

Infectious Diseases Society of America Position Statement on Telehealth and Telemedicine as Applied to the Practice of Infectious Diseases

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Over the last 2 decades, telemedicine has effectively demonstrated its ability to increase access to care. This access has the ability to deliver quality clinical care and offer potential savings to the healthcare system. With increasing frequency, physicians, clinics, and medical centers are harnessing modern telecommunications technologies to manage a multitude of acute and chronic conditions, as well as incorporating telehealth into teaching and research. The technologies spanning telehealth, telemedicine, and mobile health (mHealth) are rapidly evolving, and the Infectious Diseases Society of America (IDSA) has prepared this updated position statement to educate its membership on the use of telemedicine and telehealth technologies. IDSA supports the appropriate and evidence-based use of telehealth technologies to provide up-to-date, timely, cost-effective subspecialty care to resource-limited populations.

Keywords. telehealth; telemedicine; antimicrobial stewardship; infectious diseases; store-and-forward.

The Infectious Diseases Society of America (IDSA) supports the appropriate use of technologies to provide evidence-based, cost-effective, subspecialty care to resource-limited populations; manage persons with chronic infectious diseases; deliver consultative care across diverse settings; perform outpatient parenteral antimicrobial therapy (OPAT) duties; conduct research; manage antimicrobial stewardship programs (ASP); and implement infection prevention and control (IPC) measures. The purpose of this position statement is to educate IDSA members on the use of telehealth and to promote the use of such technologies in clinical care, research, and education.

DEFINING TELEHEALTH, TELEMEDICINE, AND MHEALTH

Telehealth and Telemedicine

“Telemedicine” has been used interchangeably with “telehealth” to describe interactions between a patient and provider when separated by geographic distance. The Health Resources Services Administration defines telehealth as “the use of electronic information and telecommunications technologies to support long-distance clinical healthcare, patient and

professional health-related education, public health and health administration. Technologies include videoconferencing, the Internet, store-and-forward imaging, streaming media, and terrestrial and wireless communications ... telemedicine refers specifically to remote clinical services, [while] telehealth can refer to remote non-clinical services, such as provider training, administrative meetings and continuing medical education, in addition to clinical services” [1–4].

Remote Monitoring and mHealth

Mobile health, or mHealth, is the delivery of healthcare services via mobile devices, often incorporating wearable technologies that are integrated with specific software [5]. Examples include observing medication compliance and side effects, monitoring disease parameters, and enhancing chronic disease management. The US Food and Drug Administration (FDA) offers regulatory oversight for the use of smartphone applications, wearables, and peripherals [6]. Hardware components can provide video, photos, and electrocardiography to assist clinicians.

Originating Versus Distant Sites

Regulatory bodies refer to the “originating” and “distant” sites of care, which may impact licensure, scope of practice, payment, and liability. The location of the patient is the originating site, and the distant site is the location of the healthcare provider or organization [7]. Billing parity laws contain specific visit requirements for reimbursement, including “telepresence”—having a physician extender (A physician extender is a trained and licensed person who performs tasks under the direction of

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a supervising physician, that might otherwise be performed by the physician themselves. Examples include nurse practitioners and physician assistants. The citation for the definition is as follows: Medical Dictionary for the Health Professions and Nursing (C) Farlex 2012) at the originating site—as well as requirements for technology and documentation.

UNDERSTANDING THE APPLICATIONS

Synchronous telemedicine refers to real-time patient and provider interactions. Encrypted, high-resolution videoconferencing is the core technology, allowing for an accurate simulation of traditional brick-and-mortar encounters. Systems must use encryption software and have a connection speed of at least 384 kbps in both the downlink and uplink directions, though optimal functioning may require greater bandwidth [7]. To ensure confidentiality, Health Insurance Portability and Accountability Act (HIPAA) requires 128-bit encryption and password-level authentication [8]. High-definition cameras and specialized equipment, including digital stethoscopes, otoscopes, ophthalmoscopes, and hand-held ultrasounds, are available.

Asynchronous telemedicine, or “store-and-forward,” refers to consultations without a live interaction. Clinical data, photographs, laboratory values, culture results and radiographic studies are digitally provided to the infectious diseases (ID) consultant, reviewed in depth, integrated, and used to formulate an expert opinion regarding a specific case. The specialist provides a timely consultative report back to the referring provider at the originating site.

A Telehealth Toolkit, summarizing issues to consider when designing and implementing a telehealth program, is provided in [Figure 1](#).

ESTABLISHED USE CASES FOR INFECTIOUS DISEASES

The published literature demonstrates that telemedicine can increase access to care, with high patient satisfaction [9]; improve outcomes [10, 11]; and reduce costs [3, 12]. The American College of Physicians, American Medical Association, and several other professional organizations support its expanded role in healthcare delivery, if an appropriate provider-patient relationship is established [13, 14].

Human Immunodeficiency Virus Management

The IDSA supports the use of telemedicine for human immunodeficiency virus (HIV) care. Studies have shown improved adherence to antiretroviral therapy and more favorable clinical outcomes when clinicians with experience and formal training in HIV management are involved in care [15–18]. Clinician expertise can improve outcomes and decrease the risk of toxicities, side effects, and drug-drug interactions. Compared to on-site management by generalists, subspecialty

care using synchronous telemedicine in a large prison system improved adherence and virologic suppression and resulted in a greater rise in CD4+ T-cell counts [11], which are outcomes associated with reductions in morbidity, mortality, and transmission [19–21]. Such programs may prove beneficial in other resource-limited settings and enhance care coordination [22].

Studies in the developing world have shown improved antiretroviral therapy adherence with mHealth interventions, such as text message reminders and adherence monitoring [23–25]. The IDSA anticipates great advances, especially in the realm of reliable, device-enabled tools, for the transfer and analysis of clinical data and timely patient communication.

Tuberculosis Management

Directly observed treatment (DOT) is a common strategy in tuberculosis treatment, but can become burdensome due to the time and travel required. Electronic DOT (eDOT) may reduce these burdens [26, 27]. Synchronous programs allow for real-time assessments of symptoms and more immediate responses to patient questions. The Centers for Disease Control and Prevention has developed a toolkit for tuberculosis programs that are looking for eDOT guidance [28]. In 2017, a national survey of tuberculosis programs found that 42% were already using eDOT and 36% had plans to implement eDOT within 1 year [29].

Antimicrobial Stewardship Programs

The IDSA supports the use of technology in ASP. Using telehealth to conduct ASP-related activities allows community hospitals to effectively participate in stewardship programs. Many hospitals and post-acute care facilities lack the resources needed to build an on-site ASP, which is now a Centers for Medicare & Medicaid Services requirement. Telehealth platforms can be used to provide educational opportunities regarding stewardship, share tools and best practices, provide case consultation, and allow the review of antimicrobial use, with feedback. A telehealth ASP should have access to local antibiograms, the ability to review the patients' electronic health records, and access to hospital personnel for delivery of educational programs. The IDSA recommends that programs follow the standard guidelines for ASP [30].

Tele-OPAT

OPAT programs are a safe, cost-effective alternative to prolonged hospitalization for the management of patients requiring intravenous antimicrobials [31–33]. However, patients may experience drug toxicities, new infections, and treatment failure, requiring hospital readmission. Practice guidelines stress the need for ongoing communication between patients and their care team and the ability to transport patients to appointments or emergency services. A follow-up visit with an ID

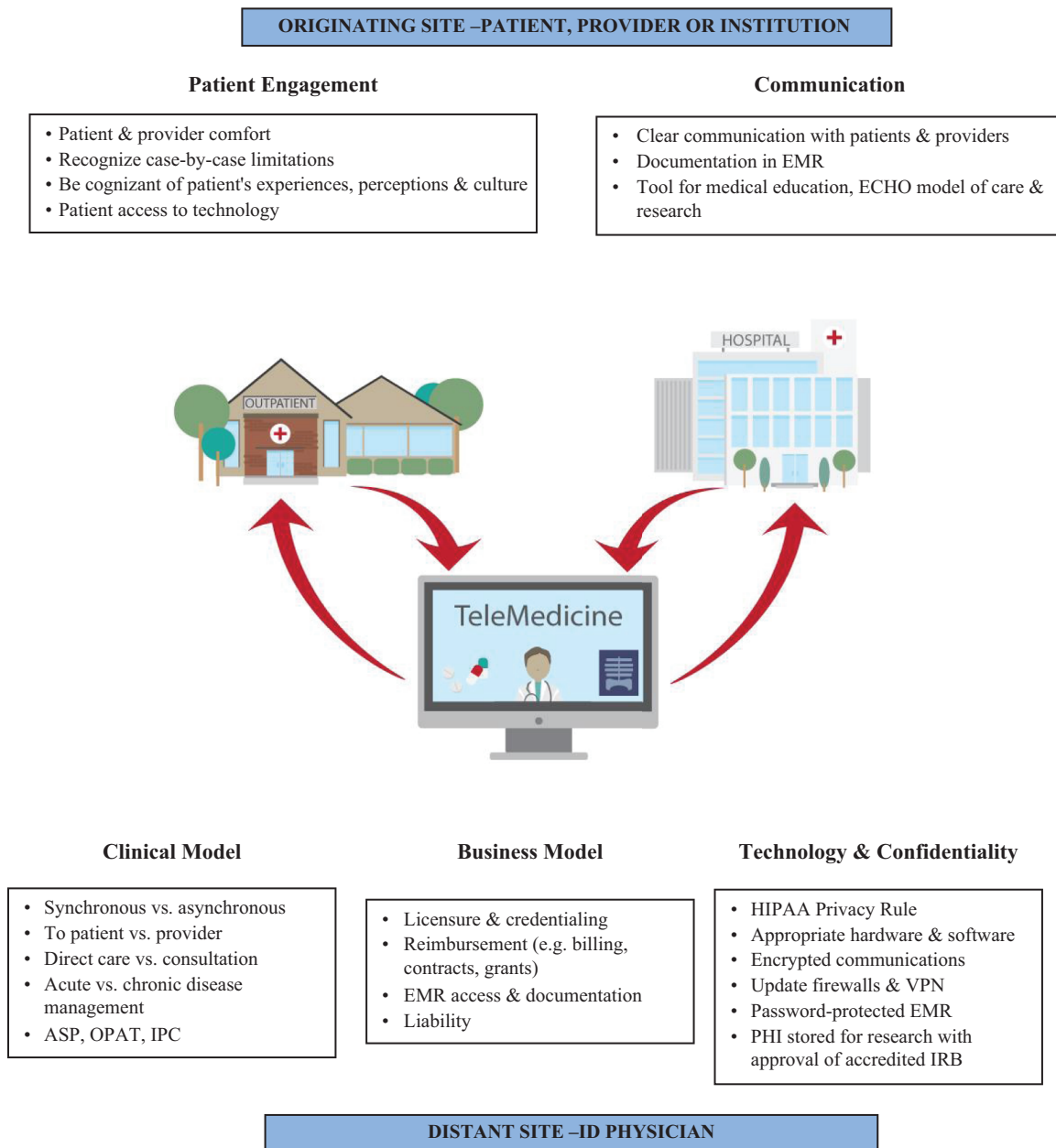


Figure 1. Telehealth toolkit: considerations when designing and implementing a telehealth program. Abbreviations: ASP, antimicrobial stewardship programs; ECHO, Extension for Community Healthcare Outcomes; EMR, electronic medical record; HIPAA, Health Insurance Portability and Accountability Act; IPC, infection prevention and control; IRB, Institutional Review Board; OPAT, outpatient parenteral antimicrobial therapy; PHI, protected health information; VPN, virtual private network.

physician within 2 weeks of hospital discharge for a patient on OPAT is associated with a reduced readmission rate and is recommended [34].

OPAT guidelines recognize the use of telemedicine as a helpful means of monitoring safety and compliance [31]. Virtual home OPAT visits (tele-OPAT), using an interactive audio-visual communication system, may eliminate travel costs for patients, improve outcomes, reduce clinic no-show rates, reduce costs, and improve patient satisfaction. Such telehealth solutions are especially desirable in low-income

regions, where distance and transportation are common barriers to care.

Investing in a tele-OPAT program should be of interest to payers, because of the cost reductions associated with decreased frequencies of clinic visits and hospital readmissions. The adoption of tele-OPAT has been limited, even though initial experience has shown such programs to be as successful as conventional OPAT programs, with the added potential of greater efficiency [35, 36]. Larger studies are needed to assess the outcomes and cost savings of tele-OPAT.

Infection Prevention and Control

Healthcare-associated infections are a leading cause of morbidity and mortality. Healthcare-associated infections in long-term care facilities are estimated to have an annual incidence of between 1 and 3 million and are often associated with hospitalization and death [37]. To reduce morbidity and mortality, federal agencies have demanded improvements in IPC practices, which has become a national priority [38].

While IPC specialists are often available in acute care settings, many community hospitals and long-term care facilities lack the expertise to develop and manage IPC programs. Telehealth platforms may be utilized to connect ID physicians and other experts with local providers, allowing them to provide education and assistance in policy development, healthcare-associated infection surveillance, infection recognition, the investigation of outbreaks, and antibiotic use monitoring. IPC specialists require remote access to antibiograms and medical records, and close communication with ASP and Pharmacy and Therapeutics (P&T) committees at local sites. The IDSA encourages the utilization of telehealth tools as a potential solution to meet the need for IPC in healthcare facilities lacking expertise.

Provider-to-Provider

Telehealth models can be designed to address a variety of clinical, systems-based, or public-health needs. Project Extension for Community Healthcare Outcomes (ECHO) is a clinical mentorship model that has been successfully used to triage and treat patients with chronic, infectious diseases [39]. It can improve outcomes for patients with hepatitis C and HIV when applied in areas with relative shortages of subspecialty providers [40–42]. As an educational and practical consultative model, it has great potential to increase access to subspecialist care in rural areas, nursing homes, correctional facilities, and other underserved areas. This model may be used to connect non-clinicians to other non-clinicians and to clinicians—such as case managers and health departments—to provide longitudinal support, discuss systems-based issues, and participate in collective problem solving. The IDSA recognizes that employing the ECHO model may also expand ID-led services, such as ASP, OPAT, and IPC.

ISSUES FOR CONSIDERATION

Regulations regarding licensure, reimbursement, and liability vary widely on a state-by-state basis. Legal requirements are often traditionally formulated at the state level and vary based upon the population needs and an administrative understanding of medical practice.

Licensure and Credentialing

Telehealth requires the equivalent licensing, credentialing, and privileging as required for in-person patient care. ID physicians

delivering telemedicine services must be licensed in the state of the originating site and must abide by that state's rules and regulations for the maintenance of licensure and by that state's practice laws. The IDSA supports efforts to lower burdens for physicians to obtain licenses in multiple states. In states currently participating in the Interstate Medical Licensure Compact, physicians have an expedited pathway to licensure if they wish to practice in multiple states [43].

Practitioners who deliver care using asynchronous systems are viewed by the Joint Commission as consultants, and may not be required to be credentialed at the originating site. The originating site may honor the credentialing and privileging information from the distant site. Providers who wish to provide asynchronous consultations—particularly across state lines—should clarify the credentialing criteria at the originating site and remain cognizant of the potential risks and liabilities of practicing across state lines.

Reimbursement

The IDSA supports coverage and payment parity for telehealth services, when provided by subspecialty-trained, board-certified ID physicians and when certain criteria are met, such as HIPAA compliance and the proper use of technology. This is essential to ensure telemedicine care is of high quality, promotes care coordination, meets state licensure requirements, maintains patient choice and transparency, achieves a high level of patient satisfaction, and protects patient privacy.

Programs are funded in several ways, including by billing patients, by billing insurers, through organizational contracts, and through program grants and research grants. Private insurer policies vary, but most will reimburse for telehealth services provided to patients in rural areas. It is recommended that the provider write a letter of intent to the insurer, informing them of billing for telemedicine services. As of this writing, only a limited number of states mandate true payment parity for care via telehealth [3, 44]. Therefore, providers should be aware of the policies within their state.

Medicare covers telehealth services only when certain conditions are met [45]. The beneficiary must be in a rural, Health Professional Shortage Area that is located either outside of a Metropolitan Statistical Area or in a rural census tract, although we anticipate this requirement may change. The beneficiary must be in an originating site of service that is authorized by law. A patient's home is not considered a valid originating site in most states. Only certain services are permitted to be provided via telehealth technologies, although criteria are evolving.

There are 48 state Medicaid programs that provide some coverage for telemedicine, but the extent of coverage, rules, and regulations vary widely [46]. Medicaid reimburses for synchronous consultations and office visits for patients located in a non-Metropolitan Statistical Area, which includes

nearly all rural counties. A definition and listing of qualified areas is available via US census data [47]. Note that there is no geographic limitation or requirement for the location of the distant site.

For the latest telemedicine reimbursement information, see the websites of the American Telemedicine Association (<http://www.americantelemed.org/home>), the Centers for Medicare & Medicaid Services Telehealth (<https://www.cms.gov/Medicare/Medicare-General-Information/Telehealth/index.html>), the Center for Connected Health Policy, or the IDSA Information on Telehealth (<https://www.idsociety.org/clinical-practice/patient-care/telehealth/>).

Scope of Service, Quality of Care, and Documentation

Vital aspects of designing and maintaining a telehealth or telemedicine program include: obtaining the correct equipment and technology, providing high-quality clinical care in a timely fashion, assuring patient confidentiality, striving for high patient satisfaction, appropriately storing medical records, communicating with other care providers at the originating site, designing a sustainable business model, and—for some programs—high-quality teaching and research. Specific considerations include:

- Patients or referring physicians should have a choice of ID physicians and must have access, in advance, to the licensure and qualifications of the clinician providing care.
- Appropriate medical records should be available to the consulting ID physician prior to the encounter. Consulting physicians should have a good understanding of the policies, procedures, health care infrastructure, and patient resources available at the originating site.
- Telemedicine services must be properly documented. Medical records should be available at the originating and distant sites. Documentation should include a statement that the visit was conducted via telehealth, when appropriate.
- Telemedicine services should include care coordination with the patient's existing primary physician and others involved in care.
- The IDSA supports guidance from the American Medical Association Council on Ethical and Judicial Affairs, which states that physicians using telehealth should inform patients about technology and service limitations and how to arrange follow-up care [48].
- Organizations should have active training and quality-assurance programs for both the originating and distant sites. Each organization should also maintain documentation on how the program protects privacy, promotes high-quality care, and coordinates care for patients who may require subsequent evaluations or procedures.
- Organizations participating in telemedicine should have protocols for local referrals for urgent and emergency services.

- The distant site should have educational materials and translation services available for multiple languages, with sensitivity given to cultural differences of patients.

Providers must exercise caution regarding direct prescribing for patients via electronic communications or asynchronous evaluations. Most states have regulations that discourage or prohibit practitioners from prescribing for patients they have not seen in a brick-and-mortar facility. In many cases, the wording of these regulations is such that a synchronous teleconsultation may meet the requirements for a “good faith exam.” The Federation of State Medical Boards established a National Clearinghouse on Internet Prescribing, which includes a state-by-state breakdown of jurisdictions, regulations, and actions related to Internet prescribing [49]. Currently, Ryan Haight Act Amendment 21 USC § 829 places limitations on the prescribing of controlled substances via telemedicine [50].

Privacy and Confidentiality

To meet HIPAA requirements, telehealth interactions and email transmissions must have appropriate encryption, with password authentication, firewalls, and secure storage of any video or audio recordings, as well as protected health information (PHI). Databases used for program evaluation, external reporting, or research should be approved by an accredited Institutional Review Board (IRB). When utilizing technology, the burden lies with the practitioner or organization at the distant site to ensure proper connectivity and encryption, update firewalls, and enter records properly into secure and password-protected electronic health records.

The FDA plays a regulatory role in ensuring the safety, security, and effectiveness of the hardware, medical devices, and software used in the delivery of telemedicine, with the Center for Devices and Radiological Health acting as the lead agency. These agencies perform pre-market reviews, post-market surveillance, and quality monitoring of telehealth devices [51]. The FDA provides guidance regarding the minimum standards, encryption, and storage of images. In 2015, the FDA issued guidance to provide clarity for mHealth application manufacturers as well, clarifying the standards for hardware, modem speed and connectivity, digital interfaces, and communications portals [52].

Liability

If a provider-to-patient model is used, the ID physician may bear full liability, no different than a bricks-and-mortar encounter. Recommendations rendered are based solely on information provided by the patient, available medical records, and the history and physical exam performed by the clinician at the distant site. Liability should be based on the information available at the time the patient was evaluated by the distant site provider; however, clear communication is vital. In a consultative model, liability may be shared; however, the allocation of

responsibilities will vary by individual case and on a state-by-state basis. ID physicians should verify that their medical liability insurance policy covers telemedicine prior to delivery of any service, and informed consent should be obtained.

Patient Engagement

The practice of medicine has a tradition of establishing a trusting, therapeutic relationship with patients. A patient's comfort level with their healthcare provider affects both their health outcomes and quality of life [53, 54]. While current published data show high patient satisfaction with telemedicine [9], there can be a perception amongst inexperienced providers and patients that technology lacks intimacy.

Knowing the limitations are important when harnessing technology in medicine, and the clinician should recognize when it may not be appropriate to use. For example, telehealth may be appropriate for evaluating a patient with an upper respiratory tract infection, but unsuitable for discussing more serious diagnoses or end-of-life issues. Also, clinicians should recognize that the perception of depersonalization with technology can be heavily influenced by a patient's experiences, knowledge, trust of Western medicine and technology, socioeconomic status, beliefs, and culture [55]. Discussing issues of depersonalization and changes to the traditional doctor-patient relationship with patients may be helpful to manage expectations and improve patient satisfaction.

Research and Education

Research

As with any research, ethical practices, prioritizing the protection of subjects and PHI, and protocol review by an IRB should occur in telehealth research. Investigators should remain cognizant of video and audio encryption, firewall updates, and storage of PHI. The emergence of new, technology-related ethical issues in research has led to the launching of the Connected and Open Research Ethics (CORE) initiative [56]. CORE is a free, Internet-based resource that convenes key stakeholders in telehealth to respond to questions regarding ethical research practices. It assists researchers, using synchronous telehealth, mHealth, social media, and other Internet-enabled methods of data collection to construct appropriate study methods. CORE is an excellent resource for investigators and their local IRB in constructing ethically-sound telehealth research.

Medical Education

With the emergence of new technologies, several institutions have successfully implemented telehealth educational modules for students [57, 58]. The foundations of healthcare are shifting, and telehealth will play a major role in the future of medicine and medical education. Current and future physicians must learn how to use these technologies and should practice interacting with patients remotely.

SUMMARY STATEMENT

The IDSA supports the appropriate use of telehealth in clinical care, research, and education. A Telehealth Toolkit, summarizing issues to consider when designing and implementing a telehealth program, is provided in Figure 1. If technology is used, the clinical and ethical standards in medicine must apply, with additional consideration given to emerging issues, such as liability, licensure, reimbursement, and patient satisfaction. We must advocate for patient safety, the protection of PHI, funding of ID telehealth research, and payment parity.

Notes

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