

Open School

Case Study: Improving Care in Rural Rwanda

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Learning Objectives

At the end of this activity, you will be able to:

- Give an example of an effective improvement project in a developing country.
- List several ways hospital staff can improve care despite a profound lack of resources.

Description

This report tells the story of Partners In Health's (PIH's) recent quality improvement work in rural Rwanda. Since Partners In Health's founding over 25 years ago in rural Haiti, the organization has worked to alleviate the underlying social and economic conditions as well as the diseases that afflict the poor in developing settings. PIH's quality improvement work emphasizes substantial commitment to improving infrastructure, building capacity, and augmenting available resources with the belief that, in resource-poor settings, these components are necessary for both initiating and sustaining meaningful improvements in quality of care.

Although it is told from the perspective of Dr. Lee, the following narrative represents the concerted effort of many, including Dr. Raymond Dusabe, Nurse Philbert Kanama, Nurse Caste Habiyakare, Kirehe Program Manager Shema Jean René, the dedicated Rwandan staff of Kirehe Hospital, PIH co-founder Dr. Paul Farmer, Director of PIH Rwanda Dr. Michael Rich, PIH Rwanda Medical Director Dr. Henry Epino, PIH Medical Director Dr. Joia Mukherjee, Meera Kotagal, and many others.

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- [QI 104: The Life Cycle of a Quality Improvement Project](#)
- [QI 105: The Human Side of Quality Improvement](#)
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- [L 101: Becoming a Leader in Health Care](#)

Key Topics

Leadership, quality improvement, improvement capacity and capability, engage front-line staff in improvement, build capacity, redesign processes and systems, improvement methods (general), plan-do-study-act (PDSA), model for improvement, systems thinking.

This report describes Partners In Health's quality improvement work at Kirehe Hospital — the newer of the two Ministry of Health-Partners In Health (MOH-PIH) district hospitals in the rural Eastern Province of Rwanda. This is a hilly, malaria-endemic area of nearly 500,000 people whose income averages less than 1 USD per day. Prior to PIH's arrival in 2005, under-five mortality was about 23 percent, nearly half of all children suffered from malnutrition and stunted growth, no one was being treated for HIV/AIDS or tuberculosis (TB), and there were no doctors at all working in the district.

In the context of a partnership with the Rwandan Ministry of Health to scale-up an effective and sustainable rural health care model nationwide, PIH began working in the two poorest, most underserved districts in the Eastern Province of Rwanda. With the hard work and leadership of our talented Rwandan colleagues and mentorship from Paul Farmer, Joia Mukherjee, Michael Rich, and others, PIH successfully implemented a robust, community-based health care system adapted from its work on the central plateau in rural Haiti.

In 18 months: hundreds of community health workers were trained and paid to monitor patients and administer medications; nearly 2,000 patients were started on antiretroviral therapy; TB, malaria, obstetrical, and comprehensive health care services were established and strengthened; and a program was put in place to meet the population's urgent social needs, including nutrition, shelter, school fees, and transport costs to and from the clinics.

When I began working at Kirehe Hospital in 2007, I was asked by PIH Rwanda Medical Director Henry Epino to focus on improving quality of care throughout the system. For eight weeks, I served alongside the nurses and doctors in the hospital and clinics as a clinical mentor, modeling the kind of patient-centered, evidence-based care that I had been trained to practice and that I believe is the fundamental right of every person. Each morning, I engaged the staff in short chalk talks around issues relevant to our hospitalized patients. We lived, ate, and relaxed together after the days' work. All this time I listened.

I came to care deeply about Kirehe and realized the strong ties between the hospital's staff and the surrounding community. Most of the staff lives within walking distance of the hospital. They know their patients as neighbors and often friends. Many of them bear traumas from the 1994 genocide. One of my personal heroines, Nurse M, became the head of her family at age 12 when both her parents were murdered. She supports six younger siblings and took in another AIDS orphan last year, honoring his mother's dying wish. I knew M first as a smart, dedicated nurse with a radiant smile, and only later learned how profoundly she has cared for her younger siblings and her community. She is not alone. Many of our staff and members of the local community have suffered similar losses and have responded with service and a quiet determination to go on, to make the future better than the past.



Patrick Lee (center) with the staff of Kirehe Hospital in May 2008.

In those first eight weeks, I also noticed major gaps in care. Despite deep ties to the community, staff morale seemed low. Many nurses were underperforming. I would pick up a patient chart and often find that vital signs had not been done, or medications ordered by the doctor had not been given properly, or lab tests had not been performed. Some resources were missing, including several essential medicines and diagnostics and adequate staff to allow sustainable patient-to-doctor and patient-to-nurse ratios. The hospital, facilities, and staff had come a long way since the beginning of the MOH-PIH partnership, but there were still gaps in care. Prior quality improvement efforts, including exhortations to “do better” and a report card/pay-for-performance intervention, had not resulted in lasting change.

I knew we could do better. But how? We needed to raise staff morale, set and achieve a new standard of excellence in patient care, identify and supplement key missing resources, and maximize the effectiveness of our existing staff and resource pool — and we had to do it with the smallest possible footprint so that whatever gains we achieved could be implemented and sustained without negatively impacting other programs.

Around the same time, I met Meera Kotagal, a Harvard medical student who had prior experience working with the Institute for Healthcare Improvement (IHI) and was volunteering for the year with Partners In Health in Rwanda. Meera and I engaged in a series of conversations about the existing gaps in care and the ways we might continue to improve the system. Meera brought methodological rigor to the discussion based on her work with IHI and introduced me to the Model for Improvement and Plan-Do-Study-Act (PDSA) cycles (straightforward, effective techniques for focusing and measuring change). We made a plan, got the nod from two of the hospital’s leaders, Shema Jean René and Henry Epino, and forged ahead.

- 1. Imagine you are a staff member at a hospital or clinic in a resource-poor setting (this might be anywhere from Kirehe, Rwanda to Chicago, Illinois). A team arrives and offers to help improve the quality of care. You are initially skeptical as prior quality improvement efforts have taken up considerable staff time and attention but have not resulted in sustained change.**

- **How could this new team earn your confidence and collaboration?**
- **What factors might convince you this team has a good understanding of your hospital/clinic and its underlying economic and sociopolitical context?**

Our first task was to build broad consensus and identify change goals. In a staff discussion, we agreed that our patients and community deserved the highest standard of care — the same standard we would want for our own families — and we reaffirmed our solidarity with the poor community we serve. Vital signs and medication administration were chosen as our first two targets in our simple quality improvement intervention. A baseline evaluation revealed that a full set of vital signs were performed and medications given as ordered only about 50 percent of the time.

We set our change goal at 95 percent compliance for five consecutive days for both vital signs and medications. Achieving this high standard would require effort on the part of every member of the nursing staff over the course of five days. We hoped this might create a “last man/woman” effect, enabling the better-performing members of the team to motivate even the least enthusiastic nurses to bring their standard up.

Despite the previous six months’ status quo, we quickly made remarkable gains. PIH’s comprehensive care model, emphasis on building local capacity, and substantial resource and infrastructure inputs at Kirehe provided a firm foundation for this early success. These inputs included hiring new staff, providing incentive pay on top of base salaries, supplementing missing essential medicines and diagnostics, implementing an electronic medical record system to facilitate re-supply and patient tracking, supplying electricity, fuel, vehicles, food, bedsheets, and so on. While these inputs may eventually have raised vital signs and medications to 95 percent as has occurred at other PIH sites in Rwanda, our QI intervention at Kirehe seemed to accelerate this improvement. Something sparked in the kindling of existing resources, the staff’s deep ties to the community, our emphasis on service and solidarity, and the timely performance feedback. The status quo shifted.

Our initial gains relied heavily on a surge of staff effort. Lacking enough functioning blood pressure cuffs and thermometers, for example, the nurses set up a creative relay system that allowed them to get all the vital signs done before 9 AM. We were performing at goal, but not yet in a sustainable way.

2. Imagine again that you are the leader of the QI team in the previous scenario. Your team would like to improve quality of care across the board and sustain those gains. Whatever specific targets you choose to measure and focus on, your ultimate aim is to raise staff morale, set a new higher standard of excellence, and empower staff members to “see a problem, fix a problem” in their daily work.

- **How would you go about assessing the local needs and setting appropriate quality goals?**

- **Who would be your most important allies? What qualities would you look for in selecting effective local leaders for this new program?**
- **How would you frame this intervention, especially in light of the previous QI efforts at this site? What would you say to the staff on day one?**

Using basic quality improvement tools (including a series of PDSA cycles), we were able to identify resource gaps and systemic problems, then work to improve them. We began to backfill. Or rather, the nurses themselves began to backfill, addressing resource deficits and improving the system's organization and efficiency. They received full support in this effort from Kirehe's leadership, including Shema Jean René, Philbert Kanama, Henry Epino, and others. Recognizing that half-an-hour after the morning meeting was not enough time for the day nurse to perform vital signs and give out medications before 9 AM, they transferred this task to the night nurse (a move that had long been discussed but not yet implemented). This led to a wholesale reorganization of the nursing staff from a nomadic rotation where nurses worked several days in each ward then moved on, to one where nurses were assigned to a ward and elected a chief who would be responsible for quality of care and training of junior nurses.

Every Thursday, the all-staff meeting was replaced by local "troubleshooting rounds" in each ward, where the ward chief and nurses would review supplies, any problems from the previous week, and solve problems directly if they could. Systemic problems identified in these meetings would be discussed on a monthly basis with the head of nursing and the hospital medical director. This is only a partial list. Change was occurring organically throughout the system, driven by nurses who felt motivated and empowered to "see a problem, fix a problem" — the defining feature of a high-performing, self-correcting system.

We found that, by spotlighting keystone patient care processes, we helped illuminate resource gaps and opportunities for better use of existing resources all along the health care delivery chain. For example, by counting a medication stock-out as a medication "not-given" (since the patient did not receive it), we provided an incentive for the ward nurses to strengthen our pharmacy supply chain by promptly requesting medication re-supply and reminding their pharmacy colleagues to anticipate stock-outs before they occurred.

3. Substantial resource inputs are essential to successful improvement work in resource-poor settings. At Kirehe, for example, nurses in the outpatient department were initially doing more than fifty patient consultations per day and had no time to talk with patients about their diagnoses. We had two major resource gaps here: not enough nurses, and not enough consultation rooms.

- **In your own experience, how have you seen resource inputs play a critical role in improvement efforts in resource-poor settings?**

- **Can you think of at least one instance where missing resources also hindered improvement efforts in a resource-rich setting?**

In my first month at Kirehe (about six months after the hospital's opening), we experienced a nearly two-week stock-out of Lasix, an essential medication for the management of heart failure. This is unfortunately not an uncommon occurrence in resource-poor settings such as rural Rwanda. One patient, a kind 60-year-old man with smile lines around his eyes, had been admitted for severe heart failure. We had stabilized his condition but then the Lasix supply ran out. After several days, he asked to return home. Since he lived nearby and we could go find him when the Lasix arrived, there was little we could do but agree. We learned later that he had died at home from heart failure. I keep the letter he wrote to me in perfect French on the day he left the hospital in memory of him and as a powerful reminder of why quality improvement matters.

I share this story not as a critique of the early efforts at Kirehe, but rather in recognition of the difficult realities of health systems in resource-poor settings, and the lifesaving potential of an effective quality improvement program. We have not stocked out of Lasix for over a year now at Kirehe. Though I wish we could have improved the system a few months earlier, I am glad for all of the patients who have and will benefit from our strengthened pharmacy system and a steady supply of essential medicines.

Our Rwandan quality improvement team — Dr. Raymond Dusabe, Nurse Philbert Kanama, and Nurse Caste Habiyakare — was the driving force behind these remarkable improvements. Their fundamental understanding of the methodology and their belief in its utility allowed them to speak frankly and honestly with their colleagues about gaps in care and solutions they had devised to improve the system. They inspired their colleagues with their own outstanding service and solidarity with the community while employing simple QI tools to track and respond to even small dips in performance.



Dr. Raymond Dusabe (left) and Caste Habiyakare, the lead doctor and nurse for quality improvement at Kirehe Hospital.

The Rwandan QI team was able to maintain a very small footprint while spurring system-wide change because quality and excellence had become an all-staff endeavor. Soon our social workers and program director, who had frequent conversations with the local community, reported that people they spoke to were talking about a “change at Kirehe.” Patients noticed nurses working hard all night long, and using slow periods during the day to teach basic lessons on health and hygiene. They expressed their appreciation and growing trust that they were receiving the very best possible care. Nurses in turn described “rediscovering their sense of professionalism” and “renewing their commitment to health care and their community.” They reported that they were working harder than before but feeling much more satisfied with their jobs.

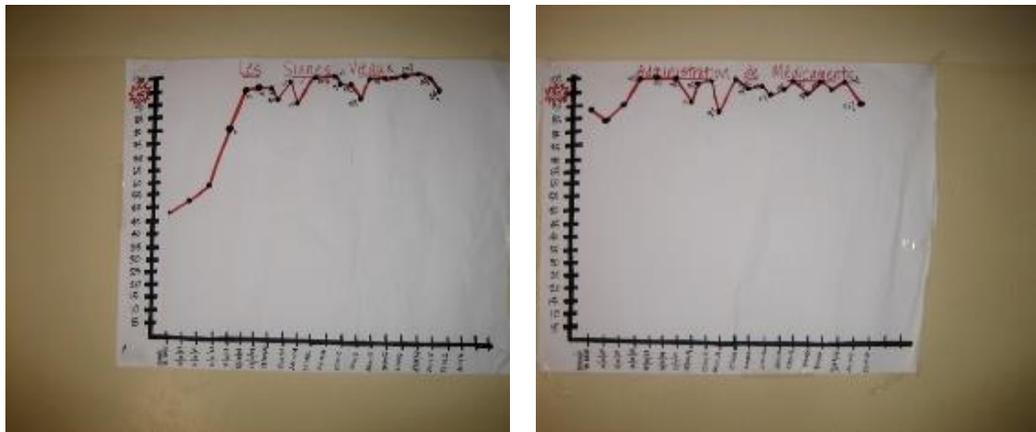
The Rwandan physician staff also made several important changes to improve patient care. They instituted afternoon rounds where they would follow up on any unstable patients as well as see any new patients admitted during the day (who otherwise would be seen first by nurses and not evaluated by a doctor until the following morning). The doctors started giving direct pass-off to whichever colleague was on overnight call to be sure key facts were communicated on the sickest patients. They installed a light box in the staff room so x-rays could be shown and challenging patients discussed during morning meetings.

The doctors also led a dramatic improvement in the learning environment at the hospital. They instituted afternoon teaching rounds that were initially led by either one of the visiting PIH clinical mentors or myself. During these rounds we performed ultrasounds together at the bedside, reviewed blood smears and urine sediments, and discussed the sickest patients in order to optimize management. Over time, the Rwandan doctors began to conduct these rounds on their own. Perhaps most impressively, the doctors organized an in-house lecture series. I returned to Kirehe Hospital in

September 2008 to find that, in place of our usual morning chalk talks, two nurses and a doctor were collaborating to deliver PowerPoint presentations to the staff on core clinical topics three days per week. This is an astounding feat in a rural community with inconsistent running water and no access to the power grid, where the majority of the population are poor farmers earning less than 1 USD per day.

We were witnessing a remarkable change at Kirehe. The staff was active and engaged, practicing excellence in their daily work and solving problems locally. Meanwhile our Rwandan QI team gained confidence with each success and stepped forward to lead and propose new initiatives even as Meera and I moved back into more supportive roles.

We began spreading the model. Quality improvement became an important theme of the first annual PIH Rwanda Physician Retreat. At the retreat, our now-veteran Rwandan QI team shared their philosophy on quality improvement: doctors, as system leaders, need to "be the change" and exemplify the highest standards of care. They also led a wonderfully nuanced workshop on the Model for Improvement. Our Rwandan team trained nurses at two health centers in the Kirehe district, and replicated both the specific and global results of the QI intervention at Kirehe. At Kirehe, we tapered from showing daily performance to random weekly spot-checks over the course of three months and moved on to other QI goals, including laboratory tests, universal HIV voluntary counseling and testing, partogram use, diabetic nutrition, and patients being able to correctly name their diagnosis. One year later, review of all of the Kirehe Hospital charts for September 2008 suggests we have held our early gains, and still check vital signs, give medications, and perform laboratory tests >95 percent of the time.



Using a wall chart, Lee and his teammates tracked the proper checking of vital signs each morning as well as the proper administration of medication.

- 4. What can we learn from the experience at Kirehe? Consider four key lessons according to Dr. Lee: Ensure broad consensus, keep a small footprint, make effective use of performance data, and address substantial resource and infrastructure gaps. How was each of these tactics significant in Kirehe, and why might they be important elsewhere?**

Broad consensus is critically important to ensure the success of programs in developing settings. Consensus-building includes earning trust, listening, and giving local stakeholders a central role in planning and leadership. We learned this lesson the hard way when, after training our first health center team off-site at Kirehe hospital, the program stalled for the first few weeks. Nurses at the health center saw the new program as a kind of police squad, rather than as an enabler for them to improve the system and provide the highest standard of care to their community, and they resisted it. When our Kirehe team went on-site to the health center, engaged the staff in open discussion, and framed the intervention in terms of service and solidarity, the improvement project quickly took off. Since then, we have made sure to involve the entire team from Day One and tailor our goal setting to the most important local problems.

Keeping a small footprint – that is, minimizing the burden on staff and resources – prevents improvement efforts from disrupting existing services. Now that we are looking to scale our QI program to all our sites in Rwanda, it helps a great deal that improvement work in our model is a part-time job, requiring only 30 minutes daily for a single nurse per site and 30 minutes weekly for staff discussion. When staff members are already over-extended covering clinical services (the usual case in resource-poor areas such as rural Rwanda), the prospect of carving out half-an-hour per day for one nurse versus reassigning that nurse full time can make all the difference for the local buy-in and long-term sustainability of an improvement program.

Making effective use of performance data can help accelerate and drive change. We found that by spotlighting two keystone patient care processes – taking vital signs and giving medications properly – we helped illuminate resource gaps and opportunities for system improvement all along the healthcare delivery chain. We observed downstream changes such as reorganized nurse staffing to promote ownership and accountability, anticipation of pharmacy stock outs before they occurred, and a higher overall standard of care – all without direct prompting from our QI team. These changes were driven by an empowered medical staff, responding to daily performance feedback and motivated by early successes. Properly timed and targeted performance feedback can be a powerful agent for change, and should be thoughtfully integrated into improvement work.

Finally, and perhaps most importantly: **in resource-poor settings, substantial resource inputs are necessary** to both initiate and sustain improvement. In the area of Rwanda where Partners In Health works, for example, we had to build and renovate the district hospitals, outfit the health clinics with electricity and equipment, strengthen the supply chain for essential medicines and diagnostics, hire, train, and pay a fair wage to hundreds of Rwandan staff, supply food and bed sheets, and fill resource gaps all across the system. As Paul Farmer has observed, “In order to improve clinical services, you need to improve (and often build) the clinic itself.” Building capacity through substantial infrastructure and resource investments is an essential step toward breaking the poverty cycle and bringing about meaningful improvement.

Discussion Questions

1. Imagine you are a successful QI program director who has led several high impact interventions from startup through independence in developing settings. Several proposals for QI interventions cross your desk and you have the option of funding only one of them.
 - How would you decide which proposal to fund?
 - What advice might you offer this new QI team as they get started?
2. The Partners In Health model isn't just about life-saving technologies and systems. It also aims to provide hope and dignity to the communities it serves. One example would be landscaping that beautifies the clinic and also signals to the community that PIH is committed to their humanity, over and above the delivery of necessary medical care. For instance, take a look at this photo of a new training center in Rwinkwavu, Rwanda, where our community health workers and all new staff get their introduction to PIH:



Another example would be the treatment and cure of childhood leukemia in an area where poor children would otherwise have no access to chemotherapy and cancer care.

- Think of a resource-poor community you are familiar with. How might you boost hope and dignity in this community in the context of a quality improvement program?
- What kind of “off the balance sheet” benefits might accrue from an approach that centers on providing hope and dignity as well as life-saving systems and technologies?