

**MOBILE HEALTH**

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# Telemedicine

## What's Old is New Again

**A**MID THE feverish speculation about mHealth's rising stars, telemedicine is featured as a central figure. It's a simple concept – marry communications and clinical technologies with professional resources and offer the resulting services at a deep discount to traditional medicine. And it's not blindingly original – telephone consults between practitioners and with patients have been around for decades. But does the person-to-person remote consult remain the solid center of telemedicine today? Consider Figure 1, issued by the U. S. Institute of Medicine in 1996, which depicts a linear, point-to point inventory of telemedicine services.

Even today, telemedicine is characterized as a channel of bilateral communication. The Centers for Medicare and Medicaid Services seems to think so; it describes telemedicine as “a two-way, real-time interactive communication between a patient and a physician or practitioner at a distant site through telecommunications equipment that includes, at a minimum, audio and visual equipment.”

The American Telemedicine Association (ATA) takes a broader view. It describes telemedicine as “the use of medical information exchanged from one site to another via electronic communications for the health and education of the patient or health care provider and for the purpose of improving patient care, treatment and services.” As shown in Figure 2, the ATA definition makes an important distinction—it places telemedicine within a broader category of “telehealth,” which also encompasses non-clinical applications over distance, such as consumer outreach and continuing medical education, and addresses the individual's

overall health via tools for health monitoring and recording, health and wellness online advice, and information services. This is where old meets new: bilateral communication imbedded into a vastly more comprehensive, hub-and-spoke, integrated network of care coordination services.

This new and improved catalog of services is propelling dynamic growth – the global market for telemedicine solutions will almost triple from \$14 billion in 2012 to \$39 billion by 2018. (Research and Markets)

This is being driven by favorable economics (reimbursement trends, cost pressures) and systemic gaps in care (lack of specialty physicians, lack of patient access), but also by advances in technology – expanding broadband network coverage and web-based applications, improved video communications technology, the convergence and standardization of health technologies, and increasingly powerful, smaller, cheaper equipment. There is also a subtle but influential human factor: the culture of healthcare delivery is changing as provi-

ders and patients become comfortable with an electronic dialog and the efficiency and convenience of virtual medicine. A looming trend is the demographic shift toward an aging population that will impose an ever-greater demand for services on an already stretched industry.

Collectively, these trends are reordering the structure of the provider-patient relationship – and most tellingly, within primary care. In recent years, the primary care physician has served as the overworked, underpaid point of entry to an assembly line of medical services. The pressure toward ever-shorter visits and increasing specialization have replaced what should be an ongoing conversation between the patient and the provider with episodic, isolated encounters. Telemedicine changes that strange dynamic, by reintroducing the patient conversation and continuity of care. The remote conversation can take a variety of forms, from advanced solutions like telepresence (Skype or similar) and remote patient monitoring to simple connectivity—phone, email, or text. Primary care isn't the only winner – telemedicine extends specialty resources, particularly in urban areas where the demand for on-call specialty physicians often exceeds the supply in spheres such as stroke, congestive heart failure and behavioral health.

For the patient, telemedicine is an access expander. It provides patients in rural or underserved areas the ability to establish and maintain a dialog with primary care physicians and specialists with a frequency that otherwise would require lengthy travel or that would be out of reach entirely. Telemedicine also provides access to a wide range of diagnostic and treatment services that are convenient and cost effective. Common examples of these clinical benefits include:

- Direct care between a patient in an

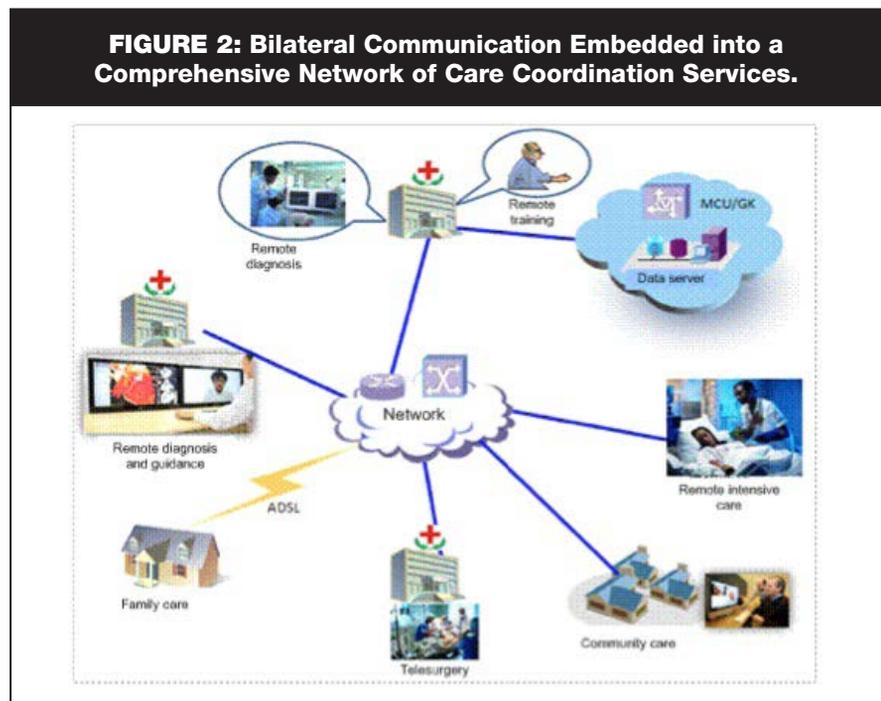
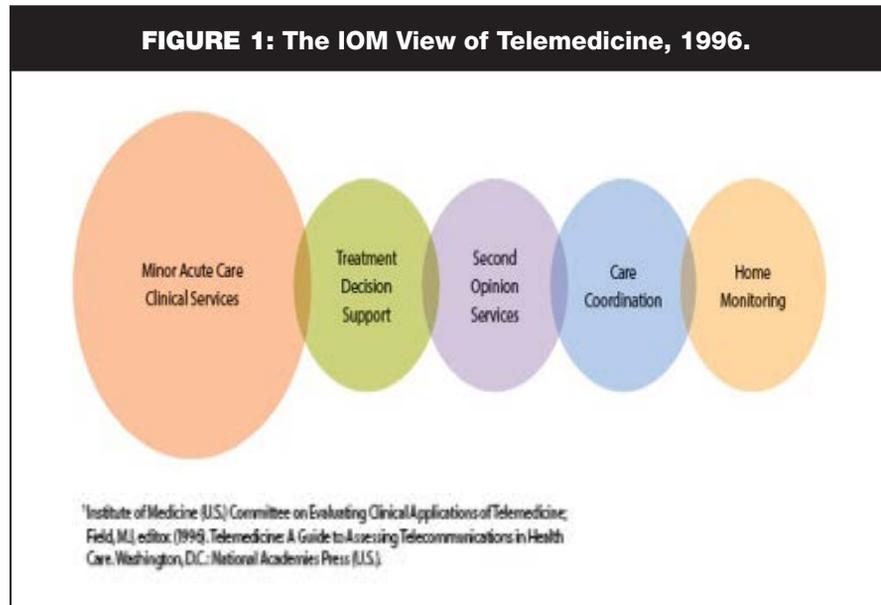
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underserved region and a healthcare professional in another location

- Remote consults with specialists to assist in diagnosis, provide a second opinion, or recommend and explain treatment options
- Monitoring and transmission of data—such as the transfer of X-ray, magnetic resonance imaging, and computed tomography scans. Devices in the patient’s home are able to transfer information regarding blood pressure, glucose levels, electrocardiograms, or pacemaker testing. Applications also include live patient video conferencing, transmission or remote sharing of still and video images from scopes and other diagnostic equipment.

Viewed from a business perspective, telemedicine improves resource utilization. It allows providers to more efficiently manage their assets by keeping non-urgent cases out of expensive emergency departments and by managing their time by enabling asynchronous patient communication. There are macro benefits. Telemedicine improves population health management, creates an opportunity to capture greater market share, and supports patient preference and satisfaction by eliminating long waits and introducing convenient, untethered access.

But there are headwinds facing universal adoption. Telemedicine deployments, particularly in facility settings, can be expensive and complex—start-up costs for telecommunications lines and equipment for teleradiology services alone can range from \$70,000 to \$100,000 and can take six months to a year to install in rural areas. Once the system is established, system reliability and downtime can also be hurdles. Trust is also an issue—healthcare providers have the same obligation to safeguard the privacy and security of patient information via telemedicine, including rules enacted by HIPAA and the HITECH Act. And there are staffing issues – including credentialing, training, and appropriateness and continuity of care. Staff and patients likely will need to be educated about the value to be had from an electronic dialog. Finally, there are issues of culture. Today there remain different degrees of telemedicine



acceptance among clinical, administrative, payer regulatory and technical communities. Many state legislatures and medical boards have been slow to change rules and laws to allow telemedicine services, and despite its demonstrated savings, insurers have been slow to add reimbursement for telemedicine to their fee schedules (notable exceptions include United Healthcare,

Wellpoint, and Blue Cross/Blue Shield).

So how can telemedicine programs succeed in the face of some pretty formidable obstacles? First, the big picture. Size the market and revenue opportunity. Research the regulatory and reimbursement issues that will need to be resolved up front. Determine whether a hybrid business model combining virtual and physical care

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is clinically, technically and economically aligned.

Next, determine the total cost of ownership and return on investment attributable to a telemedicine program. What is the business case? What procedures will be reimbursed? What net new revenues will accrue? How will the program affect daily workflows, and what adjustments to enterprise staffing should be anticipated?

Define the customer in retail terms. Successful retailers engage their customers through multiple channels – channels that segment the market, align content with customer requirements, deliver value and are highly actionable, offer convenience, and anticipate buying behavior. Planners must conduct market segmentation analysis to ensure that the right patients are drawn to the right channel. The telemedicine customer (the patient) must be segmented not only according to demographics (age, employment, insurance, health indications, etc.) but also according to consumer behaviors (technology comfort, lifestyle, buying decisions, communication preferences). Tailor the engagement channel (video, voice, digital, web), frequency and acuity in alignment with customer preferences.

Finally, evaluate the patient experience. Is the telemedicine solution user friendly, and will it yield net new patient volumes? Is it effective, and will it increase patient satisfaction? How will it play into the in-person encounter?

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few signposts: major players like Google are partnering with telemedicine providers to offer \$25 virtual visits, and digital image diagnoses in specialties like dermatology are being offered directly to the consumer. Members of the healthcare fraternity would do well to take note. A few years ago, retail medical clinics were dismissed as health-care lite, but consumers have been receptive to its price and convenience. Telemedicine is leveraging this rising tide of consumer preference and delivering solutions that address the industry's critical shortage of providers and its uneven distribution of access to care. In both clinical and economic terms, it's a winning formula, and the new telemedicine is just getting underway. **JHIM**



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