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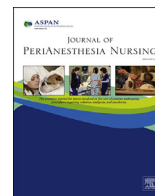
Informatics and Health Information Technology

Telehealth and the COVID-19 Pandemic

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It is every parent's or caregivers' worst nightmare to hear the classic barking cough of croup in the middle of the night. The unmistakable sound is at once disconcerting but also a symptom that helps identify a potential cause and treatment plan. Nesbitt and Katz-Bell[1] describe a concerned mother having a physician listen to her croupy baby using "new" telephone technology, as published in the *Lancet* in 1879. It is one of the earliest documented telephonic health care encounters and one that begins a long history of the slow adoption and evolution of telehealth services. The coronavirus disease 2019 (COVID-19) pandemic has thrust telehealth into the spotlight as it serves as a critical means of maintaining patient contact and supporting the financial survival of some health care facilities. Perianesthesia practice is primarily one of proximity rather than distance. However, owing to many health care facilities halting surgical procedures during the pandemic, perianesthesia nurses have had to display their remarkable flexibility and versatility.[2] Telehealth has not traditionally been a major part of perianesthesia practice, but the pandemic has forced many specialties to think creatively as to how telehealth might preserve continuity of care and potentially expand the scope of practice.

Definitions and Types of Telehealth

The challenge of trying to define telehealth is compounded by the language used in consumer advertising, which may be confusing or in conflict with regulatory and professional definitions. The Health Resources Services Administration (HRSA) describes telehealth as the use of technology to "support long-distance clinical health care, patient and professional health-related education, public health, and administration."[3] The term "telehealth" is a more inclusive term that encompasses a wide array of electronic health care delivery and nonclinical services at a distance as compared to terms such as "telemedicine" or "connected health." Telemedicine, for example, is sometimes used synonymously but actually refers to provider-to-provider communication and data exchange specific to diagnosis and medical treatment.[4] The Center for Connected Health Policy (CCHP) is a nonprofit organization that focuses on policy and progress of telehealth

practice. In lieu of an agreed-upon definition for what telehealth is, the CCHP has outlined four main ways in which telehealth allows nurses and other health care providers to expand their reach through telehealth tools and practices.[5] Probably the most familiar, because of its explosive growth, is the use of "virtual visits" or "e-Visits" by way of synchronous voice and videoconferencing between patients and health care providers. The CCHP framework also includes transmission of electronic health care data, which may be somewhat invisible to the average consumer, but can help connect care delivered at different sites and by different providers. Connected devices are the next aspect and are key to remote patient monitoring in which a wide range of Web-enabled devices can deliver data ranging from heart rates to blood sugars. Finally, the use of mobile health, often referred to as "mHealth," supports patient decision-making often with educational applications that run on mobile devices.

Telehealth's Big Moment

A shift to telehealth was literally and figuratively a means for survival for patients and providers during the initial phase of the COVID-19 pandemic. Large and small health care facilities had to quickly re-envision how their face-to-face care models needed to change. They were often simultaneously furloughing staff while gearing up to fight the pandemic. In some cases, telehealth was the only option for ensuring continuity of care and for the offset of significantly reduced patient volumes due to shutdown of many services they delivered, most notably surgical services.

More than a decade of successful commercial virtual visit companies and applications had helped mature and prove out the potential of telehealth. Coupled with greater access to high-speed internet and a wider range of video and voice-enabled technologies, the ease of implementation and allure was growing. Technology cross-compatibility had been a limiting access factor that existed up until the recent past. Mobile devices and the applications that run on them have become both omnipresent and ubiquitous. Voice and video applications are often both mobile device and laptop/desktop ready, giving consumers and providers greater options and flexibility. Although important, the big moment for telehealth was realized only secondarily by the reduction in these technology barriers. The primary driver for the rise of telehealth was regulatory and reimbursement changes made early in the announcement of COVID-19 as a global pandemic. The pandemic

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was unfortunately the catalyst needed to tip the scales toward the telehealth practice changes that were eventually adopted or in some cases expanded. Despite the many benefits, if telehealth as a service model is to survive as a viable and welcomed alternative, the barriers to expanding and maintaining its adoption must be addressed.

Barriers to Broader Telehealth Adoption

Before the pandemic, the lack of a reimbursement incentive had limited interest in investing in telehealth applications or the training needed to use them. Federal support for telehealth in response to the pandemic quickly changed patterns of interest and adoption. Within a few weeks of the initial outbreak becoming labeled as a pandemic, several federal legislative actions and governmental health care agency policy changes were announced. The appropriations and reimbursement model changes announced throughout March of 2020 were a key part of allowing for telehealth to be used to address the crisis.[6] These changes were intended to close some of the continuity of care gaps created by patient delays in accessing care and safety restrictions on services that could be provided due to the risk for contracting and spreading COVID-19.

The reimbursement and appropriations for telehealth allowed for not only greater reimbursement rates but also expansion of services that could be reimbursed. Telehealth engagements, notably for Medicare recipients, were historically reimbursed at a lower rate than face-to-face encounters or were not covered at all. Geographical site restrictions were waived for Medicare beneficiaries, and patients no longer had to have a prior relationship with a provider to access telehealth services. Lifting of restrictions on the applications that could be used for communication and the devices that could be used for remote patient monitoring expanded service delivery options. Applications that many patients already used to communicate with family and friends were now being deemed acceptable as telehealth communication options. Expanding the types of services and who could provide them quickly helped with the financial shortfall many agencies and providers were facing and removed the barrier that had in the past been one of the biggest in terms of broader adoption and use of telehealth interventions. The announcements quickly spurred rapid and large-scale adoption of telehealth across health care delivery contexts.

Complex regulation of telehealth services had also previously been a limiter of expanded services. The introduction of any new technology into the health care space has required extensive consideration of the Health Insurance Portability and Accountability Act (HIPAA) rules, cybersecurity, privacy, data sharing, and consent. Entities interested in telehealth services have had to invest funds and time to carefully navigate everything from functionality and liability to marketing and technical compatibility. The time and cost have often slowed innovation, speed to market, and speed to practice.[7] The announcements in March 2020 included changes to not just reimbursement but to regulatory rules as well. For example, it was announced that the federal enforcement of rules for accidental Protected Health Information disclosures would be relaxed in the acute phase of the pandemic.[8] The rule changes also applied to some aspects of Protected Health Information sharing and informed consent so that there was reduced risk of penalty as a part of HIPAA audits.[9] The announcing of regulatory changes still emphasized the importance of common-sense and good faith efforts to protect the privacy of patients and families, but recognized the challenge of meeting the standards in a time of national emergency and the urgent need of information on the part of first responders. For example, COVID testing via nasal swabs in hospital parking lots could limit the ability for typical HIPAA protections to be applied. In terms of telehealth, the urgent need for services was balanced with the potential safety and security issues that might be introduced as a result of quickly adopting new practices and technologies.

Variability in state-to-state laws for nurse and provider licensure and readiness for providing care via telehealth have also presented challenges to expansion. Telehealth can break down the literal and figurative barriers that may have limited nurses and other providers from working with patients distant to them or in an entirely different state. The licensing rules for health care providers, although, have historically been complex when it comes to cross-state care delivery models. In some cases, telehealth nurses who serve large insurance pools or multistate practices would need to have multistate licensure to be able to provide care. The work needed to pay for, monitor, and maintain currency with multiple licenses may not have been worth the return on investment for many practices. Even in cases where in-state or multistate telehealth practice had been established, there has been a lack of readiness for telehealth practice for many nurses and care providers.[10] A position statement from the telehealth nursing specialty interest group within the American Telemedicine Association identified a need for legislative support such as multistate compacts, expansion of education around telehealth practice, improved technologies, certification, and a deeper evidence base for telehealth practices.[11]

Consumer digital literacy and access issues may persist even if the barriers of readiness, licensing, privacy, security, regulation, and reimbursement are addressed. The rapid shift to telehealth tools and virtual visits may have left some patients who did not have reliable, high-speed internet or access to the right technologies with even fewer health care options. Although many health care consumers have mobile devices, it can neither be assumed that all telehealth systems have the right software and hardware compatibility nor that consumers will be comfortable or ready to use these devices for virtual visits or accessing their health care data. The core tenets of consumer health and digital literacy support that just having access to more health care data and virtual opportunities to connect with providers is not enough. Access to health care data or health information does not mean that consumers know how to use it to improve or maintain their health.[12] All health care providers and vendors of telehealth services are accountable for addressing consumer digital health literacy to actually improve health and wellbeing, reduce risk, and overcome known disparities and inequities.

Finally, once the COVID-19 pandemic acute phase subsides and virtual visits are no longer the only option for patients and care providers, there remains the question of patient preference and comfort level. The face-to-face dyad of patient and surgeon or patient and perianesthesia nurse is a sacred one.[13] The therapeutic use of presence, interpretation of body language and visual cues, and establishment of a therapeutic relationship may be much easier in face-to-face contexts and may ultimately be the patient's preferred mode of interaction.[14,15]

Preadmission and Postsurgical Impacts

Preadmission testing (PAT) practices have continued to evolve in response to changes to surgical practices and coverage of care. The PAT process traditionally was completed hours before surgery and has now moved to a period of a few days or weeks before a planned procedure. The PAT processes have also traditionally occurred in a

face-to-face health care setting. Innovative clinician groups have explored telehealth as a PAT option, with the pandemic hastening its further exploration and use. There were limited reports of the use of telehealth as a full replacement for face-to-face PAT, but these reports indicated that patients had shorter visits, few or no case cancellations, accurate clinical evaluation as compared to face-to-face, and high rates of both provider and patient satisfaction.[16,17] Despite the convenience and time-savings, there are certain aspects of PAT that cannot currently be resolved via virtual visit such as direct airway evaluation, laboratory studies, or more sophisticated electrocardiography. More sophisticated remote patient monitoring and increasingly higher quality cameras and videos on mobile devices may address some of these gaps. Telehealth-delivered PAT reduced the risk of presurgical exposure to COVID-19 while helping to safely ensure a return to normal surgical case volumes. In the future, telehealth-delivered PAT could give patients more convenient and flexible options, particularly in less complicated patient preparation situations.

Postoperative visits have traditionally been conducted a few days to a few weeks after surgery and traditionally in a face-to-face setting as well. Nandra et al[18] analyzed the use of video telehealth visits as a replacement for standard office-based follow-ups. Their study demonstrated improved access, convenience, and potential cost savings. A systematic review of the literature[10] related to telehealth and surgical practices identified 24 studies outlining largely positive findings, notably the ability to do wound and drain assessments as well as successful use of remote blood pressure monitoring. Similar to the reports in PAT research, convenience and satisfaction were similar themes of the systematic review. Grenda et al[13] provided a case report of the implementation of telehealth for postoperative follow-up in a thoracic surgical practice during the pandemic. They reported their telehealth processes for postoperative assessments, routine postdischarge visits, and the initial evaluation of postoperative acute issues. Presurgical and postsurgical care can be facilitated through telehealth interventions and may continue in the future based on several factors following the acute phase of the pandemic.[19]

Innovation and Extension

Delivering care in a time of crisis such as the COVID-19 pandemic has required an innovative spirit, creativity, and perseverance. Therapeutic connections with patients and families during the pandemic have allowed many different types of therapies and care delivery models to be examined in a sort of natural laboratory because of both a sense of necessity and professional duty. A fascinating case in point is a group of music therapists at Gillette Children's Specialty Healthcare in Saint Paul Minnesota who wanted to support patients and families in quarantine. They decided to offer interactive, live stream sessions hoping to bring joy and comfort to the complex children Gillette served. They went from serving 10-12 patients a day in their face-to-face sessions to having more than 30,000 viewers during some of their live-streamed sessions.

Perianesthesia nurses have also been called to be innovative and to stretch their practice. A case report of military perianesthesia nurses flexing to intensive care units and staffing triage stations gives a snapshot of how perianesthesia practitioners can be used during low surgical volumes and in a time of national emergency.[2] The monitoring of sicker patients at a distance through electronic-Intensive Care Unit delivery models and expansion of home-based monitoring have also emerged as viable to meet the demands of patients with COVID-19 and to reduce exposures.[20] Telemonitoring by perianesthesia nurses not only allows showcasing of

perianesthesia nursing skills and service in a time of crisis, but also paves the way for new expanded practice scope.

The Future of Telehealth

The unpredictability of the COVID-19 pandemic and its impact on health care is a cautionary tale for how difficult it is to predict what aspects of telehealth might remain, expand, or cease moving forward. The reimbursement and regulatory aspects will most certainly be an important driver of what telehealth practices look like after the most acute phases of the pandemic. The reliance on telehealth for several aspects of care may help to normalize it as a means of access and delivery. The comparable quality of care, convenience, and satisfaction with telehealth during the pandemic may shift what patients and families expect after the pandemic. There had already been clear signs that patients[21] were increasingly expecting greater data sharing and some degree of a digital experience at least as an option or alternative when face-to-face may not be their preference or was not convenient. As evidence grows to show that telehealth can close the gap in health care disparities and access issues,[12] nurses have a professional duty to advocate for the continued reduction of barriers to its expanded use in times other than that of health care crisis and uncertainty. The professional nursing community must align on a telehealth advocacy position for practice transformation incorporating expanded educational preparation, awareness of best practices, and a greater evidence base that supports those best practices. The Coronavirus Aid, Relief, and Economic Security Act (CARES Act), a part of the federal response to the COVID-19 pandemic, ear-marked $29 million dollars per year for 4 years in grant funding to expand telehealth infrastructure, while the Federal Communications Commission identified $200 million in funds available for the purchasing of telehealth hardware and software.[6] Ideally, these kinds of investments, a professional advocacy position, and the lessons learned in terms of the speed at which these practice changes occurred during the pandemic can inform and support the continued use of telehealth and expand its quality and efficacy.

Conclusion

The reality is that there are some aspects of a face-to-face patient care experience that cannot be met, even when using sophisticated telehealth tools. The COVID-19 pandemic has required health care providers to be flexible and creative both in response to the needs of their patients, and also due to incentives, to expand telehealth care through expanded reimbursement and relaxed regulatory rules. Although some aspects of care may never be fully replaced by telehealth options, it can still be looked at as a new means of expanding practice scope and serving populations that might previously have been inaccessible. Telehealth was a crucial tool during the early phases of the pandemic and allowed, in most cases, for the closing of some service delivery gaps and as a financial life boat for health care practicies. For patients, particularly those at high risk because of chronic conditions, telehealth may have been their only means of follow-up and support. Specialty practices such as perianesthesia nursing practice can drive innovation in this space while also shaping optimal care experiences that meet the standards of the profession.

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