



## New lifesaving surgery options for young people with epilepsy

*Wednesday 30 August 2017*

- New scan technique may allow more children with epilepsy to have lifesaving surgery
- Study, funded by Action Medical Research, was conducted under research partnership between UCL GOS - Institute of Child Health, Young Epilepsy and Great Ormond Street Hospital
- Surgery for young people with epilepsy can be highly effective for those who have uncontrolled seizures
- This scan technique is not currently available through the NHS

A new study, funded by Action Medical Research, has revealed that the combined scans of Electrical Source Imaging (ESI), Electroencephalography (EEG) and functional MRI (fMRI) – ESI/EEG-fMRI - could allow more children with epilepsy to have lifesaving surgery.

**Dr David Carmichael, Reader in Neuroimaging and Biophysics at UCL Great Ormond Street Institute of Child Health**, has been looking into improving imaging techniques which allow doctors to identify brain areas which cause seizures. Improved accuracy in locating the problem areas is hoped to lead to greater success in epilepsy surgery allowing more children to be considered for surgery. This study was conducted under the research partnership between Young Epilepsy, UCL GOS – Institute of Child Health and Great Ormond Street Hospital.

“Epilepsy surgery can be highly effective for children with the condition where medication does not control seizures,” said Dr Carmichael. “For surgery to work, the brain areas generating the seizures need to be found.”

Dr Carmichael and his team using a child-friendly protocol, scanning 53 children without sedation or anaesthetics, measuring EEG and fMRI at the same time. They first created an ESI map using EEG data to pinpoint where the epileptic activity was coming from. They then combined both the EEG with fMRI to create an EEG-fMRI map of the epileptic activity.

In doing so, this gave a much more accurate profile of the area causing seizures which is hoped will help surgeons to further improve outcome of epilepsy surgery. The ESI and EEG-fMRI can then be controlled.

The area causing seizures was accurately localised by combined ESI/EEG-fMRI (in 92%) and ESI (in 82%), which it is hoped will help surgeons and further improve outcome of epilepsy surgery. Most children being considered for surgery would benefit from ESI, which is a relatively low-cost test. Children without an abnormal brain on standard MRI may benefit from the combined test.

Dr Carmichael suggests the NHS, as well as private specialists, should consider this method as part of their long-term investment and care plans for epilepsy surgical candidates.

“Our research is expanding so we could be able to help more young people,” adds Dr Carmichael. “However, as the UK’s health system continues at looking into cost management, investing in a combined ESI/EEG-fMRI scan could save long term costs associated with having epilepsy.”

By analysing the results we’ve seen, the combined ESI/EEG-fMRI scan can offer a chance for children and young people with epilepsy, where standard MRI has failed.”

**Carol Long, CEO of Young Epilepsy, says:**

“This research is hugely significant. More young people could now be considered for surgery; a life-changing opportunity to spend their adulthoods with much reduced, or no seizures. Young Epilepsy’s research partnership, with Great Ormond Street Hospital and UCL GOS Institute of Child Health, works to deliver ground-breaking results like this to continually improve support, treatment and outcomes for children and young people with epilepsy.”

**-ENDS-**

**NOTES TO EDITORS:**

To access the research, click here:

<http://onlinelibrary.wiley.com/doi/10.1002/ana.25003/full>

**About Young Epilepsy:**

Young Epilepsy is the national charity working on behalf of children and young people with epilepsy. With 120 years of experience we are a leading provider of specialist health and education services. The charity offers support, information, and training for health, social care and education professionals and campaigns to improve access to, and quality of, health and education services.

Epilepsy is the most common serious neurological condition in childhood affecting 112,000 people aged 25 and under in the UK. On average one child at every primary school and five at every secondary school will have been diagnosed with epilepsy.

For more information on research at Young Epilepsy, visit [youngepilepsy.org.uk/research](http://youngepilepsy.org.uk/research).

If you need support or information, please contact our helpline on 01342 831342 or email [helpline@youngepilepsy.org.uk](mailto:helpline@youngepilepsy.org.uk). For further information on Young Epilepsy, please visit: [www.youngepilepsy.org.uk](http://www.youngepilepsy.org.uk)

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