

IDRC  CRDI

IDRC eHEALTH EVALUATION SUMMARY



Canada

IDRC WORK IN THE FIELD OF eHEALTH

Canada's International Development Research Centre (IDRC) provides research grants to individuals and organizations in the developing world to allow them to find solutions to their social, economic and environmental problems. From its creation in 1970, IDRC has been committed to understanding how appropriate access to and use of information can improve development outcomes. This has included support for research into the use of information and communication technology (ICT) in health systems, often referred to as electronic health or ehealth.

Over 8.5 million people have been affected by IDRC-supported ehealth projects, which have mobilized over \$7.3 million* in funding from other donors.

For more than 10 years, IDRC-supported projects in communities in Africa, Asia, and Latin America and the Caribbean (LAC) have been addressing a broad range of demand-driven research questions. The projects range from exploratory proof-of-concept studies and software development to large multi-country research networks and capacity-building initiatives that examine the relationship between ehealth solutions and health outcomes.

IDRC is recognized for its risk-taking culture — both internally and externally — leading to projects that are not only undeniably innovative and cutting edge with

*Note: Currency is Canadian dollars throughout this report.



respect to content and structure, but have also catalyzed critical pathways contributing to building the field of ehealth research in Africa, Asia, and LAC.

[The Uganda Health Information Network (UHN)] initiative [which began with research funding from IDRC] was away ahead of its time. So, in a way, it became a standard/ benchmark for anyone else doing electronic data collection and transmission. Because of this it became a natural reference point for informing policy.

— Patrick Kibaya,
Uganda Chartered Healthnet

IDRC's dual focus on strengthening capacity and influencing policy has shaped ehealth research projects. Research capacities have been strengthened at the level of individuals as well as organizations, and evidence from these projects has influenced discourse and practice in the realm of policies.

The single most important lesson we learned is to get the national government involved with the ehealth project. Why? Because any ehealth project has the potential to benefit a large portion of society, and scaling up to that level will involve government in various ways: legislation, regulation, promotion, etc. Failing to involve national government will result in substantial hurdles in upscaling any ehealth project.

— Dr. Alvin Marcelo,
University of the Philippines, Manila



ABOUT THE EVALUATION STUDY

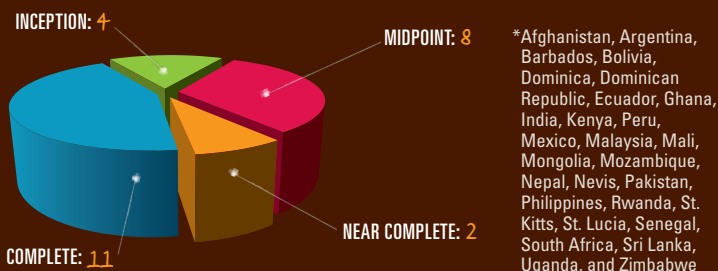
To help chart a strategic direction for its work in ehealth over the next five years, IDRC commissioned an evaluation of its past work and key trends in this area. Led by Dr. Patricia Mechael and a team of health research consultants, the evaluation was conducted over 6 months, from August 2010 to January 2011, in close collaboration with IDRC staff and grantees.

The team looked at 25 ehealth projects funded between 2005 and 2010. Almost half took place in Africa, where IDRC first began this work, followed by almost a third in LAC and the remainder in Asia. A handful of these projects represent networks consisting of several sub-projects. Three were considered to have a global focus.

AT THE TIME OF THE EVALUATION

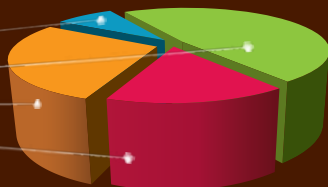
Number of projects **25** Range of funding **\$30^k-2.4^M** MILLION
Number of countries represented **28*** Total Funding **\$17^M** MILLION

PROJECTS BY STAGE OF COMPLETION



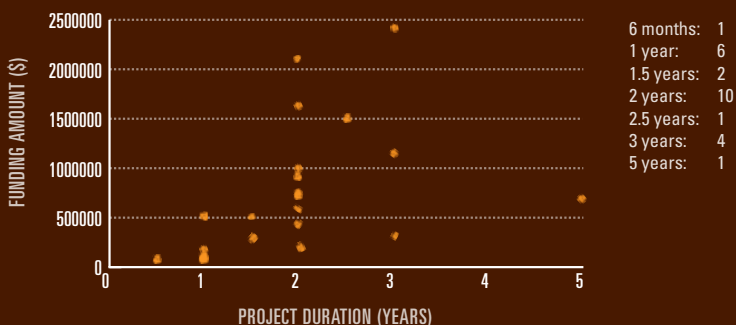
NUMBER OF PROJECTS AND FUNDING BY REGION

GLOBAL: 2 PROJECTS, \$0.19 MILLION
AFRICA: 12 PROJECTS, \$8.77 MILLION
LAC: 7 PROJECTS, \$4.68 MILLION
ASIA: 4 PROJECTS, \$3.32 MILLION
LAC = Latin American and the Caribbean
Note: total funding = \$16.97 million



INDIVIDUAL PROJECTS BY DURATION AND FUNDING

Note: 40% of projects in the evaluation were funded for 2 years.



The results will provide guidance as IDRC expands its ehealth support from a regional to a global focus with greater emphasis on governance, health equity, and health systems strengthening. Recommendations from the evaluation will help IDRC use its past experience, build on current trends, and establish its niche in the field.

This report provides an overview of the evaluation and presents key findings, lessons learned, case studies, and recommendations that can be adapted and applied by non-governmental organizations (NGOs), academic institutions, and donor agencies involved in promoting ehealth in low- and middle-income countries.

ABOUT THE PROJECTS

All ehealth research focuses on contributing evidence and knowledge about how to use technology to help solve health challenges. Among the projects evaluated, 12 use ehealth tools to tackle one or more specific challenges, such as HIV/AIDS (the most common issue, addressed by five projects), maternal health, community health, and Chagas disease. The remaining 13 projects focused on more general health systems strengthening.

The relation between ehealth and health outcomes is the focus of many research studies. Although this is an increasingly critical area for health research, only 44% of survey respondents indicated that they measured health outcomes. Metrics included mortality rates, number of new infections, cost–benefit analysis, and clinic visits.

Over half the projects used mixed methods. Few reported the use of randomized controlled trials or case–control studies. Four projects conducted a systematic literature review with complementary key informant interviews that focused mainly on infrastructure and market assessments to contribute to feasibility studies. Most evaluations of ehealth implementation and interventions focused on process improvement, user satisfaction, and the potential impact on health outcomes and overall quality of care.

EVALUATION METHODS

The evaluation focused on utilization by engaging primary intended users in defining the needs of the evaluation and providing data and recommendations. A mixed methods research design was used to determine IDRC’s role in the broader ehealth environment in low- and middle-income countries. Specific project outcomes as reported by grantees were assessed to capture and document transferable lessons learned and to chart a vision and strategy for IDRC’s future ehealth work.

Specific methods used were

- a systematic review of IDRC grant-related documents
- a survey of the 25 grantees to identify quantitative outcomes (19 responses)
- three regional workshops to determine lessons learned
- a usability survey of 47 users of software and applications supported by IDRC (17 complete responses)
- key informant interviews with 21 internal IDRC staff and external ehealth stakeholders
- a review of peer-reviewed literature to locate IDRC’s work within the growing body of ehealth research in low- and middle-income countries

Assumptions

The eight projects that form the PANACeA Network in South and Southeast Asia were counted as one project. Project leaders were assumed to be able to provide accurate figures for the outcomes measured.

Limitations

- **Time:** The evaluation was carried out over six months. Given the various data collection, analysis, and validation techniques used and the significant engagement required of IDRC staff and grantees, the work was divided among a team of professional evaluators to maximize efficiency while retaining consistency and ensuring high quality.
- **IDRC ehealth strategy:** IDRC did not have a defined ehealth strategy, mainly because of the way in which IDRC has supported research on ehealth in the past. Each regional program (Africa, Asia, LAC) had a strategy for its Information and Communication Technologies for Development portfolio, of which ehealth was one component. A cross-program ehealth strategy was not feasible without supporting structures and processes.
- **IDRC projects:** The projects evaluated varied in size, type (e.g., assessments, literature review, implementation), and point in the project cycle. Thus, standardized criteria could not be used to evaluate all the projects.
- **Project outcomes:** The evaluators designed and conducted quantitative and qualitative surveys to fill information gaps discovered during the document review. As IDRC grantees, in some cases, had not reported specific quantitative outcomes (e.g., health outcomes, number of people trained), project leaders were asked to provide estimates. Further, only the outcomes of completed projects could be evaluated, and only 9 of the 25 projects were complete. Because of this small sample size, the findings are not statistically significant.

CASE STUDY

PILOT PROJECT USING ICTS TO MONITOR CHAGAS DISEASE IN ARGENTINA AND BOLIVIA

In Latin America, Chagas disease is one of the greatest and least publicized public health challenges. Although statistics on the prevalence of the disease are scant, it is estimated there are approximately 18 million cases each year, of which 43,000 result in death. Primarily affecting those living in poverty, as well as youth in their reproductive years, the disease is transmitted by insects that reside largely in rural and peri-urban residential areas.

Various front-line actions have been identified to combat this disease, including educating rural and marginalized populations in preventive measures and detection of the disease in pregnant women. The need for improved dissemination of information and public education regarding the disease persists, as well as a need to train health professionals in its diagnosis. At the same time, more effective management of official registries and health statistics could provide reliable information that is necessary for effective decision-making in public policy realms.

To address these challenges, a pilot project using ICTs was designed following a series of meetings with stakeholders. Implemented in Argentina and Bolivia, an epidemiological monitoring and surveillance system allows community health workers to track patients who are sero-positive for Chagas disease. Using geographic information system maps and wireless handheld devices, cases tagged with geographic data can be easily managed from diagnosis, through treatment and follow-up. Since the project's inception in 2008, 33,000 child profiles have been entered into a database and appropriately tagged for follow-up; more are continually being added during field visits.



SUMMARY OF FINDINGS

Capacity-Building Outcomes

Regardless of region, scope, or size, all projects reported capacity building as a significant outcome. Training included a wide range of activities — hands-on use of mobile devices for data collectors at the village level, the use of the data at the ministry of health and other decision-making levels, and training cadres of technology experts to design and create health information systems. Training was carried out mainly through workshops (specific and at conferences) and mentoring programs and less so through courses, elearning, and distance education.

Capacity strengthening in the following areas was reported:

- Use of mobile devices or other ehealth technology to increase the knowledge and skills of front-line health providers and educators
- Knowledge and application of high-quality ehealth, health information systems, and mobile research methods
- Ability to design, develop, program, and maintain health information systems and mobile technology devices and software

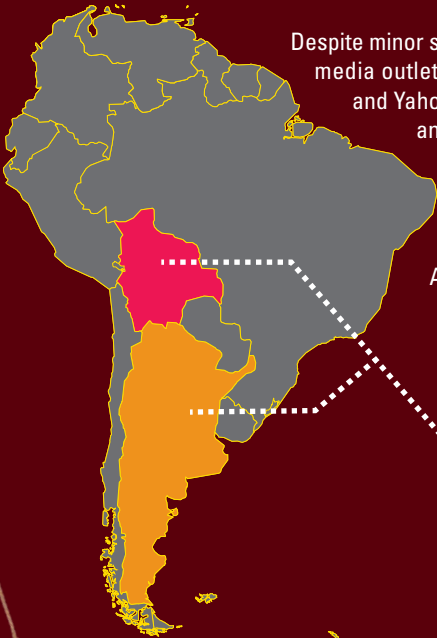
In Africa, many of the capacity-building outcomes reported centred around training community health workers in various ICT-based health applications. Although projects in Asia and LAC region reported similar outcomes, their focus was more on strengthening of organizations, in terms of their ability to work with international organizations, refining financial management systems, and improving research skills.

SUMMARY OF FINDINGS

IDRC's ehealth projects have trained 1,462 people in the design, use, and management of ICT solutions.

To educate and train workers and the community about the disease and screening process, workshops were held at various localities in schools, health centres, and community halls. Although most workshops led to community adoption of screening programs, in some cities families refused to have children screened. A re-evaluation of how to align outreach strategies with cultural and social values has been proposed for future workshops.

Despite minor setbacks, the project has been featured by major media outlets across Argentina and Bolivia, including MSN and Yahoo, leading to increased awareness of the cause and mobilization of resources. Additional laboratory personnel have been hired at the Instituto de Chagas, educational TV programs focused on eradication of Chagas disease have aired, and health departments in various provinces in Latin America have requested information about the project.



Policy-Related Outcomes

The projects influenced policy in the regions to varying degrees. In Africa, policy decisions have led to support for national expansion of IDRC-funded projects — notably in Uganda, Rwanda, and Mozambique. In comparison, in Asia and LAC, projects have led to increased collaboration and engagement with government authorities and a commitment from them to consider project findings in national health information and health system strategies.

Of the 25 projects evaluated, 23 reported conducting policy-related activities and research at various levels of government with varying degrees of influence. Some set out to influence policy and included specific policy-related objectives and activities in their workplans, whereas others considered policy influence as an ancillary component, making recommendations based on research findings. Most (92%) emphasized that policy reform is a key concern, inextricably linked to the growth and maturity of the ehealth sector. Projects funded for multiple cycles reported tangible policy outcomes (e.g., UHIN, Punto J).

Holding stakeholder meetings and briefings was the most common policy-related activity reported, followed by writing white papers and establishing standards.

A specific recommendation from a number of projects was the need to precede ehealth implementation by a review of the country's health system policy. This exercise is likely to ensure alignment with the country's broader health strategy and help develop an understanding of policies that may hinder or block the implementation of planned technologies.

Grantees emphasized the importance of making reports and ehealth data useful at the decision-maker and policy level. They suggested documenting the experience of working with government agencies and decision-makers, including specific relationships and lessons learned, as a tool for broader application.

Strategic Partnerships and Networks

The evaluation illustrated that engaging in partnerships with NGOs, governments, universities, and the private sector is critical to the execution of ehealth projects. Among the 25 projects reviewed, 19 reported partnerships with almost 80 organizations throughout all sectors in Africa, Asia, and LAC. On average, projects engaged with four partners, and the preference was for NGOs and academic institutions.

In the quantitative survey, respondents indicated engaging with academic partners (93.6%), NGOs (80%), the ministry of health (80%), and government entities (77.8%). Fewer than half reported partnering with industry (40%), the ministry of science and technology (44.4%), the ministry of information and communication (30%), and community-based organizations (45.5%).

eHealth implementation requires diverse expertise and perspectives to support implementation, nation-wide dissemination, and sustainability, as one actor within the "ecosystem" cannot effectively do it all. Finding mutually beneficial areas for collaboration and win-win situations is essential for successful ehealth initiatives.

Technology Outcomes

Across regions, grantees acknowledged IDRC's willingness to support research teams to assess, design, develop, and test new and innovative ehealth interventions. Most (82%) reported developing or implementing an ehealth software platform or application as part of their project to support a variety of health system needs, such as electronic medical records for patient registration and tracking, algorithms for disease surveillance and prediction, and mobile telephones for data collection and health promotion.

Approximately 84% of the technologies implemented were identified as open-source and available at no cost. Most projects adopted internationally accepted technology standards and emergency data exchange language. De-identifying and encrypting data were used to protect the integrity of health information.

Overall, technologies developed by projects in Africa were more advanced, more often integrated into national health information systems, and more recognized by external stakeholders. This may be because Africa was the first region in which IDRC funded ehealth projects.

In cases where existing technologies were used to achieve project goals, OpenMRS, JavaROSA, and mHealth survey were most commonly cited. These technologies were leveraged to develop programs to support community health workers, provide relevant information to improve adult and pediatric HIV/AIDS care, and enable data collection for monitoring and evaluation purposes.

Across the range of existing and newly developed technologies used within IDRC projects, functionality, portability, affordability, and reliability contributed most to better collaboration among health system stakeholders and clinicians. In contrast, maintainability, ease of learning, efficiency, and user interface were noted as potential areas for improvement.

Support systems for the technologies included workshops, electronic user guides, and online user support tools, including email and instant messaging. Overall, a need for more training opportunities and support tools, such as user guides and forums for non-technical users, was reported.

Publications and Conference Presentations

The IDRC approach to supporting research is one that nurtures the entire research cycle, from planning through to communicating findings and influencing policy and practice. According to the valuation, projects in all three regions have increased awareness of ehealth. In Africa, this meant greater awareness among higher authorities and government; in Asia, it was among health care providers and institutions, and in LAC among researchers and programming partners.

99% respondents have made at least one presentation at a regional conference; 33% have made nine or ten presentations.

Projects in each region have not only been featured in academic literature and conferences, but also mainstream publications. Based on the quantitative survey, 44% of grantees have had one or two manuscripts published in an open-access (OA), peer-reviewed academic journal, 44% have authored one to four manuscripts published in a non-OA, peer-reviewed academic journal, and 11% have had one manuscript published in a non-OA, non-peer-reviewed academic journal. Approximately 80% of respondents have been featured in at least one local or national newspaper, and 56% have had projects highlighted in the global media.

All respondents had presented a paper at least once at an international conference; 22% had made nine or ten presentations. Most respondents (99%) had presented at least once at an ehealth-specific conference; 33% had made nine or ten such presentations. Two-thirds had presented at least once at a health-specific conference; 22% at nine or more. Two-thirds of respondents reported presenting up to six times at a technology-specific conference.

Did you know? - Interoperability

The increasingly interconnected world we live in necessitates working with others. This collaboration requires sufficient common ground to reliably exchange messages in a way that minimizes errors and misunderstandings. In the world of eHealth, this is referred to as interoperability. If one were to relate this concept to spoken language, it would include discussions about dictionaries, punctuation, structured grammar and the ways in which language is spoken and understood among different individuals and across different groups. Interoperable health systems are the foundations behind working together to strengthen health systems in a way to minimize fragmentation, error and misunderstandings. This often involves establishing common ground when it comes to structuring data and selecting standards to exchange them.

LESSONS LEARNED

1 Investing in **capacity building**, whether it was organizational development or training of health and technology workers, is the most important activity but also the greatest challenge in ehealth projects. Although finding partner organizations with the range of skills necessary for success may be challenging, IDRC's approach of providing hands-on mentorship and opportunities to strengthen research and leadership skills has led to improved partner performance and confidence. This approach, called the **"grants-plus" model**, has helped many academic researchers move into influential roles in research and policy spheres and transfer projects to sustainable organizations. Many continue to achieve success long after their research funding has ended. Finding qualified health and technology professionals to manage ehealth implementation in low- and middle-income countries is also difficult.

To address this problem and prepare for future scale-up of ehealth solutions, all IDRC-supported projects make it a priority to hold workshops, establish training and certificate programs, develop ehealth training modules, and prepare online and print education materials.

2 Understanding the **socio-political context** at a project site is a critical step in devising an implementation plan that accurately reflects field realities. Project leaders consistently expressed a desire to examine more deeply issues of culture, politics and policy, language, gender, and age as they relate to ehealth implementation and adoption. This interest came with the realization that the human element in ehealth implementation, namely user behaviour patterns and change management strategies, is as important as technology development. An appreciation of these factors has often made the difference between successful or poor adoption of an ehealth solution.

CASE STUDY

PAN-ASIAN COLLABORATION FOR EVIDENCE-BASED E-HEALTH ADOPTION AND APPLICATION (PANACeA)

When a group of researchers across South and Southeast Asia undertook an evaluation of IDRC's ehealth projects in the region in 2006, they found a set of disjointed efforts that lacked structured evaluation and measurement of discrete health outcomes. An opportunity to demonstrate the projects' value in terms of strengthening communities' health systems and influencing policymakers to consider scaling up ehealth solutions had been lost. Learning from this oversight, the group recommended the establishment of a regional research network that would stimulate collaboration, build capacity, generate evidence, and inform relevant policy dialogue.

With support from IDRC and managed out of Aga Khan University, the PANACeA network was inaugurated in 2007. Through a series of capacity-building workshops with local researchers, eight projects were identified and designed. With funding and mentorship support from the PANACeA network, each project intends to examine and build an evidence base for appropriate ehealth solutions for South and Southeast Asian countries — solutions that are sustainable and scalable and that will result in improved clinical health outcomes.

The network's decision to implement research projects in multiple countries in the region with a requisite to measure health outcomes makes this work unique among the vast majority of current ehealth research. Ten countries in the region are represented in the network: India, Pakistan, Indonesia, the Philippines, Malaysia, Sri Lanka, Nepal, Afghanistan, Mongolia, and Bangladesh. Key health challenges in the region — tuberculosis, maternal mortality, disability, and emergency and disaster health care — are also being addressed by using technology solutions ranging from Short Message Service for data collection and health promotion to telehealth solutions allowing rural and urban physicians to collaborate on patient care.

Although some projects have yielded positive results — illustrating the impact of patient registration and pharmacy management systems on operational and clinical efficiency — operating



3 Project implementers and managers have found that ehealth research must produce applicable and transferable **measures of health outcomes**. The inherent need to focus on technological aspects of projects must continually be balanced by attention to the intended health outcome of the intervention, as there is often a danger of losing sight of the ultimate goal of improved quality of life for the target population. Research questions must begin with the health problem, and then use technology as a potential solution.

4 **Involving government partners and institutions** from the outset of a project (beginning with development of the project proposal) is important for future collaboration. Early involvement can help government and ministry policymakers not only become familiar with the research, but also guide the study design so that it can be effectively applied to the country's existing health system. Long-term engagement of policymakers can lead to deeper understanding of the value and potential of technology to increase access to health care and greater support for ehealth implementation. The UHIN, for example, illustrates the advantages of

building a strong relationship with government officials. The project has influenced the ministry of health to hire a full-time consultant to further develop distance-learning materials, in addition to informing the country's national health information system strategy.

5 Although partnerships are integral to successful ehealth implementation, managing collaborations, often across distances and time zones, can be complex. Establishing criteria for partner selection, engaging partners early in the project cycle, and harmonizing reporting requirements among the various partners were found to be important factors in ensuring effective and useful collaboration.

6 Supporting and promoting the use of **free and open-source software** for ehealth solutions rather than proprietary solutions has been fundamental in building local capacity and advancing the field of ehealth. In some cases, the open-source route has led to lucrative partnerships with governments and ministries, who are drawn by the opportunity to train an indigenous workforce, innovate in line with local conditions, and save software licensing costs.

as a network has been challenging. The need to manage communication and coordination, administer funds, and monitor projects across areas and time zones has, in some cases, caused setbacks. However, the network's collaborative research model has been widely discussed at domestic and international conferences and in academic peer-reviewed publications. Most recently, members of the network established a spinoff non-profit organization, eHealth Association of Pakistan, to advocate broader ehealth implementation and policy reform in that country.

To advance the growth of PANACeA and support tacit knowledge sharing among members, the network's Advisory and Monitoring Team has been working diligently to establish a comprehensive repository of tools and resources. This includes establishing a foundation for a standardized evaluation framework that can be used across all projects in the network, an online library of materials and resources related to ehealth evaluation, and an ehealth certificate program using interactive online seminars. This wealth of resources has already proved to be invaluable to network members, who speak fondly of their experiences with PANACeA and hope that the organization becomes the primary platform for ehealth policy advocacy and reform in the region. Chaitali Sinha, IDRC Senior Program Officer, writes:

The network is far more than a structural construct. Although the structure is of great importance to how PANACeA functions, it is the membership, governance, and management of the network that leads to increased research and policy capacities, knowledge translation, legitimacy and flexibility.

Its members represent a human network of researchers and practitioners, working together to examine how ehealth solutions influence health outcomes across ten countries in Asia. Despite PANACeA's regional focus on ehealth research in Asia, the design of the network and the lessons emerging from the networking activities can have influence at a global level.

RECOMMENDATIONS

1

Preserve the risk-taking, rigorous, open, and collaborative ethos that characterizes IDRC

One of IDRC's core strengths — inherent in its name — is its focus on and leadership in the cross-section between development programs and research. The evaluation process highlighted the wide recognition of IDRC's risk-taking nature and the innovative and cutting-edge results that "have been instrumental at catalyzing critical pathways within ehealth." Grantees recommended that IDRC "stay the course," i.e., continue to fund and support the growth of ehealth. In addition, they urged IDRC to maintain its commitment to rigorous, developmental evaluation and active knowledge translation and collaboration among the NGOs, donors, and governments working to build intercontinental capacity for ehealth.

2

Supporting ehealth capacity building is an important role for international donors to ensure long-term sustainability of the sector

Throughout the evaluation, the focus on capacity building in all IDRC-funded projects and programs was clear. Continuing to invest in the expansion of existing ehealth training programs and building and promoting the use of local capacity should be a key part of IDRC's philosophy. This includes supporting regional and community networks, such as PANACeA and OASIS, that have enabled collaboration between researchers and software developers and have significantly accelerated the advancement of ehealth in low- and middle-income countries.

3

Balance funding between enabling ehealth innovation and scaling up proven ehealth solutions

IDRC will need to assess how to create an environment that not only enables innovation but also moves some of its earlier investments to a broader scale and greater sustainability.

CASE STUDY

OPEN ARCHITECTURE, STANDARDS AND INFORMATION SYSTEMS (OASIS) FOR HEALTH CARE IN AFRICA

Demonstrating that African capacity for ehealth can be developed through community-driven, open-source software has been the driving force of the OASIS network. Initiated in 2007 by the Medical Research Council of South Africa, the Department of TeleHealth and Computer Science at University of KwaZulu-Natal, the University of Eduardo Mondlane, and the University of Zimbabwe, its initial implementation sites in South Africa, Mozambique (M-OASIS), and Zimbabwe have been expanded to include Rwanda (OASIS-RHEIN) and a number of countries as part of the Millennium Villages Projects. The network boasts a total of 15 global partners, including the Rockefeller Foundation, the World Health Organization's Health Metrics Network, the United States President's Emergency Plan for AIDS Relief, Columbia University, Innovative Support for Emergencies, Diseases and Disasters, and the World Wide AIDS Coalition, to name a few.

Through a unique blend of online collaboration tools and offline networking meetings, "hackathons," and training programs, the OASIS network has attracted over 300 African software developers to contribute to the expansion of an open-source electronic medical record platform, OpenMRS. In September 2010, the network held its fifth annual OpenMRS Implementers Meeting, bringing developers across Africa to Cape Town, South Africa, to exchange ideas and strategize for the platform's expansion. Recognition of this talent at the Mozambique site has led to a memorandum of understanding with the ministry of health, making the OASIS developers the primary implementers and advisors on health information systems in the country.

According to Karl Brown, associate director of applied technology at Rockefeller Foundation, similar open-source platforms, such as OpenROSA, FrontlineSMS, and RapidSMS, are seeking to adopt OpenMRS's community model. "I think OpenMRS is one of the strongest open-source communities in mHealth and is sort of a demonstration of the power of this community model. It has served as an inspiration for other open source groups that are looking at producing something meaningful," he says.

However, the complexity of undertaking capacity building became apparent when the network's internship program, modeled after Google's "Summer of Code," suffered from poor enrolment. Although tools and a stipend were offered to eligible candidates, program leaders soon realized that training opportunities must be coupled with adequate support and stimulating career opportunities. This lesson proved invaluable to the non-profit organization, Partners in Health, in Rwanda, where training programs for software developers are being developed to complement the government's decision to roll out OpenMRS nationally. With large-scale ehealth implementation becoming more common across Africa, a spin-off non-profit organization, JEMBI, was established with support from the first phase of OASIS, funded by IDRC, to manage future projects.

This can be achieved by supporting existing grantees in program implementation and research on a much larger scale and/or sponsoring grantees who engage in activities and research that will help create the enabling environment needed for ehealth to thrive.

4 Advocate evidence-based policy and practice using project research results as levers for change

Many have called for increased rigour in ehealth research to strengthen the evidence base in a way that influences policymakers to collaborate in the development of an ehealth policy framework that projects and countries can adopt. IDRC is well positioned to lead this effort by example, ensuring that research projects are designed to measure health outcomes and are evaluated using methods that clearly illustrate the value of ehealth in terms of health system strengthening. Supporting multi-year grants is one way to strengthen the evidence base and increase the likelihood of influencing policy change.

5 Commit to research that informs both ehealth implementation science and health outcomes research

Although IDRC has supported critical research into what works and how it works, it has been more inclined to fund projects that provide lessons in ehealth implementation science rather than determine whether ehealth solutions lead to improved health outcomes. This need not be a zero-sum game, as there is room and a requirement for both types of research (and significant overlap between them). Moving forward, IDRC will need to consider its priorities when developing its new research funding strategy.

Did you know? - FOSS

Did you know that Free and open-source software (FOSS) is all around us? FOSS drives many prominent web sites, large web browsers (such as Firefox) and web servers (such as Apache). So ... what is FOSS and what isn't FOSS? According to the Free Software Foundation, when thinking of FOSS, one should "think of free as free speech, not as in free beer". This means the term FOSS refers to the freedom to download, copy, modify, reuse, and contribute software back to the community, rather than to the price of the software. Resources - both human and financial - are often required to customize, deploy and maintain a FOSS system; these tasks are increasingly being carried out by a locally trained and highly skilled workforce in developing countries.

In 2009, the OASIS network entered its second phase, with a new round of funding and a renewed focus. Developing discrete software applications through collaborative efforts during the network's first phase highlighted the need for an underlying framework that would support interoperability between applications in a given country. This lesson has led to shifting OASIS's mandate toward promoting and convening stakeholders to collaborate in the development of an open enterprise framework. As an internationally recognized leader of this dialogue, the network has held a series of meetings for global stakeholders and, in September 2010, launched the Health Enterprise Architecture Lab (HEAL) at the University of KwaZulu-Natal in Durban, South Africa, to serve as a testing and research centre.

In addition, as part of OASIS-II collaboration, a mixed-methods evaluation by the Millennium Villages Project is paving the way for leveraging real-time health monitoring data generated through mHealth (ChildCount+) as an extension of ehealth (OpenMRS) for health outcomes research. The research includes a repeated measures approach, quarterly qualitative assessments of user experiences, action research to obtain data to identify intervention areas, and a cost-benefit study to inform future scale-up and sustainability.

VISION FOR eHEALTH RESEARCH PROGRAMS AT IDRC

During the three evaluation workshops, grantees from all regions expressed a hope for advancement of the sector. As IDRC prepares to move from a regional to a global ehealth program, an understanding of regional goals, priorities, and resources has been significant in informing a new strategy. Following is an overview of each region and the key elements IDRC will consider as it commences a new round of ehealth funding. Although these overviews are presented by region, many issues are applicable and of interest across multiple regions.

Africa

Interviewed participants of IDRC-supported projects in Africa were eager to see the ehealth sector mature. This means establishing an open ehealth “enterprise architecture” that can be shared, modified, and adopted across the region and continuing to invest in appropriate network infrastructure where it is still needed.

Participants want the research community to continue developing a strong evidence base for ehealth, and consider evaluating ehealth options using a total-cost-of-ownership model. These activities should be supported by policy initiatives, such as forming national ehealth strategic planning committees and setting up local innovation labs to stimulate entrepreneurship and innovation.

To foster an enabling environment for ehealth, participants recommended developing an ehealth policy framework by gathering together existing ehealth policies, common dictionaries, and standards to facilitate interoperability. This type of collaboration could best be facilitated if donors pool funds, so that funding may be obtained from a common basket.

Asia

In Asia, there was an overarching sense that the next five years would be dynamic for ehealth given the heightened interest and momentum achieved over the past year. Participants requested that guidance in managing ehealth at the national level be made a significant priority. This includes the development of guidelines and incentives that encourage partnerships between industries as well as an ehealth certification and accreditation program, an e-human resource service, and an enterprise architecture framework.

Universal access to basic infrastructure was seen as an important part of transitioning ehealth from a series of pilot projects to full-scale implementation. This would have to be supported by an enabling policy environment that included a national ehealth strategy, investment in improved health and technology infrastructure, and engagement of industry, user, and service provider groups to promote interoperability.

Participants agreed that consumers and the general population must be included in the design and development of ehealth solutions to influence user experience and address privacy and security concerns. Further, as the gap between ehealth demand and available human capital widens, designers, programmers, and implementers should be made aware of the career opportunities in this field.

Finally, there was a feeling that although bodies exist to lead ehealth knowledge translation, there is no cohesive and active global platform that networks such as PANACEa can connect with between ehealth meetings and conferences. To address this gap, a “Global Forum for eHealth Knowledge Sharing and Networking” was suggested to serve as a repository of materials and a dynamic platform on which policymakers, practitioners, and researchers could engage, both physically and virtually, in networking and information exchange.



Latin America and the Caribbean

Participants' vision for ehealth in the LAC region focused on the notion that, in the future, technology as a key tool for health care will be ubiquitous and "just the way we do things." They envisioned an integrated community of practice, where trained professionals (physicians and technicians) would be working in multidisciplinary teams, enabling the dynamic exchange of ideas and information across the region.

eHealth would support high-quality clinical care by providing reliable data for patient care, disease surveillance, program management, and evaluation. The prevention of epidemics of both contagious and non-contagious diseases would be a priority. Health departments would use ICTs not only to enter information, but also to promote two-way communication with and participation by the public. Governments would make open standards a legal requirement and promote open-source software. Participants believed that the research tools and capacity needed to measure the health outcomes and impacts achieved through these technology applications would be readily available.

Did you know? - Enterprise Architecture

How does one plan a health system? What are the different components and how do they interact with one another? Similar to how a building would need a 'blueprint' to allow the architects, plumbers, electricians and contractors to understand how it is built and functions, the role of Enterprise Architecture (EA) is to illustrate a health system by showing the component subsystems as well as the relationships among them. Understanding these relationships and how they contribute to broader goals of improving health is central to strengthening health systems. This allows information systems to be less fragmented and work more effectively in a well-designed and harmonized environment.



IDRC eHEALTH EVALUATION

The International Development Research Centre (IDRC) is a Canadian Crown corporation that works in close collaboration with researchers from the developing world in their search for the means to build healthier, more equitable, and more prosperous societies.

www.idrc.ca

PO Box 8500
Ottawa, Canada
K1G 3H9

2011