

Epilepsy care in the COVID-19 era

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ABSTRACT

The COVID-19 pandemic will impact on how care for chronic conditions is delivered. We use epilepsy to exemplify how care for patients will be affected, and suggest ways in which healthcare systems can respond to deliver the most effective care. Where face-to-face outpatient appointments have been cancelled, telemedicine can facilitate remote clinical consultations for new and follow-up epilepsy clinic patients while reducing the risk of infection to both patients and healthcare staff. First-seizure patients will need investigation pathways rationalised, while those with chronic epilepsy will need to have reliable alternative avenues to access clinical advice. At the same time, neurologists should support emergency departments and acute medical units, advising on appropriate management of seizures and other acute neurological presentations. Ultimately, the revolution in our clinical practice is unlikely to cease after this pandemic, with reconfiguration of services likely to bring improvements in efficiency and convenience, and a reduced environmental impact.

KEYWORDS: COVID-19, epilepsy, seizures, telemedicine, healthcare systems

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Introduction

Coronavirus disease 2019 (COVID-19) is a rapidly spreading infectious disease caused by the novel human coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).¹ At present we do not know, but it seems unlikely, that having epilepsy puts people at greater risk of COVID-19; however, epilepsy is associated with a number of comorbidities that do increase risk. Epilepsy is also associated with health inequalities, which worsen during pandemics and further diminish contact with services when help is needed.^{2,3}

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The COVID-19 pandemic is having, and will continue to have, a significant impact on how epilepsy care is delivered. The major challenge will be determining how epilepsy services respond most appropriately, ensuring safe pathways for those with likely first seizures, as well as access for those with an established epilepsy diagnosis. This is at a time when neurologists and specialist nurses are being redeployed to areas of significant clinical need, including intensive care and acute medical units, supporting their colleagues on the frontline. For many, this is an unfamiliar role requiring refresher courses and retraining.

Redeployment has inevitably led to less time to dedicate to epilepsy care, and the ongoing management of many other chronic diseases. However, despite the unprecedented challenges that healthcare systems are facing, we still have a duty of care to people with epilepsy (PWE), and to those presenting with first seizures. Having robust plans and protocols for continued effective epilepsy care is essential to minimise avoidable presentations to both primary and secondary care, and to minimise risk to those unable or unwilling to seek help.

Telemedicine

To respond to the COVID-19 pandemic, changes to services have been made at unprecedented speed, including the widespread implementation of telemedicine.⁴ Governments have introduced various measures to encourage social distancing and discourage non-essential travel to limit spread of the disease. This has led to a move away from the traditional congregation of patients in epilepsy outpatient clinic waiting areas, in order to reduce infection risk to both NHS staff and patients.

Telephone consultations have been shown to be both effective and efficient in providing a remote epilepsy service, although specialised digital audiovisual technology is being rapidly deployed for both new and follow-up epilepsy clinic patients.^{5,6} While there are limitations that come with telemedicine, such as reduced ability to perform physical examination, in epilepsy care physical examination is rarely necessary, particularly for chronic disease management, and epilepsy would seem an ideal condition for using telemedicine.⁷ The changed human interaction may, however, diminish the ability to pick up non-verbal and some verbal cues, which are particularly important in functional presentations. This may result in greater diagnostic error, including the misdiagnosis of dissociative seizures as epileptic seizures. This can be mitigated by simultaneously seeking the account of an eyewitness as part of the remote consultation and having a low threshold to revisit the diagnosis,

depending on further events or response to treatment. If performed successfully, remote consultation in epilepsy has the potential to serve as an exemplar, leading to implementation in other medical specialities.

First seizures

A first seizure is a common presentation, and a swift assessment is crucial to identify those with serious underlying pathology or at higher risk of recurrence, in order to minimise risk and provide advice about driving and employment. This is recognised in National Institute for Health and Care Excellence (NICE) guidance, which recommends a 2-week urgent referral.⁸ In addition, many patients are put on first-seizure pathways despite having had syncope, and a rapid assessment avoids unnecessary delay in a return to driving, as well as onward referral to cardiology for those who need it.

Most first-seizure patients can be assessed by telemedicine, followed by a face-to-face appointment if absolutely necessary. Decisions should then be made about investigations. First-seizure patients should have brain imaging, but routine magnetic resonance imaging (MRI) scanning is currently reduced or cancelled in some units due to the challenges of deep cleaning MRI facilities. Most first-seizure patients will have a computed tomography (CT) scan, often unenhanced, in the emergency department (ED), which will rule out most serious pathologies. Until the COVID-19 pandemic is over, MRI should be reserved for those patients with a high probability of a serious underlying lesion such as a tumour – mainly those with rapid onset of frequent seizures and those with neurological deficits or signs. For patients who have not had imaging in the ED or have come from primary care, an enhanced CT scan should be booked if MRI is unavailable.

The vast majority of patients presenting to acute care settings with a possible seizure will have already had an electrocardiogram (ECG) performed. If an ECG has not been performed, a 12-lead tracing should be requested, with priority given to those with a history suggesting syncope rather than seizure, those with a family history of sudden cardiac death and those taking drugs associated with QT prolongation.⁹ Regarding electroencephalogram (EEG), in adult care the great majority of first-seizure and new epilepsy patients can be managed in the first instance without an EEG, as treatment to prevent convulsive seizures, which pose the greatest risk, can be initiated whatever the epilepsy syndrome. Although EEG is used in prognostication for purposes of licensing by the Driver and Vehicle Licensing Agency, it is not essential for clinical management.

Chronic epilepsy

While it may be appropriate for services to focus on the risk posed to those with first seizures, epilepsy is a prevalent condition and many thousands of patients have been disconnected from their usual neurology services for ongoing care. Telemedicine is entirely appropriate for the vast majority of outpatient epilepsy consultations. The challenge is to identify those in greatest need of contact who can then be prioritised, while ensuring that PWE know when and who to call to ask for help. Clinical coding may help identify those in greatest need to offer telephone appointments, such as those with complex epilepsy and learning disabilities. Letters should be sent to patients and carers, reminding them about the availability of telephone advice lines, reassuring and empowering them to seek help when needed from specialist services. Empowering patients in this way could lead to successful

implementation of an 'open access' model of care for epilepsy, which improves patient outcomes.¹⁰ Increases in capacity of epilepsy specialist nurse telephone advice lines should be considered to meet the increased frequency of calls.

Data from China indicate that the mental health of PWE has deteriorated during the pandemic, the negative psychological impacts being more pronounced in those with drug-resistant epilepsy.¹¹ These individuals may need greater psychological support and access to practical self-help coping strategies, which may be available via charities and the voluntary sector organisations.¹² Patients with vagal nerve stimulators *in situ* may also face additional challenges. Changes to programming should be deferred and urgent replacement of batteries should only be considered in those experiencing an increase in generalised seizures.¹³

Supporting epilepsy care in the ED and medical assessment unit

While the majority of patients with seizures in the community do not require hospital assessment and admission, patients with prolonged uncontrolled seizures or in status epilepticus should be assessed and treated urgently. Given that acute medical services are experiencing a sharp increase in workload during the COVID-19 pandemic, it is imperative that specialist neurologist input is readily available in EDs to advise on the appropriate management of seizures and other acute neurological presentations. Additionally, emergency care plans with clear thresholds to attend hospital should be considered for all PWE, with prescriptions for rescue medications issued for those most at risk. People with combined epilepsy and learning disability may be at highest risk, given that this vulnerable group of PWE commonly have refractory epilepsy, frequent seizures and/or communication difficulties, and may not have reliable alternative avenues to access specialist services.¹⁴

Ensuring continued anti-epileptic medication supply

Another concern is continuity of anti-epileptic drug (AED) supply for patients and ensuring that supply chains continue to function. At the time of writing, there appear to be no AED shortages as a direct or indirect result of COVID-19.¹⁵ Despite this, governments will have to ensure that they liaise with pharmaceutical regulatory bodies and industry partners to continually monitor the evolving impact of the COVID-19 pandemic on the supply chain and put in place measures to safeguard the availability of these essential medications. Perhaps a more pressing concern is ensuring that patients who are either self-isolating or have a disability continue to receive timely delivery of their AEDs to their place of residence. Pharmacy delivery services are likely to be overwhelmed due to an increase in demand and a decrease in staffing due to illness or isolation, which could lead to the possibility of delayed deliveries and missed AED doses as a result. A potential solution is prescribing adequate quantities of medication to patients, reducing the need for frequent repeat prescriptions; this must be carefully balanced with measures to prevent stockpiling. Another consideration will be the timely initiation and supply of AED therapy in patients with a new diagnosis of epilepsy. As more new diagnoses are made remotely, protocols will need to be in place to ensure the rapid and convenient distribution of new prescriptions to patients. This will require collaborative working between neurology and primary care, and utilisation of the digital prescribing infrastructure already available in community pharmacies.

Conclusion

We must be proactive in implementing these crucial changes to our practice in this challenging time, as we have a duty to offer flexible and innovative clinical care during this pandemic to benefit our patients living with epilepsy and other chronic diseases. Despite initial timely cancellation of outpatient activity to enable redeployment and retraining, there has clearly been a delay in entering the next phase of robust contingency planning for routine clinical care and implementation of acute care plans. The revolution in our clinical practice should not yet come to an end, as it is clear that sustained change will be required to cope with the inevitable demand from subsequent phases of the disease, as well as the clinical backlog that will have resulted from the disruption caused by COVID-19. Core epilepsy services that have been paused indefinitely during the pandemic, including epilepsy surgery programmes and inpatient video telemetry, will need to be gradually reintroduced following re-triage of waiting lists. The legacy of COVID-19 should be a reconfiguration of services that will persist beyond the pandemic, bringing improvements in efficiency and convenience, and a reduced environmental impact. In a time of undoubtedly increased anxiety for PWE, due to fears about supply of their critical medication or from the difficulties of isolation, it is important that they feel supported and know that, despite healthcare services being focused on combating the COVID-19 crisis, that they have not and will not be forgotten by their clinicians. ■

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