



# **Letter: Neurosurgical Management of Spinal Pathology Via Telemedicine During the COVID-19 Pandemic: Early Experience and Unique Challenges**

Alexander C. M. Greven, *Emory University*  
Christopher W. Rich, *Emory University*  
James G. Malcolm, *Emory University*  
David P. Bray, *Emory University*  
[Gerald Rodts Jr.](#), *Emory University*  
[Daniel Refai](#), *Emory University*  
[Matthew Gary](#), *Emory University*

---

**Journal Title:** Neurosurgery

**Volume:** Volume 87, Number 2

**Publisher:** Oxford University Press Inc. | 2020-08-01, Pages E192-E196

**Type of Work:** Article | Final Publisher PDF

**Publisher DOI:** 10.1093/neuros/nyaa165

**Permanent URL:** <https://pid.emory.edu/ark:/25593/vjjzg>

---

Final published version: <http://dx.doi.org/10.1093/neuros/nyaa165>

## **Copyright information:**

© 2020 by the Congress of Neurological Surgeons.

*Accessed January 20, 2022 11:31 PM EST*

## Letter: Neurosurgical Management of Spinal Pathology Via Telemedicine During the COVID-19 Pandemic: Early Experience and Unique Challenges

To the Editor:

Clinics around the world are adapting to the novel coronavirus 2019 (COVID-19) pandemic employing telemedicine to serve the needs of their patients. Traditionally, telemedicine has been driven by providing healthcare to rural, underserved populations and has involved medical specialties that are thought to be more suitable for remote consultation, like psychiatry and dermatology.<sup>1</sup> During the COVID-19 pandemic, surgeons have started to implement remote clinic visits to meet the needs of their patients while practicing social distancing. Our aim is to discuss the unique challenges of caring for neurosurgical spine patients via telemedicine during the COVID-19 pandemic, and to define the opportunities for telemedicine as an outpatient care adjunct in the post-COVID-19 world.

Neurosurgical telemedicine literature is sparse and primarily relates to triaging trauma in rural settings,<sup>2</sup> managing routine follow-up patients,<sup>3</sup> and analyzing the socioeconomic benefit for patients traveling long distances.<sup>4</sup> To meet the needs of the spine patient population, we must learn how to best incorporate telemedicine into spine care by (1) defining regulatory requirements, (2) implementing system-wide protocols centered around appropriate telemedicine technology, (3) structuring the clinic visit to best optimize telemedicine technology, and (4) understanding the benefits and limitations of telemedicine.

### REGULATORY REQUIREMENTS

Key changes have been made to pre-COVID-19 telemedicine regulatory requirements in an effort to facilitate rapid implementation of telemedicine clinic visits across all medical specialties (see Table 1). Prior to the pandemic, healthcare providers had to be licensed in the state where the patient was located and Medicare/Medicaid covered only remote patient visits that occurred from eligible sites, which included offices, clinics, and hospitals, but not homes.<sup>5</sup> Currently, emergency waivers from governmental agencies now allow healthcare providers to see patients from out of state (though not all), telemedicine visits from home are now reimbursable, videoconferencing with non-Health Insurance Portability and Accountability Act (HIPAA)-compliant applications (such as FaceTime and Facebook Messenger) is acceptable, and prescriptions for controlled substances are now possible without a prior in-person evaluation.<sup>5</sup> Most private insurers have followed suit with the government and are allowing reimbursement for telemedicine visits.

### IMPLEMENTATION

Telemedicine is executed via 3 mediums: video with audio, telephone only, and electronic communication only. The application Zoom (San Jose, California), which had previously been used by our neurosurgery department for remote conferences, is our preferred method for delivering telemedicine due to its HIPAA compliance and familiarity of use. This technology also has features like “breakout rooms,” which allow telemedicine visits to closely mimic the workflow of an in-office clinic visit, complete with a waiting room, different examination rooms, and a common hub for providers. When audio-visual visits are not possible secondary to connectivity issues, then telephone calls without video are a backup option. Lastly, electronic communication (such as email or medical record messaging) can be used to maintain contact with patients but is suitable only for nonurgent needs of established patients. New changes allow for billing of these electronic communications (see Table 2 for a virtual visit billing guide).

### NEUROSURGICAL TELEMEDICINE VISIT

The first step in establishing a telemedicine visit is scheduling the appointment. Caring for our established patients and seeing new patients during this time allows us to provide conservative treatments, evaluate new patients for surgery, and decrease the rush of in-person encounters once the COVID-19 pandemic is over. To this end, we are encouraging all patients who were already scheduled to be seen in clinic to change their appointment to a telemedicine visit instead of postponing their clinic visit for months.

Thirty minutes prior to the scheduled appointment, the medical assistant (MA) calls the patient to gather information, including patient identification, estimated height and weight, chief complaint, pain level and location, and current medications. In addition, the MA obtains special consent for the telemedicine visit, which includes confirming the patient’s location and that they are in the same state or a state that has waived licensing requirements during the pandemic, consenting the patient to participate in a telemedicine visit, directing the patient to call 911 or seek the nearest Emergency Department in the event of a medical emergency, and advising that the patient should plan to see the attending physician at least once for an office visit within the next year. Due to the novelty and potentially confusing nature of remote clinic visits, the MA is instrumental in informing the patient on what to expect. The patient is told to login or “check-in” at least 15 min prior to their appointment, to conduct the visit in a quiet room with good lighting, to wear clothes that are easily removed should a direct examination of the spine or an extremity be needed, and to have someone else available to hold the camera, if possible, to facilitate capturing physical examination findings.

**TABLE 1. Telemedicine Regulatory Requirements<sup>7,8</sup>**

Pre-COVID-19	During COVID-19
<i>Originating site:</i> Reimbursable sites of care included provider offices, hospitals, health clinics, pharmacies, skilled nursing facilities, ambulances	"Originating site" requirement was waived so that patients can receive services from their homes
<i>Device type:</i> Personal phones and tablets were unauthorized to be used; only certain HIPAA-compliant modalities were acceptable for use	Patients are now able to use personal phones and tablets to receive services; everyday communication technologies like FaceTime and Skype are acceptable
<i>Patient and service eligibility:</i> Limited range of services were provided via telemedicine; patients were required to have seen the provider within previous 3 yr to access remote services	Wide range of services are now available; new patients are now eligible to receive telemedicine services
<i>Prescribing guidance:</i> Prescription for a controlled substance required in-person medical evaluation	Clinicians are now able to prescribe schedule II to V controlled substances to patients seen using telemedicine communication

It is also important for the documenting physician to record the time of the encounter, as billing is done by time.

Recording the patient's history is straightforward, and it can be obtained by a resident or advanced-practice provider (APP) just like in clinic. The physical examination is nuanced, and relies on good lighting, adequate space for the patient to move, the ability for the patient to position the camera in a way that allows for appropriate visualization, and clear specific instructions on the part of the healthcare provider. A pain diagram can be shared to the patient's screen to correlate the location of pain on examination.

One major component of neurosurgical telemedicine visits that differs from general practice telemedicine is the importance of imaging for evaluating and diagnosing disease. Acquiring that imaging poses a unique challenge to neurosurgeons, particularly for new patients who have had imaging done at outside facilities. Traditionally, new patients are instructed to bring compact discs (CDs) to clinic to have them uploaded into the Emory system via LifeImage (Newton, Massachusetts). During the COVID-19 crisis, we have developed several workflows for acquiring outside imaging: (1) the outside imaging center can push images directly to our PACS via PowerShare (Burlington, Massachusetts), (2) the imaging center can upload images to LifeImage and then we transfer them to PACS, (3) the imaging center can give the patient a CD or USB of the images, which the patient can upload from their own computer to LifeImage, or (4) the patient can mail the CD or USB to clinic prior to their telemedicine appointment. We have created "imaging teams" with personnel that expedite image retrieval with the patient prior to their telemedicine visit. During the actual visit, Zoom's screenshare capability facilitates reviewing images with patients, and the ability to draw on the scan in real time allows for effective communication and patient education.

Although the American College of Surgeons and the Surgeon General of the United States have recommended postponement of elective spine surgery during the COVID-19 crisis,<sup>6</sup> telemedicine visits for these patients are crucial for triaging urgent issues during this time of crisis; managing patients conservatively with pain medications, steroids, and remote physical therapy

recommendations while their procedure is delayed; following up on postoperative patients; and signing patients up for a surgery waitlist to temper the flood of clinic visits that will occur once the COVID-19 pandemic has resolved. Once the COVID-19 crisis is over, neurosurgeons will need to address this inevitable backlog: perhaps by decreasing clinic time (since we can theoretically see more clinic patients now) and increasing operative time. Regardless, scheduling patients for surgery without an in-office visit has interesting moral, legal, and ethical implications, which have largely never been thought of until this point.

## BENEFITS AND LIMITATIONS OF TELEMEDICINE

The obvious benefit of telemedicine visits during the COVID-19 pandemic is the ability to continue patient care in a safe way that decreases the risk of transmission of the virus. Other benefits, like socioeconomic impact, have implications that extend beyond this time of crisis. Telemedicine has the potential to relieve the burden of travel for patients who seek expert opinions at tertiary medical centers but live far away. Reduced in-office clinic visits could lead to less overhead with decreased demand for electricity, parking, front desk staff, and waiting/examination room space.

A good motor examination is critical for the evaluation of a neurosurgical spine patient. Completing a thorough physical examination via telemedicine is not yet possible. In the future, we will need to support innovative technologies that will allow for more accurate remote neurological evaluations. At present, there is no substitution for the subtleties of an in-office visit, such as detecting the odor of tobacco on a patient who claims they are a nonsmoker, but time will tell whether telemedicine visits taking the place of in-office visits has any impact on patient outcomes.

## FUTURE OF TELEMEDICINE

The potential good that can come from incorporating telemedicine into neurosurgery is immense. Questions remain whether the relaxed regulatory regulations that have enabled the

**TABLE 2. Virtual Visits for Providers Who Can Bill Evaluation and Management Services During COVID-19 Emergency<sup>9</sup> (eg, Physicians, Nurse Practitioners, Physician Assistants, Nurse-Midwives, Clinical Nurse Specialists, Certified Registered Nurse Anesthetists)**

Method of communication	What is the service?	CPT/HCPCS code	Patient relationship with provider	Documentation requirements	Suggested attestations	Payors
Zoom, FaceTime, Univago, American Well	A telehealth visit uses a real-time audio and visual system between a provider and a patient	99201 to 99215 (office or other outpatient visits) 99241 to 99245 (outpatient consultations) *99221 to 99223 (inpatient admissions) 99231 to 99233 (subsequent hospital day) 99251 to 99255 (inpatient consultations) *99281 to 99285 (emergency department visits) *99291 to 99292 (critical care) For a complete list of Medicare-approved services, visit: <a href="https://www.cms.gov/Medicare/Medicare-General-Information/Telehealth/Telehealth-Codes">https://www.cms.gov/Medicare/Medicare-General-Information/Telehealth/Telehealth-Codes</a>	New or established	Documentation should mirror an in-person office visit Include your normal components of history, examination and medical decision making, or time-based statement Time-based attestation: "Total telehealth visit time ___ minutes, over half of which was spent counseling on ___." The provider should add modifier 95 at charge entry to indicate the service occurred via telehealth	This is a telehealth visit that was performed with the originating site at PATIENT LOCATION and the distant site at PROVIDER LOCATION Verbal consent to participate in video visit was obtained This particular visit occurred during the 2020 COVID-19 outbreak I discussed with the patient the nature of our telehealth visits, that: (1) I would evaluate the patient and recommend diagnostics and treatments based on my assessment (2) Our sessions are not being recorded and that personal health information is protected (3) Our team would provide follow up care in person if/when the patient needs it	All payors G (Medicare only)
Telephone only	A telephone evaluation and management (E/M) service provided to an established patient, parent, or guardian; the call cannot originate from a related E/M service provided within the previous 7 d nor lead to an E/M service or procedure within the next 24 h or soonest available appointment	99441 to 99443 (telephone E/M) G2012 (virtual check-in)	Established	Documentation should include a summary of the telephone discussion and the total amount of time spent in medical discussion.	This is a telephone visit that was performed on DATE OF SERVICE. Verbal consent to participate in the telephone visit was obtained. This particular visit occurred during the 2020 COVID-19 outbreak I discussed with the patient the nature of our telephone call, that: (1) I would evaluate the patient and recommend diagnostics and treatments based on my assessment (2) Our calls are not being recorded and that personal health information is protected (3) Our team would provide follow up care in person if/when the patient needs it	Medicaid, Blue Cross; other payors may expand their policy during the COVID emergency

<b>TABLE 2. Continued</b>						
<b>Method of communication</b>	<b>What is the service?</b>	<b>CPT/HCPCS code</b>	<b>Patient relationship with provider</b>	<b>Documentation requirements</b>	<b>Suggested attestations</b>	<b>Payors</b>
EMR exchange (portal)	An e-visit is a communication between a patient and their provider through an online patient portal; the portal communication <i>must</i> be initiated by the patient	99421 to 99423 (online digital E/M service) G2010 (remote evaluation of recorded video and/or images submitted by patient)	Established	Documentation should include how the patient was contacted and how much time was spent on each encounter This code covers all communication, both via the portal or via the telephone, over a cumulative 7 d period An appointment must be scheduled and checked in to ensure documentation on the correct encounter Suggestion: Addend the initial Cerner note to include cumulative services Include how the patient was contacted and how long was spent on each addendum.	This is an online digital evaluation and management service that was initiated from the patient on the date of service above via EMORY PATIENT PORTAL. This particular e-visit occurred during the 2020 COVID-19 outbreak, during which the government declared a public state of emergency. I spent XX minutes on DATE(S) OF SERVICE via PORTAL/TELEPHONE including answering the patient's direct questions, performing data review, reviewing and/or providing medications. The total time at the end of the 7 day billing period was _____	All payors G (Medicare only)

\* Allowed during COVID emergency.

widespread implementation of telemedicine services will return to more stringent regulations once the pandemic has resolved. Future research investigating patient outcomes, patient satisfaction, and socioeconomic effect will give neurosurgeons insight into the feasibility of making telemedicine visits standard of care for the evaluation and management of spine pathology.

### Disclosures

The authors have no personal, financial, or institutional interest in any of the drugs, materials, or devices described in this article.

**Alexander C. M. Greven, BS**  
**Christopher W. Rich, BSE**  
**James G. Malcolm, MD, PhD**  
**David P. Bray, MD**  
**Gerald E. Rodts, MD**  
**Daniel Refai, MD**  
**Matthew F. Gary, MD**  
*Department of Neurosurgery*  
*Emory University Medical Center*  
*Atlanta, Georgia*

### REFERENCES

- Nesbitt TS. The evolution of telehealth: where have we been and where are we going? In: Board on Health Care Services; Institute of Medicine, eds. *The Role of Telehealth in an Evolving Health Care Environment: Workshop Summary*. Washington (DC): National Academies Press (US); 2012.
- Latifi R, Ollidashi F, Dogjani A, Dasho E, Boci A, El-Menyar A. Telemedicine for neurotrauma in Albania: initial results from case series of 146 patients. *World Neurosurg*. 2018;112:e747-e753.
- Reider-Demer M, Raja P, Martin N, Schwinger M, Babayan D. Prospective and retrospective study of videoconference telemedicine follow-up after elective neurosurgery: results of a pilot program. *Neurosurg Rev*. 2018;41(2):497-501.
- Hayward K, Han SH, Simko A, James HE, Aldana PR. Socioeconomic patient benefits of a pediatric neurosurgery telemedicine clinic. *J Neurosurg Pediatr*. published online: October 25, 2019 (doi:10.3171/2019.8.PEDS1925).
- Wright JH, Caudill R. Remote treatment delivery in response to the COVID-19 pandemic. published online: March 26, 2020. *Psychother Psychosom*. (doi:10.1159/000507376).
- Zammar S, Simon S. COVID-19 and Neurosurgery. American Association of Neurological Surgeons. <https://www.aans.org/Patients/Neurosurgical-Conditions-and-Treatments/COVID-19-and-Neurosurgery>. Accessed April 4, 2020.
- COVID-19 Information Page. United States Department of Justice: Drug Enforcement Administration. <https://www.deadiversion.usdoj.gov/coronavirus.html>. Accessed April 4, 2020.
- Issue Brief: COVID-19 and Telehealth Changes. American Society of Health-System Pharmacists website. <https://www.ashp.org/Advocacy-and-Issues/Key-Issues/Other-Issues/Issue-Brief-COVID-19>. Accessed April 4, 2020.
- Medicare Telemedicine Health Care Provider Fact Sheet. Centers for Medicare & Medicaid Services (CMS). <https://www.cms.gov/newsroom/fact-sheets/medicare-telemedicine-health-care-provider-fact-sheet>. 2020. Accessed April 4, 2020.

Copyright © 2020 by the Congress of Neurological Surgeons

---

10.1093/neuros/nyaa165

---