



Administering a Telemedicine Program

Luisa Taylor¹ · Heidi Capling¹ · Jay M. Portnoy¹

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Abstract

Purpose of Review The purpose of this review is to describe the process of administering a telemedicine program including reviewing telemedicine guidelines; discussing licensing, credentialing, and privileging of providers; outlining scheduling and recruitment of patients; and measuring outcomes of a telemedicine program.

Recent Findings Recent literature findings suggest that telemedicine in specialty clinics continues to grow at a rapid pace. Medical specialty programs should prepare to adopt a practice that includes telemedicine to better serve their patients and families who have expressed significant satisfaction with the delivery of healthcare in this manner.

Summary With the appropriate support, any specialty clinic can provide their patients with a telemedicine option which has shown to be highly successful for Children's Mercy Allergy, Asthma, & Immunology Department.

Keywords Telemedicine · Telemedicine providers · Patient satisfaction · Scheduling · Licensing

Introduction

Telemedicine (TM) has been defined as “the remote delivery of health care services and clinical information using telecommunications technology” [1]. Children's Mercy Hospital (CMH) in Kansas City, MO, has been at the forefront of the TM movement by providing services to children in a variety of settings including synchronous ambulatory services such as primary care and behavior and specialty care as well as asynchronous store and forward evaluation of tests such as pulmonary function tests, radiographs, and echocardiograms. The demand for this type of service in the largely rural states of Missouri and Kansas has permitted the program to expand to over 2000 outpatient encounters last year with a greater than 40% annual growth rate. CMH's facilitated TM program has expanded to include 27 pediatric specialties delivering care to four different regional locations with more on the way.

Allergy, Asthma, & Immunology (AAI) was one of the first divisions to pioneer this innovative approach to healthcare

delivery. The AAI telemedicine TM team is composed of trained telefacilitators (nurses or respiratory therapists) who are present at the location of the patient (the originating site), and a provider located at a distance (the remote site). The team utilizes a non-integrated healthcare delivery platform though platforms that are integrated into the hospital's electronic medical record (EMR) are being developed and may be used in the future. Once the connection is made, the provider and patient interact the same way that they would for an in-person visit [2•].

Administering a telemedicine program can appear to be a daunting task; however, with the appropriate pieces in place and careful planning, it can be a seamless process. This review will describe the various components that are needed to create a flourishing TM program and how to administer each of them. It will also describe how TM outcomes can be measured to document the effectiveness of the program and to identify areas for improvement.

Telemedicine Guidelines

The American Telemedicine Association (ATA), which is known as a catalyst, non-profit association in the telemedicine industry, has published practice guidelines for delivering care via telemedicine with guidance from leaders throughout the USA [3]. These guidelines are available to anyone with access

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✉ Luisa Taylor
lmtaylor@cmh.edu

¹ Department of Medical Informatics and Telemedicine, Children's Mercy, 2401 Gillham Road, Kansas City, MO 64108, USA

to the ATA website and it outlines the practice, technical, and administrative guidelines when delivering care live, on demand primary or urgent care. Guidelines relevant to this review range from clinical operating procedures for pediatric telehealth to more technical issues such as a guide to TM lighting and how to maintain eye contact when seeing patients via videoconferencing. There also are guidelines for dermatology, which are relevant to an allergy practice as they pertain to patients with atopic dermatitis and urticaria.

The American College of Allergy, Asthma & Immunology recently published a position paper on telemedicine in the *Annals of Allergy, Asthma & Immunology* [4••]. It described the differences between synchronous and asynchronous TM including the pros and cons of each type of encounter. In addition, it briefly mentioned the importance of following regulations such as credentialing and privileging as well as ensuring HIPAA compliance and the need to obey a variety of state regulations when setting up a TM program.

Licensing, Credentialing, and Privileging

The practice of medicine in the USA is regulated by boards of medicine in each of the states, the District of Columbia, and the US territories [5]. With few exceptions, a provider needs to be licensed in the state where the patient is located when seen. This requirement clearly has had an inhibiting effect on the growth of TM because practitioners who wish to use the technology across state borders are required to maintain multiple state licenses. The only two federal agencies with explicit authority for portability of state licensure are the National Health Service Corps healthcare professionals who are authorized to practice nationwide provided they are licensed in any state, and military health professionals who may practice in any location authorized by the Secretary of Defense [6]. Some states have attempted to limit the use of TM by blocking the ability to establish a patient-provider relationship when a patient is seen by TM, setting up restrictions on where the provider can be to bill for Medicaid recipients, and imposing other regulations to protect in-state providers from out-of-state providers practicing via TM.

In 1996, the Federation of State Medical Boards (FSMB) in conjunction with the AMA recommended that states create a special license for physicians who regularly engage in the practice of medicine across state lines using telemedicine. It would require a physician who holds an unrestricted license in one state to be given an expedited license in other states. In 2000, the FSMB formed a special committee on license portability. In 2010, the Health Resources Services Administration reported that licensure portability was needed to improve access to quality healthcare services via telehealth [7]. Subsequently, 16 states have agreed to accept a “Uniform Application for Physician State Licensure” and others are

considering it. In addition, the State Alliance for e-Health recommended that the state medical licensure process be streamlined to facilitate cross-state e-health services. Even with this slow progress towards a uniform license process, healthcare workers who currently plan to provide cross-state services via TM need to have a full license to practice medicine in each practice location.

Credentialing

Credentialing is a process used by institutions to evaluate and confirm the education, qualification, and practice history of a healthcare professional [8]. This process includes verification of a provider’s completed education, training, residency, licensure, and board certification if applicable. This formal verification of a provider’s qualifications is performed by hospitals and by health plans as well as any other type of institution for which the provider will deliver healthcare services. Credentialing is essential prior to granting of privileges to ensure that the provider is qualified to perform the services they seek permission to do. While TM does not require formal academic training, credentialing for TM should verify that the provider knows how to use the equipment and understands the process of interacting with patients using the technology. A provider could also use this credentialing to obtain TM privileges in institutions that require a separate TM privilege.

Privileging

Privileging defines a physician’s scope of practice and the clinical services he or she may provide. Granting of privileges is based on demonstrated competence as verified by credentialing and is a data-driven process. In 2012, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) issued its final recommendations for TM standards [9]. Subsequently, the Centers for Medicare & Medicaid Services (CMS) approved those recommendations. The most salient feature was in allowing an originating site (where the patient is located) to use the credentialing and privileging information from a distant site (where the provider is located) when making privileging decisions for TM practitioners. The governing body of the distant site is therefore responsible for having a process that is consistent with the credentialing and privileging requirements of the originating site. This reduced the burden on small institutions that may have many providers seeing few patients each since they do not have to create a process for TM privileging of each provider.

In 2017, JCAHO proposed amendments to this accreditation framework to address privileging for direct-to-patient telehealth services [10]. To earn accreditation, the commission would have required hospitals to have a process to confirm a patient’s location and obtain informed consent before providing telehealth services. The rationale was that it would permit

hospitals to verify that the provider was licensed in the state where the patient was located when calling. This proposal was later withdrawn because it was felt to create an unreasonable burden on hospitals. While technically it is necessary for a provider to be licensed in the state where the patient is located, patients who use a direct-to-consumer system may be located anywhere when they have an urgent need for the service making it virtually impossible to verify their location and to find a provider who is licensed wherever they happen to be. This situation continues to be evolving so institutions that grant TM privileges need to keep up with new requirements as they arise.

Some institutions might interpret the JACHO standards to require a separate privilege for a provider to see patients using TM. Though decisions regarding the need for privileges are made by the institution's medical staff committee, it should be noted that JACHO does not have a requirement for a separate privilege specifically for doing TM itself. Instead, the requirement is that a provider needs to have privileges to do whatever procedures they do using the TM platform.

Recruiting Providers

Given the effort required to train providers to see patients using TM, it is important to identify individuals who are likely to use the service. To this end, several characteristics of providers who are successful early adapters of TM have been identified [11]. In particular, the use of TM changes the way providers and patients communicate with each other. In many cases, they may not actually meet in person. For this reason, it is important that the effect of substituting video for in-person visits be fully understood. Providers who feel comfortable seeing patients via TM also are more likely to use other means of communication such as e-mail and texting [12]. A seasoned clinician is more likely to use TM effectively since they have medical skills and only have to focus on interacting via technology. Younger graduates tend to succeed better if coached by a seasoned provider [13].

To be accepted by providers, the technology should appear to be useful in that it offers a benefit to the provider over in-person visits [14]. While the primary benefit of TM to the patient is convenience, the provider also benefits by not having to travel to remote locations to see patients. In addition to this convenience, TM should provide the same quality of interaction that an in-person visit would provide [15]. Providers who deliver care via TM need to feel comfortable giving up some degree of control of the visit to a telefacilitator while retaining enough to provide patient care. The provider needs to feel that they continue to have the status as the patient's medical caregiver which may be difficult for some providers. TM providers also should recognize that adjustments to their style of interpersonal interaction may need to occur and that certain medical situations might require an in-person visit.

During a TM session, providers tend to talk more, patients are more passive, and there is less "small talk" [16]. Providers who find it important to get to know the patient by engaging in this activity tend to be less satisfied with TM. Patients, on the other hand, tend to be just as satisfied suggesting that the small talk is more for the benefit of the provider than for the patient. TM encounters are shorter than in-person ones due to this less small talk, and they tend to be more focused on problem solving. Providers tend to collect less data during a TM encounter, however. Since patient outcomes are similar between TM and in-person visits, this does not appear to reduce the quality of the visit.

Staffing for Telemedicine

In addition to patients and providers, a successful TM program requires support staff to fill a variety of administrative roles. Such individuals need to be hired and trained to perform their function before patients can be seen by TM.

What Staff Is Needed?

The number of individuals needed to support the program depends on its scope which is related to the number of locations where patients will be seen and the number of patients to be seen at each location. For facilitated visits, each location will need a facilitator during the time when patients are to be seen. This can be a shared facilitator if several specialties or practices use the same space, or it can be a dedicated (part- or full-time) person for exclusive use by a single practice.

In addition to facilitators at the originating locations, a TM program needs someone to identify patients who might benefit from a TM visit and to schedule TM appointments. Since TM is heavily dependent on computers, digital equipment, and networking, technical support is essential. This can either be a dedicated Information Technology (IT) person or the expertise can be contracted for from an outside source depending on the scale of the program. It also helps to have a manager to interact with various vendors of TM services and to coordinate the overall program. Depending on the scale of the program, some of these different roles could be performed by the same person. An overview of the TM staff at CMH can be seen in Table 1.

Training of Staff

Once the staff has been hired, it is important that they be effectively trained to perform their function. Facilitators need to understand how to operate the clinical telemedicine cart and how to perform minor repairs to equipment if needed. Since clinical skill is required to properly aim an otoscope at the tympanic membrane or to place an exam camera to view

Table 1 Staff to consider hiring for administering a telemedicine program including their roles. Some of these can be performed by the same person depending on the scope of the program

Position title	Role
Medical Director (this is a TM champion)	• Serves as a role model by incorporating the use of TM in their clinical practice • Provides strategic planning insight for the Telemedicine program • Leads the practice's Telemedicine research efforts, if any • Promotes the use of TM technology to other providers
Telemedicine Operations Director	• Provides leadership to telemedicine staff • Responsible for programming, budgeting, and planning decisions in conjunction with the Medical Director • Provides planning and support for daily operations • Monitors and contracts with payors regarding reimbursement for TM services
Telemedicine Manager	• Responsible for daily operations of the program assuring that standards and competencies are maintained • Coordinates resources and staff utilization and management
Telemedicine Training and Clinical Coordinator	• Responsible for telemedicine education and training • Develops TM process for each location • Schedules patient TM visits
Nurse Telefacilitator	• Facilitates TM visits by providing nursing skills and support for communication between the patient and evaluating provider(s) • Meets the educational needs of the patient • Uses technical knowledge to operate the TM equipment and troubleshoot malfunctions when they occur
Telemedicine and Video Conferencing Network Analyst	• Plans for the technical needs of the telemedicine program and related videoconferencing systems • Manages the overall health and performance of the telemedicine equipment and network • Provides technical training and assistance to telemedicine users and staff

rashes, telefacilitators should practice with volunteers before working with patients. Facilitators may also need to perform parts of the physical exam that the provider cannot do by TM such as palpation. For that reason, clinical training with the provider is essential. Training for other staff could include a variety of seminars and live training to become familiar with the TM methods, technology, and software which should be personalized depending on the specialty of the staff.

Patients

Once the TM infrastructure is established, it is necessary to identify patients who could benefit from the program and to offer them the option of being seen by TM rather than in person. Patients may be puzzled by this since they may not have experienced a computer-facilitated medical visit before, so it is usually necessary to describe it to them. In our experience, 81% of patients given this option select to be seen by TM due to the convenience even though they initially are unfamiliar with it.

Identification of suitable TM patients facilitates the provider's transition from a traditional, in-person model to a TM clinic and enhances positive patient and provider interactions. Evaluation of a provider's existing in-person clinics is an integral part of identifying which patient appointment types likely will be successfully supported via TM. This approach also can reduce the need to review each patient on an individual basis. CMH utilizes a Telemedicine Clinical Coordinator to oversee this process. Types of allergy patients who might be candidates to be seen by telemedicine include those requiring evaluation and management of common allergic disorders such as rhinitis, asthma, and eczema. Patients who require low-risk tests such as spirometry can be seen by TM. Since allergy skin tests require that a provider be present in the patient's location in case a reaction occurs, allergy testing by TM should be done with in vitro tests. Patients who require skin tests should either be seen in person or there would need to be a provider present during the procedure. Challenges including to antibiotics and foods or bronchoprovocation should not be done by TM. In many cases, a patient who requires these procedures can be evaluated initially by TM and then scheduled to have the procedure at a subsequent in-person visit.

The TM clinical coordinator should review the clinical and technology needs of each patient to determine whether they are candidates for a TM visit. This will facilitate clinic flow and helps to avoid disappointment if a patient needs a procedure that cannot be performed by TM. Over time a list of patient types can be developed to automate this process.

Scheduling for TM

Schedules for patients seen by TM initially should reflect those of appointments for in-person visits. This helps the provider to establish a clinic flow since it is similar to their previous in-person experience. Once the provider is comfortable with the clinic flow, the schedule can be altered to account for differences in length-of-visit when patients are seen by TM vs. in person. This should take into account the patient type (new/follow-up), diagnosis, specialized testing that may be required, and any other factors that might influence the duration of a visit. In one study of patients seen by TM vs. in person, the time spent in TM encounters was shorter than that for in-person visits without sacrificing the quality of the appointment in terms of outcomes and patient satisfaction [16].

Telemedicine Outcomes

When designing a TM service, it is important to identify outcomes that can be used to justify continued support of the program and to ensure that clinical care is at least as good as care delivered in person [17]. Outcomes should be measurable and relevant to both the conditions being treated and to the technology being used to manage them. Outcomes can be divided into clinical outcomes (e.g., asthma control, utilization) and non-clinical outcomes (e.g., driving miles saved, reduced time away from work or school) as well as subjective outcomes such as patient satisfaction.

Clinical Outcomes

Clinical outcomes are measured to ensure that patients who receive care using TM do as well as patients who are seen in person. This can be used to measure the quality of care given as well as to assure providers and patients that care quality is not sacrificed by using the technology. For allergy patients, clinical outcomes commonly measured include serial assessments of asthma control (using a validated tool such as the Asthma Control Test™), pulmonary function tests (e.g., FEV₁, FeNO), and utilization (ED visits, hospitalizations) as well as missed days of school or work. By comparing these values for patients seen by TM vs. patients seen in person, evaluators can identify and address issues with the TM program if significant discrepancies are present. One study determined with a 95% certainty that the improvement in Asthma

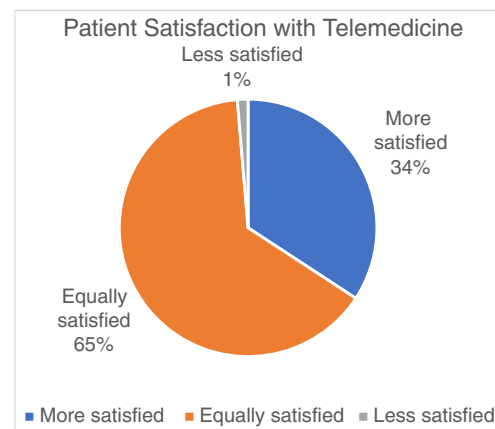


Fig. 1 Percent of patients responding to the question “how satisfied you are being seen by Telemedicine as compared to an in-person visit?” 231 were more satisfied, 435 were equally satisfied, and 9 were less satisfied

Control Test score was the same when patients were seen by TM and that TM was not inferior to in-person visits [18•].

Non-clinical Outcomes

Non-clinical outcomes tend to focus on financial savings and convenience that are experienced by patients, providers, and practice as a whole as a result of using TM [19]. A common measure is miles driven by patients seen by TM vs. miles that would have been driven had they traveled to the central clinical location. For travel that would have required an overnight stay, the cost of hotel and meals could also be included. In addition, the time required for the trip can be estimated and described in terms of time away from school or work. It could even be possible to estimate of the reduced risk of a car accident by avoiding long drives.

Table 2 Number of patients mentioning categories of reasons for preferring telemedicine over in-person visits

Themes in satisfaction survey	
Distance/convenience	523
Referral/recommendation by PCP or other	33
Scheduled as TM apt	21
Quicker appointment time	18
Not missing work/school	15
Interested/curious about TM	13
Continuity of care/keep same provider	9
Staff	6
Positive personal experience	6
Saves money	4
Travel w/ children is easier	4
Safety	2

Other outcomes could include revenue to a practice that would otherwise not have been realized if distant patients had not been seen. This, of course, needs to be offset by the cost to the practice of the telemedicine program itself.

Patient Satisfaction

TM's innovative approach has been endorsed by its most important consumers, the patients. Nearly 95–100% of patients in a recent study stated they were “more” or “equally” satisfied with the TM appointment when compared to a traditional visit [20]. The drivers for satisfaction stem from the convenience of these types of visits. TM has been shown to improve outcomes and self-management, decrease wait times and travel time, lower costs, and decrease readmission rates, to name a few of the benefits that patients experience using this model of healthcare [21].

From July 2017–July 2018, CMH reached an outstanding 98.6% patient satisfaction rate for patients who received TM services in all pediatric specialties. Of those, 34.2% (231) were “more satisfied than traditional, in-person visits” and 64.4% (435) were “equally satisfied as traditional, in-person visits” (Fig. 1). Those who were “less satisfied” (1.4%) cited technology issues during their visit such as sound or picture interference or stated they had a personal preference for face-to-face appointments. Patients and parents were given the opportunity to identify the reasons why TM was an effective method for them (Table 2). Most of these comments referenced the convenience of not having to drive so far to be seen.

Conclusion

The success that CMH has had with TM has been largely due to advances in technology, the tenacity of its TM staff, and support from leadership, and to the program's benefits both to providers and to patients. Administering a TM program requires facility support and a dedicated team to assist in meeting its goals. Practices that choose to implement such a program can do so with the understanding that they are staying on the cutting edge of patient care and that they are avoiding becoming obsolete as new care strategies evolve.

Compliance with Ethical Standards

Conflict of Interest The authors declare no conflicts of interest relevant to this manuscript.

Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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- Of importance
- Of major importance

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