Neurologia i Neurochirurgia Polska
Polish Journal of Neurology and Neurosurgery
2020, Volume 54, no. 2, pages: 207–208
DOI: 10.5603/PJNNS.a2020.0038

ISSN 0028–3843

Telemedicine in neurosurgery during the novel coronavirus (COVID-19) pandemic

Tomasz Szmuda[1], Shan Ali[2], Paweł Słoniewski[1], NSurg4WL group[3]

[1]Neurosurgery Department, Medical University of Gdansk, Poland
[2]Students' Scientific Circle, Neurosurgery Department, Medical University of Gdansk, Poland
[3]ELearning Students' Group, Medical University of Gdansk, Poland

The current COVID-19 outbreak poses a significant global health threat, even in comparison with past pandemics [1]. Since the World Health Organisation (WHO) declared the novel coronavirus disease (COVID-19) to be a pandemic, person-to-person contact between physicians and patients has been greatly curtailed in order to protect medical staff and slow the spread of the virus [2]. As a result, routine outpatient visits have come to a halt.

It is our contention that telemedicine — a method of administering healthcare services remotely — provides a solution. In this letter, we explore the current technical solutions, the legal considerations, and any potential limitations of telemedicine in neurosurgery.

Automated logic flows (bots) can take over the responsibility of screening patients, scheduling video visits, and even treating patients [3]. In this way, patients avoid travel, lessen their risk of exposure to the virus, and reduce medical costs for the hospital. During the current situation, telemedicine allows patients to receive healthcare while still practicing social distancing, the principal anti-pandemic defence. Moreover, bots can be adjusted quickly based on the latest research findings and WHO recommendations on COVID-19. With triage being exclusively handled by bots, nurses and clinicians can devote more of their time to patient care.

Following the introduction of Obamacare in the United States from 2010, video consultations have become regular occurrences [4]. There is a variety of free software that can be used, including Skype, Google Hangouts, and WhatsApp. However, proper room lighting, and a suitable camera that has the ability to zoom in and out are prerequisites for efficient medical diagnostic and decision-making purposes [5]. Fortunately, these days most smartphones and laptops are equipped with high definition video and audio, sufficient for a video conference. In 2019, the general neurological examination consisting of 22 items performed via telemedicine by an experienced specialist was validated [6]. On occasions, the patient may need the support of a partner or relative in order to perform parts of the examination, e.g. the Laségue test for spine problems.

In a pandemic, certain elective orthopaedic or neurological surgeries will be postponed so as to free up hospital staff, medical supplies, and hospital beds. We suggest that neurosurgeons should consider postponing surgery for certain moderate-risk patients (e.g. those with meningiomas or cerebello-pontine angle tumours) as they may be scheduled for video consultations with other specialists (i.e. oncologists, neurologists or pain medicine specialists). It is important to remember that postponing elective surgeries, especially for patients with chronic spinal pain, often leads to a poorer quality of life and can even result in occupational disability [7, 8]. Therefore, we suggest that each postponed surgical operation be followed up by a video consultation. In this way, the surgeon can explain the delay, review the patient's prescription medications (i.e. pain medication), inquire about any documentation required by the patient's employer(s), and refer patients to reliable and easily-understood sources of medical information online [9].

Unless scheduled for planned spinal surgery, the patient can be referred to a physiotherapist who offers home-based neurological telerehabilitation. We encourage hospitals to take advantage of the various types of management software, statistical reporting tools, and remote-control post-surgical site monitoring that permit outpatient management of complex conditions [4, 5, 10, 11].

Moreover, with social distancing being practiced even in hospital, we encourage physicians to use online modes of communication with each other. Effective ongoing communication is essential in order to prevent burnout [12].

In recent times, the legal regulations concerning telemedicine have been scrutinised both by physicians and by health ministries. In Poland, the role of telemedicine is strictly limited by law. Article 10 of the 'Code of Medical Ethics' states that medical treatment may be given remotely only in emergency

Address for correspondence: Tomasz Szmuda, Neurosurgery Department, Medical University of Gdansk, Dębinki 7 St., 80–952 Gdansk, Poland, e-mail: tszmuda@gumed.edu.pl

situations [13]. Likewise, permission for a temporary leave job may only be given after a direct physical examination [14].

However, on 11 March 2020, the Ministry of Health issued a new decree for specialists which allowed all remote teleconsultations to be reimbursed identically to in-person visits [15].

We believe that this is an opportunity to develop telemedicine because no limitations on the particular elements of teleconsultation were set. Because the current law is not in accordance with the recent decree, we urge that Polish laws should also be updated, especially since they were drafted at a time before widespread access to the internet.

In the United States, a physician may only provide telemedicine care according to the state in which he or she is licenced [4]. This limits the growth of telemedical services beyond state lines. However, the Interstate Medical Licensure Compact legislation has started to become adopted, allowing physician licensure in another state to be expedited [16]. In England, government priorities have emphasised patient-provider interaction as telemedicine has proved its beneficial role in clinical practice by enhancing collaboration among medical professionals [17]. A 2016 systematic review revealed some of the major benefits of teleconsultation in improving patient management [18].

Handicapped patients and older patients usually require assistance and facilities before they can benefit from phone-based or internet-based communication with a physician. This role often falls to a relative or a caregiver, although this is not always possible in every case. Moreover, privacy issues arise, especially when considering the European Directive "On the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC, (General Data Protection Regulation, GDPR)."

We assert that this unresolved patient data issue becomes of secondary importance in the emerging and evolving COVID-19 pandemic. Thus, we advise health professionals to record all video consultations and present the GDPR to patients and relatives.

The unprecedented COVID-19 pandemic has tested the world's grasp of, and facility with, telemedicine. It has presented an enormous challenge in terms of how fast a shift may be made so that patients are not left isolated at home.

We hope that telemedicine may be better utilised in the future, and that this letter clarifies some of the current solutions, legal considerations, and the limitations of telemedicine in neurosurgery.

References

1. Gates B. Responding to Covid-19 - A Once-in-a-Century Pandemic? N Engl J Med. 2020 [Epub ahead of print], doi: 10.1056/NEJMp2003762, indexed in Pubmed: 32109012.
2. Cucinotta D, Vanelli M. WHO Declares COVID-19 a Pandemic. Acta Biomed. 2020; 91(1): 157–160, doi: 10.23750/abm.v91i1.9397, indexed in Pubmed: 32191675.
3. Hollander JE, Carr BG. Virtually Perfect? Telemedicine for Covid-19. N Engl J Med. 2020 [Epub ahead of print], doi: 10.1056/NEJMp2003539, indexed in Pubmed: 32160451.
4. Kahn EN, La Marca F, Mazzola CA. Neurosurgery and Telemedicine in the United States: Assessment of the Risks and Opportunities. World Neurosurg. 2016; 89: 133–138, doi: 10.1016/j.wneu.2016.01.075, indexed in Pubmed: 26852710.
5. Coombes CE, Gregory ME. The Current and Future Use of Telemedicine in Infectious Diseases Practice. Curr Infect Dis Rep. 2019; 21(11): 41, doi: 10.1007/s11908-019-0697-2, indexed in Pubmed: 31630276.
6. Awadallah M, Janssen F, Körber B, et al. Telemedicine in General Neurology: Interrater Reliability of Clinical Neurological Examination Via Audio-Visual Telemedicine. Eur Neurol. 2018; 80(5-6): 289–294, doi: 10.1159/000497157, indexed in Pubmed: 30783053.
7. Szmuda T, Słoniewski P, Ali S, et al. Does Spinal Cord Stimulation Due to Failed Back Surgery Syndrome Lead to Permanent Occupational Disability? Neuromodulation. 2019 [Epub ahead of print], doi: 10.1111/ner.13014, indexed in Pubmed: 31231912.
8. Babińska A, Wawrzynek W, Czech E, et al. No association between MRI changes in the lumbar spine and intensity of pain, quality of life, depressive and anxiety symptoms in patients with low back pain. Neurol Neurochir Pol. 2019; 53(1): 74–82, doi: 10.5603/pjnns.a2018.0006.
9. Szmuda T, Rosvall P, Hetzger TV, et al. YouTube as a Source of Patient Information for Hydrocephalus: A Content-Quality and Optimization Analysis. World Neurosurg. 2020 [Epub ahead of print], doi: 10.1016/j.wneu.2020.02.149, indexed in Pubmed: 32147561.
10. Hosseiniravandi M, Kahlaee AH, Karim H, et al. Home-based telerehabilitation software systems for remote supervising: a systematic review. Int J Technol Assess Health Care. 2020 [Epub ahead of print]: 1–13, doi: 10.1017/S0266462320000021, indexed in Pubmed: 32151291.
11. Velnar T, Zele T, Bosnjak R. Importance of the telemedicine network for neurosurgery in Slovenia. World J Methodol. 2019; 9(1): 20–25, doi: 10.5662/wjm.v9.i1.20, indexed in Pubmed: 30705871.
12. Szmuda T, Ali S, Słoniewski P. Neurosurgery residency burnout: what can prevent this? Neurol Neurochir Pol. 2019; 53(5): 392–395, doi: 10.5603/PJNNS.a2019.0043, indexed in Pubmed: 31577364.
13. Kodeks Etyki Lekarskiej. https://sip.lex.pl/akty-prawne/akty-korporacyjne/kodeks-etyki-lekarskiej-286454095?fbclid=IwAR0DC1ZZ0OD5XJSarkvPh-i47QH-A99NCb-rjyyY5M-TlqgTU6WPHw_z2Ls (23.03.2020).
14. Dziennik Ustaw Nr 65. http://prawo.sejm.gov.pl/isap.nsf/download.xsp/WDU19990650741/O/D19990741.pdf?fbclid=IwAR2o80AvneUZYSWEPtHzImpHk-3cIQ3TE7_sJuQM8sD3_--xNp19UQq1dSpw (23.03.2020).
15. Aktualności Centrali - Teleporady w Ambulatoryjnej Opiece Specjalistycznej. https://www.nfz.gov.pl/aktualnosci/aktualnosci-centrali/teleporady-w-ambulatoryjnej-opiece-specjalistycznej,7627.html (23.03.2020).
16. Boards. F of SM. Interstate Medical Licensure Compact. n.d.
17. Pappas Y, Vseteckova J, Mastellos N, et al. Diagnosis and Decision-Making in Telemedicine. J Patient Exp. 2019; 6(4): 296–304, doi: 10.1177/2374373518803617, indexed in Pubmed: 31853485.
18. Deldar K, Bahaadinbeigy K, Tara SM. Teleconsultation and Clinical Decision Making: a Systematic Review. Acta Inform Med. 2016; 24(4): 286–292, doi: 10.5455/aim.2016.24.286-292, indexed in Pubmed: 27708494.