Call to Action on Global eHealth Evaluation:

Consensus Statement of the WHO Global eHealth Evaluation Meeting, Bellagio, Italy, September 2011

"To improve health and reduce health inequalities, rigorous evaluation of eHealth is necessary to generate evidence and promote the appropriate integration and use of technologies."

September 9th, 2011

The Bellagio eHealth Evaluation Group

Overview

Throughout the world, countries are striving to set priorities and achieve national and global health goals, in complex and dynamic health systems that need timely, accurate, and reliable data. The increased availability, adaptability and capability of information and communication technologies (ICT), even in the poorest communities, provide opportunities to improve health outcomes and redress health inequities in innovative ways. eHealth[a] is defined by the World Health Organization (WHO) as the use of ICT for health, and includes mHealth and telemedicine.

Potential of eHealth to Address Global Health Challenges

Addressing global health challenges requires a sound understanding of the different social, political, economic and environmental factors influencing complex health systems, and exploring appropriate and innovative means to treat disease and promote individual and public health. eHealth can help realize health gains and contribute toward transformational health system change when policies and implementations are informed by rigorous and focused evaluation. Used appropriately, eHealth has the potential to catalyze, support and monitor health improvements at scale, and to accelerate achievement of national and global development goals, including the United Nations Millennium Development Goals. **If used improperly, eHealth may divert valuable resources and even cause harm.** To ensure effective and appropriate use of eHealth systems, implementation must be guided by evidence from evaluations at all design and scale-up stages. A small set of studies has shown positive impact of eHealth solutions in resource-poor environments but more evidence, of better quality, is needed to make the health and investment case for scale-up.

For greatest impact, eHealth implementations should focus on improving quality and access to care, increasing accountability, governance and client participation within health systems, and delivering health gains for the most disadvantaged populations. In pursuit of these goals, significant consideration must be given to sustainability, usability, scalability (including the use of modular systems), interoperability and use of open standards, while promoting equity, transparency, and ethical conduct.

eHealth requires multiple domains of expertise to be able to communicate with each other in a mutually intelligible fashion. These can include public health, medicine, health informatics, social science, cognitive science, computer science and engineering – among others. Each discipline brings distinct priorities, implementation strategies and evaluation methods. Maximizing health gains requires the appropriate use of cross-disciplinary approaches and cross-cultural communication strategies (e.g., establishing common vocabularies) to understand and accommodate the perspectives and priorities of each domain engaged in eHealth and its evaluation.

Major investments in eHealth by development agencies, governments, and NGOs rarely include adequate support for and emphasis on effective evaluation. When support for evaluation exists, it tends to be relatively limited and focus predominantly on accountability, rather than approaches that emphasize learning and improvement from results, or prioritizing those that assess outcomes. This compounds a situation of insufficient evidence of the impact of eHealth on quality of care, safety, costs, health system governance and performance of the health system, including effects on reducing health inequities.

Policy makers, funders and implementers of eHealth systems have a central responsibility to ensure that eHealth solutions are subjected to, and informed by, rigorous evaluations. Findings

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[a] "eHealth" is defined by the WHO to include mHealth and telemedicine: eHealth is interchangeable anywhere in the document with the terms "mHealth" or "telemedicine".

should be used and contribute to evidence generation, synthesis and documentation, including peer-reviewed articles.

Bellagio eHealth Evaluation Principles

Each of these principles is essential in the design, deployment, and application of eHealth evaluation.

1 Core principles underlie the structure, content, and delivery of an eHealth system independent of the rapidly changing technology used.
Outputs, outcomes and impacts of eHealth may be attributable to systemic changes in process, efficiency or quality of care, which are achieved through better management of information, independent of the specific technological approach being used.

2 High quality data collection, communication and use are central to the benefits of eHealth systems.
Data must be accessible and usable by intended users in the sites where it is collected and elsewhere; client-level data is usually required locally to ensure clinical quality and accountability.

3 Evaluating eHealth both demonstrates its impact and fosters a culture that values evidence and uses it to inform improvements in eHealth deployments.
eHealth can facilitate the capture of data for improvement at all levels of the health system, such data can also be used for improving the design and use of eHealth systems.

4 To ensure the greatest benefit from eHealth and enhance sustainability and scale, eHealth evaluations should recognize and address the needs of all key constituencies.
Evaluation study design and scope should consider all relevant stakeholders, from decision-makers and funders to end-users and health system beneficiaries, at all levels in the health system.

5 Evidence is needed to demonstrate costs and benefits of eHealth implementations, and maximize eHealth's beneficial impact on health system performance and population health.
Evidence equips decision makers to choose the most effective, economical and sustainable approaches to system design, strategies, implementation and training in eHealth.

6 The value of a complete evaluation program is enhanced through research that is attuned to the differing requirements throughout the life-course of the project, whether at needs assessment, pilot-, facility level-, regional and national scale-up stages.
Appropriate study designs, well-defined methods, and consistent and appropriate indicators should be used to optimize stage-specific evaluation.

7 Independent and objective outcome-focused evaluation represents the ideal of impact evaluation.
Although it is very important to perform system optimization and formative evaluation during development, as well as qualitative studies of system use, the ultimate evaluation target should be measurement of system impact on health outcomes, either directly or through validated proxy indicators.

8 Country alignment and commitment to a clear eHealth vision, plan, and evaluation strategy is essential.
This helps to ensure that eHealth systems are appropriate to the local environment and institutions, are harmonized across the health sector, and will promote the use of eHealth system outputs in decision-making. Regulatory oversight of eHealth to ensure patient protection, confidentiality and risk reduction should be included.

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Improving the eHealth evidence base requires more than increased numbers of studies but also improved quality of eHealth research studies.

Optimized use of existing data, resources and opportunities through improved study designs both quantitative and qualitative, earmarked funding for evaluation, and training on research methodology are concomitant requirements. More investment in rigorous evaluation studies and capacity building is needed; adequate resources in every eHealth funding stream should be committed to evaluation.

eHealth Evaluation: Next Steps

Increased prioritization of evaluation is needed in order to cross a threshold of evidence demonstrating the contribution of eHealth to health outcomes. Governments, donors and implementers must **require, generate and use** evaluation findings, publications and dissemination to inform new eHealth strategies and practice. Evaluation should be integrated into continued funding for current and future projects. It is important and urgent to address existing evidence gaps to ensure that systems are appropriate, optimized and responsive to the local health system priorities, and that they provide reliable evidence for decision makers to make sound use of limited resources.

Stakeholders need to be engaged in dialogue about appropriate evaluation approaches to measure the impact of eHealth on data quality, quality of care, health outcomes, system efficiencies, and cost-effectiveness of eHealth implementations. Broad dissemination of results should also be prioritized. Decision makers should be encouraged and empowered to utilize evaluation findings to identify and implement solutions with the greatest potential impact on health, and implement them in the most cost-effective, sustainable and practical ways, at scale.

Recommendations and identified action items:

- Identify and adapt, where necessary, robust and relevant tools (such as frameworks) for the evaluation of eHealth.

- Continue to identify the barriers to undertaking and using evaluation in eHealth and make recommendations to overcome them.

- Develop simple and pragmatic tools to enable decision makers to review and select eHealth systems, based on appropriate evaluation-generated evidence of impact, and potential for scalability and sustainability.

- Identify gaps in knowledge where better evidence might increase the appropriate use, scale and impact of eHealth in resource-limited settings.

- Develop principles and recommended practices to evaluate and assess eHealth, with a view to increasing transparency, accountability and integrity.

- Identify appropriate, high quality eHealth indicators (direct and proxy) that allow measurement of input, process and effect to facilitate consistent outcome measurements and comparability of studies. These could be made available in an eHealth Indicators Databank.

- Advocate to donors and consumers of eHealth to structure funding to require evaluation and wide dissemination of evidence.

- Develop an "eHealth Evaluation Learning Network" to promote, support and develop in-country and regional capacity for improved evaluation of eHealth interventions; and to learn from similar initiatives in other sectors.

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- Create a multi-stakeholder web-based platform for constructive sharing, publication and learning from successes and failures. Include a registry of eHealth evaluation studies and results, and a repository of evidence-based eHealth best principles and practices.

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