

ImpactIndia

Features **Lessons for Creating Better Global health Programs**

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Lessons for Creating Better Global Health Programs





EFFORTS TO BRING PROMISING HEALTH CARE INTERVENTIONS TO RESOURCE-CONSTRAINED REGIONS OF THE WORLD OFTEN FALTER—OR EVEN FAIL—BECAUSE ENTREPRENEURS UNDERESTIMATE THE ARRAY OF OBSTACLES THAT LOOM IN THEIR PATH. ASPIRING HEALTH INNOVATORS CAN BENEFIT FROM LESSONS THAT SOME OF THEIR PREDECESSORS HAVE LEARNED THE HARD WAY.

■ *By LYN DENEND & AMY LOCKWOOD, WITH MICHELE BARRY & STEFANOS ZENIOS*



The PlayPump combines a recreation opportunity for children with a device that aims to make gathering water easier and safer.

While traveling in South Africa, a retired British businessman named Trevor Field took note of the burden that collecting safe drinking water for their families placed on women and girls in rural villages. That experience made a big impression on him. The need to gather water, he believed, should not take mothers away from their children or cause young girls to miss school. So Field began looking for a solution. In 1989, he licensed the rights to an existing technology that combined a merry-go-round with a community water pump. The idea was simple: children who lacked recreational equipment could power the pump as they played on the merry-go-round. To pursue that idea, Field formed an organization called PlayPumps International. The enterprise quickly attracted support from donor organizations, and Field set his sights on installing thousands of PlayPumps in local schools across sub-Saharan Africa.

What Field and his supporters failed to understand, however, is that a shortage of mechanical energy to operate hand pumps has never been a significant obstacle to supplying clean water in Africa. Financing and maintaining adequate water supply infrastructure, improving water quality, and dealing with water scarcity are all far more problematic issues, and the PlayPump did nothing to resolve them. The PlayPump solution, moreover, didn't take the perspective of users into account. Children found the merry-go-round mechanism difficult to rotate and quickly lost interest in it, leaving women to operate the pump device by hand—an activity that they found both inefficient and embarrassing. After years of achieving mixed results, PlayPump International closed its doors in 2010.

The PlayPump story echoes all too many other stories of well-intentioned health innovation

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projects that ultimately failed to achieve their desired impact. Especially in the global health field—the field in which people seek to improve health in developing countries around the world—a pattern recurs with dismaying frequency: A team of health innovators initiates a project. The project generates momentum in the form of seed funding and, in some cases, media attention. It goes through the stages of prototyping and testing. Then the team encounters obstacles of the kind that often mark new ventures, and the project languishes without ever reaching its intended scale.

The need to break this frustrating cycle has become ever more urgent. In response to growing health care deficiencies in resource-constrained settings, entrepreneurs have begun to develop creative technologies and breakthrough service delivery models that promise to address the needs of underserved patients and providers. Equally important, aspiring health innovators are taking significant steps toward commercializing many of these solutions.

These efforts are admirable. Yet they are no less fraught with challenge than efforts to create and market the next smartphone, 3D printer, or optical sensor. In certain crucial respects, they are *more* challenging. The health care industry has several characteristics that increase the complexity of introducing a new product or service into the market. Some of these features, such as government regulation and clinical testing requirements, are in place to ensure the safety of consumers. All the same, they add expensive, time-consuming steps that are not present when a retail company launches a new product. In the United States, by one estimate, it takes 12 years and \$350 million to bring a single new drug to market. The clothing retailer Zara, in contrast, is reportedly able to translate designer fashions from the runway to its low-cost stores in as little as two weeks. Contextual barriers that are widespread in developing countries—unreliable access to water, electricity, and transportation; limited availability of well-trained medical professionals; crippled supply chains; and the limited purchasing power of users—further complicate efforts to bring innovation to those settings.

In combination, these factors make entrepreneurship in global health a daunting proposition. For every innovation aimed at an underserved patient population that reaches its target market, there are many other ideas with the potential to meet vital health needs that never attain that goal. There is one way forward, in our view: experienced members of the global health community must commit to sharing their hard-won wisdom—wisdom that arises not just from success, but also from failure.

HIDING IN PLAIN SIGHT

Entrepreneurs in every sector face difficult odds. But the lack of information about what has been tried, what has failed, and what has been learned in the field of global health innovation puts those who work in this space at risk to an especially high degree. There is now a large body of literature on the general process of innovation. Yet material that presents practical insight on the complex field of global health remains in short

supply. Media stories about global health innovation are fairly common, but they almost always emphasize the passion and the ingenuity of entrepreneurs. They have little to say about the risks that these entrepreneurs have faced, and they include almost no mention of failure. As a result, lessons about the obstacles that limit global health innovation and the approaches that can overcome those obstacles are not readily available.

To help close that knowledge gap, we spent more than a year and a half talking with practitioners, funders, and others about their approach to pursuing or enabling global health innovation—and, in particular, about the *challenges* that they have faced along the way. We did so under the auspices of a campus-wide grant that Stanford University received from the National Institutes of Health in 2010. As we delved into the topic, we started to think critically about how well we were preparing students for the obstacles that they would confront as they move beyond an academic setting. Over time, our work began to focus on understanding where innovators are most likely to struggle as they bring global health products and services to market. This research led us to create a collection of case studies called the Global Health Innovation Insight Series.¹

Our goal in building this base of knowledge was to help those who have labored in the field to share their experiences with other global health innovators. Given the variety of geographies, technologies, service delivery methods, and business models that our research has covered, we have not been able to identify a single, straightforward recipe for success. We have, however, extracted several guiding principles that are applicable across a broad range of global health interventions. These principles may appear simple in theory—and, indeed, somewhat obvious when viewed in isolation. But that is a defining aspect of this field: in many cases, the risks that are most likely to derail global health innovators are hiding in plain sight. So, we believe, are the lessons that would-be entrepreneurs can take from the experiences of innovators who have come before them.

A prototype is just the beginning | Many entrepreneurs who work in global health are based in the developed world. Because they spend only a limited amount of time in the developing-world countries where they hope to target their products, they tend to focus their efforts on early-stage work that they can do remotely: identifying needs, brainstorming solutions, creating functional prototypes. Yet it is the hard, time-consuming, and expensive work that comes afterward that determines whether an offering will reach its intended market. “That’s not to say the idea is the easy part,” says Robert Miros, CEO of 3rd Stone Design, a product design, strategy, and development consultancy. “But there are a lot of needs and a lot of potential ideas. The challenge becomes: How do you take that initial idea, scale it up, and make it into a real product?”

Consider the case of Respira Design. Launched in 2007 by a team of Stanford University graduate students, Respira developed an asthma spacer for use in resource-constrained settings. What makes the offering special is its economical design: it consists of a single sheet of paper that people can transform into a usable



spacer through a series of cuts and folds. Those who have seen the product have routinely lauded its simplicity. Yet the Respira team faced a major challenge. “We couldn’t put it in the hands of a mother to treat a child without a detailed understanding of how effective the device was,” says Barry Wohl, a cofounder of Respira.

To collect data on effectiveness, Respira needed to test its innovation in the field. Likewise, field-testing was necessary to obtain approval from regulatory agencies—either in the United States or in Mexico, the company’s primary target market. Conducting such tests would require substantial funding. But before potential donors and investors would make a sizable financial commitment to the company, they wanted to see clinical data that showed whether the device actually works. This Catch-22, among other factors, ultimately led Respira leaders to shut down the project.²

You can’t do it alone | Some entrepreneurs believe that a single team can execute all of the steps that make up the innovation process. In reality, successful innovators almost always partner with experienced individuals and organizations that can help them overcome important hurdles. To enable collaboration, they deploy

them on board. We explained... the uniqueness of how consumers can get clean water through our program,” Mandell says. “Usually, when they’re on board and supportive, our sales are much better.”³

Just because you build it doesn’t mean that they will come | Global health innovators tend to be passionate about helping others. But the *need* for a given solution is wholly distinct from a *demand* for it. In global health, demand is a complicated matter. Patients, providers, and investors all have divergent priorities and points of view. To ensure that different players in a health care ecosystem will purchase, prescribe, and use a product, innovators must analyze what motivates each of those players and then find ways to align all of their interests.

The story of Star Syringe illustrates the value of responding adaptively to demand-based challenges. In 1984, the British inventor Marc Koska read about the devastating consequences of unsafe injections, which often result from needle reuse. He committed himself to developing an auto-disable (AD) syringe that would lock its plunger in place after a single use. Convinced that he had developed a breakthrough solution, Koska founded a company

called Star Syringe and shopped his product, the K-1 syringe, to major syringe manufacturers. His hope was that they would license and distribute the K-1. Initially, however, they declined his offer. “They saw that there was a need, but they didn’t see the demand,” Koska says. Only

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various mechanisms—strategic hires, joint ventures, outsourcing, the use of contractors and consultants. Whatever methods they use, innovators must be brutally honest about what they can and cannot do well, and about how their enterprise might benefit from outside assistance. Instead of creating their own sales and distribution channels, for example, effective entrepreneurs often find ways to leverage channels that already exist. To facilitate that kind of solution, innovators need to become adept at tapping into informal relationships and working with local power structures.

Representatives from the nonprofit PATH learned that lesson well during implementation of the organization’s Safe Water Project. From 2006 to 2012, PATH led a series of pilot initiatives to make safe water products available in rural parts of Cambodia, India, Kenya, and Vietnam. In those efforts, PATH focused on using market mechanisms to distribute its products. At first, sales were disappointingly low. “We realized that we weren’t being sensitive to the existing influencer relationships that existed in the villages,” says Ben Mandell, a consultant who worked on PATH projects in Cambodia.

Mandell and others on the PATH team then modified their approach. Before starting a sales campaign in a village, they would meet proactively with village chiefs, government officials, and other local opinion leaders. “We discussed what we’re doing and tried to get

after he landed a significant order from UNICEF was he able to interest manufacturers in the technology.

The challenges, however, didn’t stop there. By the mid-2000s, Star Syringe had signed deals with about 10 licensees, and collectively the licensing companies had sold roughly 2 billion syringes around the world. But that figure, as impressive as it seems, represents just a fraction of the total syringe market. In India, for example, the level of unmet need was especially high. Frustrated in his efforts to persuade Indian officials to mandate the use of AD syringes, Koska created the SafePoint Trust. SafePoint launched a huge public awareness campaign that sparked outrage in the Indian press and ultimately forced the Indian Ministry of Health to adopt AD syringes in its public health facilities in 26 states.⁴

Business models matter | In the global health field, choosing the right model for bringing an intervention to market can’t be an afterthought. Many health innovators, for example, assume that the best option is to create a company around their offering. But other options exist and are worth pursuing. “There are already too many organizations out there,” says Laura Hattendorf, portfolio director at the Mulago Foundation. “The vast majority of early-stage teams would be well served if they spent more time thinking about how to integrate their interventions into an existing organization.”

Thinking through that issue is a familiar process for Alejandro Palandjoglou, a cofounder of AdaptAir, a company he started in 2011. AdaptAir makes a silicon adapter for a piece of equipment—the bubble CPAP (continuous positive airway pressure) device—that providers in resource-constrained settings use to treat children with respiratory infections. Bubble CPAP devices are emerging as an affordable alternative to mechanical ventilators, and the AdaptAir interface improves the efficiency of the CPAP system. What's more, it does so without requiring the purchase of a new bubble CPAP machine. When the AdaptAir team introduced the device, the reaction from health-care professionals was very positive. "They loved that this was an add-on device, which made their current set-up as effective as one that you'd find in a well-resourced hospital in a developed country," Palandjoglou says.

As members of the AdaptAir team tried to take their idea forward, they discovered that it would be nearly impossible to create a business around an accessory device that costs just a few dollars per unit. Licensing seemed like a feasible alternative for getting AdaptAir to market. Unfortunately, that route presents obstacles of its own. Prospective partners are increasingly risk-averse, and they often insist on licensing only products that have already cleared clinical, regulatory, and intellectual property hurdles. To reach that point, AdaptAir needs to raise funds to take the device through clinical trials, gain regulatory approval, complete product development, and establish manufacturing. Palandjoglou raised a modest amount of money to begin testing the adapter, but it has been slow going.⁵

Customers must come first | People in all parts of the world—regardless of their socioeconomic standing—value their ability to make a choice. They also value choices that align with their preferences, aspirations, and desires. So entrepreneurs in global health must treat patients, providers, and other stakeholders just as they would any other group of consumers. Even if these consumers aren't directly paying for a health-related offering, they must willingly change their behavior before they will adopt that product or service, and that process usually requires health innovators to give careful attention to marketing.

Population Services International (PSI), a nonprofit that delivers health products in high-need regions, uses branding and social marketing to drive positive health behaviors. In 2010, PSI launched a campaign to promote female condom use in Lesotho among women between the ages of 18 and 29. The organization conducted market research and found that perceptions of the female condom within the target group were overwhelmingly negative. In response to these findings, PSI developed an initiative to reposition a certain brand of low-cost female condom as the preferred choice for women who are sophisticated, independent, and able to take charge of their lives. By marketing the product via peer educators, special events, and media advertising, and by making it available where young women are most likely to need it (in restrooms and university dormitories, for example), PSI successfully changed women's opinion about the female condom.

Success in marketing to female consumers wasn't enough, however. In the cultural context of Lesotho, even if a woman is comfortable with using a female condom, the man in a relationship often decides whether she will use it. "The feedback we got from women was 'You need to talk to our husbands and our boyfriends about this. You need to tell the men why they should accept it,'" says Brian Pedersen, a technical services advisor at PSI. The next step for PSI, therefore, is to launch a campaign targeted at men. "We're going to see if we can convince men to accept having their female partners use the female condom, or at least encourage them to find out about it," Pedersen explains.⁶

Everybody needs an incentive | To create a solution that will be truly sustainable, health innovators need to ensure that each participant in a service or product value chain receives appropriate value for its involvement. Manufacturers and distributors, for instance, must earn market-rate compensation for the work that they do. Too often, companies in the global health field simply avoid the difficult work of managing these crucial value-chain relationships.

The leaders of D-Rev, a nonprofit product development company, have taken the issue of incentives seriously. One of D-Rev's signature products is Brilliance, a low-cost solution for treating infant jaundice. To bring that offering to market, the company had to find partners to handle the manufacturing, sales, and distribution for it. After extended negotiations with Phoenix Medical Systems, a for-profit company based in India, the D-Rev team devised an agreement that allows Phoenix to license Brilliance in exchange for fees and royalties. D-Rev leaders made sure that the royalty arrangement was fair but competitive, so that Phoenix would have a clear incentive to market the technology.

In India, public hospitals and small district hospitals bear most of the burden of treating neonatal jaundice. D-Rev leaders, therefore, were eager to motivate the Phoenix sales team to sell Brilliance to those institutions. So they got creative with how they structured the royalty scheme. Although customers in all market segments pay the same price for the Brilliance device, D-Rev takes a lower royalty on sales to providers in public and district hospitals. "If you sell to a public hospital, you get a bigger cut. If you sell to a private hospital that serves higher-income patients, you don't get as much back," says Jayanth Chakravarthy, product manager for Brilliance. That incentive structure appears to be working. D-Rev and Phoenix launched Brilliance in mid-2012. Since then, providers have treated more than 11,000 babies with the device.⁷

Slow and steady wins the race | Media coverage of global health innovation continues to focus on breakthrough products that promise quick fixes to longstanding problems. But in this field, there's no such thing as a quick fix. Even a solution that appears simple on its surface will require innovators to display exceptional patience and perseverance in bringing it forward. That's particularly true when an entrepreneur tries to introduce a new offering in an untested market. There are many ways to encourage product adoption, but a "big bang" approach is rarely the best



strategy. In most cases, a more measured, iterative approach will lead to longer-lasting results.

Take the example of CycleBeads, a natural family planning product developed by the Institute for Reproductive Health (IRH) at Georgetown University and Cycle Technologies. In 2006, the Minister of Health in Mali asked the IRH team to roll out CycleBeads across the entire country. Members of the team had reservations about such a large-scale implementation. In Mali, only 4 percent of women who were of fertile age practiced family planning. “It is difficult to start from absolute zero and get to 100 in a short period of time,” says Victoria Jennings, a researcher at IRH. “But given the enthusiasm in Mali, we decided to move forward.”

Jennings and her colleagues quickly discovered that they were underprepared. “We didn’t lay the needed groundwork, and we tried to do too much too quickly,” Jennings says. Health workers were hesitant to embrace the CycleBeads method. Raising public awareness about the use and availability of that method was equally challenging. IRH also faltered in establishing an effective delivery and support model for the product. “If you’re trying to do all of those things across the country without having tested them in pilots, you’re going to make mistakes,” Jennings says. In the wake of these setbacks, the IRH team abandoned the nationwide strategy and instead chose to target just four regions within Mali. They partnered with established networks of community health workers to provide comprehensive training on the CycleBeads method. They also devised a marketing campaign to reach women who weren’t already visiting clinics to obtain another form of birth control.⁸ Making these changes made a difference. By 2012, the IRH team had made CycleBeads available at more than 1,200 service delivery points across 43 of Mali’s 49 regions.

A CHALLENGE TO INNOVATORS—AND TO INVESTORS

The number and variety of potentially life-changing health innovations that appear every year are truly inspiring. For that very reason, many innovative projects receive ample support in their early stages—support that takes the form of university programs, business plan competitions, and seed grants. But the vast majority of these projects eventually get stuck. Some of the attrition is natural and appropriate, but many remarkable inventions do not reach the people they are trying to serve because entrepreneurs struggle with the challenges that we have described here, or because investors are unwilling to direct necessary resources to them.

For entrepreneurs, awareness of the challenges faced by health innovators who came before them is critically important. So too is a clear understanding of the time that it takes for a great idea to become a widely accepted solution. “Everyone is excited about innovations that address global health issues,” says Jane Chen, a cofounder of Embrace, a social enterprise that markets a low-cost infant warmer for use in treating low birth-weight babies. “But no

one tells you that it will likely take at least 7 to 10 years to bring even the most well-designed product to scale.”

Investors, both philanthropic and commercial, must also understand the level of commitment that is necessary to provide global health innovations with a realistic chance of success. They must be willing to offer enough resources over a long enough time period for innovative projects to survive beyond the prototype and pilot stages. Enabling an innovation to become sustainable and to achieve a large scale requires investors to reset their expectations and their investment policies. It means moving away from small, short-term grants and toward multi-year commitments. “The early years of any enterprise are all about R&D and learning,” says Hattendorf. “Investors need to look to the fundamentals: Is the product or service still one that has high social impact potential? Is the management team rising to meet the challenge? One-time grants or prizes are helpful, but what really builds a company is the time and capital to learn, iterate, and settle into the right product-market fit.”

Despite a wide array of serious challenges—or perhaps because of them—there is a growing community of entrepreneurs and investors who are passionate about overcoming critical global health challenges. Passion is not enough, however. Projects that aim to bring health-care interventions to resource-constrained regions of the world are exciting, but they will founder if entrepreneurs and investors fail to surmount the obstacles that stand between an idea and its implementation. ■

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