

Stop Pump During Exercise to Avoid Glucose Drop

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KEYSTONE, COLO. — Stopping basal insulin during exercise sharply reduces the risk of hypoglycemia in children and adolescents with type 1 diabetes on insulin pump therapy, Dr. Rosanna Fiallo-Scharer reported at a conference on the management of diabetes in youth.

This is an important new observation from the Diabetes Research in Children Network Study Group (DirecNet), according to Dr. Fiallo-Scharer of the department of pediatrics at the University of Colorado, Denver.

Although exercise has long been one of the three cornerstones of type 1 diabetes management, recommendations for preventing exercise-related hypoglycemia are nonspecific, and some families are skittish about allowing their diabetic children to participate in organized sports or other strenuous activities.

For this reason, the multicenter DirecNet group conducted a randomized, crossover clinical trial involving 49 youths

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aged 8-17 years with type 1 diabetes that was managed with pump therapy. On two afternoons, subjects completed a 60-minute treadmill workout to a target heart rate of 140 beats per minute. The session was

broken into four 15-minute treadmill segments interspersed with 5-minute rest breaks, said DirecNet coinvestigator Dr. Fiallo-Scharer at the conference, which was sponsored by the University of Colorado and the Children's Diabetes Foundation at Denver.

When patients stopped their pump basal insulin during exercise, eight (16%) developed hypoglycemia as defined by a blood glucose level of 70 mg/dL or less in frequent sampling during the session. In contrast, 22 patients (45%) became hypoglycemic when their basal insulin continued during exercise.

Blood glucose levels dropped by a mean 28% from a baseline of about 160 mg/dL when basal insulin was stopped, and by 41% when it continued during exercise.

There was a price—albeit an acceptable one—for halting basal insulin to achieve a marked reduction in risk of exercise-induced hypoglycemia: Blood glucose exceeded 200 mg/dL in six patients (12%) when basal insulin was stopped during exercise; hyperglycemia occurred in one patient (2%) when basal insulin was continued during exercise, the physician noted in discussing these as-yet-unpublished results from DirecNet.

This study was a follow-up to a previous DirecNet study in which investigators demonstrated that when food intake and insulin regimens weren't adjusted, an hour

of moderate aerobic exercise on a treadmill in the afternoon boosted the rate of nocturnal hypoglycemia that night to 48%. In contrast, the nocturnal hypoglycemia rate was 28% during the night of a nonexercise day.

In the five-center study, bedtime self-monitored blood glucose measurement proved to be the most important measure of the day. The study involved 50 patients, aged 11-17 years, with type 1 diabetes. Insulin pump therapy was used by 27 of

them; the remainder used multiple daily injections.

Going to bed with a blood glucose level greater than 130 mg/dL after a day without afternoon exercise protected patients against nocturnal hypoglycemia. The incidence under such circumstances was a mere 7%.

In contrast, the nocturnal hypoglycemia rate was 36% in patients with a bedtime blood glucose level greater than 130 mg/dL after afternoon exercise. In exer-

cisers with a bedtime blood glucose of 130 mg/dL or less, the nocturnal hypoglycemia rate climbed to 57% (J. Pediatr. 2005; 147:528-34).

Patients who don't stop their pump basal insulin during afternoon exercise need to modify their treatment regimen that night, either by reducing the basal insulin dose by 10%-20% or by eating a bigger-than-normal bedtime snack to lower their nocturnal hypoglycemia risk, she said. ■



The advertisement features a collage of four photographs: a young man smiling, an older male doctor with a stethoscope, a female doctor in a white coat holding a clipboard, and a close-up of a woman's face with a headset. In the center of the collage is a Gemini laser device. Below the photos, the word "Us" is written in large blue letters, and "Them" is written in smaller blue letters to the right. A small wooden crate icon is positioned above the word "Them".

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