HEALTHIER

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A program to prevent Type 2 diabetes in middle-schoolers has relied on SIUC undergraduates for its success and expansion.

by K. C. Jaehnig and Marilyn Davis

LIVES FOR KIDS

He was—no way around it—large. Yet in just a few months, the boy, a Harrisburg middle-schooler, lost about 10 percent of his body fat and could wear clothes four sizes smaller.

To Sharon Peterson, creator of the innovative program that helped that boy transform himself, the pounds he'd shed were a side benefit, but not the main point.

"We're focusing on health outcomes, not body weight," says Peterson, a registered dietitian, community nutritionist, and assistant professor of food and nutrition.

"While we do work with self-esteem and body image, I get my feathers ruffled when this program is perceived as one that rounds up all the kids who are overweight—that's not what we're about. We're trying to help kids at risk for developing Type 2 diabetes—the kind that used to be referred to as 'adult onset diabetes'—build the kind of healthier lifestyle that will reduce those risks. Overweight is a risk factor, but you can develop Type 2 diabetes without being fat."

Before she came to SIUC in 2006, Peterson's years of private practice in the region had put faces—and bodies—to the dry statistics about rising rates of obesity and diabetes in kids. She knew there was a pressing need to address the issue. Experts disagree on the scope of the problem, but one thing is clear, she says: "As recently as 15 years ago, no one considered that children could develop Type 2 diabetes." Now some are calling it an epidemic.

Peterson designed her program, R.U.A. Healthy Kid?, to buck those trends. She launched it with some startup funds from SIUC and the Illinois Soybean Association. The idea, she says, "had been in my brain for about 10 years—in private practice I'd specialized in children's nutrition, among other things," and it was slated to be one of her top priorities as a faculty member.

You can't change some risk factors for Type 2 diabetes. If someone in your family has diabetes, your odds increase. Type 2 incidence is higher among African, Hispanic, and Native Americans, too, although that may be due to differences in health care access or quality.

Still, most risk factors, such as physical inactivity, a high proportion of body fat, and high blood pressure, respond to changes in behavior. And because those risk factors intertwine, changes in one often affect the others.

Based on the data, her professional experience, extensive reading on behavior and motivation, and a massive search through published material about childhood obesity, Peterson decided to tackle four key areas where changes could help

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kids cut their diabetes risk. In addition to feeling better about themselves and their bodies, she wanted them to eat meals at home, make good snack choices, and replace "screen time" (computers, TV watching, games, texting) with some kind of physical activity.

To give them the information and skills they'd need to make those changes, she'd mix training sessions with weekly phone calls and e-mails and a newsletter. And to see if it worked, she'd collect data before, during, and after the six months the program would run.

"We are one of the first research teams in the country to intervene with this target audience," Peterson says. "No one that we're aware of is actually trying to intervene and measure changes in at-risk kids through a community-based program."

Working with Harrisburg Middle School, Peterson, the school's nurse, and master's student Long Pham started early in 2007 looking for kids they deemed likely to develop Type 2 diabetes based on the presence of three or more risk factors. They gathered information from parent consent forms, physical measurements such as blood pressure checks, and interviews with the children themselves.

Out of 246 youngsters, they identified 54 as being at risk. "Fifty-three of them had a high body mass index (high body fat for their weight)—that's an indicator of how strong that particular risk factor is," Peterson notes.

In summer 2007, undergraduate Toya Wilson and Peterson developed the program details by starting with a needs assessment. They interviewed 10 willing parents about "what kind of program they would want—what kind of program they would bring their kid to," Peterson says. The idea was to determine families' barriers to participation and what they would perceive as beneficial.

Wilson, who has diabetes herself, did the work as her research project for the federal McNair Scholars Program, which prepares first-generation-college/low-income and underrepresented minority undergraduates to go on to doctoral study. She and Peterson did a lot of brainstorming as they identified common themes in parents' responses.

Above: Sharon Peterson (left) and Toya Wilson worked together to develop the Type 2 diabetes prevention program. Right: Peterson holds regular meetings with the students who assist in running and assessing the project. Far right: Children at Harrisburg take part in one of the healthy-eating education activities. ***(Photo courtesy Sharon Peterson.)***

"Toya was vital…in determining what key components needed to be included to make [the program] interesting and relevant," Peterson says.

When it came to healthy eating, for example, parents indicated lack of time, lack of money, and their children's preference for junk food as obstacles. Another obstacle was that work schedules interfered with monitoring children's food intake, half of the parents said. "With that information we sought out recipes that were tasty, low-cost, healthy, and easy to prepare," Peterson says.

Only 18 of the 54 youngsters signed up for the pilot program, but because Peterson and her team were reinventing and tweaking as they went along, "that was plenty," she says, laughing. "And we only lost one kid (as a drop-out). I feel good about that because this is a tough age to keep interested." The program actu-

ally ended up with 24 participants, as kids from some nearby communities came to get in on the act.

Several more SIUC undergraduates were involved by the time the six-month program began in October 2007. With their help, the program ran at the school for four hours on selected Saturday afternoons.

The youngsters rotated between different stations, where they got to exercise with fun, unusual equipment like a monster basketball and an inflatable twister-bouncer, learned about portion size and food cost (that station was developed from scratch by an undergraduate), did

hands-on food preparation where they put together and taste-tested healthy snacks, and more. At each session the researchers rechecked physical measurements and had the kids fill out questionnaires to track behavioral changes.

Parents had cited a lack of fitness programs for children and the cost of those available as obstacles to healthier behavior. So Peterson persuaded fitness centers in Harrisburg to offer programs for kids and paid the first six months' memberships for those children from grant funds. (After seeing their kids' enthusiasm—and the results—some parents began saving for memberships, and one center is sponsoring three children for free.)

While the boy who shrank four sizes was probably the program's most notable success, all the kids made what Peterson called "tremendous progress," although you might not know that if you looked only at their weight. "Over the six months, overall body weight actually increased significantly," she says. "But these are adolescents, so they're still growing. In addition, muscle weighs more than fat.

"That's where the body analysis comes in. We found that their percent of body fat as a group significantly decreased. Their pounds of body fat as a group also significantly decreased, and their pounds of muscle significantly increased. It's exactly what we would have hoped for as far as outcomes."

It worked so well that Peterson has received $261,000 from the Illinois Soybean Association to expand the program to kids in other Southern Illinois communities, such as Highland and Vienna. The diversity of settings will allow the team to test the program's effectiveness with kids of different racial/ethnic backgrounds, rich kids, poor kids, high schoolers, and pre-teens. They also hope to pinpoint which components of the program get the best results. They have already identified 39 fifth- through eighth-graders in Vienna whose parents will be invited to enroll their children in a program there.

"The ultimate goal is to get something tangible that we can package—a website or a curriculum or a board game or all of the above—so that we can share this throughout the state or even perhaps throughout the country with people who are concerned about the rise in Type 2 diabetes in children and want to do something about it," Peterson says.

She also stresses sustainability, though. "We're trying to build relationships and maintain contact for the long term," she says. "Our long-term vision is to develop 'hubs' throughout the region to provide ongoing intervention programs to which physicians can refer children at risk. We can envision graduates of the program returning to serve as mentors and role models."

Over the past two years, at least 20 undergraduates have volunteered time to work with Peterson—collecting and analyzing data, supervising and teaching the children, taking on short-term projects, and contributing ideas. "At any one time, there are five or six key players," Peterson says. She also now has six graduate assistants assigned to the project.

And Emily Whitney, a doctoral student in health education, is working in Harrisburg on ways to sustain and expand the program there to reach all children through the school day: in physical education classes, at lunchtime, through the curriculum, and so forth. It will form the basis of her dissertation.

She heard about the program from an undergraduate—Toya Wilson.

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