Telehealth: The Integration of Telecommunication into Patient/Provider Encounters

Introduction

Throughout history, the physical interaction of physicians and patients has been a fundamental aspect of providing direct and effective care. Lack of adequate technological and communicative resources meant that physical examinations, including discussing patient symptoms and treatment options in person, was the only viable means to providing care. However, significant developments in examination and communication devices and techniques, particularly over the latter half of the twentieth century, have expanded options available to providers when consulting with patients.

Real-time communication with patients through video-conferencing and email, remote monitoring of patients with chronic conditions using measurements for vital signs and other important metrics, and the utilization of off-site specialists to review imaging and provide diagnoses, are some of the many ways healthcare providers are expanding breadth of coverage to their patients through telehealth.

In this white paper, we examine the history and scope of telehealth, current applications, staffing considerations, and how telehealth will continue to supplement the care physicians provide to their patients, particularly in rural and remote access areas.
Evolution of Telehealth

The American Telemedicine Association (ATA) defines telehealth as “the use of medical information exchanged from one site to another via electronic communications to improve a patient’s health status” (See “What is Telemedicine?” American Telemedicine Association). The means of delivery for this health information varies based on the technology used, but ultimately includes one key component- the separation of physicians and patients via distance.

The evolution of telehealth, consequently, follows closely the advent and rapid advancement of telecommunication devices in the United States, beginning in the 19th century. The telegraph -- first developed in the mid-1830s by Samuel Morse -- used a coded system of dots and dashes corresponding with letters in the alphabet to transmit messages over long distances. This long-distance communication proved vital during the Civil War, where health-related information including casualty lists and ordering necessary medical supplies was relayed via telegraph (See “Evolution and Current Applications of Telemedicine”, Telemedicine, NCBI Bookshelf).

The communication devices at the disposal of medical professionals expanded in 1876 with the patent of the telephone by Alexander Graham Bell -- making electronic speech transmission possible. Into the late 19th century, the infrastructure and technology for telephone devices (switchboards, telephone lines) meant that telephone communication expanded beyond inter-city contact and could travel significant distances. This was followed by the development of radio signals for communication, with the first signal transmitted by Guglielmo Marconi in 1895.

Although this proliferation of communication technology was significant, it was not until the mid-20th century that the impact and integration of telecommunication into the medical field was truly felt. Noted developments in use of telehealth include:

- **1948**: Transmission of radiologic images via telephone from Westchester, PA to Philadelphia, PA- 24 miles
- **1959**: University of Nebraska physicians use two-way interactive television to transmit neurological examinations/information across campus
- **1965**: Medical journal *Anesthesiology* reported ship-to-shore transmission of x-rays and electrocardiograms

Source: “Evolution and Current Applications of Telemedicine”, Telemedicine, NCBI Bookshelf

For medicine, this was the advent of significant, collaborative and innovative methods for reaching colleagues and patients. Electronic communication was of fundamental importance for real-time correspondence in a profession where acute, emergent conditions often require sound and immediate decision making.
Telehealth Services and Benefits

As technology available to healthcare organizations has progressed, the array of services provided by telehealth has expanded significantly. The ATA identifies services provided by telehealth to be wide-ranging, including:

- **Remote patient monitoring:** Remote patient monitoring is particularly important for patients who suffer from multiple, chronic, debilitating conditions, particularly when inadequate patient coverage can result in life-threatening complications and hospital admissions. Through the use of remote devices, patient data including vital signs can be collected and monitored at a remote facility, and supplement the use of monitoring nurses.

- **Predictive Analytics:** Predictive analytics use data from wearable and home sensors, health assessments and health risk assessments to monitor and forecast patient problems and needs. As an article in the July 30, 2015 edition of CIO notes, “The connective devices may include blood pressure cuffs, pulse oximeter devices and activity trackers such as Microsoft Brand. The collected data is transmitted to Azure Cloud via smartphone, where it’s pulled into a Cortana Analytics Suite dashboard at a contact center. At the data center, registered nurses with access to each patient’s personalized care plan continually monitor patients’ health status and potentially serious trends. If there’s a problem, a nurse receives an alert and immediately reaches out to the patient and authorized family members via phone call, video chat or secure text – often before the patient realizes there’s a problem.”

- **Referral Services:** Referral services include consultation provided by a physician to render a diagnosis off-site. This may include interactive two-way video between provider, patient and assisting medical staff; reviewing of medical imaging (x-rays, CT scans, MRI tests, etc.) to provide diagnosis; or interacting with patients via email or other video devices for consultation services.

- **On-line health information:** The use of web-based health resources, including interactive discussion groups, educational websites for patients and other means for individual patient health education.

- **Continuing medical education:** For medical professionals in remote locations, the use of online services to complete continuing medical education (CME) requirements is a valuable resource, particularly to off-set difficulty and cost of travel to locations where educational opportunities are provided.  

  *Source: American Telemedicine Association (ATA); “What is Telemedicine?”*

Telehealth also allows for expanded market coverage, improvement of patient outcomes, reduction of preventable hospital readmissions, expanded clinical productivity, and the provision of coordinated services outside a facility setting.
A Multi-Layered Effect

For many healthcare entities, the integration of telehealth into clinical care has a multi-layered effect, allowing for outreach to more patients, cost reductions, and the provision of more frequent and higher quality coverage for patients than might otherwise be possible.

- Many patients, particularly in rural or remote access areas, find frequent hospital and physician visits difficult to schedule, both from a time and cost standpoint. Telehealth, including the use of video-conferencing with a specialist, can substitute for certain clinical visits, saving the patient a costly trip while allowing physicians to maintain oversight on patient conditions and progress.

- Patients who are discharged post-operatively may be monitored through remote devices as well as telecommunication with patients. Patients with chronic, debilitating conditions can have vital signs and other important metrics monitored by remote home health devices to reduce the likelihood of complications and hospital readmission.

- Consultation between physicians is a significant aspect of telehealth services. The advent of the Affordable Care Act has placed an increased emphasis on collaborative and cooperative care between primary care physicians and specialists, particularly through the establishment of Accountable Care Organizations (ACOs). Through telehealth services, including relaying of imaging and medical testing, physicians can pool resources to identify the best treatment course for patients (For more information on ACOs and collaborative care, see “Population Health Management”, Staff Care, 2015).


Provider Shortages

Although physical interaction between patient and provider is generally the optimal form of providing care, this is not always a feasible. A widespread physician shortage, projected currently to be between 21,800 and 30,800 physicians and to reach up to 90,400 too few physicians by 2025, according to the Association of American Medical Colleges, creates a gap between the demand for physicians and other clinicians and supply.

Telehealth provides an additional resource that can be cost-effective, efficient, and improves communication between patient and provider. As telehealth is further incorporated the delivery systems, it will be vital to address several issues, including how telehealth services will be staffed and how they will be reimbursed.
There are a variety of case studies where integration of telehealth services has produced tangible, quality results for healthcare systems. These include:

- **HealthSpot** onsite telehealth care for San Diego County employees, numbered at 17,000 and implemented by Kaiser Permanente to increase patient access. Over a 12 month pilot period, the HealthSpot walk-in kiosk serviced 451 patients, with a 98.6% patient satisfaction rating and only 4% need for follow-up appointments (See “Kaiser Permanente + HealthSpot Pilot: Onsite Telehealth Provides Quality Care for San Diego County with Convenience & Ease”, Telemedicine Case Studies, ATA).

- Use of “Medical Memory” video recording system by Barrow Neurosurgical Associates over a nearly 4 year period (November 2009-July 2013), where physician visits were recorded and access to video of visits was given to patients in an attempt to allow patients to review visits and more clearly understand and improve communication with physicians. Results included 65% of patients reporting they remembered more of physician instructions (See “Video Recording Doctor-Patient Visits to Remember What the Doctor Said”, Telemedicine Case Studies, ATA).

- **Telepsychiatry** program founded by the Albemarle Hospital Foundation, through the Duke Endowment, in northeastern North Carolina, to improve efficiency and decrease relapse into criminal and harmful behavior for psychiatric patients. Between 2011-2012, implementation of telepsychiatry resulted in 47% reduction in length of stay and 35% reduction in harmful/criminal behavior (See “Telepsychiatry in North Carolina: A Hospital Initiative Evolves into a Statewide Telepsychiatry Program”, Telemedicine Case Studies, ATA).

- **Congestive heart failure patients** use home-based weight scales and a blood pressure cuffs to check in routinely with a nurse. The use of these at-home devices allows for nurses to supervise multiple patients without having them take up space in a hospital.

- Mental health providers believe video conferencing visits for **patients with mental illness** can be more effective. Patients are able to avoid the stress and anxiety of leaving their comforting home environment and provide more precise information on their mood and condition.

- **For patients looking to drop their smoking habit**, text-messaging interventions have become a common part of treatment efforts. Regularly scheduled text messages to deal with cravings and “on-call” text-based coaching provide support for patients looking for long-term results.

These are just a few of the many ways that health systems are beginning to implement telehealth into clinical practice patterns and reaping benefits such as improved patient quality care metrics, decreased hospital stays, and overall improved patient satisfaction.
For patients utilizing telehealth services on-line, innovative consultation services have developed for patients to contact physicians or advanced practitioners through web-based communication, without the need for a secondary provider on site. One such service for online care, Zipnosis, offers patients the ability for a small fee to answer an online questionnaire regarding symptoms and past history, connect with a local provider, and receive a prescription, all within an hour. Conditions treated are minor, and include: Acne; athlete’s foot; canker/cold sores; cold, sinus infection, sore throat; irritable bowel syndrome; diaper rash; eczema or dermatitis; UTI; hay fever/allergies; GERD; influenza; jock itch; malaria prevention; medication refill for asthma; motion sickness; conjunctivitis; tobacco cessation; ringworm; tinea; and vaginal yeast infection.

Source: Zipnosis; https://zipnosis.com/

Telehealth & the VA: A Growing Success Story

In 2003, the Veterans’ Administration implemented telehealth programs in order to bring care directly to patients in their homes. Over the past 12 years, telehealth programs at the VA have expanded to include more than 44 clinical specialties. The VA also works in conjunction with the National TeleMental Health Center to provide veterans access to national experts in eight areas: Bipolar Disorder, Behavioral Pain, Schizophrenia, Non-Epileptic Seizures (NES), and Insomnia treatment.

The VA has quickly become a leader in large scale deployment of telemedicine. In 2014, the VA’s national telehealth programs served more than 690,000 veterans, which accounted for more than 2 million telehealth visits. Approximately 55% of telehealth visits were veterans living in rural areas with limited access to VA healthcare. The VA’s telehealth services are growing by about 22% per year. For example, the teleaudiology program has grown from serving 1,016 veterans in 2011 to more than 10,589 in 2014.

As healthcare providers continue to try and find ways to reduce costs and improve efficiency, the VA has proved telehealth programs can be effective in achieving these goals. According to VA officials, telehealth programs have helped lead to a 34% reduction in readmissions and a 42% drop in bed days in 2014. The VA managed to deliver cost savings while also keeping patient satisfaction scores high. Clinical video telehealth received a 94 percent satisfaction rate in a 2014 survey of about 10,000 participating veterans, according to VA officials. As quality-based payment models become more commonplace, patient satisfaction rates will heavily influence methods of care, and reaching high satisfaction rates will increase the use of telehealth.

The VA is continuing to expand their telehealth offerings in 2015. VA telehealth offerings have begun to expand through the $16.3 billion VA reform bill issued in August 2014. The bill authorizes the department to accelerate the deployment of mobile clinics through the use of telemedicine, which can allow veterans to avoid traveling long distances and reduce wait time to access medical attention.
Telehealth Commercial Service Providers Are Expanding Access

As the popularity of telehealth grows, so does the popularity of e-doctor visit platform providers. A variety of companies have sprung up to provide patients the opportunity to have a video visit with a physician. These include:

- **Doctor on Demand** has a network of more than 1,400 general practitioners, internists and pediatricians in 47 states. They diagnose simple ailments, such as pink eye, sore throat and allergies. Doctor on Demand provides customers one-on-one sessions with physicians either through an individual account or through employer partnerships such as Comcast Corporation. It claims to provide in-network or subsidized access to more than 25 million Americans.

- **Teledoc** offers patients the opportunity to schedule a virtual visit without an appointment. The visit includes a one-on-one consultation with a doctor over phone or video. The doctor can access a patient’s HIPAA-compliant EHR and in some states send certain prescriptions to the patient’s pharmacy of choice.

- **MD Live** provides patients with convenient access to virtual health care services utilizing partnerships with established industry leaders, including Walgreens, Microsoft, and major health systems across the country. The company provides virtual consultations with U.S. board-certified physicians and licensed therapists through a HIPAA-compliant cloud-based platform.

In August, 2015 retail pharmacy company CVS announced a partnership with three prominent telehealth companies -- Doctor on Demand, American Well, and Teladoc – to innovate ways of expanding patient access to medical services and extent treatment to patients at home, giving further impetus to the telehealth movement.

Acute Care Telehealth Offers Specialty Care

Many hospitals are not able to employ as many specialists as they desire due to the shortage of physicians and the expense and are thus lacking in certain onsite medical expertise. Acute care telehealth offers a solution by enabling a remote physician to provide immediate consultative care for these medical centers. For example, InTouch Health’s global network supports over 130,000 annual physician encounters with connections to more than 1,250 patient access locations. InTouch Health provides a number of acute care services including:

- **TeleStroke** connects an established regional network of outlying hospitals with specialty centers to provide acute care on a timely basis for patients during the critical period following onset of stroke symptoms.
TeleICU provides board-certified virtual intensivist coverage to understaffed ICUs. TeleICU allows intensivists to integrate best-practice protocols with a mobile platform to support remote care in the ICU.

Reimbursement for Services

Although telehealth services provide increased flexibility for providers in terms of scope and breadth of patient coverage, it is important to understand how these services are compensated for, and which patients are eligible for coverage of telehealth services.

Telehealth services are largely concentrated in sparsely-populated, rural states—those in which healthcare and provider resources are comparatively limited. A significant portion of telehealth services are covered by government payments through Medicare or Medicaid. However, as demand for telehealth services continues to grow, private insurance providers are expanding their coverage options.

For example, UnitedHealthcare has begun providing access to physicians via mobile phones, tablets, and computers 24 hours a day and reimbursing such services for self-funded employer customers. The insurance provider has plans to offer coverage to employer-sponsored and individual plans in 2016. While cost per visit will differ depending on provider, type of visit, and other factors, UnitedHealthcare believes it will likely be less than $50.

Coverage and reimbursement for telehealth varies based on individual state policy. Depending on the state, patient categories for which telehealth services may be reimbursed include:

- Medicaid
- Medicare
- Private Insurance Coverage

Coverage by State

According to the National Conference of State Legislatures (NCSL), 43 states plus Washington, D.C., provide some sort of Medicaid reimbursement for telehealth services. These include: **Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Mexico, New York, North Carolina, North Dakota, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Texas, Utah, Vermont, Virginia, Washington, Washington, D.C., West Virginia, Wisconsin, Wyoming.**
The map below illustrates telehealth coverage by state:

MEDICARE COVERAGE

According to the Centers for Medicare & Medicaid Services (CMS), Medicare beneficiaries are only eligible for telehealth services if they are located at an “originating site” - or site where the telehealth service was originally provided. Such sites must be located in:

- A rural Health Professional Shortage Area (HPSA) located outside a Metropolitan Statistical Area (MSA) or in a rural census tract; or
- A county outside of a MSA

Source: Centers for Medicare & Medicaid Services (CMS); “Telehealth Services: Rural Health Fact Sheet Series”

Designations for HPSAs differ based on qualifying factors defined by the HRSA (U.S. Department of Health...
and Human Services Health Resources and Services Administration), but typically meet a few criteria:

- Have a population to primary care physician (PCP) full time equivalent (FTE) ratio of 3,500:1 or greater; or meet unusually high needs for services despite not meeting this ratio
- Display significant access issues/barriers for care

Source: HRSA;  
http://bhpr.hrsa.gov/shortage/hpsas/designationcriteria/primarycarehpsaoverview.html

Facilities that may be utilized for telehealth services under CMS regulations may include the following, although requirements vary based on the individual state:

- The offices of physicians or practitioners;
- Hospitals
- Critical Access Hospitals (CAH)
- Rural Health Clinics
- Federally Qualified Health Centers
- Hospital-based or CAH-based Renal Dialysis
- Centers (including satellites)
- Skilled Nursing Facilities (SNF); and
- Community Mental Health Centers (CMHC)

Qualifying providers may also include the following, although requirements vary based on individual state:

- Physicians
- PAs
- NPs
- Nurse mid-wives
- Nurse specialists
- Clinical psychologists
- Clinical social workers
- Dieticians and nutritionists

Source: Centers for Medicare & Medicaid Services (CMS); “Telehealth Services: Rural Health Fact Sheet Series”

Based on these designations, telehealth services are concentrated heavily in rural HPSAs where access is limited and resources are scarce.

On January 1, 2015, the Centers for Medicare & Medicaid Services (CMS) introduced a newly payable chronic care management (CCM) service ideally suited for telehealth. Under the new service, hospitals offering outpatient CCM services may bill Medicare for the facility portion of the service. In addition, Medicare will pay for the physician time directing the CCM services under the Physician Fee Schedule. The CCM billing code
pays providers on a monthly capitated (per patient per month) basis.

On July 7, 2015, U.S. Rep. Mike Thompson (D-CA), with bipartisan sponsors, introduced a new version of the Medicare Parity Act. This bill and the bipartisan Telehealth Enhancement Act (H.R. 2066) features a variety of telehealth coverage expansion provisions for Medicare that, if passed, could significantly increase the use of telehealth services.

For a comprehensive list of medical services covered by Medicare for the 2015 calendar year, see “Centers for Medicare & Medicaid Services: Telehealth Services: Rural Health Fact Sheet Series”.

**Identifying Remote Access Areas**

Based on the criteria provided by the CMS, Medicare beneficiaries—those most likely to utilize telehealth services, must be located in an originating site that is designated as a HPSA when the telehealth service is rendered. According to the Kaiser Family Foundation, as of April 2014 there were 6,871 primary care HPSAs designated in the United States. The list indicates number of HPSAs per state and the number of practitioners needed to remove HPSA designation. This number of practitioners is calculated on the basis that an area is designated as a HPSA if the ratio of population to primary care physicians is 3,500:1 or greater.

<table>
<thead>
<tr>
<th>Location</th>
<th>Total Primary Care HPSA Designations</th>
<th>Percent of Need Met</th>
<th>Practitioners Needed to Remove HPSA Designation</th>
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<td><strong>United States</strong></td>
<td><strong>60,871</strong></td>
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<td><strong>80.7</strong></td>
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*Source: Kaiser Family Foundation; [http://kff.org/other/state-indicator/primary-care-health-professional-shortage-areas-hpsas/]({link})*
Although identifying HPSA areas is one metric to utilize when identifying those who might use telehealth services, another way to identify remote access areas is by looking at number of hospitals servicing each state. Based on information provided by Kaiser Family Foundation from 2013, below is a display of hospital distribution in the United States:

![Hospital Distribution Map](http://kff.org/other/state-indicator/total-hospitals/#map)

Although this distribution only displays volume of hospitals without taking into account per capita service, the distribution of hospitals geographically is somewhat telling. The states with the fewest number of hospitals are heavily distributed throughout the western portion of the United States, particularly the rural mid and Northwest. These are areas where limited provider service- and costly and significant travel time for patients- would be mitigated through the use of telehealth services.

### Telehealth Standards

In March of 2015, the American Telemedicine Association released an analysis on state-to-state coverage of telehealth services and reimbursement for these services, evaluating how thoroughly each state was
integrating telehealth into clinical health services (see “State Telemedicine Gaps Analysis: Coverage & Reimbursement”, ATA). Each state was assigned a letter grade, “A” through “F”, corresponding to overall performance in 13 measured standards. These standards include:

- **Parity Laws**: How telehealth services are classified in comparison to in-person services
- **Medicaid Coverage**
- **State employee health plans**: The degree to which individual states integrate telehealth coverage into state employee health plans
- **Patient Setting**: The number of “originating sites” states designate where telehealth services may be used
- **Eligible Technologies for telehealth use**
- **Distance/Geography restrictions**
- **Eligible providers for telehealth services**
- **Physician-provided services**: The degree to which physicians are restricted on services that may be provided through telehealth
- **Mental & Behavioral Health Services**
- **Rehabilitation Services**
- **Home Health Services**
- **Informed Consent for telehealth services**
- **Telepresenter**: Measured based on requirements for a telepresenter or healthcare provider on premises during telehealth services

Based on these 13 metrics, the following grades were distributed for each of the states plus Washington, D.C.:

![Map of states with letter grades]

*Source: “State Telemedicine Gaps Analysis: Coverage & Reimbursement”, ATA*
Only 5 states- Maine, New Hampshire, New Mexico, Tennessee, Virginia- and Washington, D.C., were assigned a letter grade of “A” based on their overall integration of telehealth into healthcare services and reimbursement of telehealth services. The majority of states (43) received a letter grade of “B” or “C”, with only Massachusetts and Rhode Island receiving a letter grade of “F”.
About Merritt Hawkins

Established in 1987, Merritt Hawkins is the leading physician search and consulting firm in the United States and is a company of AMN Healthcare (NYSE: AHS), the largest healthcare workforce solutions organization in the nation. Merritt Hawkins’ provides physician and advanced practitioner services to hospitals, medical groups, community health centers, telehealth providers and many other types of entities nationwide.

The thought leader in our industry, Merritt Hawkins produces a series of surveys, white papers, books, and speaking presentations internally and also produces research and thought leadership for third parties. Organizations for which Merritt Hawkins has completed research and analysis projects include The Physicians Foundation, the Indian Health Service, Trinity University, the American Academy of Physician Assistants and the North Texas Regional Extension Center.

This is one in a series of Merritt Hawkins white papers examining a variety of topics directly or indirectly affecting the recruitment and retention of physicians and advanced practice professionals, including physician (PAs) and nurse practitioner (NPs).

Additional Merritt Hawkins’ white papers include:

- Psychiatry: “The Silent Shortage”
- Physician Supply Comparisons: Physicians by Select Specialties Practicing in Each State and Licensed in Each State but Practicing Elsewhere
- The Aging Physician Workforce: A Demographic Dilemma
- Nurse Practitioners and Physician Assistants: Supply, Distribution, and Scope of Practice Considerations
- The Physician Shortage: Data Points and State Rankings
- Physician Supply Considerations: The Emerging Shortage of Medical Specialists
- RVU FAQ: Understanding RVU Compensation in Physician Employment Agreements
- The Economic Impact of Physicians
- Ten Keys to Physician Retention
- Trends in Incentive-Based Physician Compensation

For additional information about Merritt Hawkins services, white papers, speaking presentations or related matters, contact:

**Corporate Office:**
Merritt Hawkins
8840 Cypress Waters Blvd #300
Dallas, Texas 75019
800-876-0500

**Eastern Regional Office:**
Merritt Hawkins
7000 Central Pkwy NE
Suite 850
Atlanta, Georgia 30328
800-306-1330

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