



BOLD IDEAS WITH BIG IMPACT

It's hard to believe that May 3, 2013, is only Grand Challenges Canada's third anniversary. It's been a tremendously exciting year as we continue to build on our goal of supporting bold ideas with big impact.

Working with literally hundreds of innovators on the ground in low- and middle-income countries, we're enabling exciting new solutions to the truly big challenges that confront global health. From Saving Lives at Birth, Saving Brains and Global Mental Health, to supporting rising stars in global health, we're unleashing the forces for transformative change – all squarely focused on saving and improving lives.

A large part of our character as an organization comes from harnessing the unique energy of entrepreneurship to take innovations to scale. Not only does this create the potential for even bigger impact and successful advancement of our efforts to combat a wide range of global health challenges, it allows us to tap private sector expertise and finance. The result is often quite exciting: unlocking new social enterprise in the developing world and creating start-ups at home in Canada that hold out the promise of future jobs, prosperity and growth. The emergence of these new social enterprises is among the most dynamic and organic of the developments we're witnessing as the organization matures.

This has been a busy year. We enjoyed the ongoing encouragement of Mrs. Laureen Harper as the Honorary Chair of Saving Brains, we hosted the annual Grand Challenges symposium in Ottawa with the Bill & Melinda Gates Foundation and welcomed the launches of Grand Challenges Brazil, India and Israel.

Overall, we've continued to move forward at a rapid pace, anchored by our core values. One such value that we've strongly embraced as an organization is the importance of entrepreneurship – of persistently pushing our own capacity to invite applications, award new grants, identify truly exciting scale opportunities and advance the cause of achieving on-the-ground results that make a tangible difference in the health and well-being of people and their communities. Of course, that is all anchored by an equally rigorous oversight and accountability framework to ensure efficacy and results.

As of March 2013, Grand Challenges Canada has awarded 283 peer reviewed grants, representing a commitment of \$93 million. For every dollar we have spent, we are leveraging roughly one additional dollar through partnerships, and we expect this ratio to grow. All of this has been made possible thanks to the Government of Canada's belief and financial support of Grand Challenges Canada – and, for that, we all owe them our sincere gratitude.

Behind the numbers, there are tremendous stories to be shared, including moving and affecting examples of dedicated researchers who are already beginning to create change on the ground and, in the process, make material improvements in people's lives.



Projects with Early Promise

By far the most exciting part of our lives at Grand Challenges Canada is the emergence of what we call 'bright spots': those projects and innovators that are, in defiance of all reasonable expectation, already showing signs of early results. Innovation is usually a longer-term enterprise, so it is immensely gratifying for team members to see projects they reviewed on paper begin to come to life on the ground, just as hoped. It's also immensely validating, as it confirms the approach and model we've developed is working as intended.

I'm always quick to remind our team that such examples are to be treated as treasured anomalies – they are encouraging but innovation normally takes a long time. That's a caution well worth posting. We've always known that much of our work will require years to measure fully and effectively.

At the same time, I've become excited with the number of bright spots that we've seen in what still constitute our early days. In talking it over with others, I've come to believe that this early success is far from accidental. What I think we are discovering is that, in practice, our 'Integrated Innovation' model – the coordinated application of scientific/technological, social and business innovation approaches – incentivizes and encourages demonstrable results earlier and more obviously than other models. That's not to say that all our grantees will produce such results. But it may be that, due to the Integrated Innovation model, we can expect earlier results more often than traditional development models generally produce.

With all this in mind, I wanted to dedicate the balance of my update to sharing some of these bright lights with you and highlighting some of the projects that, already, are giving us cause to be excited about the success of the Grand Challenges approach.



Grand Challenges Canada is dedicated to supporting bold ideas with big impact in global health

Projects With Early Promise (continued)

Diagnosing diarrhea in Botswana – In most of the world, diarrheal disease remains deadly and, far too frequently, the cause goes unfound. One of the main barriers to diagnosis is the difficulty in obtaining an adequate and timely specimen. Even the most sophisticated detection tools are ineffective without an adequate specimen. The goal of this Botswana-based project is to directly fix this challenge. The project team has combined highly sensitive detection techniques with a robust, patient-friendly, technologically advanced yet easy-to-use flocked rectal swab and a transport system that poses a minimal biohazard risk. Early results are encouraging and indicate that these samples will have equal or higher pathogen yield than traditional bulk stool samples, and will allow for point-of-care diagnostics for one of the leading causes of childhood illness and death.

The more exciting result has been indirect, although significant. During the winter of 2011, there was a particularly severe diarrhea epidemic across Botswana.

With funding from Grand Challenges Canada, the project team was the only group in the country testing diarrheal specimens for viruses (including rotavirus). They were asked by colleagues at the Ministry of Health to share their data and also to loan them point-of-care test kits for rotavirus detection, so that children from other regions could be tested. It was determined at all facilities that the vast majority of cases were due to rotavirus. After consultation with the project team, the Ministry of Health decided to fast-track the approval of a national rotavirus vaccine program, which was started within a year. Botswana is now one of the first countries in Africa to roll out a national rotavirus vaccine program. This is particularly impressive, given that Botswana is not a GAVI-eligible country. Even more encouragingly, project investigators are now working with the Ministry of Health and other collaborators in order to establish a national rotavirus surveillance program where the flocked swabs will be used for specimen collection.



Flocked rectal swab design, anatomically designed for sampling rectal epithelium



Projects With Early Promise (continued)

SOIL Haiti, Sustainable Organic Integrated

Livelihoods (SOIL) – The lack of availability of clean sanitation services in many low – and middle – income countries is a clear threat to public health. This is a problem that neither governments nor NGOs have effectively come to grips with in many states where infrastructure is weak and resources are few. SOIL is a non-profit organization in Haiti dedicated to protecting soil resources, empowering communities and transforming wastes into resources. Specifically, it is developing and implementing a viable business model for providing complete sanitation using private sector tools to generate a common benefit. The model charges a small fee for the maintenance of toilets and it also receives revenues from selling waste products as fertilizer. Through design improvements and economies of scale, SOIL is working to reduce the cost of the toilets from \$200 to \$75 per unit.

SOIL's ecological sanitation (EcoSan) toilets were initially providing essential sanitation services to 20,000 people living in the camps of individuals displaced by the 2010 earthquake in Port-au-Prince, Haiti. Even at present, 5,000 people continue to rely on the toilets in both Port-au-Prince and Cap-Haïtien.

Through the support of Grand Challenges Canada funding, SOIL is mapping potential target neighbourhoods, hosting educational events to increase market demand, training local technicians and producing 50 EcoSan toilets to service targeted neighbourhoods. Their ultimate objective is to bring this approach to scale in Haiti and then globally.



A recent tweet from the SOIL Haiti team



Projects With Early Promise (continued)

JANMA Clean Birth Kit: A Product of ayzh –

There are few challenges in global health greater than saving the lives women and children at the time of birth. A for-profit social venture, ayzh is developing low-cost technology designed to meet the unique needs of women in communities where resources are few and conditions are often unsanitary. Their first product is JANMA, a \$2 clean birth kit, which provides women with all the components recommended by the World Health Organization for a safe and hygienic birth. Ultimately, this project aims to reduce unnecessary infections, particularly with umbilical cords, which frequently results in morbidity and mortality.

Initially, about 10,000 units were sold and distributed in India, Malawi and Ghana. However, a lack of awareness among healthcare workers and a lack of formal data to demonstrate the product's impact posed substantial challenges to wider scaling. With the funding from Grand Challenges Canada, ayzh has been able to better measure impact and strengthen distribution. As a consequence, ayzh now believes it will fill orders for 60,000 units – a six-fold increase. With additional partnerships, ayzh has also expanded its marketing efforts to include Nigeria, Laos and Haiti.



ayzh employs women to package the JANMA Clean Birth Kit

Projects With Early Promise (continued)

Champions of Maternal and Neonatal Health: A Project in Transformative Leadership Amongst Islamic Opinion Leaders in Northern Nigeria – Some of the greatest barriers to improving women’s and children’s health are cultural rather than technological. Even with the best scientific evidence for delivering good health care, few improvements can be made if influential community leaders believe that medical interventions and healthcare providers represent a threat. This problem is compounded when strict religious beliefs place cultural and community behaviours under the influence of faith leaders.

This unique and impressive project was designed to address this challenge directly, by engaging with religious leaders to leverage their involvement and support, rather than attempt to circumvent or contest it. The goal is to increase the demand for maternal and neonatal health services in poor, conservative communities with dominant Muslim populations. Specifically, 14 conservative religious leaders participated in a study tour to Egypt. Working alongside prominent Egyptian religious and medical scholars, participants received information about the

importance of maternal and neonatal health, and the compatibility of these objectives with their faith. Particular attention was dedicated toward child spacing and childhood vaccinations.

The early results of this project are very promising and highly instructive. Before the study tour, 10 of the 14 religious leaders expressed doubts about immunization. Following the study tour, all but one faith leader had become persuaded to the contrary and indicated they would now support immunizations. Project leaders are also reporting that this openness is spreading to other important areas. Signs are amassing that these same religious leaders are now advocating maternal healthcare and health interventions during pregnancy. Such results have attracted interest. As a result of this project, the State Primary Health Development Agencies in the two programming states have established formal working relationships with the Ministry of Religious Affairs, and UNICEF has incorporated the individuals engaged through the project into their community mobilization activities.



Religious leaders participating in the study tour in Egypt



Projects With Early Promise (continued)

ChipCare – ChipCare offers an example of how Canadian enterprise is being leveraged to address a major health challenge in the developing world, while creating spinoff start-ups with the promise of financial and business reward at home in Canada.

ChipCare’s portable tester uses wireless computer technology and disposable, low-cost “chips” to easily read a patient’s CD4 cell count. They have designed their tester device to be rugged so that it can be used in the field by doctors or health workers located in remote and rural areas, or in any poor setting where access to laboratories or hospitals is limited because patients can’t afford tests or travel. The initial focus is on CD4 T-cell counting for HIV disease monitoring. It is estimated that the current global market for CD4 tests is 25 million tests annually, although the need is estimated at 60 million tests annually. The appeal of the innovation is that it relies upon a single, small blood sample using only one drop taken from a finger prick. The device can potentially be modified in future for the testing of other diseases, such as malaria or tuberculosis.

ChipCare has now developed a prototype that has been presented to prospective investors, with exciting uptake. With the support of Maple Leaf Angels, they are transforming their development idea into a company that’s attracting private sector finance – thanks, in part, to a commitment by Grand Challenges Canada to match angel financing. The result is a win-win-win: an innovative device to help those in need, a new Canadian start-up, and the promise of jobs and growth down the road.



Lu Chen and the ChipCare device

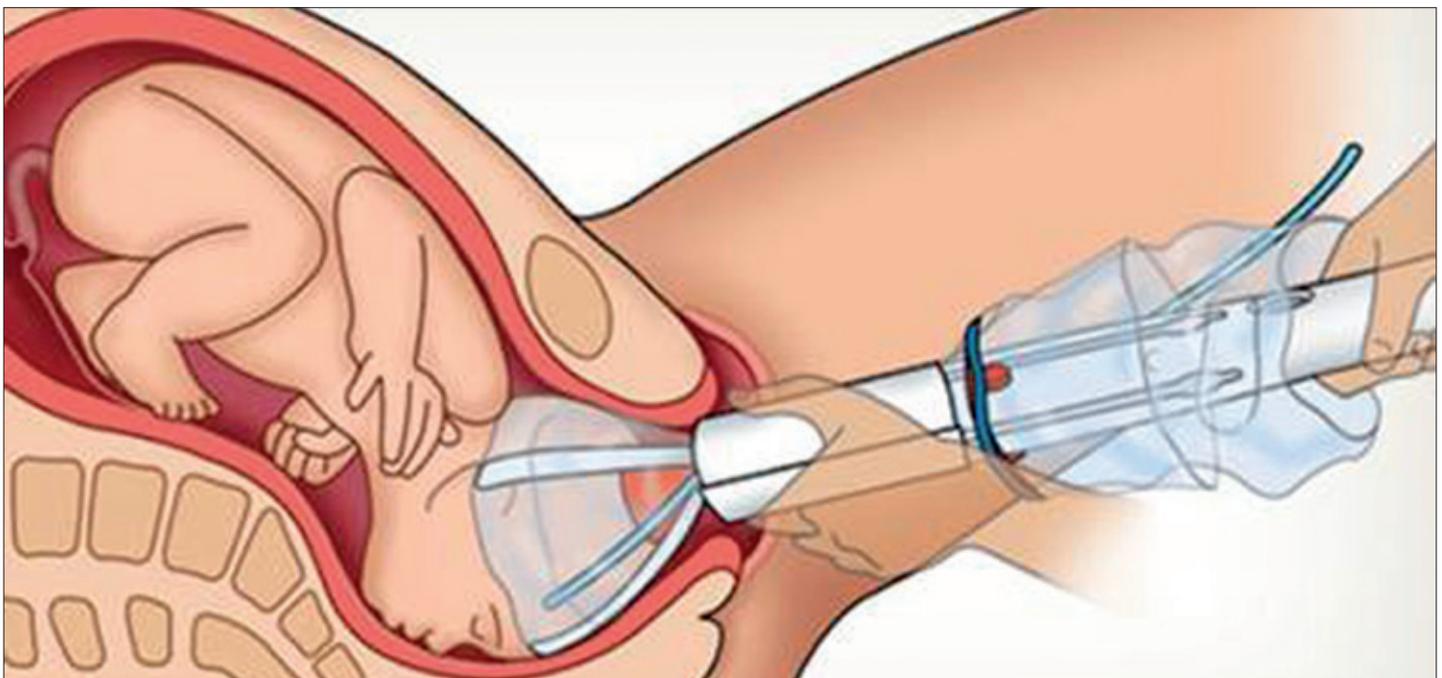


Projects With Early Promise (continued)

The Odón Device – Complications that arise during the second stage of labour are a devastating cause of death for millions of women and babies each year. It occurs when the fetus is unable to move into the birth canal, leading to serious bleeding, infection, fistulas or death in women, and to asphyxia of the fetus. The Odón Device is a new, low-cost instrument that can assist in the safe delivery of a fetus, designed specifically to assist with and overcome obstructed labour. The device has been designed to be safer and easier to apply than forceps and a vacuum extractor (which is contraindicated in the event of maternal HIV infection), and to provide a safe alternative to some Caesarean sections in settings with surgical and human resource constraints. Created by Jorge Odón, an Argentinian mechanic, it is currently being field-tested with the support of the Saving Lives at Birth partnership.

The early results are sufficiently encouraging that the device is attracting the attention of companies. This is a good example of Shared Value, a concept developed by Michael Porter that emphasizes the importance of creating both economic and social value.

In addition to these highlighted projects, there are other examples of bright spots we could have used and will showcase in the future as they mature. We were also thrilled to see a number of the projects we support win awards this year, including Laura Stachel for Solar Suitcase (CNN Heroes award), Kit Yamoyo from Cola Life (Product category in the Design Museum Design of the Year award), D-Rev for innovative health care product design (on Fast Company's annual list of "The World's 50 Most Innovative Companies"), Helen Dimaras's work on childhood eye cancer (Greek America's Forty Under 40 award) and Ophira Ginsburg's work on cancer in Bangladesh (YWCA Women of Distinction award). Congratulations! We are proud to support you and all our innovators and entrepreneurs.



The Odón Device



Way Forward

These encouraging results reinforce our deeply held view that the promise of Integrated Innovation that fuels the Grand Challenges approach is working and working well. In the coming year, we will build on these successes. And we will build on these early results.

We will also continue to pursue targeted efforts related to Saving Lives at Birth and Saving Brains, which align perfectly with the leadership Canada has established in women and children's health since the Muskoka G8. At the same time, we're also intensifying our focus on global mental health, working with partners to solve these neglected but critical global challenges. The latter two challenges together probe a critical and neglected domain in global health, the human brain.

A fundamental tenet of the Grand Challenges approach is that the challenges we face are too big for any organization or country to solve alone. At its core, the Grand Challenges model is a way for different partners in different countries and different sectors to solve global problems. The following blog explores this issue in greater detail: <http://bit.ly/WbUqGh>.

This is why we will continue to work closely with key partners, including USAID, the Bill & Melinda Gates Foundation, the UK's Department for International Development, the Government of Norway, the Norlien Foundation and others. And naturally we work with both public and private sector partners, since these problems are simply too big to be solved by any one sector. A big thank you to all of our partners!

We are also contributing to the discussion about what shape global development goals should take after the

current Millennium Development goals expire in 2015. As shown in this video, we have proposed a life-course approach to this vision: <http://bit.ly/YPmt0C>. We also think the Grand Challenges approach can prove effective in helping to solve post-2015 development goals, as this blog helps to demonstrate: <http://bit.ly/TwUNjf>.

Of course, no undertaking of this size could be possible without a dedicated and tremendous team. I want to thank all those who make the Grand Challenges Canada vision possible, including our Board of Directors chaired by Joseph L. Rotman, the Scientific Advisory Board, and partners at Canada's International Development Research Centre and the Canadian Institutes of Health Research. Above all else, I want to thank the Grand Challenges Canada team and, of course, the innovators themselves who make everything possible.

As Grand Challenges Canada continues its work year after year, our record of results will grow. Ultimately, what truly matters is the impact we make in the lives and the health of people in low- and middle-income countries. At the same time that we transfer knowledge, techniques and tools, we're also able to share a better life. That is the true inspiration for our work. That is the true inspiration for all of us connected with Grand Challenges Canada.



Thank you for your interest in our work. I will continue to keep you updated over the course of the coming months on our progress and efforts.

Yours truly
Peter A. Singer O.C.

Funded by the Government of Canada, Grand Challenges Canada is dedicated to supporting bold ideas with big impact in global health.

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