E-Health in Developing Countries to Manage illnesses through Patient Education and Empowerment of Rural Health Workers
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1 Introduction
In developing countries, the vast majority of the people are living in the rural areas with limited access to quality care. In fact, village doctors with limited training, community health workers, unqualified allopathic providers and drug store sales people are largely responsible for providing the rural medical care. Severe sufferings and increased healthcare cost of the patients are caused due to either inadequate information, choice of drugs and treatment strategies etc. Some relatively well do to rural patients go the cities for medical care. The private hospitals and clinics offer adequate services but are out of reach for the common people. The government hospitals and clinics are affordable for all but offer poor quality services. Most of the medical equipment are imported but often do not function effectively due poor quality of service and maintenance. Physicians order expensive and sometimes unnecessary investigations because they receive incentives for their referrals from the diagnostic centers. Doctors' tendency to prescribe fashionable and expensive drugs or irrational drugs with limited therapeu tic value is also of concern for patients' care and safety. Currently a burning question is how to bring a rapid improvement for rural people in the developing countries that have no or limited access to safe health care? The application of Internet and Communication Technology, ICT in healthcare is growing rapidly in an attempt to find cost effective solutions for providing quality healthcare (1). We are working with the integration of smart, affordable medical devices with telemedicine using modern ICT tools, for improving the rural health care situations (2).

2 Method
The rural people depend on village doctors and paramedics. But they have limited capacity for providing relevant healthcare. In order to improve health care facilities and achieve health equity and patient safety, we together with the local partners are using Innovative, Relevance, Acceptability, Affordability and Effective ICT tools to address some of the health problems in rural areas. We are working to improve rural health workers' capacity, quality and performance by creating enabling environment to provide services that are accessible. Our actions include development of a) reliable, robust and cost effective medical devices, b) proper education and training to use the diagnostic equipment, c) connectivity to the medical experts for disease prevention and treatment advice and d) health education to teach how to prevent and treat health problems which routinely afflict them. We have developed and deployed reliable and affordable diagnostic devices integrated with the communication systems and have developed care services nearest to the homes that have the capacity to diagnose the common chronic illnesses, formulate in consultation with distant specialists a Home-care Plan, follow-up care, identify secondary risks and make referrals. We have also initiated to organize Health Clubs to create scope for collective approach for management of these illnesses that ensures access and patient education and empowerment. Female health worker are visiting rural women at the homes with: i) relevant and user-friendly health care content to educate to manage health, ii) portable and affordable diagnostic and iii) communication platform to connect the health workers and patients with medical experts for advice.

3 Results
We find our model of e-Health activities to be appropriate for India and Bangladesh and believe to be suitable for other resource-constrained countries. Rural people find great satisfaction from the face to face video-consultation with the medical experts. They appreciate the just in time, cost-effective and quality treatment without any need for travelling. This has greatly reduced the earlier errors due to wrong diagnosis or wrong medication or too much medication for a too long time. Some other positive impacts of our work are: a) Better monitoring of the progress of health programmes and achievements of health MDGs. b) Increased understanding of the importance of e-Health by the policy-makers c) Rural doctors and paramedics benefit from a satisfying professional experience thanks to connectivity to medical experts and avoiding harmful mistakes. This rural e-Health service decreases their professional isolation, reduce number of unnecessary referrals and facilitate for continuous education and empowerment, d) A creative environment of health around the Point of Care to strengthen the confidence of the community for seeking health and start sharing the responsibility of health care by all stake holders;

4 Discussions
While working with ICT tools for empowering the rural people in Bangladesh and India, some of the challenges that we faced include, unreliability of electricity supply, weak internet backbone, high internet access cost, financial constraints preventing the purchase of an appropriate number and type of ICT equipment, unavailability of adequate number of computer-literate employees to implement e-health programme, resistance to changes. Work should be intensified to: a) raise awareness of existing e-Health tools and services, b) develop an knowledge exchange network to share practical experiences on the application and impact of e-Health initiatives, c) create an e-Health information resource to support the needs of the rural people and d) promote the use of e-Learning for rural health workers and rural people.

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References