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A Mobile Device Is Not Your Grandmother's Telephone Anymore: It's A Mobile Health Center

by

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I am in Dubai, holding up a mobile device in front of a large conference of Communications Ministers and industry representatives attending ITU Telecom World 2012. I ask, "What Is This?" They shout out answers in a cacophony of dialects and accents, literally from every corner of the world.

While it *is* still a mobile phone, it is increasingly becoming a mini-computer with more computing capability than our first spaceships. More importantly, these tiny devices are now also a critical care unit, immediate access to one's health records, a reminder to take medicine, a remote biometric device for checking vital signs, a therapist, and, most importantly, a lifesaver.

This is high tech transformation occurring right in the palm of our hands.

It is no longer technology for technology's sake, but technology that is changing our lives, enabling us to gain new research and insights into disease through collaboration of the best minds in all parts of the world, sharing data points in a cloud or a success story in a remote village.

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Many new high tech discoveries are driving mHealth, a term used for the practice of medicine and public health supported by mobile devices, including:

- Ubiquity of wireless
- Explosion in sensors
- Reduction of storage and computing costs
- Collaborations as a reducer of testing costs
- Ubiquity of electronic health records
- Huge data banks and data mining techniques
- And, finally, the consumer who wants to have access to all of their own health information as well as to drive their health and wellness decision.

Delivering healthy babies, living longer, developing drugs more quickly, and pushing best practices into healthy delivery sooner are all side effects and secondary by-products of this technological explosion.

While government is certainly not the creator or producer of these innovations and new devices, government does have a critical role.

For instance the FCC has been a "first adopter" and an incubator, whether launching specific healthcare initiatives, setting aside swaths of spectrum to experiment with nascent technologies, or even requiring online filings and other data-driven activities.

More than five years ago, the FCC established a healthcare pilot program to connect our most rural citizens to top medical facilities and research institutions. Setting aside \$100 million in competitive grants, the FCC enabled high speed connectivity between rural hospitals and research universities as part of its universal service program.

In November 2010, the FCC opened a proceeding to examine ways to promote innovative and efficient spectrum use for wireless healthcare devices, and created new experimental licenses for medical and other research. This will reduce regulatory barriers, cut red tape, and speed the process of getting new technologies into the marketplace. New, streamlined experimental licensing processes will also be created for universities and non-profit research organizations.

Last November, the Commission dedicated spectrum for medical micro-power networks (MMNs), which have the potential – literally – to enable paraplegics to stand. Just weeks ago, the FCC adopted new rules to allow greater use of spectrum for Medical Body Area Network, or MBAN, devices. MBAN devices provide a cost-effective way to monitor patients wirelessly, providing more information to physicians and giving patients mobility and greater independence. While MBAN monitoring may not sound that revolutionary to some, the odds of surviving a cardiac arrest are twice as high for monitored hospital patients compared to unmonitored patients. At the same time, by decreasing infections, this technology can save an average of up to \$12,000 per patient. Economist Robert Litan estimates that remote monitoring technologies could save as much as \$197 billion over the next 25 years in the United States alone due to better management of chronic diseases.

While in Alaska recently, I was able to see how you could keep people in their local village surrounded by family and friends while getting virtual online therapy, or to overcome addiction, and even family counseling from a psychiatrist hundreds of miles away. Later I visited the modern university hospital and saw the doctor and nurses, psychiatrists and therapists Skype counseling with the patient, still in their home village, surrounded by family and friends. The concrete savings included air flights and lengthy waits, hotel accommodations for patient and family, not to mention the physical toll and lost work days for the family. And even from the vantage point of the insurance and hospital balance sheet, telemedicine enabled substantial cost savings.

There is also an ongoing inter-governmental collaboration being led by NIH related to public private partnerships, with participation from the FDA, the Department of Veterans Affairs, HHS, and Centers for Medicare & Medicaid Services. This will be a productive discussion on how government and private innovators can work together to improve the quality of care and lower costs.

MHealth is also critical to work being done in research among national and even global scientists, all online. One project is called the Knowledge Networks and is comprised of research hospitals, respected researchers, and private ICTs creating gigantic databases to better identify both appropriate protocols and effective medications for persons with, among other illnesses, mental illness. This data also holds the potential for identifying a cure for many "brain diseases." Through sifting through and sharing data, real time therapists can see what may work best for their client rather than trying drug after drug only to have the patient hospitalized to stabilize the medications. This can result in fewer costly hospital stays, improved outcomes, reduced medical errors, and enable the patient to return to normal functioning and get back to work as a productive member of society.

All of this is only possible with today's mega-bandwidth and access to this data from anywhere, anytime.

Today, a "smart" pill box can send automatic reminders to a patient to take her daily medication, and alert her physician or family members if she skips it. Or a patient can swallow a camera "pill" which provides doctors with photos throughout his internal digestive system, in real time.

What was only in the movies a few years ago is now a daily reality.

New mobile diabetes management devices are freeing patients from the burden of logging their glucose measurements and making remote monitoring a seamless process. My first vote at the FCC in 2006 was for one of these early diabetes predecessors, a step along the unending development of new and better. I still remember the letter from a mom thanking me for no longer having to "prick" her three children six or seven times a day. That letter reminded me every day of the lasting

impact regulators can have on maximizing what our scientists and researchers are doing by enabling their discoveries to become real solutions for real people.

So, in answer to my question about my mobile device: It is a game changer for the welfare of all people everywhere, especially with regard to the delivery of health services.

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