# Advice for Life

MARY FREE BED

## Early treatment, team approach help manage spinal condition

By Tricia Boot

Scoliosis has never defined Courtney Trudell. The spinal disorder did, however, put her on a career path that eventually led to Mary Free Bed Rehabilitation Hospital's Orthotics and Prosthetics (O&P) program.

As a certified orthotist at the Grand Rapids hospital, Trudell helps a broad spectrum of patients, providing everything from knee and elbow braces, to helmets and foot-drop braces. "Orthotics is bracing for the joints of the body, anything from the skull to the feet."

Trudell

Trudell also has the opportunity to routinely work with young patients who have scoliosis, a condition she understands both as a patient and as a care provider. Diagnosed as a teen, Trudell had spinal surgery when she was 13 years old and again at 16 and 19. She learned about the field of orthotics by talking to the orthotist who helped to fit her with a post-surgical "turtle shell" brace.

"I knew I wanted to help people with scoliosis since it was such a huge part of my life," Trudell said.

The National Scoliosis Foundation estimates two to three percent of the country's population — or roughly 7 million people — have some degree of scoliosis, or sideways curvature of the spine. There's no known cause for the disorder, and data suggests it's more common for females than males.

Patrick Logan, vice president of operations and development for O&P said his team is quite familiar with scoliosis.

"Our clinicians are skilled in evaluating and fitting patients for all types of scoliosis braces and jackets," Logan said. "We see young people with scoliosis on a daily basis, both here at Mary Free Bed and at clinics in the area."

Scoliosis typically is diagnosed in childhood. Most cases are considered mild, requiring little to no treatment. Bracing, or even surgery, is necessary to manage curves that are significant enough to cause complications, such as chronic back pain or pressure on the internal organs.

As students receive back-to-school "well-child" checks, O&P sees an uptick in children and teens seeking scoliosis-specific orthotics. Trudell said it's important for these young patients to receive early treatment and to know they're not alone.

"It sounds very scary to have a 'crooked' spine," Trudell said. "As long as you have a good health team behind you, it's not that bad."

A patient's team — which may include a primary care physician, a certified orthotist and other specialists — should coordinate to determine the appropriate treatment, based on the degree of the person's spinal curve and other factors. Professionals can measure the degree of the S- or C-curve through a combination of physical exams and X-rays.

A 10- to 15-degree curve may require little more than regular physician checkups. Bracing may be necessary to manage a 20- to 40-degree curve. A 45-degree or higher curve typically calls for surgical intervention.

"The course of treatment depends on the person's age, spinal maturity and what the spine wants to do," Trudell said. "Scoliosis is very unpredictable."

For some young patients whose spines are still growing, orthotic bracing will offer the "best chance" at halting, or at least managing, a curve's advancement.

Day (Boston) braces, or the more aggressive night (Providence) braces, are fitted based on an individual's measurements and health needs. Teens may gravitate to the night braces, particularly if they don't want to wear a brace to school, Trudell said.

"It's important to remember the brace isn't there to ruin your life. It's there to help," she said.

Blaine Rison, 14, recently began using a customized night brace to address a 41-degree curve in his lower spine and a 26-degree curve in his upper spine.

The freshman at Thornapple Kellogg High School said he was surprised at how quickly he's become accustomed to the device, which Trudell has adjusted based on his feedback.

"At first, wearing the brace wasn't the greatest," Rison said during a recent appointment at Mary Free Bed. "That first week, I eased into it and adapted to it. After that, it got a lot more comfortable. Wearing it now is a piece of cake."

**Certified orthotist Courtney Trudell adjusts a scoliosis brace for patient Blaine Rison.** (Submitted photo)

AT A GLANCE

### LEARN MORE

**Curvy Girls:** An online forum and resource targeted to pre-teen and teenage girls with information about how to shop for clothes that can accommodate a brace, coping strategies, peer-to-peer support and more. Web: **curvygirlsscoliosis.com**

**Scoliosis Research Society:** Patient stories, frequently asked questions and other educational materials from the international organization focused on the research and treatment of scoliosis. Web: srs.org

**College of Human Medicine researcher Andre Bachmann, left, works with graduate student Lisette Yco in his laboratory at the MSU College of Human Medicine.** (Submitted photo)

MSU COLLEGE OF HUMAN MEDICINE

## New use for medications fights childhood cancer

A combination of two medicines long used for treating other illnesses can stop the growth of a deadly childhood cancer, according to a recent study by a Michigan State University College of Human Medicine researcher who has a history of finding new uses for old drugs.

Laboratory tests on cell cultures showed that the drugs DFMO and sulfasalazine effectively impeded the growth of neuroblastoma, which causes about 15 percent of all childhood cancer deaths. For years DFMO, or difluoromethylornithine, has been used for treating African sleeping sickness, and sulfasalazine for bowel disorders and rheumatoid arthritis.

"It's such a big advantage when you find an existing, FDA-approved drug that acts on neuroblastoma, because it already has been shown to be safe," said André Bachmann, Ph.D., the study's senior author. "Re-orienting old drugs for new indications can save lives, time and money."

Separately, each drug impeded neuroblastoma in laboratory tests, but, when administered together, the two drugs acted synergistically and were more than twice as effective in blocking the cancer's growth, according to their recent study published in the medical journal BMC Cancer.

"Instead of one plus one equals two, it equals four," said Bachmann, a professor of pediatrics and associate chair for research in the College of Human Medicine's Department of Pediatrics and Human Development. "That's why the synergistic effect is so important. We can use the two drugs in lower doses," thus achieving the same result while minimizing side effects.

Each year, about 700 children in this country, most of them age 2 and younger, are diagnosed with neuroblastoma, a highly aggressive tumor, which forms on nerve cells in several areas of the body. With current treatments, neuroblastoma usually goes into remission, but returns in about half of those cases. Only about 10 percent of children with recurring neuroblastoma survive.

Bachmann's earlier research showed that DFMO targets a protein called ornithine decarboxylase (ODC), which, when elevated in the cancer, promotes the growth of neuroblastoma cells. He pioneered the idea of re-purposing DFMO for neuroblastoma which translated from bench to clinic in 8 years and led to phase I and phase II clinical studies.

"In this most recent study, we were interested in finding a second drug that would work even better in combination with DFMO," Bachmann said.

Through additional research, he identified a second protein in the body called sepiapterin reductase (SPR), which interacts with ODC and also promotes the growth of neuroblastoma cells. SPR previously had been identified as a factor in neurological disorders, such as Parkinson's disease, but never before in cancer.

"That's when we said, 'Since SPR and ODC jointly contribute to causing neuroblastoma tumor growth, why don't we hunt for a second drug that targets SPR,'" Bachmann recalled.

He began the search and learned that other recent studies had shown that the drug sulfasalazine blocked SPR, although it never had been tested against cancer.

Since the 1950s, sulfasalazine had been used in treating inflammatory bowel diseases, Crohn's disease, and rheumatoid arthritis, but the mode of action had remained unknown.

"That's what's very exciting about this drug," Bachmann said. "I'm very confident about this, because it's a safe drug that has been taken by humans for many years with little side effects."

On his latest study, Bachmann collaborated with other researchers, including Lisette Yco, a graduate student in his Grand Rapids laboratory, and with Dirk Geerts, a cancer researcher in the Netherlands, who recently accompanied Dutch King Willem-Alexander and Queen Maxima on a visit to Grand Rapids.

Now that DFMO and sulfasalazine have been shown to preferably stop the neuroblastoma growth in the laboratory, Bachmann anticipates this safe drug combination will soon be evaluated in clinical trials.

Partnerships between research scientists and physicians are important and prove the value of combining basic research with clinical practice, said B. Keith English, M.D, chair of the Department of Pediatrics and Human Development in the College of Human Medicine.

"Research is a team sport," he said. "That's why we have to invest in basic research, as well as in clinical research."

As for Bachmann, "I think it's safe to say he's been a pioneer in finding new uses for old drugs," English said.

Bachmann recalled the reaction he got at a cancer conference in 2003 when he first proposed repurposing the old drug DFMO to fight neuroblastoma. "I don't want to say I got booed off the stage," he said. "But I could not help noticing some pitiful smiles in the audience. Today everybody's on that wagon, trying to re-discover old drugs like DFMO. It's somewhat gratifying, I have to admit."

SPECTRUM HEALTH

## Program helps kids seeing multiple specialists

Spectrum Health Helen DeVos Children's Hospital recently announced the creation of the Peter and Joan Secchia CarePartners Program, a program designed to help patients and their families better navigate multiple appointments with more than one specialist.

The program is made possible by the generosity of Peter and Joan Secchia.

"This level of care coordination is something we have wanted to offer at Helen DeVos Children's Hospital for quite some time," said Dr. Bob Connors, president of Helen DeVos Children's Hospital. "Peter and Joan have made this dream a reality, and their vision and generosity will make a difference for so many patients and families for years to come."

The program aims to improve the health and alleviate suffering of medically complex children and their families by transforming the care model to provide a time compressed, coordinated plan of care across multiple specialties and providers. A CarePartners program coordinator will screen a child's needs and coordinate the appointments for the family. The appointments will be scheduled in a compressed time frame so families can see several specialists in an efficient manner, reducing travel time and missed days at school or work.

"Because of a similar situation with our granddaughter, we realize how difficult it can be for families to face a complex health situation with a young child," said Peter Secchia. "We had to line up several appointments within a day or two for our daughter and granddaughter. Joan and I understand the need for a program like this, and wanted to make sure all families coming to Helen DeVos Children's Hospital have this support while going through such a difficult time."

Joan Secchia echoes his support of the program and is excited to see it started. "We wanted to ensure the Helen DeVos Children's Hospital experience would provide special care to other families during stressful times," she said.

Dr. Bill Bush, medical director of the program, recently hired Michelle Lancaster, RN, as its first coordinator. The Peter and Joan Secchia CarePartners Program soon will be located in the Helen DeVos Children's Hospital Outpatient facility, 35 Michigan St.