

## Emergency medical training for health promoters in Central and South America

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Underserved regions in the developing world are challenging areas to provide emergency medical care. As populations in these often remote or isolated districts may have minimal access to regular health care, contacts with medical providers are frequently episodic and driven by an acute condition. Health promoters—practitioners who provide basic medical care and promote public health in numerous countries across Central and South America, Asia and Africa—help to fill this void. Typically, health promoters are certified through a formal training program in their country and come from the same population as the clients they serve, which helps them form a link between their community and the dominant health care system in the region (1–2). Access to health and social services in regions served by health promoters is usually minimal, resulting in high morbidity and mortality associated with preventable diseases. Health promoters strive to improve the overall health of these communities by supplementing and improving the curative, preventive, and promotional aspects of the existing health system.

Evaluations of the public health impact of health promoters have identified specific benefits for the populations they serve, as well as challenges and limitations. A review of Peruvian health promoters indicated that they had the greatest impact on boosting vaccination coverage and increasing use of available public health services. Sustainability was a problem, however, with only 40% of health promoters originally trained still active 3 years after their training and supervision had ended (3). In Bangladesh, the impact of village health promoters was limited by methods used, time constraints, and extreme poverty and illiteracy in the population served (4).

To have a positive impact on public health in indigenous or rural populations, health promoters must: (1) determine the health status of a population, (2) gain acceptance by taking into account community cultural beliefs and practices, (3) improve health care outcomes from both emergent and non-emergent medical conditions using available resources, and (4) ensure the effort is sustainable. Many health systems that use health promoters have no ability or mechanism to assess the impact of health promoters, no means for health promoters to advance their education or skills, and no plan for sustainability. These limitations can hinder the ability of health promoters to bring about lasting gains in patient care and public health.

One factor in health promoters' effectiveness is the level and scope of their education, which varies widely. Data describing the long-term health impact of educational programs for health promoters are scant. Many educational efforts directed toward health promoters consist of just one intervention. These programs may assess health promoters' knowledge immediately after the educational intervention, but they do not measure long-term improvements in scope of knowledge or health care provision.

Physicians, midwives, and nurses at the U.S.-based nonprofit agency Global Pediatric Alliance (GPA) have worked with health promoters, midwives, and physicians in Central and South America for 5 years. Working directly with local health promoters and other medical personnel, GPA staff have created an education program for health promoters in Guatemala, Nicaragua, Mexico, and Ecuador, with a focus on reducing maternal and infant mortality and improving primary and emergency care. These programs are designed to take maximum advantage of health promoters' strengths as well as local capacity and to address limitations based on prior program experiences.

This paper describes these educational efforts, which were developed to enhance the skills of health promoters and midwives by offering advanced, sustainable emergency medical training that would otherwise be unavailable. The goal of this program is to improve emergency and routine care by developing long-term relationships with these frontline health care providers, evaluating their educational needs, providing tailored training, and facilitating the development of community leaders and future educators.

Two key elements of this program are sustainability and customization of training in emergency care. Sustainability has been an issue for a number of programs, where the knowledge imparted is lost once a health promoter leaves the field. These examples support the concept that ongoing training and integration of new health promoters into the education program are necessary to ensure a lasting and significant improvement in acute care and public health (3).

The impact of tailoring health promoter training for specific populations is less well documented. Educational programs used with a group of health promoters in one country have been successfully applied in other countries, but the long-term health impact of these programs has not been well studied (5). Anecdotally, there is considerable evidence that standardized training programs often fail to take into account such basic issues as variability in health status, availability of equipment, and local cultural beliefs and practices related to

health care. For that reason, GPA's training is designed to take into account the health problems, capacities, cultural attitudes, and desired public health outcomes of each population served.

## PROJECT DESCRIPTION

In Central and South America, access to health services can vary widely. Impoverished and rural communities may have village health promoters and/or midwives, or they may not have any access to health care services. Formal medical and public health training for health promoters and midwives is inconsistent. Existing health promoters and midwives may have extensive practical experience, but most have no opportunities for learning emergency care or new techniques or advancing their skills.

### Guatemala

The educational program for the GPA project site in Guatemala, known as Ak'Tenemit, has focused on providing workshops on emergency care and advanced primary care, particularly treatment of acutely ill or injured children. This module was developed because an acute need was identified by health promoters working at the clinic. A program was created by these health promoters along with physicians and nurses from GPA.

Ak'Tenemit is a community-run health care and educational center on the banks of the Rio Dulce. Located deep in the country's eastern rainforest, the site is accessible only by boat or on foot. The clinic has a staff of four health promoters but no permanent physician; it relies exclusively on donations for all medical supplies and equipment. Ak'Tenemit serves a population of approximately 10,000 to 15,000, mostly indigenous Q'eqchi'-speaking people of Mayan descent. The region lacks roads, electricity, and adequate potable water. The nearest hospital is reachable only by a one-hour motorboat journey that is well beyond the financial and logistical reach of the majority of the population. Consequently, the clinic's health promoters and midwives are the sole health care providers for most of this community.

The Ak'Tenemit health promoters have considerably more training and experience than do health promoters from the surrounding area. Once a week, Ak'Tenemit sends a team of its health care workers to an outlying village where they assist in the running of a day clinic and lead an educational workshop on acute care for local health promoters. Few resources exist to provide the health promoters

and midwives at the main Ak'Tenemit clinic with continuing medical training, however. The clinic houses much in the way of unused emergency supplies and equipment that were donated without consideration of whether the staff had the necessary skills to use them.

The object of GPA's educational program at Ak'Tenemit was to provide workshops on advanced primary care, with a focus on the acutely ill or injured patient. Based on conversations with leading health promoters at the clinic, GPA was able to design a tailored intervention that directly addressed priority health care concerns of the community. Training modules were developed for management of the most commonly encountered medical and traumatic emergencies, taking into consideration available resources and cultural preferences.

Training emphasized the basic requirements for effective clinical assessment, including a thorough medical history, a detailed physical exam, and carefully interpreting vital signs. It also highlighted the signs and symptoms of dehydration in both pediatric and adult patients, recognition of respiratory distress, and the distinction between asthma and pneumonia. Treatment guidelines were covered in detail, including the calculation of oral and intravenous fluid replacement; placement of intravenous catheters; indications for beta-agonists, steroids, epinephrine and antibiotics; and the correct use of inhalers and spacer devices. Intensive, hands-on workshops covered burn and wound management, with a focus on the importance of wound irrigation, infection control, and wound management techniques ranging from simple skin closure to tendon repair. Indications for hospital transfer and techniques for patient stabilization were also covered.

Educational projects at this site have been conducted once annually for 4 years. These educational workshops take place over a period of 3 days, and include the active health promoters in the region ( $n = 20$ ), as well as midwives ( $n = 20$ ). Because the same group of health promoters attends each workshop, each educational module is different from the previous one and is specifically tailored to participants' needs.

## Nicaragua

Two educational sites have been developed in Nicaragua to respond to needs on different levels. The initial project was centered at a rural women's health clinic. The clinic serves villages with limited road access and insufficient potable water, and represents the only health care available in the area. The need for educational programs was identified

by local midwives and health promoters and developed in conjunction with U.S.-based physicians and nurses.

Two of the major health issues faced by this community are maternal and child care. The initial focus of this effort has been to provide advanced training in prenatal care, normal and abnormal/high-risk pregnancy and delivery, and pediatric primary and emergency care. To provide this training, GPA created a semiannual workshop attended by midwives from 13 communities.

These workshops were conducted in conjunction with a nationwide women's resource center called Casa de la Mujer. Casa de la Mujer offers many services to poor women, and has close ties to remote health promoters and midwives. Among the supportive programs Casa de la Mujer offers these health workers is an on-site doctor who visits the remote areas in which they work and sees patients on a periodic basis.

Initially, the trainers considered these workshops less effective than the ones conducted in Guatemala. This was partly because many of the health promoters lived in areas with an established health center in relatively close proximity that could provide a higher level of care, and partly because the health promoters were older and more clinically experienced. As a result, these health promoters were less receptive to the educational initiative. Therefore, the educational thrust in this area has now been directed mainly to the midwives at Casa de la Mujer, many of whom were younger and less clinically experienced than the health promoters, especially in obstetrical emergencies. The program has been made more effective by carefully identifying clinically active midwives for advanced training.

A second educational program was begun in Nicaragua after establishing relationships with the health promoters and midwives serving outlying communities. These health workers often worked closely with hospital-based medical staff when acutely ill patients were referred for a higher level of care. Hospital-based physicians and nurses expressed interest in receiving specialized pediatric emergency training that would help ensure the continuity of care from the rural village to the hospital. This program was initiated at Hospital Japon Amistad in Granada, Nicaragua, which primarily serves indigent patients and patients from rural villages.

Through this program, 14 physicians and nurses have become certified by the American Academy of Pediatrics' Newborn Resuscitation Program (NRP). At the request of the hospital's nursing staff, NRP and other educational programs have been initiated for labor and delivery RNs and midwives. These programs now run semiannually,

with the goal of educating 20 working midwives, 20 RNs and several physicians in each session. In addition, patient care protocols are being developed with a neonatologist and the intensive care nursery (ICN) staff. In the future, a pediatric advanced life support (PALS) course will be offered to physicians, RNs, and health promoters. Another major goal is to establish ongoing NRP certification courses for other physicians in Nicaragua.

Creating effective educational programs in emergency care for health promoters and midwives within the confines of the health care system in Nicaragua has been a challenge. A major issue is the historical lack of respect for health promoters and midwives on the part of physicians. This lack of respect can impede the effectiveness of education programs in several ways: it impedes communication between health promoters and physicians (including trainers); it interferes with coordination of care; and it can cause delays in transferring seriously ill patients to the hospital.

Educational programs will have to help bridge the gap between these caregivers to succeed in this setting. Improvement in patient care will come from creating an environment in which village health workers feel comfortable sending patients to the hospital early in the disease process (e.g., with pediatric respiratory disease or maternal hemorrhage in labor) without fear of criticism or condescension. This is a major problem in many countries where health promoters practice; overcoming it has been shown to be a critical factor in reducing maternal morbidity and mortality. By including midwives and health promoters in the NRP and other educational programs at Hospital Japon Amistad, the GPA initiative may be helping to bridge this gap between providers who are trained at different levels.

## Ecuador

An entirely different program was developed for the Quechua people of Kachiwanushka village in Ecuador's Amazon Basin. The Quechua are a self-sustaining community of indigenous people, living in an area with insufficient potable water and high rates of parasitosis and respiratory illness. This group has limited access to and minimal ability to afford hospital-based routine or emergency medical care. As a group, the Quechua have little faith in government health programs. The community members themselves requested help with medical education and public health measures. Specific needs, especially in emergency care, were identified by a local physician, Peace Corps volunteers, and GPA staff, who worked together to implement an educational program.

This program is the first to have direct involvement from an in-country physician practitioner. The physician is a general practitioner in Quito who is pursuing a master's degree in public health. The educational program in emergency care developed with this physician is similar to the GPA programs in Guatemala and Nicaragua. Workshops introduce important concepts in emergent conditions, primary care, rehydration, machete and wound care, family planning, and integration of traditional medicine techniques. The program is focused on training 9 villagers as regional health promoters, who serve the village of Kachiwanushka (population about 150) and 5 surrounding villages of similar size. Workshops in the Kachiwanushka region are conducted over a 1–2 day period and were given monthly when the program was initiated 3 years ago. They now occur every other month. In addition, because the request for this initiative came from the local community, community-wide health education training has been given annually during the 3 years of this project. Attendance has averaged approximately 55 people from the 5 local villages. This community-wide training initiative and increased awareness of good health practices may have some direct benefits. The Kachiwanushka villagers recently implemented a clean water project and built a well with a simple pumping system that delivers potable water to the village kitchen and schoolhouse.

The success of this program is due in part to having a dedicated in-country physician who is able to travel to Amazona from Quito as often as every 4 weeks for conferences and workshops. Increased frequency of training means that new concepts can be introduced at a faster rate and existing concepts can be reinforced. A small number of regional and local physicians and volunteers assist in this effort, and have become more involved as the success of this program has grown. These individuals are currently assisting in developing new educational sites and participants in other villages in the Amazona region. Local physicians have also allowed health promoters to do a modified externship at regional health posts as a result of this effort. Importantly, it is anticipated that this arrangement will help improve cooperation and understanding between health promoters and physicians.

## DISCUSSION

### Creating long-term success

Although other organizations have done similar work teaching health promoters and midwives in developing countries, most of these efforts were

not specifically designed to meet local needs and capabilities and thus were not ultimately sustainable. GPA's programs have met these challenges largely by: (1) providing ongoing training to ensure continued motivation and skill-building in emergency care; and (2) tailoring educational modules to take into account the previous education and experience of local health promoters and midwives, the limits of the existing health system, and the practice of assessing educational needs in conjunction with local health promoters and midwives.

As educational programs for local health providers are often not applicable to other contexts, specific assessments and educational interventions must be made for different geographic areas. The need for localization of training was particularly evident in Nicaragua, where health promoters and midwives were highly experienced, and many no longer worked in the rural setting, which limited the effectiveness of the module adapted from the program in Guatemala. Having made a commitment to ensure the sustainability of the program, GPA retooled the educational module and addressed the health promoter-physician relationship to adapt the program to the local context. This modified approach increased both the participation by other health providers, including physicians and midwives, and the level of interest among health promoters.

### Tailoring training

Within the health domain, *tailoring* refers to situations in which the content and delivery of one's message is altered to address the unique needs, interests, motives, and perceived barriers of different individuals or groups (6-7). Health education materials are typically generic; to serve as broad a population as possible they tend to try to be all things to all people, providing as much information as possible in a single communication (8). However, if a health education intervention is to have lasting impact, it is critical to understand the demands placed on the audience not only in the initial learning process but also subsequently, particularly with regard to the availability of resources that will allow the newly acquired knowledge to be retained. In other words, the first step in planning an educational intervention should be an assessment of participants' skills and resources relative to the demands of the course (9).

Participants must be assessed in terms of all variables necessary for performance of the target behavior, including the personal characteristics and skills required by the behavior itself. For example, one of the modules of the advanced primary care workshop at Ak'Tenemit involves the recognition of

dehydration in children and the development of intravenous rehydration skills. If the target behavior is "retention of IV hydration skills," several variables must be satisfied for the behavior to be both learned and retained (such as the ability to learn from a lecture format, the acceptance of new technology, and opportunities to practice one's skills). Each of these requisites is in turn dependent upon multiple variables (such as literacy, support of the local medical community, and financial and educational resources). The causal chain that appears in Figure 1 outlines the dynamics that exist between these correlates and predictors of the target behavior.

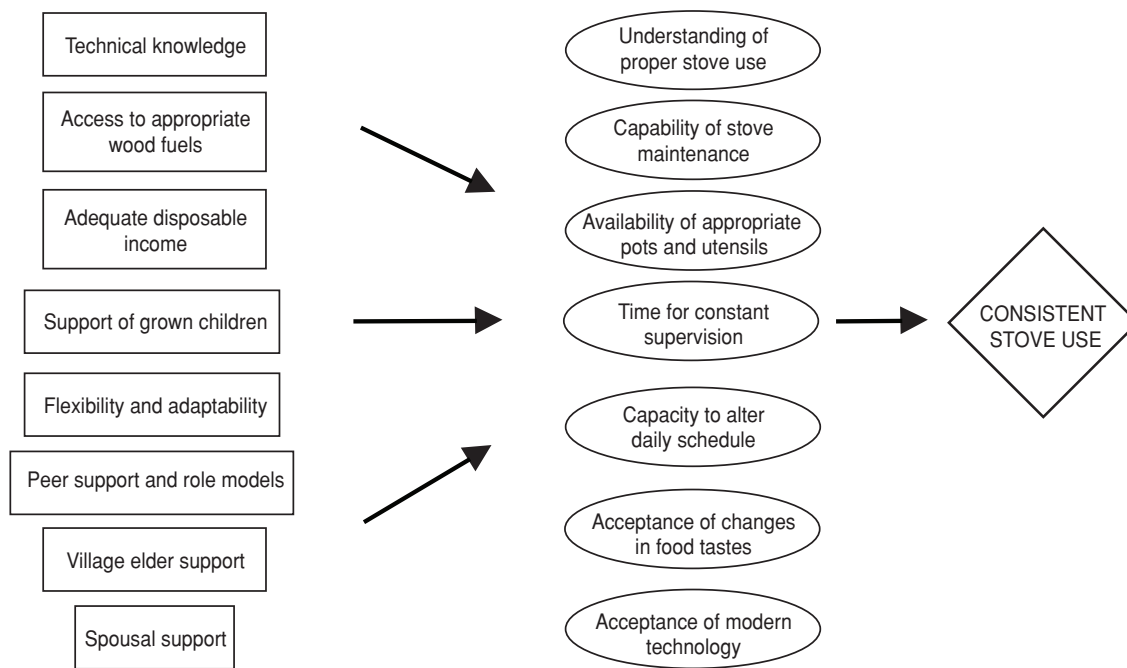
Other examples of ways in which GPA has attempted to tailor its training modules include assessments of participants' educational level in health care, as well as their expertise with the available equipment and resources. For example, Guatemalan health promoters learn about intravenous fluids and antibiotics, while health promoters in Ecuador learn indications and techniques for preparing oral rehydration solution. Health promoters in the Rio Dulce region of Guatemala are experienced and well educated and have intravenous supplies and fluids available, whereas, in the Amazona region in Ecuador, health promoters have no real equipment or formal health education course training. Therefore, program goals at the latter site have been tailored to teach early recognition of the signs and symptoms of dehydration, and administration of oral rehydration solution (ORS) early in the course of the illness. Another example of educational tailoring is that remotely located health promoters in Amazona are taught to recognize early the signs of respiratory distress, and to initiate transport to a facility with a higher level of care. Health promoters in the Rio Dulce region of Guatemala, due to prior education and experience, are taught when to administer oxygen, when to administer intravenous versus oral antibiotics, and ways to administer nebulized medications.

### Sustainability

GPA achieves program sustainability by focusing on a small number of core sites to provide a foundation for health promoter and midwife emergency care training in a particular geographic area. The goal is not to expand efforts beyond what is sustainable in the long term. Using a train-the-trainer approach, educators identify the health promoters who are best suited to impart the new knowledge they are acquiring and include them as teachers in future modules.

Personnel selection is a key factor in achieving successful and sustainable workshops. GPA

**FIGURE 1. Causal chain: underlying social factors and acceptance of change as correlates and predictors of consistent stove use**



strives to select individuals with extraordinary motivation coupled with a high level of expertise. The 2- to 4-person team teaching at a site must have a good understanding of the participants they are teaching, including their living and work conditions and their educational and work experience. They must also understand and share GPA's vision, that the education process must involve mutual respect between trainers and participants, as well as its values—hard work in curriculum development, along with optimism. Although the executive director provides the staff with guidelines, once an individual is invited as a volunteer, he or she has broad autonomy. This approach allows volunteers to take ownership of their work, elicits their best efforts, and engenders their loyalty, keeping staff enthusiasm high and minimizing turnover.

Site selection is also critical for sustainability. It is important to select teaching participants who are actually busy seeing patients in their daily life in their village or community. In addition, to have the greatest impact, and to make the most effective use of funds, sites should be selected in part for the lack of other available health care services. For example, in an area where a government clinic exists, the impact of training health promoters would be limited because the population at large is more used to using the established health services.

## FUTURE PLANS

In the future, GPA plans to select a coordinator for each site. This individual will function as the site point person, maintaining contact with other site participants and planning and coordinating local workshops. The major role of the site coordinator will be to continually gauge local needs and tailor programs for optimal effectiveness. In addition, as part of the Ecuadorian program, GPA is planning to partner with and offer micro-grants to other health promoter and midwife training programs. This will augment their ongoing efforts with sustainable financial and educational support.

Work will begin soon on formally assessing and evaluating the impact of these educational programs in emergency care on the practices of local health promoters and midwives, and on the health of the populations they serve. This evaluation process will identify gaps in the current educational program, new areas of focus for educational interventions, and ways to make health promoter and midwife education translate into improved emergency care delivery in the community.

Creating successful programs in acute care training with this model is a work in progress. Fundamental components must be developed and sustained through the evolution of the project and or-

ganization as a whole. Anticipating problems and understanding mistakes can be critical learning points for program improvement in developing countries.

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#### SINOPSIS

### Entrenamiento médico en urgencias para promotores de salud de América Central y América del Sur

*Los promotores de salud, las parteras y otros proveedores de cuidados médicos básicos trabajan en comunidades locales de todo el mundo para mejorar y facilitar la atención sanitaria. No hay suficiente información que describa los programas educacionales dirigidos a mejorar los conocimientos y las habilidades de los promotores de salud y sobre su impacto sanitario a largo plazo. Muchas iniciativas educacionales diri-*

*gidas a los promotores de salud consisten en intervenciones aisladas que permiten evaluar sus conocimientos inmediatamente después de la intervención, pero no miden los progresos a largo plazo en la base de conocimientos o la atención sanitaria. La Alianza Pediátrica Global —una organización sin ánimo de lucro basada en los EE.UU. que trabaja con personal médico y sanitario local— creó un programa educacional para promotores sanitarios y parteras en Ecuador, Guatemala, México y Nicaragua con un enfoque centrado en reducir la mortalidad materna e infantil y en mejorar la atención primaria y de urgencias. En este artículo se describen estas iniciativas educacionales diseñadas para mejorar las habilidades de los promotores de salud y las parteras mediante un entrenamiento médico avanzado y sostenible, ajustadas a las necesidades específicas de cada comunidad.*

**Palabras clave:** prestación de atención de salud, enfermeras obstétricas, atención primaria de salud, servicios médicos de urgencia, Américas.

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