readers to the

organization's website.[7] Here, interested readers can find annual reports, stories, and links to research papers to emerge from the organization's data. But we offer a few key results here.

In upper Dolpa, the highest altitude and most remote region in which the organization is working, in the first 2 years of program implementation in the region maternal deaths decreased from an average of 15 deaths per year (out of 1000 deliveries) to 12, then nine. The region has experienced only one death in the last 2 years, out of roughly the same number of deliveries. These results are based on verbal autopsy and reporting by the district health officer, and confirmed by either FCHVs or SBAs. In Baglung District, a more densely populated region with greater capacity for addressing obstetric emergencies in the district hospital, results have been equally promising. Maternal deaths appear to have dropped from an average of 30 per year out of approximately 8000 deliveries to zero deaths in the past 2 years, with roughly the same number of live births.[8] Although not the focus of this Report from the Field, OHW also responded nimbly and with direct positive impact on pregnant and laboring women and infants to the spring 2015 earthquakes in Nepal. The organization responded to need not only in Baglung, but also in two heavily impacted districts (Sindupalchowk and Dhading) where the organization had been poised to expand its programs, in collaboration with the MOHP.

Returning to the story above, we note that network of safety interventions often produced unpredictable windfalls as side effects of focus on delivering women. When OHW began its work in Baglung, the team anticipated meeting resistance from local men, given the profile of rural uneducated communities as well as practices of female seclusion and cultural suspicion of and fear of the blood of menstruation and childbirth that has prevented women from receiving biomedical care during delivery.[9] In fact, the opposite seemed to occur. Not only did the men end up taking an active part in decision-making about safe motherhood, but they also became active contributors to the programs that OHW helped to launch.

We acknowledge that the push out of the home and into the clinic offered by the male health worker in the vignette above is a directive that some view as 'best practice' and that others—including laboring women themselves—may hope to avoid, often for good reason [15]. Yet we also understand that some of the reticence about institution-based births can be mitigated by community-led efforts to create inviting, warm, safe, and connected local birthing centers. This narrative pinpoints the politics of donor-NGO-community dynamics, even as it indicates an empowered citizenry holding its government accountable for meeting local healthcare needs, in collaboration with an organization whose fingers rest on the pulse of national and international MCH policy, as well as local values and concerns.

As the articles in this special issue and other literature suggests, the needs of delivering women in the most mountain regions are often overlooked simply because the challenges they face are so much more extreme than those in easily accessible places. Even though it is daunting, and even though many organizations are unwilling to face these challenges, we argue that with the right approach the provision of high quality maternal and child health care in mountain communities can be accomplished.

[7] www.oneheartworld-wide.org.

[8] Similar results are seen in reduction of infant deaths: in Dolpo from 85 to 90 deaths out of 1000 births to 75, then to 35, and in the last 2 years between 3 and 5 deaths; in Baglung from 300 newborn deaths (again out of 8000 deliveries) to 150, to less than 50, and now to zero newborn deaths in 2015.

[9] See the Nepal Safer Motherhood Project: http://www.nsmp.org/pregnancy_childbirth_nepal/index.html.

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