Telemedicine effective for monitoring patients in large pediatric neurology network

June 9 2020

Credit: CC0 Public Domain

As the COVID-19 pandemic sent entire communities into lockdown, doctors quickly adopted telehealth strategies without knowing whether they would be effective or feasible. Now, a new study from the Division

of Neurology at Children's Hospital of Philadelphia (CHOP) shows that for pediatric neurology care, the transition was very successful even in a short period of time and may provide guidance on the future of pediatric care after the pandemic subsides. The findings were published today in the journal *Neurology*.

The response to the pandemic required a rapid and unprecedented conversion of outpatient clinical care from in-person to remote telehealth services. In the field of neurology prior to this pandemic, telemedicine had been used to deliver care for adult stroke patients and had been piloted in rural health systems and specific populations such as those experiencing epilepsy and headaches. Until now, pediatric neurology telemedicine studies have not been performed systematically.

The Division of Neurology wanted to assess whether newly implemented audio-video telemedicine visits are an effective way of delivering care during these unprecedented times. Specifically, they wanted to perform a quality improvement study to determine the effectiveness of these visits, the utility of telemedicine for future care, the need for short-term, in-person follow-up after these appointments, and whether both patients and caregivers were satisfied.

In the course of a week, all in-person visits were changed to audio-video telemedicine visits. Established patients who lacked access to a smartphone or computer application were offered dedicated telephone visits. Providers were surveyed at the end of each encounter regarding their satisfaction with the visit, technical barriers, and the need for in-person assessment. Patients and caregivers were also asked about their propensity for using telehealth in the future. In order to comprehensively review the data, the study team utilized Arcus, an informatics platform developed by the CHOP Research Institute that links biological, clinical, research, and environmental data to securely access and analyze data generated over the course of a patient's clinical encounters and research

study visits throughout childhood and adolescence.

"With our robust pediatric neurology care network, our team was uniquely suited to serve as the first center to examine this new and important aspect of healthcare," said Ingo Helbig, MD, a pediatric neurologist at CHOP, director of the genomic and data science core of CHOP's Epilepsy Neurogenetics Initiative (ENGIN) and senior author on this study. "Our healthcare analytics approach allowed us to mine all of the electronic medical records of our patients essentially in real time during this transition."

A total of 2,589 telehealth visits were analyzed for the study, with included 2,093 telemedicine visits and 496 telephone appointments. Of the surveys that were completed after these appointments, the clinical team considered telemedicine satisfactory in 93% (1200/1286) of them and suggested telemedicine as a component for follow-up care in 89% (1144/1286) of cases. According to the survey, 40% (519/1314) experienced some sort of technical challenge. An in-person assessment was considered following approximately 5% (65/1285) of the appointments. Patients and caregivers indicated that they would be interested in using telemedicine for future care 86% of the time (187/217).

The study team believes that the high rate of satisfaction despite the technical issues may have been influenced by the lack of alternate methods for these visits to occur during the COVID-19 pandemic. To address those technical issues going forward, the authors recommend software updates and increased bandwith across the hospital's networks to better handle telemedicine visits.

Additionally, telemedicine may address previously existing barriers to clinical care. Expanding telemedicine may be ideal for underserved patients whose caregivers cannot afford to miss work or travel to the

clinic for in-person appointments, who live far from a hospital or other facility where the visits normally take place, or who have complex transportation needs.

The authors also observed that racial and ethnic minority groups were more likely to have to do a telephone appointment instead of a audio-video telemedicine visit for reasons such as a lack of access to a computer, suggesting that the inequity between groups needs to be properly addressed moving forward.

"While there is a need to make technical improvements as well as make certain that every patient receives the same level of care, our findings demonstrate that telemedicine is safe, timely, patient-centered and efficient, and both patients and clinicians found this transition to be an effective one during these unprecedented circumstances," said Donna Stephenson, MD, Medical Director of Operations and Outreach and an attending physician in the Division of Neurology at CHOP who was one of the senior authors of the study. "We hope that the appropriate resources are allocated to allow telemedicine to continue to serve the needs of patients well beyond what current circumstances dictate."

"This is the largest telemedicine study that has ever been done in pediatric neurology and was made possible based on the growth of our network, the adaptability of our clinical team in order to provide the best patient care under these circumstances, and our excellent relationship with our patients and caregivers, without whom this transition could not have come together as quickly as it did," said Brenda Branwell, MD, Chief of the Division of Neurology at CHOP and holder of the Grace R. Loeb Endowed Chair in Neurosciences. "Safe and effective care is always at the top of our minds every single day, and this study has shown that going forward, telemedicine may have a sustained role in making sure every patient receives the attention they deserve."

More information: Ramretta et al. "Analyzing 2,589 Child Neurology Telehealth Encounters Necessitated by the COVID-19 Pandemic." *Neurology*. Online 9 June 2020.

Provided by Children's Hospital of Philadelphia