Improved rescue kits for people with diabetes, hypoglycemia

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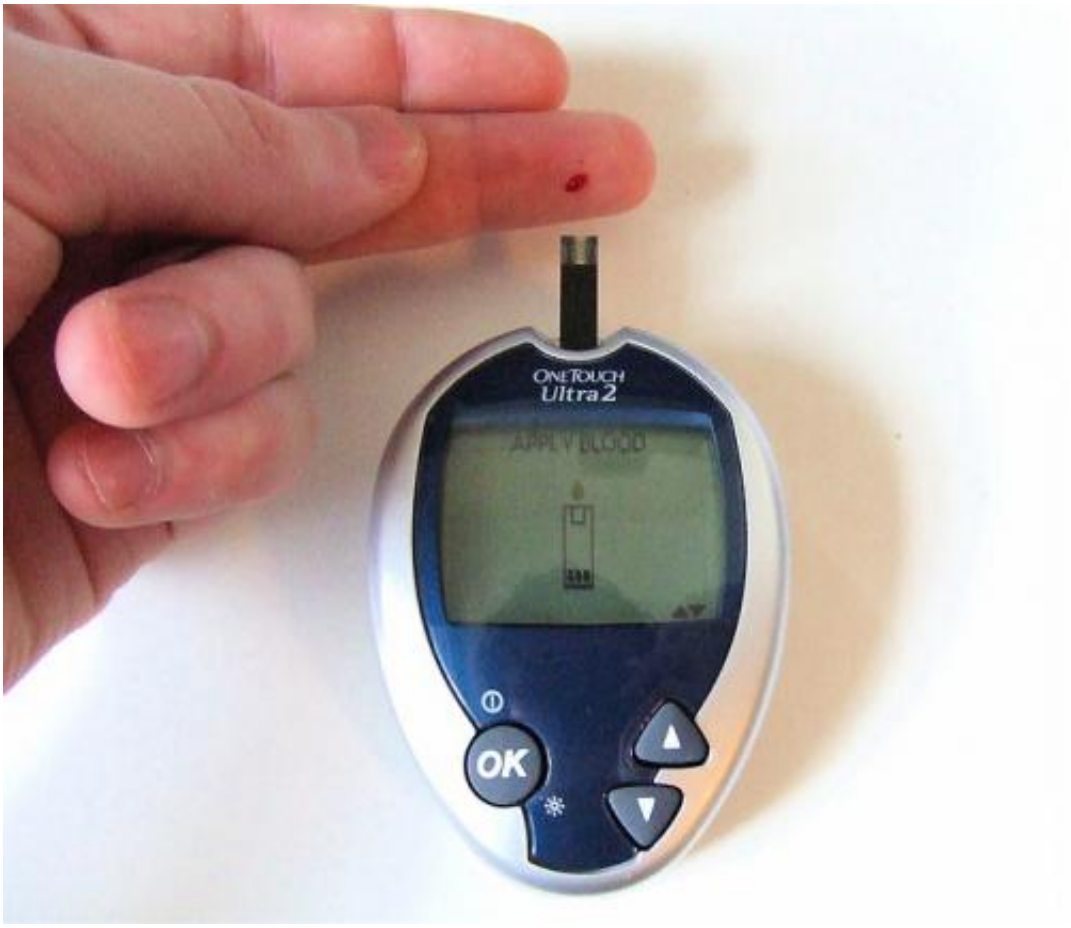

Blood glucose monitoring. Credit: Wikipedia

Being with someone who has diabetes and needs immediate care to avoid a coma can be a frightening situation. Even worse, current products and

injection kits to help in those emergencies can be complicated to use.

Now Purdue University researchers are working on a solution similar to common EpiPen devices that could help diabetic patients and others with hypoglycemia.

Elizabeth Topp, who led the research team, has personal experience with how the technology developed at Purdue could improve lives. Her younger brother was a principal in Delaware and had a young student volleyball player with diabetes who needed to have a nurse travel with her to games in case she needed an injection of glucagon, which is used to help raise sugar levels.

"Our technology will hopefully one day be able to help that student and millions of other people and their families impacted by hypoglycemia," said Topp, a professor of industrial and physical pharmacy. "We want an easier alternative to the current rescue kits that require someone to mix components and then figure out how to properly inject the glucagon."

The difficulty in dealing with the glucagon rescue kits also means most people choose to go to the hospital for treatment, when it could be possible to give a simple injection at home.

Topp and the other researchers faced a challenge when developing their technology: Glucagon is poorly soluble and unstable in solution. They solved this challenge by using peptide derivatives of glucagon, which have shown to be soluble and stable in solution.

The derivatives created at Purdue are quickly re-converted to glucagon after injection by enzymes in the body. This process creates an easier and quicker alternative to delivering glucagon to a person in need.

Other members of the research team include Markus Lill, a Purdue

associate professor of medicinal chemistry and molecular pharmacology; Shenbaga Moorthy Balakrishnan, a former Purdue research scientist; and Hamed Ghomi, one of Lill's former graduate students.

"It's incredible to think that four researchers from places all across the globe were able to come together for this potentially life-changing discovery," Topp said. "Purdue is a place that makes such collaboration possible."

Provided by Purdue University