YALE JOURNAL OF BIOLOGY AND MEDICINE 85 (2012), pp.425-427.

SYMPOSIUM

Transforming Global Health with Mobile Technologies and Social Enterprises

Global Health and Innovation Conference

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More than 2,000 people convened for the ninth annual Global Health and Innovation Conference at Yale University on April 21-22, 2012. Participants discussed the latest innovations, ideas in development, lessons learned, opportunities and challenges in global health activities. Several themes emerged, including the important role of frontline workers, strengthening health systems, leveraging social media, and sustainable and impact-driven philanthropy. Overall, the major outcome of the conference was the increased awareness of the potential of mobile technologies and social enterprises in transforming global health. Experts warned that donations and technological advances alone will not transform global health unless there are strong functioning health infrastructures and improved workforce. It was noted that there is a critical need for an integrated systems approach to global health problems and a need for scaling up promising pilot projects. Lack of funding, accountability, and sustainability were identified as major challenges in global health.

INTRODUCTION

The annual Global Health and Innovation Conference is the world's largest conference focusing on global health and social entrepreneurship [1]. The 2012 meeting took place at Yale University, and the keynote speakers were Sasha Dichter (Chief Innovation Officer, Acumen Fund), Professor Jeffrey D. Sachs (Director Earth Institute, Columbia University), Dr. Sonia Ehrlich Sachs (Director of Health, Millennium Villages Project), and Seth Goldman (President, Honest Tea). The conference was organized by Unite For Sight and aimed at improving public health and in-

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†Abbreviations: mHealth, Mobile Health; WHO, World Health Organization; UNICEF, United Nations Children's Fund.

Keywords: global health, innovations, mobile technologies, social enterprises

ternational development through exchange of ideas across various disciplines. Participants discussed impact-oriented practices that work in global health and social entrepreneurship.

MOBILE HEALTH (mHEALTH†) INNOVATIONS TO TRANSFORM GLOBAL HEALTH

Mobile Health (mHealth) is the provision of health services and information via mobile technologies such as mobile phones and personal digital assistants. The motivation behind the development of mHealth technologies arises from several factors. First, it has been realized that the traditional ways of delivering health care are not working in developing countries. There are so many constraints, such as lack of health care workers, inadequate financial resources, and high disease burdens. The second factor motivating mHealth is the recent rapid rise in mobile phone penetration in developing countries. The number of global mobile phones is currently estimated to be greater than 5 billion, and in many regions, the penetration exceeds 100 percent [2]. These mobile phones are being used successfully in the banking sector [2], and there is a lot of promise that they can be used to transform health care.

In this conference, a number of successful mHealth projects were cited, including the use of mobile phones for HIV awareness in South Africa [3], supporting HIV positive patients in Kenya [4], and increasing HIV testing in Uganda [5].

Jason Friesen, program manager of Project HOPE, discussed his innovative "SMS-based Emergency Medical Dispatch in Low-Income Countries — A Pilot Program in Haiti." He demonstrated the possibilities of using mobile phones to provide rural communities with low-cost emergency medical dispatch capabilities. Medical emergencies such as childbirth and road accidents are a major public health problem in developing countries. It is often difficult to get urgent basic care in the field or rapid transport to take patients to the hospital. Mobile phone-based dispatch systems will circumvent the need for the expensive 911 dispatch systems commonly found in wealthy countries

Tess Bakke, co-founder of Skylight, demonstrated a Smartphone-to-Microscope adapter that will have a great affect on telemedicine. A Smartphone camera is held steadily over the eyepiece of a microscope, precisely where the image from the microscope is formed. The Smartphone camera can then capture photos and videos for uploading, e-mailing, and/or sharing. The system allows real-time viewing on the Smartphone screen or via video-conferencing software. This technology will enable a rural technician with a microscope to capture diagnostic images and send them to the nearest doctor who may be hundreds of miles away. The technology will also allow various experts to share and view diagnostic images in real time, even if they are thousands of miles apart. In developing countries, Skylight has the ability to connect doctors to patients from far away in rural locations.

Similar innovations were reported by Lina Nilsson, co-founder of Tekla Labs, who demonstrated the possible use of a CellScope as a mobile microscopy screening kit for rural health. Jessica Harberer of Harvard University talked about the use of wireless biosensors as telemetric, continuous health-monitoring devices. These wearable biosensors (WBS) can capture data on the patient's health and transmit to the health provider.

The daunting question about mHealth was how these technologies will be scaled up to be cost effective and of good quality. Some participants were skeptical on the sustainability of these innovations, particularly regarding cost, repairs, and maintenances. There were also concerns about infection control, and a number of participants warned that if these technologies are not designed properly, they may lead to new epidemics of communicable diseases. Bobby Jefferson, a senior informatics advisor at Futures Group, reassured participants when he discussed his project of scaling up low-cost mobile solutions to prevent mother-to child HIV transmissions.

STRATEGIES FOR DRIVING GLOBAL HEALTH INNOVATIONS TO SUSTAINABLE SCALE

While there is rapid progress in technological innovations for global health, the strategy to implement these innovations for sustainable growth is still a challenge. The traditional donor-driven approaches are not making sustainable impact. In his keynote speech, Chief Innovation Officer Sacha Dichter of Acumen Fund highlighted the need for forging public-private partnerships in support of innovation and projects that address global health needs. He shared success stories from Tanzania, where his organization catalyzed a public-private partnership between a local company with Sumitomo Chemical, ExxonMobil, the World Health Organization (WHO), and the United Nations Children's Fund (UNICEF) to manufacture low-cost, long-lasting anti-malaria bed nets in Africa. This Tanzania-based company produces more than 29 million bed nets each year to protect millions of people from malaria.

Global health experts warned that donations and technological advances alone will not transform global health unless there are strong functioning health infrastructures and improved workforce. Several participants stressed the need of strengthening health care systems and a need for an integrated systems approach to global health solutions. Using examples of malaria control programs, Professor Jeffrey Sachs reported that there has been up to a 40 percent reduction in malaria burden due to integrated efforts, including use of community health workers. Dr Sonia Ehrlich Sachs followed with a talk on "Building Health Systems: From Millennium Villages to National and Global Perspectives." Her advice was to strengthen local health care systems and to invest in frontline health workers who have proven to be excellent agents of change. She shared success stories of the Millennium Villages in African countries, where sanitation has improved and antenatal care and skilled birth attendance have doubled. She said that in some countries such as Nigeria, the government is using its own money to scale up Millennium projects.

CONCLUSION

The conference offered a balance between global health, international development, and social entrepreneurship. It was a great opportunity to network and share cutting-edge ideas. It offered participants a platform to collaborate on effective strategies for global problems. Key themes that emerged from the various participants included rapid developments in mobile technology, but the impact, effectiveness, and sustainability of these innovations require further studies. It was apparent that technological advances alone will not transform global health unless there are strong functioning health infrastructures and an improved workforce. The conference highlighted a critical need for scaling up promising pilot projects and a need for increased global health funding.

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