

Probing the mysterious second-wave of damage in head injury patients

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Why do some of the one million people who sustain head injuries annually in United States experience a mysterious second wave of brain damage days after the initial injury — just when they appear to be recovering? Limited clinical trials using an innovative new device to monitor brain chemistry on a second-by-second basis are underway to answer that life-and-death question, according to an article in the current issue of *Chemical & Engineering News* (C&EN), ACS' weekly newsmagazine. Brain injury is the leading cause of death and disability worldwide.

C&EN Senior Editor Celia Henry Arnaud describes a phenomenon called depolarization, in which brain activity decreases in patients following initial trauma. The condition involves a wave of chemical changes that spread from the site of injury and inactivate nerve cells. Since reactivation of these cells requires large amounts of [glucose](#), monitoring glucose levels in a patient's brain can help doctors tell whether or not a patient is taking a turn for the worse. The article points out that a promising new device could provide a faster and more useful way to monitor brain glucose than current methods, which are inefficient.

Now in development at Imperial College London, the new so-called "microfluidic method" measures glucose quickly and continuously — in fractions of a second instead of hourly. The device is currently being tested in patients who have suffered trauma, stroke, or aneurysm (a balloon-like enlargement of a brain artery). In the future, the device

could be used in patients with milder forms of brain injury and used in a way that is less invasive, the article notes.

More information: "Brain Glucose, Drop By Drop". This story is available at pubs.acs.org/cen/science/88/8843sci2.html

Provided by American Chemical Society

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