

Press Release

14.09.2016

New model of care for treatment of epilepsy

A ground-breaking solution is being launched today to radically improve the quality of life and care for people who are living with epilepsy, one of the most common and serious neurological conditions in the world.

Called *myCareCentric Epilepsy*, it combines the latest in wearable technologies, shared care records, machine learning, and data analysis tools. It is the first solution of its kind to collect information from wearables, smartphones and portals and integrate it with a patient's clinical record. The enhanced record is shared in real-time with patients and clinical teams in a network of expert care.

By providing timely expert guidance and support, the solution aims to overcome many of the challenges that people with epilepsy commonly face, including loss of independence and isolation.

At the same time, it means clinicians can see patient-contributed information in real-time, and in easily-digested formats. This is important because the diagnosis and treatment of epilepsy is recognised as being extremely challenging and reliant on the availability of accurate, complete patient information and specialist knowledge at the point of care.

The aim is that *myCareCentric Epilepsy* will help support new models of care which are more responsive to the needs of the individual. At the same time, the new clinical pathways, coupled with real-time pre-emptive interventions, will help reduce the costs of care and improve the treatment of the condition.

myCareCentric Epilepsy is currently being piloted by Poole Hospital NHS Foundation Trust, one of the partner organisations developing the product.

“We are creating a network of expert care for the individual which has potential to bring meaningful and significant quality of life benefits,” said Dr Rupert Page, consultant neurologist at Poole Hospital and clinical lead for the Dorset Epilepsy Service.

“These benefits to the patient can be achieved at the same time as benefits to the local health economy through reduced outpatient appointments, ambulance calls or emergency department visits and by cutting unnecessary hospital admissions and medication costs.”

myCareCentric Epilepsy works by

- Bringing together all patient information (held by the GP, by the acute Trust and by any other parts of the care community) into a single record so it can be shared throughout the community. This is achieved using Graphnet’s *CareCentric* shared record solution.
- Adding full healthcare data & lifestyle capture via wearable devices (in this case the Microsoft Band), other connectable health monitors, and smartphones. The app captures data such as sleep patterns, exercise, heart rate, temperature and galvanic skin response.

The solution is being further developed to enable family and friends to supply information to enrich the life-logging dataset. With explicit consent, this could include video and audio recordings of seizures to assist diagnosis and management. Experts then use this data to build up a picture of that individual’s seizures, potential indicators or predisposing factors.

- Presenting clinicians with the information in a single dashboard view, accessible via the web or mobile applications, so they can review and decide on the most appropriate next steps.
- Allowing clinicians and patients to interact directly and in real time, with huge benefits for patient care and support as well as efficiency. This is done through the *myCareCentric* patient portal.
- Detecting seizures using machine learning (in this case using the Microsoft Azure platform). Seizures are tracked and monitored. The pattern and frequency of events is visible to the clinical team in real-time. Analysis of this data using machine learning could help individuals identify increased risk of seizures.
- Alerts notify medical staff, and in the future friends and family, when a seizure has occurred and professional advice can be given directly back to the patient. Clinical teams can be notified when one of their patients presents for an unscheduled admission, providing prompt advice and guidance which could reduce length of stay, improve outcomes or avoid an unnecessary admission.

myCareCentric Epilepsy has been developed by a private/public consortium called the Epilepsy Care Alliance (ECA) and co-funded by Innovate UK, the UK's innovations agency. ECA members are the University of Kent, Poole Hospital NHS Foundation Trust, Shearwater Systems and Graphnet Health.

It works in conjunction with Graphnet's market-leading *CareCentric* shared record software, and Graphnet is marketing the product.

Consortium members' and partners' views

"This project is all about delivering better care for patients", **Dr Page** commented. "It enables us to focus resources on those patients who need support as close as possible to their time and point of need.

"The novel visualization tools mean we can see the most clinically relevant information at a glance, releasing more time to care.

"By integrating wearables, monitoring and notification technology with secure communication to clinical systems, we can provide expert advice and support on a timely basis to the patient.

"Finally, the high level of direct engagement helps clinicians obtain a more holistic view of how epilepsy affects an individual, as well as a better understanding of the nature of their seizures and impact of treatment."

Dr Page went on to say that by bridging a care and communications divide, *myCareCentric Epilepsy* supported the design of new models of care for the patient.

"The ability to respond rapidly to changes in seizure frequency and potential medication side-effects means that patients may become seizure-free sooner and with fewer visits to the hospital or GP surgery."

"For example, the automatic notification of patients with epilepsy being admitted to the hospital, either with seizures or unrelated problems, has allowed our epilepsy care teams to proactively advise the admitting team. In a number of cases, this has significantly reduced the length of stay for those patients as well as provided an opportunity to improve their seizure control."

Patient Sean Hamilton explained that he wanted to sign up for *myCareCentric Epilepsy* as soon as he heard about it.

"The one key thing for me is about being able to have a safety net and a support system so I can actually regain my independence. What tends to happen now, particularly if I am out on my own, is that I end up back in an ambulance or in A&E. I hope to get better control of my seizures and ideally to get the life back that I used to have".

Dr Christos Efstratiou, head of the University of Kent research team, said this hope of helping solve real world problems was central to the research effort.

“Wearable technologies have massive potential to transform the way healthcare is delivered. Coupled with advanced activity tracking algorithms, we are able to now monitor patients on a day to day basis. This will allow clinicians to better assess the effectiveness of medications, and enhance personalised care”, he explained.

Dr Ian Denley, director of Graphnet and its associate company Shearwater Systems, commented: “We are really excited to be involved in a solution which so closely reflects the whole ambition behind the NHS Five Year Forward View and service transformation.

“A shared care record solution like *CareCentric* is the basic building block of information sharing. We are now moving into the really radical and exciting phase of developing solutions which build on this shared information and change the whole nature of care provision.

“In this case, we combine intense patient engagement with different ways of working among the community nursing staff and the hospital staff, and in a way which will ultimately help patients look after themselves.”

Denley added that this was the first in a whole series of apps providing new models of care for the treatment of long term conditions which Graphnet will be bringing to market.

The Epilepsy Care Alliance has utilised a number of Microsoft applications as part of its solution including Microsoft Band and Azure. **Suzy Foster**, Microsoft’s health and life sciences director, said: “This pioneering project has the potential to redefine the delivery of epilepsy care. It is so exciting to see how the latest developments in technology are being used to improve individuals’ treatment and quality of life.

“We are looking forward to the next phase, where our partners use their technology and market presence to roll out applications for other conditions and disease groups.”