

Heartrate Monitoring in Diabetic Children

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Low blood sugar levels

- "Your body needs fuel to survive and run properly," said Dr. Simon Fisher, an associate professor of medicine, cell biology and physiology at Washington University in St. Louis. "During hypoglycemia, the body is low on energy. When hypoglycemia is more severe, the brain [which runs on sugar] can get confused and stop functioning. If the blood sugar gets low enough, hypoglycemia can be fatal."
- TUESDAY, April 22, 2014 (HealthDay News) -- Low blood sugar levels -- known as hypoglycemia -- in people with diabetes may cause potentially dangerous changes in heart rate, according to a small new study.
- This study's findings may help explain why a large-scale study found that very tight control of blood sugar levels in people with type 2 diabetes led to higher-than-expected death rates. It may also help explain why some otherwise healthy people with type 1 diabetes die during their sleep -- sometimes called "dead-in-bed syndrome" -- without an apparent cause, researchers say.

Feedback from Parents

- As a Parent one of your biggest fears waking up in the middle of the night or first thing in the morning and either testing your child and finding them dangerously low or possibly dead.

Past Solution:

Wearing a continuous glucose meter

- Although wearing a continuous glucose meter can help identify hypoglycemia, the glucose sensor, inserted under the skin, typically has a delay.
- “This delay can compromise the accuracy of measuring low glucose values,” said the study’s principal investigator, Marleen Olde Bakkink, M.D., Ph.D., an endocrinology fellow at Radboud University Medical Center in Nijmegen, Netherlands.
- “People with impaired awareness of hypoglycemia may need to wear an additional monitor.”

Low Blood Sugar Affect Heartbeat

- Past research found that hypoglycemia speeds one's heart rate and alters heart rate variability, which is the normal beat-to-beat variation in heartbeats.
- Olde Bekkink and her colleagues tested the feasibility detecting hypoglycemia using a commercially available biosensor called the HealthPatch (from VitalConnect, San Jose, Calif.) that measures heart rate and a single-lead electrocardiogram, or ECG.
- "Timely detection of impending hypoglycemia is critical to avoid severe, potentially life-threatening hypoglycemia," Olde Bekkink said.
- "Our proof-of-principle study found that measuring heart rate variability using a wearable device in an outpatient setting seems promising for alerting to upcoming hypoglycemia."
- This study received funding from the Dutch Diabetes Research Fund in Amersfoort, Netherlands, and from Radboud University Medical Center's innovation fund.

Solution:

Wearable heart rate monitor

- A wearable medical patch measuring the beat-to-beat variation in heart rate is a promising device for the early detection of hypoglycemia, or low blood sugar, in type 1 diabetes.