Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Commentary

Embracing Telemedicine: The Silver Lining of a Pandemic

Natalie Guido-Estrada, MD [a, b, *], John Crawford, MD, MS [a, b, c]

[a] Division of Child Neurology, Department of Neurosciences, University of California San Diego, La Jolla, California
[b] Division of Child Neurology, Rady Children's Hospital San Diego, San Diego, California
[c] Division of Hematology-Oncology, Department of Pediatrics, University of California San Diego, La Jolla, California

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The coronavirus disease 2019 (COVID-19) pandemic forced physicians to rapidly adopt telemedicine. Its widespread use was facilitated by relaxation of regulatory restrictions on the platform used and by insurance companies' reassurances regarding reimbursement even for new patient consultations throughout all areas of the country, regardless of home or health care setting.[1,2] Even with historically lamented limitations regarding reimbursement and regulation temporarily removed, several logistical, clinical, regulatory, and medicolegal challenges remain. Although the televisit will never replace the in-person visit, telemedicine has many valuable benefits and should endure long after the COVID-19 crisis.

Benefits

Convenience, satisfaction, cost savings

Patient satisfaction and physician autonomy are areas in which telemedicine has a favorable and symbiotic effect. Telemedicine eliminates the need for the patient and physician to be in the same physical location, making scheduling flexible and enabling visits at nontraditional times.[2] A seemingly quick check-in with a patient to review laboratory, electroencephalogram, or neuroimaging results often saves time when compared with responding to a volley of in-basket messages or phone calls. When the physician sees the child in real time, it may eliminate a concern, provide a diagnosis, or avoid additional testing. Maximizing productivity improves physician satisfaction and provides faster access for patients referred to a subspecialist.

Telemedicine can decrease the nonmedical costs of accessing health care and eliminate common frustrations reported by patients: transportation expense, time in traffic, and navigating a large campus, especially in cases of children with special needs.[3] For patients with behavioral challenges, attending in-person appointments derails the routine vital for a successful day. The telemedicine visit may only take 15 to 60 minutes compared with the absence from a full school day or work. Our group has seen a rise in patient satisfaction and a decrease in no-shows and short-notice cancellations; telemedicine studies prior to COVID-19 support this observation.[4]

Enhanced access

Pediatric neurologists are relatively uncommon, serve large catchment areas, and sometims require patients to travel hours or across states. This creates a barrier to access that affects economically disadvantaged patients the most. Despite financial hardships, the availability of a cell phone with video capability is becoming

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* Communications should be addressed to: Dr. Guido-Estrada; 3020 Children's Way, MC 5009; San Diego, CA 92123.
E-mail address: nguidoestrada@health.ucsd.edu (N. Guido-Estrada).

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more mainstream independent of socioeconomic status. Interpreters, case workers, and community advocates can participate as well. Subspecialists and comprehensive centers for complex care are even less well distributed and thus more difficult for patients access. Telemedicine in theory allows a broader outreach. However, practically speaking there are limitations in the practice of telemedicine across state lines due to state regulations requiring a remote physician to obtain a local state medical license.

Reimbursement

Child neurologists spend a substantial amount of time in coordination of care, much of which is not face-to-face.[5] This time has gone largely unreimbursed. Employing telemedicine to perform these tasks between in-person visits, or in many cases after-hours or on weekends, will ensure that we continue to best serve children and their families, keep pediatric neurology programs financially viable, and lower the burnout rate, as our work becomes more appropriately valued. When the COVID-19 pandemic has passed, we will need to evaluate how telemedicine visits will be reimbursed and how many work relative value units will be assigned.

Limitations

Physical examination

The most obvious limitation of telemedicine, especially for new patients, is the inability for physicians to complete all parts of the examination. Physicians may feel there is a heightened risk to potentially miss an important finding when conducting an examination via telemedicine. Knowing when a telemedicine visit is not sufficient and having mechanisms in place to expedite an in-person examination is vital. For instance, telemedicine may be most suitable for an autistic patient who can be examined in his or her home environment. However, children younger than one year or patients with a complex constellation of complaints may be more appropriate for in-person visits. For many types of follow-up visits, telemedicine is ideal. The Child Neurology Society recently released an age-specific guide, *Pediatric Neurology Exam via Telemedicine*, which highlights the mostly observational nature of remote examinations and recommends "ongoing and careful observation of the patient…explaining or describing any limitations, estimations, or inaccuracies of any portion of the examination, and documenting who is assisting."[6] Instructional videos sent ahead of tele-visits aimed to educate and prepare parents to help with the examination may save time and improve visit efficiency.

Staff support and scheduling

Flexibility in scheduling is necessary for telemedicine to be successful. There is an investment in time and start-up training required by the physician and also the essential support staff, as they communicate instructions for telemedicine and troubleshooting technology issues with families. Once well established, telemedicine may result in time saved and increased revenue, as staff can funnel messages into a reimbursable physician telemedicine work queue. However, there are still major challenges for those families with language barriers and a lack of access or knowledge of navigating the telemedicine software. These potential racial, ethnic, and socioeconomic disparities in access to telemedicine need to be further studied so that inequalities may be addressed. Furthermore, it is unclear whether the rates of "no shows" or last-minute cancellations will be similar in cases of telemedicine visits, and if so, what mechanism should be in place to respect physicians' busy schedules. One can imagine a more efficient telemedicine waitlist for those families who are flexible and amenable to last-minute openings. However, one can also envision that patients, referring physicians, and emergency departments may come to expect consultants to be readily available by telemedicine.

Future directions

Several areas of telemedicine need further exploration: ensuring security of the video conferencing platforms; enhancing equipment while keeping it readily available, affordable, and easy to use; and incorporating new technologies to assist with physical examination limitations. Other areas to expand include video that can be synced to accompany ambulatory electroencephalogram monitoring and the functionality to perform and bill for remote primary care physicians' office or emergency department consults. Physicians and staff must be continuously updated on best practices, as well as form specialty-specific working groups to help guide which types of patients should be seen using telemedicine. Administrators should allow physician autonomy in directing the best use of telemedicine visits. After quarantines are lifted and patients have more activities competing for their time, patients will still need to treat telemedicine visits with the same respect as in-person visits, including the expectation for a timely visit and similar copay. Medicolegal protections should be established to address the limitations of this unique but vital new health visit option. This foray into telemedicine must inspire advocacy to maintain appropriate reimbursement. Professional societies, public health, and patient advocacy groups should demand that pandemic deregulations regarding telemedicine become permanent. Although it is unclear whether the regulatory restrictions will be reversed at the conclusion of the COVID-19 pandemic, the current telemedicine trend has changed the practice of medicine forever. We anticipate that the continued use of telemedicine beyond the pandemic will lead to better access to subspecialists, as well as improved health care outcomes for many patients.

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