vCreate®

Secure asynchronous video service transforms epilepsy diagnosis and management pathways in NHS multi-centre pilot

The Challenge

Making an epilepsy diagnosis can be extremely challenging. The evaluation of neurological conditions which produce intermittent and unpredictable symptoms is reliant on a detailed oral history of the possible seizure from the patient and a witness but, without seeing an event for themselves, clinicians can struggle to make an accurate diagnosis.

This is one of the reasons that misdiagnosis rates in epilepsy are so high, varying between 25-50%.

The coronavirus pandemic has only exacerbated these challenges, further limiting patients' access to specialists which has resulted in long waiting lists for appointments and investigations. **Just 58% of patients were seen for face-to-face GP appointments in August 2021, a drop from 80% prior to the pandemic.**

Any delay in diagnosis presents serious health risks to patients. If left untreated, epileptic seizures can cause injury, accidents and sometimes death. In young children delay in treatment can result in serious life-long developmental issues.

The Solution

In 2019, the Neuroscience team at Glasgow's Royal Hospital for Children began exploring whether an existing NHS trusted video service, vCreate, available in neonatal and paediatric intensive care units, could be developed to facilitate the sharing of patient videos with clinical teams for neurological diagnosis and management.

By May 2020, the collaborating teams had developed vCreate, a secure clinical video service which connects patients and carers with their neurology team for convenient, remote clinical decision-making and care.

Patients and parents who are concerned that they or their child are experiencing seizures or seizure-like episodes can upload smartphone-recorded videos of an event to vCreate's secure cloud-based system, along with bespoke contextual data which can help clinicians with their assessment.

The videos and metadata are then assessed by neurology specialists and the resulting actions can include: a follow-up appointment, an appropriate investigation, changes to medication, reassurance of 'normal' behaviour and even a diagnosis. All videos and communication can be linked directly to the electronic patient record.

Consultant Paediatric Neurologist at Glasgow's Royal Hospital for Children, Professor Sameer Zuberi, led the clinical development and implementation of the service.

He said: *"While it's long been accepted that video plays a vital role in helping diagnose neurological conditions, we previously had no secure, patient-friendly way for families to share recordings with us. With support from the Scottish government and the vCreate team, we designed a platform to safely bridge this clinical gap."*

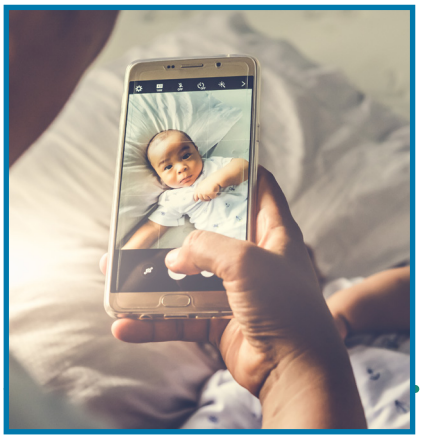
"Through the service, our team at Glasgow were able to review more patients, including those who lived long distances from the hospital, while reducing in-person appointments."

Professor Sameer Zuberi,
Consultant Paediatric Neurologist,
Glasgow's Royal Hospital
for Children

"Due to the universal accessibility of smartphones and familiarity people have with taking video clips, the system was rapidly adopted by clinicians, patients and families alike. Through the service, our team at Glasgow were able to review more patients, including those who lived long distances from the hospital, while reducing in-person appointments."

Within a month of registering the first patient in Glasgow, vCreate was rolled-out to all tertiary Neurology centres in Scotland and, soon after, other leading UK paediatric hospitals including Great Ormond Street Hospital, Evelina London Children's Hospital and Sheffield Children's Hospital.

Dr. Michael Absoud, Consultant in Paediatric Neurodisability at Evelina London Children's Hospital, led his department in joining the multi-centre pilot: *"It's been invaluable to offer patients and families a new, secure digital pathway to access specialist advice remotely. Not only has this been empowering and reassuring for those we support, it has also helped our clinicians analyse more asynchronous videos of patient events to prioritise investigations and treatments, ensuring our most at-risk patients are reviewed urgently."*



The Outcomes

Preliminary data from the service in Glasgow's Royal Hospital for Children reveals that more than 88% of users find the service very easy or easy to use and over 92% of clinicians report that the system helps speed-up the diagnostic process.

Professor Zuberi said: *"vCreate's pilot data and feedback from families has been incredibly positive. We have witnessed a noticeable reduction in time taken to achieve a diagnosis and therapy and, crucially, we're helping reduce the number of epilepsy misdiagnoses.*

"The platform has transformed how we use video in healthcare. In the space of a year, it has become embedded throughout our hospital and is now used across various medical departments to stay connected with patients."

Alongside outpatient support, the technology has also aided clinician to clinician communication. Hosted securely on the cloud, healthcare professionals can invite second opinions and send screen capture recordings of tests such as video-EEGs to clinicians both in and outside of their organisation.

Professor Zuberi said: *"As clinicians working through a pandemic, the service has helped our team of Consultants and Epilepsy Nurses continue to collaborate to achieve the best outcome for our patients. More broadly, we and other Scottish tertiary centres are regularly invited to review videos on the system by district teams seeking rapid opinions.*

"vCreate is now likely the largest carer-recorded video database in the world and is a valuable research and teaching resource. Videos are classified by event types and epilepsy syndromes which help us build curated archives of common and rare conditions which, with appropriate enhanced consent, can be used for research and teaching."

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With the video database growing by more than 800 uploads per month, vCreate and Professor Zuberi's team are exploring how machine learning algorithms can be developed for seizure types and non-epileptic events. The hope is that AI technology will eventually be able to analyse new uploads, triage videos by event severity and offer advice to reviewing clinicians.

Having received approval from over 100 NHS Trusts, the vCreate platform utilises enhanced security features to ensure patient data, videos and communication are always protected.

vCreate continues to be utilised across Glasgow's Royal Hospital for Children and over 25 neurology centres in the UK.

If you are interested in exploring how vCreate could assist your clinical teams and patients please send an email to theteam@vcreate.tv or visit www.vcreate.tv/health