The Rural Hospital In Ecuador

Improving rural secondary care is an essential expansion of the primary care strategy in many lower- and middle-income countries.

by David P. Gaus

ABSTRACT: Over a period of twelve years, the author's vision of improving the health of rural Ecuadorians has evolved from an initial emphasis on primary health care to secondary care. The local community convinced him of the critical need for an efficiently managed, high-quality, and affordable rural secondary care hospital. Exploring a variety of funding options, the hospital ultimately achieved financial sustainability, principally through Ecuadorian public sources. Now, in partnership with the Ministry of Public Health (MOH), the rural hospital model that evolved in Pedro Vicente Maldonado is being adapted as a pilot project in an existing MOH rural hospital. [*Health Affairs* 28, no. 4 (2009): 1003–1010; 10.1377/hlthaff.28.4.1003]

My anguish began the night that twenty-two-year-old Adriana arrived at our small outpatient-clinic-turned-maternity ward in the jungle of Ecuador. Adriana had severe preeclampsia, and I had no way to transport her to the nearest hospital, three hours away. As her blood pressure continued to rise, I was forced to deliver her baby under highly dangerous conditions. But both she and the baby survived.

"Please help my son!" begged nine-year-old Alfredo's mother a week later, when she brought him in with a bite from a Bothrops snake, a deadly South American viper. "The big snake bit him on his back when he was jumping into the river an hour ago," said his mother. Her son looked at me and said, "Doctor, I'm going to die." The comment startled me; I had never heard a child say that before, let alone with such resignation. Although I quickly recovered and told Alfredo and his mom that he would be all right, I had no antivenin, and none was available in the area. I managed to arrange transportation to a hospital several hours away. Alfredo died en route.

It wasn't supposed to happen this way. I came to Ecuador to launch a health care project that would emphasize all of those convincing themes taught in schools of medicine and public health. I was certain that prevention, health promotion, and education were the keys to the kingdom of improved health for developing nations. I would ultimately learn that all strategies must evolve. A primary health care strategy, not surprisingly, is not a "stand-alone" strategy that can do it all;

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rather, it is a foundation requiring further development. Strengthening secondary care through the rural hospital complements the achievements of primary care. However, a deficient secondary care system weakens those achievements. Although I risked being accused of having a physician's mentality that argues for more hospitals with insatiable appetites for health care budgets, I would discover that the cost-effective, small rural hospital is more aligned with primary care than with those expensive, somewhat disconnected tertiary care hospitals.

The unenjoyable, ignored, and certainly underinvestigated topic of how to strengthen existing health care infrastructure requires resuscitation. Identifying and providing further training to local health leaders and managers, on site, in the field, is one way to accomplish this.

Evolution Of An Idea

Graduating with an accounting degree in 1984, I volunteered for two years at a family development program in Quito, Ecuador. It was a transformational experience that led me to medicine. During the next eleven years, I completed medical school and a master's degree in public health and tropical medicine, and subsequent training in family and emergency medicine. I also began to create an advisory board for my newly created organization, Andean Health and Development (AHD). I had the foresight to recruit experienced professionals in international development, public health, medicine, business, and finance.

In 1997 I returned to Ecuador in search of an area to open the doors to good health with those newly acquired keys. The town of Pedro Vicente Maldonado, in the northwest region of the Pichincha Province of rural Ecuador, seemed to be the best fit: three hours from the capital and with limited health infrastructure. With help from local Ecuadorians and a small grant from CARE Ecuador, we conducted a feasibility study in that rural community of 50,000, looking at the residents' attitudes, beliefs, and perceptions of their own health and of the health services available to them. They listed the typical needs of a rural community, including the themes I learned in school: access to clean water, better health education, better roads (enabling better access to medical attention), and emergency care. They lived with these problems every day.

Curiously, they mentioned some other needs as well. In a focus group, I heard a fifty-year-old minimally educated farmer say, "We need a hospital here, Doc. Our women and children have nowhere to go when they get very sick. It happens more than you might think. And going to the big city is easy for you, Doc, but not for us." Sure they want a hospital. What community doesn't think it needs one? But I mentally shelved the comment.

The local outpatient facility built by Ecuador's Ministry of Public Health (MOH) years ago contained all the space needed to provide most of the health care services I was interested in developing. At this facility, MOH personnel conducted well-child exams and prenatal visits and administered vaccines. They also at-

tended an occasional childbirth and cared for the most common outpatient conditions: colds; mild diarrhea; and bladder, skin, and vaginal infections. More than half of all pregnant women in the area deliver at home—many of them by choice, others simply because they cannot find help when they need it. Arguably, some expansion was required to cover the unmet need for twenty-four-hour attention to emergencies and childbirths, since the staff only worked 8 a.m. to 5 p.m., Wednesday through Sunday. Beyond those hours, one was forced to turn elsewhere.

I tried negotiating with the MOH to convert the local facility into a twenty-four-hour center for childbirth and emergencies. No luck. Switching institutions, I negotiated with the local municipal government to build a new facility from the ground up. The local mayor had recently contracted typhoid fever, and his symptoms worsened significantly on a Monday when no doctors were in town. At that moment he decided to do something about health care.

During construction we opened a temporary outpatient facility the size of two bedrooms, which is where I met Adriana and Alfredo. The farmer's comment about a hospital began to make more sense with each patient like them. Could I have been wrong?

One day a woman named Maria made the situation concrete for me. From a small community deep in the countryside, she heard me talking to women about the danger signs and symptoms of preeclampsia, a common killer of pregnant women in the developing world. "Doc, where should we go if we get those symptoms?" she asked. I began to give her the party line, which was to go to the local MOH outpatient facility, although I knew full well they had little to offer her there—the personnel were not trained in preeclampsia management, and the critical medication, magnesium sulfate, was usually nowhere to be found. The only solution would be a transfer to the capital—if transportation could be found and if a hospital there would receive the patient. I felt my own anger and frustration with the system growing as I spoke. She must have noticed. "So why tell us about this disease if there's nothing you can do for us?" she asked.

Building Design And Management: Back To The Drawing Board

We changed our outpatient/emergency/maternity facility into an actual small hospital. Funding was acquired. Hospital Pedro Vicente Maldonado (PVM) was born. Now, how to run a hospital?

My background in family and emergency medicine, public health, and tropical medicine was quite useful. But my undergraduate training in accounting suddenly became the relevant degree. Understanding business cycles, analyzing financial statements, and managerial efficiency were now prized skills. Hiring and firing employees required an intimate understanding of confusing Ecuadorian labor law, and I still needed a great deal of help.

Looking around to see how everyone else managed hospitals in the countryside,

"The Alfredos and Adrianas of rural Ecuador have health problems that cannot be managed properly in the countryside."

I learned how they were not managed. Most MOH rural hospitals do not function as hospitals because of resource limitations: insufficient medications and supplies, and poorly trained personnel. The missionary hospital model, on the other hand, works fairly well, but it depends on outside resources for everything and was not replicable. When funding ends, projects end, leaving populations at even greater risk in the now-vacant health care landscape.

Not even the MOH itself could point me to a well-run rural MOH hospital. When they suggested that I turn over the new hospital to the MOH, I said, "Great, but first show me one that works well." End of discussion.

■ **Past focus on primary care.** In retrospect, I now understand why. Since the 1978 World Health Organization (WHO) Proclamation of "Health for All by 2000," developing countries such as Ecuador have focused most health strategies on primary care. The Alma-Ata Declaration describes primary care as essential health care based on practical, scientific, and socially acceptable methods. It is made universally accessible to individuals and families and at a cost that the community and country can afford to maintain at every stage of its development. It is the first level of contact of individuals, the family, and community with the national health system. It constitutes the first element of a continuing health care process.[1] Primary care emphasizes promotion, prevention, and some curative services to address the main health problems in the community. It is generally a "bottom-up" process starting at the community level, not the traditional top-down MOH approach, which fails to empower communities.

That philosophy, coupled with a desire to provide equal access to these basic services for all citizens, has driven policy in Ecuador for more than twenty years. And by most standard health indicators, Ecuador has performed adequately with this strategy.

■ **The need for hospitals, too.** But Maria's comment has not been addressed. The Alfredos and Adrianas of rural Ecuador still have health problems that cannot be managed properly in the countryside. What happens when the "first level of contact" cannot address the problem at hand? This is where it begins to unravel in rural Ecuador. Ecuador's emphasis on primary care is appropriate, but it must not stop there. To be sure, Ecuador's MOH does commit considerable resources to hospital care. However, inadequate planning leads to inefficient use of these resources. This mismanagement pushes sick patients to one of three large cities in search of a tertiary care hospital that is already overcrowded with patients whose problems could be easily resolved in rural hospitals if they functioned properly. Furthermore, these rural hospitals, with lower overhead costs than tertiary care hospitals, could provide the services at lower costs to both the MOH and the patient.

■ **Chronic disease care and physician training.** The limited availability of basic hospital services in the countryside goes beyond emergency problems. "Doc, the [Ecuador] Social Security primary care doctor has sent you a diabetic patient to manage his diabetes," said our outpatient nurse one morning. "Is there a complication?" "No," she said, "but the Social Security doctors here don't know how to manage diabetes."

Chronic degenerative diseases such as diabetes, hypertension, and arthritis are on the rise in Ecuador. It never occurred to me that doctors would not be trained in these diseases, but it was the case—largely because they simply were not prevalent at the time. Without continuing medical education, isolated, rural doctors cannot manage many basic maladies.

It dawned on me that a well-run rural hospital, in addition to managing life-threatening problems when patients can't make it to the bigger cities, can also be a center for training for otherwise isolated doctors in new areas of medicine.

The Biggest Challenge: Financing

"Señora Pérez has appendicitis and needs surgery. She doesn't have any money, and if she sells her cow to pay for surgery, she can't sell milk to support her two children." I hear comments like this every day from patients who are simply too poor to pay for health services—especially expensive ones like surgeries, even though we charge only US$180 for appendectomy.

How to provide relatively costly services to a poor population whose monthly family income is about US$150 surfaced as the biggest challenge. I began the arduous task of searching for strategic partners. The MOH was threatened by us because we were doing what they were supposed to be doing. Social Security had money, and 9,000 people in the area are entitled to Social Security health care, but that negotiation required lots of time. (It ultimately paid off, however.) Local municipal government was interested but had little funding available. Only about 30 percent of community residents were able to pay for services out of pocket.

Some suggested that we at Hospital PVM try accessing resources from other well-funded programs that fight specific diseases such as malaria, tuberculosis, HIV, or river blindness. If we complied with those programs' needs, we might be able to build some infrastructure (buildings, supplies, personnel) that would manage the other health problems as well. The problem with these "vertical" programs is that they actively seek out the disease they're treating, but the malnourished child, the high-risk pregnant woman, or the uncontrolled diabetic is passed over because they are not the "fortunate" ones with the "correct" disease. This wasn't a sustainable solution. Furthermore, we had no river blindness and little malaria or HIV in the population served by our hospital.

■ **A financial solution.** Hospital PVM struggled for years to come up with a financial solution. By 2007, eight years later, after experimenting with endless financing mechanisms, the hospital was 100 percent financially self-sustainable—all from

sources within Ecuador and largely from within the community. Sixty-five percent of this revenue comes from public sources, of which the overwhelming majority (60 percent) is from Ecuador's Social Security system (IESS—insurance that's available to employees who pay into the IESS system monthly or to farmers who can demonstrate that they indeed live off the land). Only 20 percent of the population has access to this insurance, which should rise to nearly 50 percent in 2009 as new legislation provides coverage for children and spouses.

Distinct from Medicare and Medicaid in the United States, which pay much less than market prices for services provided, Ecuador's Social Security pays more than what Hospital PVM typically charges for certain services. This allows us to cross-subsidize other nonpaying patients. Municipal contributions constitute a small percentage (5 percent) of the public funding. The remaining 35 percent of hospital revenues flow from patients who pay out of pocket (30 percent) or patients who buy a small insurance package from the hospital that has a series of either free or greatly discounted services (5 percent).

■ **Hospital use.** In terms of hospital production, ambulatory services average 1,300 patients monthly. Thirty surgeries, thirty childbirths, and one hundred hospitalized patients were attended to each month in this community of 50,000 people. The cost of services provided range from US$180 for a cesarean section or appendectomy, US$40 for a normal childbirth, US$8 per day for a hospital bed with food, US$3 for an outpatient visit, and US$2 for a complete blood count. Total costs and revenues for Hospital PVM for 2007 were $635,000. This pattern persisted in 2008.

This small, rural hospital has no intensive care units and no subspecialty care such as plastic, neuro-, or heart surgery. But it does take care of the common things that regularly afflict a rural community: pneumonia, kidney infections, diabetic complications, bad asthma attacks, complicated childbirths, snakebites, gallbladder disease, and motor vehicle accidents. These services are considered "secondary care" services. They complement the primary health care services and, in fact, legitimize them. I can now look Maria in the eye and give a satisfactory answer to her question: "Doc, where should we go if we get those symptoms?" The primary care without the secondary care would leave great suffering in the community.

Health Care For Many, But Not All

The community embraces our hospital. Patients are able to remain in the community, where families can visit them. They don't spend money traveling to the big city. If they have to pay out of pocket, the rural hospital is more affordable and efficient than the one in the big city.

Do we take care of virtually everyone in the community? Probably not. But neither does Ecuador's MOH system. Nor has the WHO's "Health for All by 2000" happened at the global level. It has not happened in Ecuador. Health for "a lot" has happened, though. Even if there were a hospital in every small town in rural Ecua-

dor, cultural as well as financial obstacles would prevent Ecuadorians from using modern health services.

Where To Go From Here?

■ **Merging the rural and private systems.** "Where to go from here?" I asked myself. We could do more of the same, but should we build yet another parallel system alongside the MOH and Social Security system, which, based on supply of personnel, beds, and facilities, accounts for 70 percent of all health services? Then, one day, in walked the director of a rural MOH hospital four hours away. "I've heard what you are doing here at Hospital PVM," he said. "I want you to figure out how to make our hospital better. I'll be in charge of building the political consensus, and you implement your hospital model in our MOH hospital. Can you do this?"

And so we are indeed doing it. Working under a collaborative agreement with the MOH, AHD has introduced its model of rural hospital care into the public sector. Technical leadership has been the most important contribution thus far. The model includes providing services that reflect the disease patterns of the area, introducing treatment guidelines/protocols, and continuing medical education. Administratively, the introduction of a software system for accounting, billing, and inventories permits greater efficiency in patient care, acquisitions, and hospital production. It is the first time that a private nongovernmental organization (NGO) has been invited to co-administer an MOH hospital in Ecuador.

I have learned that the community had the answer. They even told me so, although I ignored it at first. But they left it up to me to figure out the "how." It was a bottom-up process, just as the founders of primary health care suggested.

■ **Health care revolution as evolution.** Although some might call for a "revolution" in health care in the developing world, an "evolution" is perhaps more accurate. But evolve it must. No longer is global health limited to addressing natural disasters or epidemics. In fact, the global health community has developed on many fronts: food programs, water supply, improved maternal and child health, broadened vaccine coverage, disease-specific "vertical" programs, training of health promoters, empowerment of women, trade agreements, and economic development are among the most noteworthy. In fact, many would argue that these are all aspects of primary care.

This evolution must demonstrate how to build on the successes of primary health care strategy wherever primary care has made at least modest gains, as is the case in Ecuador. The evolution must recognize and build on the concept of the "new" public health, which attempts to end the unnecessary divisions between medicine and public health. The medical aspects of individual patient care in the MOH system in rural Ecuador need help. Ecuador's MOH effectively manages large numbers of patients through its inpatient network on a daily basis. But it also attempts to provide curative services through its 100 hospitals nationwide. Here is where the system breaks down.

"The evolution must build on the 'new' public health, to end the divisions between medicine and public health."

■ **Importance of human resources.** Strengthening the existing health care infrastructure to address the complex health problems of patients seeking care in the secondary care setting is a major challenge. Equipment certainly is part of the solution. But the greatest challenge is human resources: the enticement into rural areas and ongoing education of appropriately trained clinicians. Although research in this area is insufficient, I suspect that we would learn that infrastructure reinforcement is cost-effective. Buildings have been built, and payrolls are being met.

The application of modern technology to address the global burden of disease is critical, but committed leaders and managers must also be identified and trained. Following an unsuccessful campaign to recruit clinicians and administrators from the larger cities to work in the MOH rural hospital, AHD has joined forces with an Ecuadorian university to train physician-administrators for rural hospitals to begin this process of leadership development. In this way, we anticipate an expanding pool of skilled professionals with a broad understanding of clinical medicine, including secondary care, health care administration, and public health needs in the rural context.

I do not propose turning back a primary health care strategy. But I do argue that for many lower- and middle-income countries, improving rural secondary care is a logical and essential expansion of the primary care strategy. Improving the use of resources already committed to secondary care infrastructure in rural areas can have a profound impact on morbidity and mortality, with minimal increased cost. Creative partnerships among NGOs, ministries of health, Social Security, and local universities should be part of that solution.

In my twelve years in rural Ecuador, the most painful manifestation of poverty I have seen is the unnecessary suffering and death of poor, rural residents as they try to navigate a health system that is unable to respond to their needs. Providing secondary health services through well-functioning rural hospitals can help to alleviate much of that. Adriana, Maria, and Alfredo's mom would certainly agree.

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NOTE

1. World Health Organization, "Declaration of Alma-Ata, International Conference on Primary Health Care, Alma-Ata, USSR [now Khazakhstan], 6–12 September 1978," http://www.searo.who.int/LinkFiles/Health_Systems_declaration_almaata.pdf (accessed 14 April 2009).