

Overview on the Challenges and Benefits of Using Telehealth Tools in a Pediatric Population



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Telehealth in Pediatric Medicine presents many of the same benefits and challenges noted in adult-based medicine. In terms of health care delivery, the promise of improving access and reducing costs using telehealth in Pediatrics, particularly chronic care, is high. The ability to address clinician shortages and provide remote guidance for chronic care pathways from pediatric subspecialists to rural-based referring physicians is a developing model that represents a sustainable and cost-effective strategy to improve pediatric care. The adoption and implementation of consistent telehealth programs require a readjustment of current regulatory rules and a national discussion on reimbursement and compliance standards. Presently, state laws generally define the rules, whereby health systems or practices can use telehealth for patient care and education. Long-term telehealth program development depends on the ongoing value and use case provided by pediatric advocates for this emerging health care delivery model.

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INTRODUCTION

Telehealth represents a rapidly developing adjunct area in the field of medicine. The essential tenets of telehealth involve connecting patients with physicians/medical providers virtually through Internet and/or cellular technology. Increasing interest has developed in telehealth as a cost-effective health care delivery tool for a number of reasons. These include a (1) direct promotion for use by accountable care organizations, those providing behavioral health care and chronic medical care that was included in the 2010 "Patient Protection and Affordable Care Act," (2) computer/tablet and smartphone technology has become less expensive and more accessible to the general public, and (3) Internet connectivity has more become reliable and generally available across the country.¹ Current expansion in telehealth can be seen in the increased offering of employee based direct to consumer telehealth,² including sites that cater directly to Spanish-speaking individuals (see UeSalud.com) and a focus on developing primary care (including pediatric care) support in underserved/rural-based areas of the country.³ In particular, telehealth offers promise for improving access to pediatric health care specialists for patients in rural areas⁴ and in those with chronic conditions whereby travel may be onerous.⁵

TELEHEALTH TOOLS AND DEFINITIONS

Telehealth is rooted in the older terminology telemedicine. Telecommunications methods such as the phone (telemedicine) have been used in medical care for decades. Indeed, telemedicine and telehealth are often used interchangeably. According to the American Telemedicine Association's Web site,⁶ telemedicine is formally defined as "the use of medical information exchanged from one site to another through electronic communications to improve a patient's clinical health status." Telehealth is often used when referring to the use of such technology for clinical and nonclinical care (including teaching). The term itself also refers to a variety of different technologic tools beyond direct synchronous direct virtual care, including remote home-based monitoring tools and asynchronous store and forward technology.

Telehealth visits as they pertain to pediatric care can be broken down into a variety of components/options. Each of these options has its place and function within the health care delivery umbrella.

Virtual visits may be synchronous or asynchronous, ie, they may occur in a "real-time" fashion or in a delayed manner.^{1,6} They may be between providers or between a provider and patient/family. [Table 1](#) outlines these options.

Other tools include the ever-growing area of remote patient monitoring tools. These can take the form of the classic physiologic monitoring (ie, blood pressure cuff monitor) at home which can be interrogated by a health care provider remotely through bluetooth or Internet connectivity to the rapidly growing digital technologies and applications available by smartphone/tablet for wellness and chronic disease management.^{1,6,7} Other uses include adherence applications, educational material dissemination, and simple 2-way secure texting.

Although all these potential options are exciting in terms of reaching a greater number of individuals that require health care access, there is an ever-growing requirement to make these materials and tools available in other languages such as Spanish to improve health care delivery to non-primary English-speaking individuals. Consideration of these factors in terms of changing demographics in the United States is of considerable importance and should be taken into account when establishing/developing any telehealth program.

In the context of pediatric CKD, in particular ESRD, synchronous virtual care can be used between providers for a

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remote consultation, between a provider and their patient/family for a remote clinic visit—either initial consultation or as a component of ongoing care and assessment of pre-dialysis/transplant or established dialysis patients (especially those on home therapies). The same platform can be used for group dialysis education and even for potential research enrollment remotely. Ehrlich and colleagues⁵ established a remote synchronous virtual visit as part of their treatment regimen for a home-based pediatric dialysis patient. This patient was seen “monthly” using real-time secure video technology by the pediatric dialysis care team as part of standard of care and physically face to face every 3 months (per Centers for Medicare and Medicaid Services requirements). The results of their pilot study revealed some exciting results. The patient’s family saved approximately 5000 US dollars over the course of a year just in travel, lodging, and meals. The patient did not miss a significant amount of school (which is key for socialization) and the parents did not miss as much work as they would have normally. From a provider perspective, the dialysis team was able to walk the patient and family through the peritoneal dialysis cycle in a real-time fashion for trouble shooting. The team was able to focus on 1 patient and actually reduced the overall time and cost to care for the patient as the one monthly virtual visit was able to accomplish a complete monthly plan for the patient (including laboratory value review). Improved communication and involvement with the primary care physician was established and overall team communication improved. This patient was never admitted to the hospital and went on to receive a successful kidney transplant. Other considerations for successful implementation gleaned from this pilot included consideration of family expectations and adherence, connectivity, and availability of informational technology and third-party payer agreements.

Asynchronous virtual care may be applied in the setting of CKD/ESRD as well. More often, this would occur between providers. Often this will take the form of “store and forward” consultation and is more likely to be available if the referring and specialist physician are using the same electronic medical record. As an example, this type of consultation could be used when a pediatric nephrologist generated an e-Consult to pediatric surgeon for catheter placement. The surgeon could review the patient’s record and studies and advise the nephrologist on what is needed or other requirements. The nephrologist could have everything completed for the surgeon when the patient arrives to best use everyone’s time and ensure clear plan for the patient’s care. Other examples of store and for-

ward telehealth tools would include image transfer and analysis as would occur in teleradiology.^{1,8}

In terms of remote patient monitoring, few studies focusing on pediatric nephrology patients exist. Currently, the “Take-It” study is using adherence monitoring tools to assess pediatric nephrology kidney transplant patients⁹ is one of the more anticipated studies. The logical expectation for home-based monitoring tools would include the possibility for earlier intervention and avoidance of the emergency department or hospital admission resulting in lower health care costs and improve patient health. Definitive studies in the area of pediatric nephrology are required to confirm these expectations.

CHALLENGES

Despite the predicted and demonstrated growth in pediatric health care professionals adopting and using Telehealth to deliver care,¹⁰ there are clear barriers that have impact on adoption of telehealth in general¹ and within pediatric nephrology specifically. These include stakeholder (provider/patient/health system) barriers, technologic barriers, state compliance, and legal and financial barriers.^{11,12}

Stakeholder Challenges

With the advent and adoption of complex electronic medical records over the past decade, many providers have felt ill-prepared and overwhelmed by systems that were promised to reduce workload and improve patient care.¹³ Given that many physicians including pediatricians have had increased workload and are now adapting to their new clinic workflows with the electronic medical record, they are not

necessarily ready to adopt a new system like telehealth. In such cases, unless there is a very active effort to make telehealth integrated and easy to use, it is rejected by the busy provider. Indeed, the need for familiarity and education of telehealth system operations are also concerns for providers.¹⁴ Other concerns include the fear of infringing on other provider’s patient care or potentially adding an unnecessary step when a sick pediatric patient clearly needs to be transferred.¹⁵ Telehealth must offer a value-added component over current standard of care to be adopted.

Health systems or practices initiating telehealth programs need to provide a base investment in the technology and then provide an ongoing and available infrastructure (including human resources) to maintain the service network. These costs may be prohibitive for smaller rural centers.¹² Often a proforma with a return on investment may be required by the institutional financial team to proceed with developing a telehealth program.

CLINICAL SUMMARY

- Telehealth offers a health care delivery modality to improve access and care to pediatric patients with chronic diseases like ESRD.
- The current regulatory environment for conducting Telehealth will need to be revisited to allow maximal utilization of these new technologies.
- Improving accessibility to patients using Telehealth will also require the availability of information and care provision in Spanish and possibly other languages depending on geographical area.
- Technologic education for both providers and patients/families is a key for adoption and implementation of telehealth and remote patient monitoring tools.

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