Initiating Telehealth in a Complex Organization

Faryan Jalalabadi, MD, BBA¹ Kelly Page Shultz, BA¹ Norman Leslie Sussman, MD²
William E. Fisher, MD³ Edward M. Reece, MD, MBA¹

¹ Division of Plastic Surgery, Michael E. DeBakey Department of Surgery, Baylor College of Medicine, Houston, Texas

² Division of Abdominal Transplantation, Michael E. DeBakey Department of Surgery, Baylor College of Medicine, Houston, Texas

³ Division of General Surgery, Michael E. DeBakey Department of Surgery, Baylor College of Medicine, Houston, Texas

Address for correspondence Edward M. Reece, MD, MBA, Division of Plastic Surgery, Michael E. DeBakey Department of Surgery, Jamail Specialty Care Center, Baylor College of Medicine, 1977 Butler Blvd., Suite E6.100, Houston, TX 77030 (e-mail: edward.reece@bcm.edu).

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Abstract

Medicine has been praised for breakthroughs that improve the quality and longevity of human life. In the setting of today's fast-paced, tech-savvy society in combination with increased patient volume entering hospital doors, telemedicine proves an effective tool to enable the industry to adapt to the changing world around us. A review of the current literature and legislative laws was conducted along with knowledge from the experience gathered at starting a telehealth platform at Texas Children's Hospital to find the necessary steps for starting a telehealth program. Through digital platform, telemedicine offers remote delivery of medical services to all parts of the country, urban and rural, while enhancing interprofessional referral patterns in the local setting. Telemedicine sets to preemptively triage and guide patients through their appropriate phases of care all the meanwhile, bringing the patient and physician closer together. This discussion delves into the further added benefits to large hospital systems, breaks down the basics of the technological platform, and addresses current barriers to entry in the telehealth industry. This article serves as an introduction to a series regarding effective implementation of telemedicine into the hospital system.

Keywords

- ▶ telehealth
- ▶ telemedicine
- ▶ technology
- ▶ tele-device

The history of health care is deep-rooted with breakthroughs responsible for modern day longevity and quality of human life—infections have been met with antibiotics, childbirth complications with cesarean sections, and malignant masses with surgical resection. Today, health care is impeded by uneconomical outreach and insurmountable cost inefficiencies. It is no question that the pace of our modern day-to-day continues to accelerate. Efficiencies must be optimized for us to keep up with patient care demands, clinical responsibilities, research commitments, insurance transactions, administrative tasks, continuing education, office personnel management, etc. Investment in the improvement of our traditional practice can overcome the reality of this tantalizing truth.¹ Telemedicine, the use of information technology and communication networks for remote delivery of medical services, is a novel

field with the potential to transform the efficiencies of delivering health care by way of mobile devices, applications, and sensors.^{1,2}

The exponential rise of mobile technology and computing capacity make telemedicine a feasible and affordable mode of medical care. Originally pursued as a mode of increasing access, especially to specialist care, the health care industry now recognizes telemedicine's proven benefits in streamlining interprofessional referral and collaboration, increasing the efficiency of postoperative care, eliminating unnecessary referrals, reducing health care costs, and providing outcomes equal to or better than the current standard of care.^{1,3,4}

For hospital systems, adoption of telemedicine means an expanded geographic footprint, decreased emergency room (ER) bounce back, and more efficient face-to-face clinic and triage time. For patients, benefits include decreased

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Fig. 1 An electronic otoscope operated here by a nurse has the capabilities to relay high-quality imaging to the tele-physician.

spending on ER visits and hospitalization, less time spent en route or in ER waiting, and increased access to reputable physicians.^{1,5,6}

Current technology platforms consist of a single unit providing a live, high-definition, video stream, and hardware

attachments, which give a nurse practitioner or technician the ability to collect and virtually report auscultation, ultrasound, or electrocardiogram information. Add-on devices, such as otoscopes (►Fig. 1), stethoscopes (►Fig. 2), and dermatoscopes (►Fig. 3), enable high-quality tele-encounters with subspecialty physicians such as dermatologist (►Fig. 4), otorhinolaryngologist, etc. Physicians are able to gather this information along with uploaded electronic medical record data and analytics through the device and formulate an assessment and plan in real time. With continued advancements in video stream resolution, compression, and data encryption, telemedicine ventures will continue to evolve in their delivery of convenient, efficient, and cost-effective care.^{4,7-9}

Major barriers facing the broad adoption of telemedicine include service reimbursement, interstate medical licensure, patient confidentiality, clinical concerns regarding quality of the physician–patient relationship and physical examination, and social issues regarding the “digital divide” affecting aging, rural, and lower income populations.^{1,2} Current insurance coverage guidelines (e.g., Medicare, Medicaid) do not adequately address the needs of a large-scale platform, but opportunities for telemedicine ventures to experiment with bundled payment plans exist while progress is made in telemedicine reimbursement models.^{1,4,8} Hospitals may further capitalize on platform implementation by creating dedicated telehealth departments composed of physicians and surgeons hired to systematically field remote telecommunication calls.^{1,5,10}

The mass marketing of smartphones and wearable devices will likely drive the next generation of patient-centered telemedicine. New platforms will benefit from integrating application-based mobile health and wearable device data, while encouraging digital patient engagement and allowing real-time monitoring and transmission of medical data.^{4,11} These units will bring a new dimension to a diverse range of

Fig. 2 An example of a tele-consultation here shows the patient discussing his pain with a tele-physician and a technician on stand-by to help carry out the physical exam. The device shows the physician on the monitor real-time and the electronic stethoscope which can transmit sounds to the physician.

Fig. 3 An example of a dermatologic teleconsultation with live stream discussion between patient and physician with the assistance of a nurse/technician.

Fig. 4 The electronic dermatoscope transmits high-definition picture from the patient's arm to the tele-dermatologist.

specialties and, with proper implementation, reinvent the health care industry for the better.

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