

# Calculating Carbs For Kids

**T**here's something to be said for brainstorming sessions. When a group of co-workers sits around in a meeting and thinks aloud, sometimes their musings end up benefiting thousands of people.

In the case of Nicole Glaser, MD, and her team at the University of California, Davis Medical School, an afternoon "team meeting" may lead to an easier way for children and teenagers to figure out insulin-dosing.

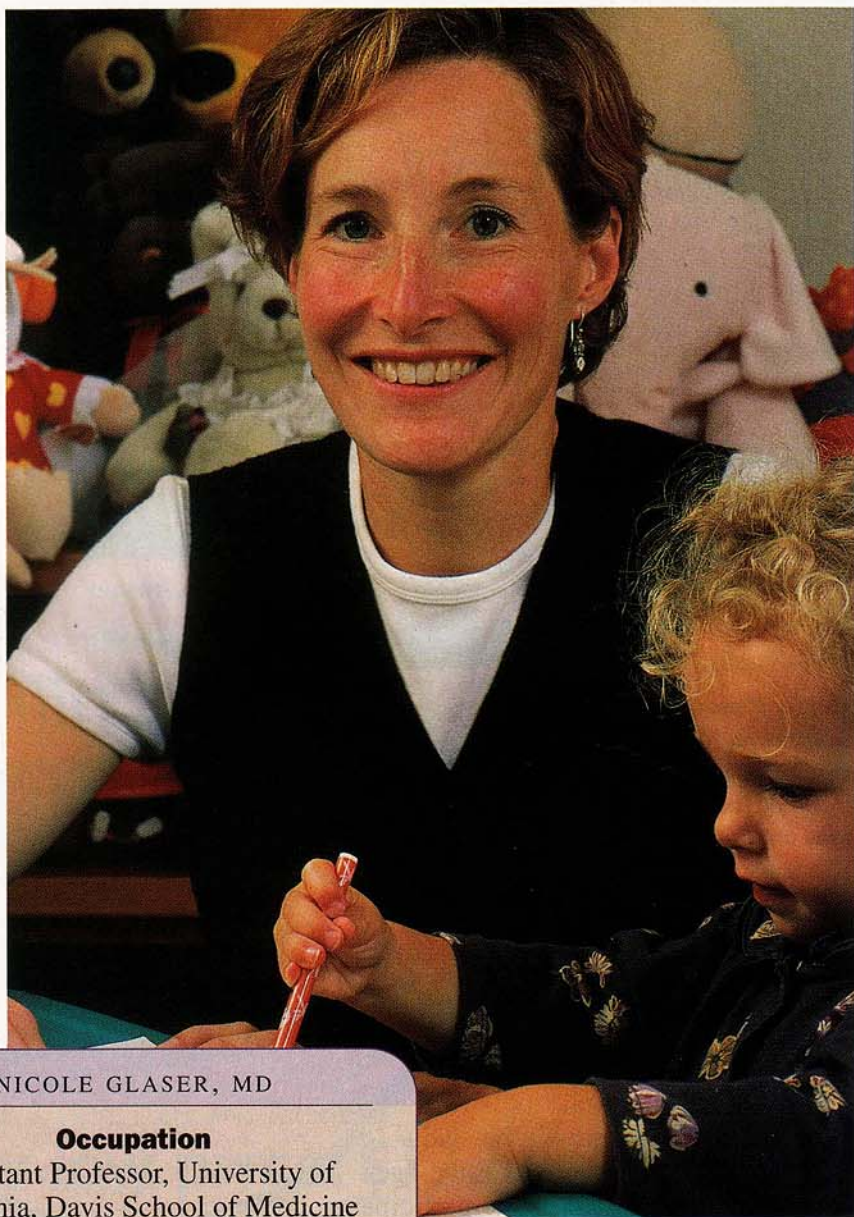
"We were sitting around talking about kids with multiple-injection regimens, and one of us said, 'Gee, it's too bad it's such a hassle for them to count out carbs and figure doses, and there's nothing available to do that for them,'" says Glaser. That's when Glaser wondered, Why not? The team then proceeded to create such a handy tool themselves.

The result is a device that can estimate insulin doses with a turn of a wheel. It's a fairly simple design, says Glaser. "There are two wheels, one on top of the other, and there's a clear window in one of them. There are numbers around the edges of one wheel indicating different servings of carbohydrate by gram. You turn the wheel so the window lines up with the number of grams in the meal, then read down a column of blood glucose values, and there's a corresponding dose of insulin."

Glaser has designed about 15 different versions of the wheel to suit different insulin requirements—younger children generally require less insulin than older ones—and a patent is pending on the device.

But does it work? Will children and teenagers be able to understand how to use it? And will their diabetes self-care improve when they use it?

These are questions Glaser and her team are trying to answer. Using funds from an American Diabetes Association



PHOTOGRAPHS BY MARC LONGWOOD

NICOLE GLASER, MD

**Occupation**

Assistant Professor, University of California, Davis School of Medicine

**Professional Focus**

Pediatric endocrinology

**Outside Interests**

Travel, outdoor activities

**Research Funding**

Clinical Research Award

Clinical Research Award, they have designed a study to determine how using the wheel affects diabetes care.

"We're looking at several things, including HbA1c measurements, frequency of hypoglycemia, and quality of life," says Glaser. "We also have a 'diabetes

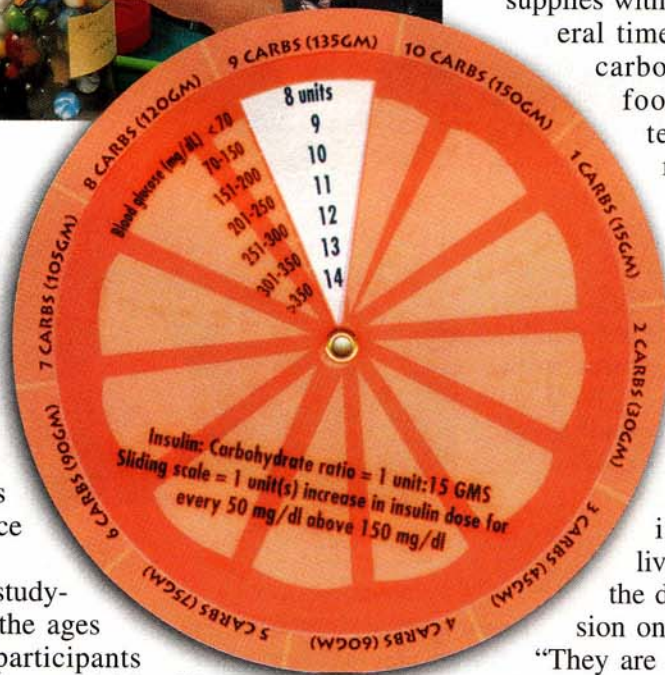


**Nicole Glaser, MD, here with daughters, Maya (left), and Eliana, has designed 15 versions of the wheel at right to help children and teens calculate their insulin doses easier.**

daily hassle scale' that measures how much of an intrusion diabetes care is on someone's life, and we're hoping the device helps in that area as well."

Glaser and her team will be studying about 100 people between the ages of 10 and 18 for a year. The participants will be divided into two groups, one which will use the wheel from the start of the study and one which will use conventional carb calculations for the first six months. After six months the second group will use the wheel, too.

Glaser and her team will compare the results from the groups against each other for the first six months. Then they will compare the second group's results from the first six months with their results from the second six months to see if adding the wheel to the second



group's regimen improved their diabetes self-care and quality of life.

### Growing Pains

Glaser, a pediatric endocrinologist, has a soft spot for teenagers. She points out that they have a lot on their minds even when they don't have diabetes—for example, school, friends, boy-girl relationships, and peer pressure. When diabetes is in the picture, it's one more thing for young people to contend with. That can make kids with diabetes become more responsible at an earlier age than their peers, she says.

"It's unusual for kids who don't have diabetes to take on as much responsibility as kids with diabetes do," she says. "The average adolescent has to remember to do homework and bring lunch to school, but the kids with diabetes have to remember to keep all kinds of

supplies with them, check blood sugars several times a day, and know about the carbohydrate content of different foods. Even when driving, the teenager with diabetes has to remember to check blood glucose and keep glucose in the car, when the average kid just has to make sure there's gas in the tank. The kids with diabetes become more responsible, because they have to be."

Like their adult counterparts, adolescents with diabetes prefer to minimize the impact of diabetes on their lives. "Part of it is that they want the diabetes to be as little an intrusion on life as possible," Glaser says. "They are perfectly capable of doing the carb calculations, but it takes some time, especially at lunch, in a noisy lunchroom, when there's only a limited time to stand on line, get lunch, figure out carbs, and eat.

"And, like adults, they get burned out doing calculations, having to do it every time they eat, day in and day out," she adds. "We'd like to help them, and provide something that makes it faster and easier for them."

—Terri D'Arrigo