A Two-Way Street: What the United States Can Learn from Resource-Limited Countries to Improve Health Care Delivery and Reduce Costs
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In the United States, health care reformers, policy experts, pay­
ers, and providers seek models of care that achieve the “Tri­ple Aim” of improved health for a population, reduced costs, and improved experience of care.1 New models of care are in­creasingly relevant as a greater percentage of American patients will soon be covered by some form of value-based reimburse­ment model that provides strong incentives to provide excel­lent quality at the lowest possible cost.2,3 Understandably, these value-based models shift provider attention to segments of the population that drive costs and poor outcomes—so-called high­risk, high-cost, or vulnerable populations—which, at 5% of the population, account for 50% of the total costs.4

Innovators seeking care models that address some of these concerns often seek to learn from analogous circumstances in other industries or other contexts.5 For example, an innova­tor seeking a new approach to patient handoffs in a hospital (a notoriously unreliable process) might study the handoffs of unaccompanied minors in airports (an extremely reliable pro­cess). Austerity, often extreme austerity, and population/public health-oriented systems in resource-limited countries offer po­tentially useful lessons.

In resource-limited countries, which have sought to care for complex and vulnerable populations for decades, relative un­derinvestment in health and social services has forced creative solutions to managing complexity, which may now provide use­ful examples for the treatment of vulnerable populations in re­source-rich settings.6 This is the underlying principle of what has become known as “reverse” or “bidirectional” innovation.

In this article, we highlight just a small subset of the myriad ideas that can be gathered from the experience of health care providers and health system managers in resource-limited coun­tries that may have a meaningful impact on health care quality and safety if applied in resource-rich countries. When available, the limited evidence regarding the documented or expected im­pact of these ideas in the originating locale or in the context of health care in the United States (which can often also be general­ized to other resource-rich countries) is provided.

Idea 1. Task-Shifting
In many resource-limited countries, the shortage of nurses, phy­sicians, pharmacists, and other allied health personnel has been cited as a major barrier to providing clinical services.7 To address this human resource gap, health system planners have routinely reassigned clinical tasks to less specialized health workers. With careful role definition and expansion of duties, trained lay peo­ple, such as community health workers, can provide high­quality and cost-effective clinical services, freeing physicians and nurses to focus on clinical care for the sickest and most needy patients, including the frail elderly and those suffering from co­morbid mental health illnesses.8 Our experience and those of others suggest that “task-shifting” efforts can increase the ca­pacity of clinics without adding new personnel costs and without compromising patient outcomes.9,10 Furthermore, highly trained personnel such as physicians and nurses working in these environments feel that they are valued and operating at the top of their training, which improves professional satisfac­tion and reduces turnover.11

Implications for the United States
A major thrust of the US government’s recent health reform plan, generally known as the Affordable Care Act,12 includes expanding coverage to uninsured Americans. However, many have suggested that the existing physician supply will likely not be able to cope with rising demand for clinical services.13 Com­bined with proposals for capitated payment systems, coordinat­ed care mechanisms such as medical homes, and primary care physician accountability for population health cost and quality, the amount of administrative time required of physicians may be further stretched. Innovative concepts from resource-limited settings would recommend the “in-sourcing” of important but nonmedical tasks to trained nonprofessional staff, thus freeing up health care providers (physicians, nurses, and mid-level pro­viders) to see and treat patients. Several provider organizations are already using trained laypersons with specific cultural, eth­nic, or religious ties to the populations they serve to provide
education, peer support, and home visits for vulnerable populations, with excellent results.\textsuperscript{14,15}

**Idea 2. Low-Cost Sites of Care**

Born of the absolute lack of availability of hospital beds in many rural settings, health systems in resource-limited countries have evolved mechanisms of extending care into the home environment. Although regulatory constraints sometimes limit the extent to which “hospital at home” concepts are realized, resource-limited countries have long been forced to manage patients living with life-threatening conditions in the community. The prototype for community-based care for complex illness is tuberculosis (TB), in which community health workers and family members perform directly observed therapy, mostly in the home. This concept has also been extended to patients who would otherwise have been hospitalized. In Peru, for example, community members were recruited to oversee a complex ambulatory treatment program for drug-resistant TB involving injectable medications and management of complex side effects that achieved world-class results.\textsuperscript{16} In India, a controlled trial showed that home-based neonatal care for sepsis reduced mortality by more than 60%.\textsuperscript{17} In Ghana, community members perform disease surveillance and provide early treatment for pneumonia, malaria, and severe diarrhea, identifying cases before they reach the level of severity that would require inpatient admission.\textsuperscript{18}

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Volunteerism has experienced a revival, yet the body of often talented and energetic volunteers is underutilized by the health sector.\textsuperscript{19} Examples of complex care delivery in the home exist but warrant expansion. In the case of patients suffering from congestive heart failure, such aggressive home-based care has prevented primary admissions and reduced readmissions and hospital lengths of stay.\textsuperscript{20} Derivative models of the community health worker approach for ambulatory management of patients with complex social, behavioral, and medical needs have proliferated, with the aim of preventing index admissions and reducing the chances of those individuals being readmitted.\textsuperscript{21} Further, several complex procedures can now be provided in the home, including sleep studies and even home-based ICUs, with remote staffing.\textsuperscript{22,23} A community-based, health volunteer corps to track vulnerable patients, provide basic health education, and deliver follow-up care to ambulatory patients would be a welcome addition to the health care work force.

**Idea 3. Checklists and Prompts**

Resource-limited countries, by default or design, have taken numerous complex medical problems, distilled them to their fundamental components, and created diagnostic algorithms, treatment protocols, and care pathways to execute those elements reliably. For example, the World Health Organization (WHO) Integrated Management of Childhood Illness (IMCI) guidelines outline appropriate medical care for the diseases most responsible for under-5 mortality. As a result of simplified, standardized evidence-based care, IMCI has reduced childhood mortality in some areas by 13% and has enabled the task-shifting efficiencies described earlier.\textsuperscript{24} Such simplified care pathways and protocols have been uploaded to smart phones, tablet computers, and other mobile Web-enabled technologies that enable easy access and easy tracking to bring evidence-based care to the bedside.\textsuperscript{25} Checklists and clinical protocols not only help to ensure reliability but reduce costs by preventing avoidable complications.\textsuperscript{26,27}

**Idea 4. Patient Engagement and Ownership**

One of the most striking ideas we have seen in resource-limited settings has been the notion of patients’ ownership of their personal health information. Without access to computers, electronic health records, and even filing space or medical clerks in many settings, resource-limited countries have created personal health information records that are held by the patients themselves, allowing them full control over their health information. Patients are free to move from one provider to another with all or most of their data on either handheld paper records, or, more recently, on electronic cards or chips.\textsuperscript{32} Although the amount of information stored on these paper records or chips may be limited, the principle of being able to access your health data when and how you please is powerful and places the patient in a
position of responsibility with regard to his or her health. In addition, although not explicitly designed for this purpose, these standardized handheld records serve the purpose of creating an “interoperable” data system so that patients can move from one health post to the next without fear of having providers miss a step in how to manage their care. This interoperability of the patient-held record reduces inefficiencies and waste associated with incomplete data that resource-limited countries can ill afford.

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Various innovators have borrowed these concepts and developed personal health information portals. In recent years, with expansion of meaningful use incentives sponsored by the Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009,33 many providers have created patient portals that allow patients to log in and download their lab results, medication information, and treatment plans.34 Some systems have pushed this further with OpenNotes—a product and service that allows patients to read and often comment on the actual physician notes in their electronic health record.35 This level of transparency breaks new ground, but the principles of patients’ ownership and responsibility for their own health data, as well as the interoperability, reflected in the simple patient-held records, have been in place in resource-limited countries for decades.

**Idea 5. National Goal-Setting**

At the macrosystem level, countries both rich and poor have come together to establish international health care priorities with associated targets. In 2000, United Nations member nations signed on to reach eight Millennium Development Goals (MDGs) by 2015. MDGs 4, 5, and 6—the health MDGs—were ambitious and galvanizing. Many resource-limited countries responded by setting aggressive national targets and began a process to revitalize and transform their health systems to meet those goals.36 For example, South Africa’s HIV/AIDS National Strategic Plan aimed to treat 80% of those in need of HIV treatment by 2011.37 Since the establishment of the plan, it is estimated that overall HIV incidence among adults in South Africa decreased by 35% in 2002–2005 and 2005–2008, with an additional 2.8 million years of life saved among the 1.7 million people receiving antiretroviral therapy in 2012.38–40 UN member states are now in the process of evaluating the overall impact of the MDG process and are proposing a next round of so-called sustainable development goals for the next 15 years.41

**Conclusion**

These five ideas for change, which are far from an exhaustive list, suggest the kinds of lessons that resource-limited countries have to teach health care systems richer in resources about teamwork, cultural competence, and navigating complex political barriers to change. The current economic climate and the need for cost containment in health care afford specific rationale for turning to resource-limited countries for lessons about how to build safe, effective and patient-centered health systems where costs must be tightly reined in.

There are several examples of efforts to capture innovative ideas from resource-limited settings. Yet despite these efforts, there is little evidence available to document the impact of these ideas when applied to the context of health care in the United States and other resource-rich countries. This was a major limitation in writing and referencing this article. In addition, few resources have been made available to guide the contextual adaptation of these ideas. Innovation departments in hospitals and health care organizations in resource-rich countries may have interest in these ideas, but guidance on how to test and adapt them into high-impact changes is lacking. These gaps represent opportunities for researchers to study the impacts and comparative effectiveness of these new ideas. There is additional opportunity to improve the efficiency and effectiveness of harvesting and disseminating ideas from resource-limited settings to ensure that the very best ideas are available for all health systems, resource rich or not, to take advantage of. The current situation of escalating health care costs and relative health system underperformance demands nothing less. The time is right for the dialogue between rich and poor health systems to become a truly two-way street for ideas and learning.1
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