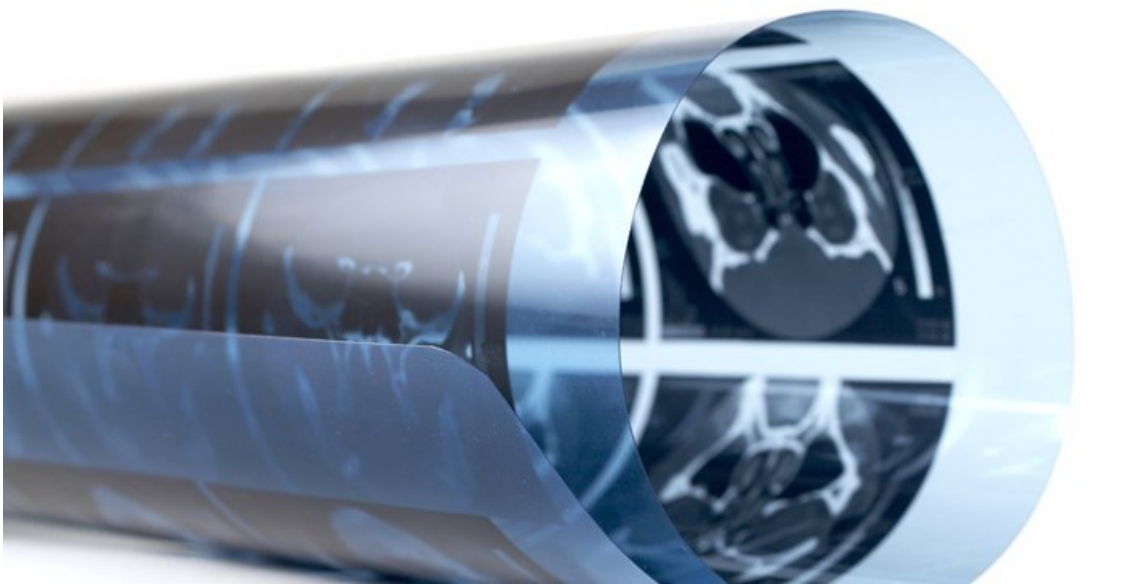
First-line treatment for epileptic seizures ineffective - new study

Epilepsy is the most common neurological disease in the world. But it is far more common in the developing countries of the global south, especially in Africa because of the region's higher rates of brain trauma and brain infections. The latter are the main causes of status epilepticus.



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A new paper by University of Cape Town (UCT) researchers and their international co-authors has explained why patients experiencing unrelenting epileptic seizures, or status epilepticus, stop responding to first-line medication benzodiazepine.

The research not only describes the mechanism underlying benzodiazepine resistance in patients but also illustrates how, in certain situations, the drug actually exacerbates seizures.

Epileptic seizures are caused by “electrical storms” or bursts of electrical activity in the brain. Most seizures stop within minutes. But status epilepticus is characterised by unrelenting seizures and is a serious condition that can cause brain damage. It also has a high mortality rate.

Until now, benzodiazepines have been the first-line therapeutic treatment for status epilepticus. But in many cases this drug is ineffective.

“As benzodiazepines works in less than 50% of cases, it means we really should think about other strategies to stop these seizures,” said corresponding author UCT’s Dr Joseph Raimondo.

Developing new therapies

The breakthrough discovery is expected to improve the management of this condition in clinical settings and point the way ahead in terms of new therapies. For example, the study showed that a different drug, phenobarbital, is very effective. Currently, however, the drug is hard to come by as it is not profitable for drug companies.

The research underpinning the paper was done in collaboration with Professor Jo Wilmshurst, head of paediatric neurology at the Red Cross War Memorial Children’s Hospital, who provided the clinical data. Former UCT master’s student and lead author, Richard Burman, split his time between the hospital’s emergency room and Raimondo’s laboratory.

“Part of the study was with these child patients who have these seizures that don’t stop by themselves,” said Raimondo.

The researchers found that 48% of the children with status epilepticus did not respond to treatment with the drug and, critically, that the duration of seizures before treatment was administered was an important predictor of non-responsiveness.

The next step is to work with clinicians to begin thinking about different clinical approaches and strategies for treating unrelenting epileptic seizures, concluded Raimondo.

Source: University of Cape Town