A Primer on mHealth
August 2012

Context: Healthcare in the United States

- Total healthcare spending in the U.S. rose to $2.6 trillion in 2010, up from $256 billion in 1980.[1] In 2010, healthcare costs accounted for 17.9% of U.S. GDP.[2] These costs are expected to almost double by 2020.[3]

    o The burden on government is also increasing along with healthcare costs. It is estimated that the federal government will pay for more than half of all healthcare costs by 2020.[4]

    o At the state level, Medicaid expenditures accounted for about one-quarter of all expenditures in fiscal year 2011.[5] This represented a 10% increase from the year before.

- The number of people without health insurance continues to increase, having reached over 17% of the adult population by the end of 2011.[6]

- Despite spending significantly more per capita on healthcare than most countries across the globe, the quality of care in the U.S. has stagnated.

    o A 2011 assessment by the Commonwealth Fund observed "substantial erosion in access to [high-quality, efficiently delivered] care…along with rising costs that are stressing families, businesses, and all levels of government. Variations in health care delivery, moreover, persist throughout the U.S., as opportunities are routinely missed to prevent disease, disability, hospitalization, and mortality."[7]

- Several demographic factors, including a sharp increase in the number of senior citizens, are expected to further strain healthcare in the United States.

    o The Kaiser Family Foundation has observed that, "because older people have more health problems and use more health care than younger people, population aging will have a small but persistent impact on cost growth in the years to come."[8] More generally, "Increases in disease prevalence [among rapidly growing segments of the population], particularly chronic diseases such as diabetes, asthma, and heart disease, coupled with the growing ability of the health system to treat the chronically ill, contribute to the high and growing levels of health spending. Rising obesity levels are another factor which may be influencing cost growth."[9]

The Impacts of Mobile Broadband on Healthcare in the United States

- Mobile broadband is facilitating the development of a number of cutting-edge approaches to healthcare, many of which are expected to lead to vast individual and national cost savings and to an increase in the availability of quality health solutions.

  o Dubbed "mHealth," this growing suite of technologies is helping to shift the healthcare paradigm by, among other things, enabling in-home care and real-time patient monitoring and focusing on disease prevention by enhancing wellbeing and awareness of personal health metrics.

- The mHealth market has grown rapidly in recent years due to a number of factors:

  o Mobile broadband has become almost ubiquitously available across the U.S.

    - According to the National Broadband Map, less than 1% of the population lives in an area without access to wireless broadband.

  o There are enormous revenue opportunities for innovators in this space.

    - By one estimate, increased wireless "service provision and system integration" into sectors like healthcare could result in $69 billion in new revenue opportunities for stakeholders throughout the mobile space.[10]

  o Consumers, doctors, and healthcare institutions are rapidly adopting advanced mobile devices like smartphones and tablets and using them to access a growing array of health-related sites and tools.

    - More than half of all U.S. cellphone users own a smartphone,[11] while the penetration rate for tablets is expected to grow from 11% in 2011 to nearly 50% by 2013.[12] This year, downloads of health-related apps are expected to exceed 250 million.[13]

    - Among physicians, 45% already own an iPad and more than half own an iPhone.[14] Two-thirds of family physicians are currently using smartphones in their practice, up from 55% in 2011.[15] A 2011 survey found that 80% of doctors use smartphones and medical apps daily, with usage highest among emergency room physicians.[16]

- As a result, the mHealth sector grew by 17% between 2010 and 2011 and is expected to grow by over 20% each year through 2014.[17] A significant driver of this growth will be the many home-based healthcare tools and services enabled by mobile broadband.

  o Pushing healthcare into the home will yield a number of efficiencies and cost-savings, as well as provide patients with a more convenient outlet for receiving care.

- o Seniors and those with chronic diseases are among those who will immediately benefit from this shift in focus and from innovation in the mHealth space. Indeed, with more than 90% of seniors expressing a strong desire to age at home, and with the costs of long-term care and institutionalization rising inexorably, home-based mHealth solutions (e.g., remote monitoring) represent a viable opportunity to deliver quality, affordable care to a large number of seniors.[18]

- Home-based mHealth tools also include an array of applications and services that allow consumers to track health metrics in a more casual manner. In many instances, data are generated by sensors worn on the body (e.g., a bracelet) and transmitted wirelessly to a device (e.g., a watch or smartphone) for analysis. Examples range from Jawbone's Up bracelet to wireless home scales to an array of consumer medical devices and applications that assist in tracking blood pressure readings and provide support during pregnancies.

  - o The market for these types of everyday mHealth solutions is booming. ABI Research estimates that "wearable wireless sensors for fitness and wellbeing will surpass 80 million devices by 2016."[19]

- In sum, the benefits of mHealth services are apparent across every user group:

  - o Widespread use of in-home remote monitoring systems, especially among **senior citizens** and **people with disabilities,** is projected to result in nearly $200 billion in healthcare savings over the next two decades.[20]

  - o Among those with **chronic diseases,** in-home telehealth services have yielded significant positive benefits. A 2009 telehealth pilot program launched by U.S. Veterans Affairs saw a 19% decrease in hospitalizations, a 25% decrease in bed days of care, and a 27% decline in 4-year diabetes mortality rate. The decrease in hospitalizations alone totaled $2.2 billion per year in cost savings.[21]

  - o For **low-income households,** mHealth and telemedicine services promise to enhance their ability to access quality care. This is critical since "Inadequate access leads to inefficient care: it causes people who are sick or injured to delay seeking treatment right away, which increases the likelihood of medical complications that could have been avoided; it encourages reliance on emergency departments for primary care, a major contributor to high costs within the health system; and it results in duplication of services and failure to follow-up on test results or preventive care."[22]

  - o For the 26 million people in the U.S. with **diabetes**, mHealth solutions like Diabetes Manager, which is available for use only on mobile devices, provide patients with a way to track this disease more closely and allow doctors to provide more individualized treatment plans.[23]

- o ***New and expectant mothers*** can receive free SMS-based health information via services like *Text4Baby.[24]*

- o ***Healthcare providers*** also benefit from using mHealth tools. Nurses, for example, are using their smartphones more and more to access critical resources when treating patients.[25] Similarly, doctors are increasingly using tablets to access electronic health records (EHRs) and to provide patients with more comprehensive on-site information about ailments.[26] Widespread use of EHRs alone is expected to yield billions of dollars in cost-savings for healthcare providers.

Barriers to More Robust Utilization and Adoption of mHealth

- ▪ Despite widespread agreement that mHealth – and broadband-enabled telemedicine generally – has the potential to radically improve the provision and consumption of healthcare in the U.S., numerous legal, regulatory, and perceptional barriers continue to impede more robust adoption and utilization of these tools.[27] These include:

  - o Inadequate reimbursement mechanisms for most telemedicine services.

  - o Outdated healthcare data privacy and security policies.

  - o State-by-state patchwork of rules regarding physician licensure and credentialing.

  - o Implementation cost concerns.

  - o Uncertainty regarding the scope and reach of tort laws.

  - o Low rates of adoption of broadband and advanced mobile devices among key patient populations (e.g., senior citizens, people with disabilities). Low levels of digital literacy among these and other populations also represent a significant barrier to meaningful uses of mHealth tools.

  - o Lack of spectrum to support deployment of next-generation mobile broadband networks.

  - o Patchwork set of regulations impacting wireless network infrastructure deployment at the state and local levels.

  - o Uncertainty regarding the full scope of review processes for new mHealth devices and applications.[28]

Opportunities for States to Foster mHealth Growth

- ▪ State government has the ability to influence adoption and meaningful use of mHealth by updating relevant policies, promoting broadband utilization, and otherwise working

with stakeholders in the private and nonprofit sectors to eliminate many of the barriers identified above. More specifically, these efforts encompass:

o *Leading by example*. States have the ability to bolster adoption of mHealth tools – and telemedicine generally – by using their power as purchasers and providers of healthcare services to state residents and employees. These efforts could include:

- Launching pilot programs via Medicaid's "Health Home" program;[29]

- Updating Medicaid reimbursement policies; and

- Partnering with mHealth providers and insurers to integrate these tools into health plans.

o *Identifying and eliminating barriers to mHealth and telemedicine adoption*. There is a substantial amount of "low hanging fruit" that is ripe for reform at the state level. For example, outdated licensure, credentialing, and tort liability systems, as well as limited reimbursement mechanisms, represent key areas where forward-looking state legislation could have major positive impacts on this burgeoning sector.

o *Recalibrating policies impacting wireless network deployment*. Even though states have limited authority to directly regulate wireless service, they do have the ability to influence the speed with which networks are deployed. To this end, states have an opportunity to update and streamline regulations regarding how rights-of-way are managed and how wireless towers are sited.

- State-level taxation of wireless services is another area ripe for reform. These services are taxed at disproportionately high rates at both the local and state levels. This approach to taxing wireless services has led to major consumer welfare losses (upwards of $15 billion annually) and is overly regressive since poorer consumers are forced to pay a greater share of their income for these increasingly essential services.[30]

o *Promoting more widespread adoption of broadband and supporting digital literacy development*. State governments are uniquely positioned to work with stakeholders in the private and nonprofit sectors to sustain momentum created by BTOP-funded outreach and training programs, work within existing social infrastructures to identify needs and deliver tailored programmatic responses within under-adopting communities, and otherwise raise awareness of the many benefits associated with using broadband.

Endnotes

[1] *See* KaiserEDU.org, U.S. Healthcare Costs – Background Brief, http://www.kaiseredu.org/issue-modules/us-health-care-costs/background-brief.aspx.

[2] *Id.*

[3] *See, e.g.,* Parija Kavilanz, *U.S. will pay for half of all health care costs by 2020*, July 28, 2011, CNN.com, http://money.cnn.com/2011/07/28/news/economy/healthcare_spending_forecast/index.htm (quoting from a report issued by the Centers for Medicare and Medicaid Services).

[4] *Id.*

[5] *See* Lisa Lambert, *State Medicaid Spending Soars*, Dec. 13, 2011, Reuters, http://www.reuters.com/article/2011/12/13/us-usa-states-medicaid-idUSTRE7BC25420111213 (quoting a study issued by the National Association of State Budget Officers).

[6] *See* Elizabeth Mendes, *More Americans Uninsured in 2012,* Jan. 24, 2012, Gallup, http://www.gallup.com/poll/152162/americans-uninsured-2011.aspx. The expectation is that this rising tide of uninsured individuals will likely reverse beginning 2014, when this aspect of the Affordable Care Act takes effect.

[7] *See Why Not the Best? Results from the National Scorecard on U.S. Health System Performance, 2011*, at 9, Commonwealth Fund (Oct. 2011), *available at* http://www.commonwealthfund.org/~/media/Files/Publications/Fund%20Report/2011/Oct/1500_WNTB_Natl_Scorecard_2011_web.pdf ("*Why Not the Best?*").

[8] *See Healthcare Costs: A Primer*, at 25, Kaiser Family Foundation (May 2012), http://www.kff.org/insurance/upload/7670-03.pdf.

[9] *Id.*

[10] *See* Press Release, *Proliferation of Connected Devices will create a $1.2tr Revenue Opportunity for Operators by 2020*, Oct. 10, 2011, GSM World, http://www.gsm.org/newsroom/press-releases/2011/6491.htm.

[11] *See, e.g., America's New Mobile Majority: A Look at Smartphone Owners in the U.S.*, May 7, 2012, Nielsen Wire, http://blog.nielsen.com/nielsenwire/?p=31688.

[12] *See* Ingrid Lunden, *OPA: iOS And Android Level In U.S. Tablet Market, Penetration 47% By 2013, $2.6B Spent On Apps In 2012*, June 18, 2012, TechCrunch, http://techcrunch.com/2012/06/18/opa-ios-and-android-level-in-u-s-tablet-market-penetration-47-by-2013-2-6b-spent-on-apps-in-2012/.

[13] *See* Laura Englehart, *Health care apps soar in popularity,* April 24, 2012, Dayton Business Journal, http://www.bizjournals.com/dayton/news/2012/04/24/health-care-apps-soar-in-popularity.html?page=all/.

[14] *See* Brian Dolan, Survey: 45 percent of doctors have iPads, April 23, 2012, Mobi Health News, http://mobihealthnews.com/17099/survey-45-percent-of-doctors-have-ipads/.

[15] *See* Sara Jackson, *Smartphone Use Growing Among Family Docs*, June 11, 2012, FierceMobile Healthcare, http://www.fiercemobilehealthcare.com/story/smartphone-use-growing-among-family-docs/2012-06-11.

[16] *See* Nicole Lewis, *80% of Doctors Use Mobile Devices at Work*, Oct. 21, 2011, Information Week, http://www.informationweek.com/news/healthcare/mobile-wireless/231901412.

[17] *See* Nicole Lewis, *Healthcare IT Spending to Reach $40 billion*, May 16, 2011, Information Week, http://www.informationweek.com/news/healthcare/EMR/229500682.

[18] *See Long Term Care and the Home Healthcare Opportunity*, July 12, 2012, mHealthTalk, http://www.mhealthtalk.com/2012/07/long-term-care-and-the-home-healthcare-opportunity/.

[19] *See* Brian Dolan, *By 2016: 80M wearable wireless fitness sensors*, July 15, 2011, Mobi Health News, http://mobihealthnews.com/11224/by-2016-80m-wearable-wireless-fitness-sensors/.

[20] *See* Robert E. Litan, *Vital Signs via Broadband: Remote Health Monitoring Transmits Savings, Enhances Lives,* at 2, Better Health Care Together (Oct. 2008), *available at* http://www.corp.att.com/healthcare/docs/litan.pdf.

[21] *See* Chumbler et al, *Mortality risk for diabetes patients in care coordination, home-telehealth program,* Journal of Telemedicine and Telecare 2009:15:98-01.

[22] *Why Not the Best?* at 41.

[23] *See* Charlene Quinn et al., *Cluster-Randomized Trial of a Mobile Phone Personalized Behavioral Intervention for Blood Glucose Control*, Diabetes Care (July 2011).

[24] *See* http://www.text4baby.org/. And *Text2Quit* offers similar service for smoking cessation. *See* https://text2quit.com/.

[25] *See, e.g.,* Tami Wyatt and Patricia Krauskopf, *E-health and Nursing: Using Smartphones to Enhance Nursing Practice*, Online Journal of Nursing Informatics (OJNI), 16 (2) (June 2012), http://ojni.org/issues/?p= 1706.

[26] *See, e.g.,* Angela Haupt, *Hospital Care: How Smartphones and Tablets are Helping Patients*, Oct. 31, 2011, U.S. News & World Report, http://health.usnews.com/health-news/most-connected-hospitals/articles/2011/10/31/hospital-care-how-smart-phones-and-tablets-are-helping-patients.

[27] Many of these are drawn from two reports issued by the ACLP at New York Law School: *The Impact of Broadband on Telemedicine,* a Report to the U.S. Chamber of Commerce (April 2009), http://www.nyls.edu/user_files/1/3/4/30/83/BroadbandandTelemedicine.pdf; *Barriers to Broadband Adoption,* A Report to the FCC (submitted Oct. 2009), http://www.nyls.edu/user_files/1/3/4/30/83/ACLP%20Report%20to%20the%20FCC%20-%20Barriers%20to%20BB%20Adoption.pdf.

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[29] Via the Health Home program, the federal government matches state dollars (9 to 1 for a period) for qualifying health home services. *See* http://www.kff.org/medicaid/upload/8136.pdf

[30] *See, e.g.,* Glenn Woroch, *The "Wireless Tax Premium" Harms American Consumers and Squanders the Potential of the Mobile Economy*, Georgetown University Center for Business and Public Policy (June 2011), http://www.gcbpp.org/files/EPV/EPF_Woroch_WirelessTaxPremium_62011.pdf.