

MEDICAL MARVELS

5 AMAZING STORIES THAT SHOW HOW COASTAL VIRGINIA'S DOCTORS ARE MAKING BREAKTHROUGHS AND GARNERING NATIONAL ATTENTION

By Kristen De Deyn Kirk

A

few decades ago, not many people would have thought of Coastal Virginia as a leader in medical research and advancements. But now, thanks to the hard work of local physicians and other experts, our community not only provides state-of-the-art care for southeast Virginians, it draws people from across the country who are seeking the newest testing, procedures and treatments. Here are just a few of the reasons why we're earning accolades:



Linda Lilley

STANDING UP ONCE AGAIN

PHOTO BY JIM PILE

Virginia Beach resident Linda Lilley will celebrate her 61st birthday in November. And if all goes well, she'll also celebrate 12 months without fainting.

Up until last November, Linda fainted often—for 26 years. She even went through phases when she'd faint up to six times a day. Plus, she suffered fatigue, diarrhea, heat intolerance, migraines, nausea and heart problems.

"Doctors told me I was doing too much," says Linda, who was teaching nursing at Old Dominion University and working on her doctorate's degree when her symptoms started. "At other times they'd only say 'something is going on; it's rare and chronic.' When things got really bad, they said to quit work and get my affairs in order."

Not one to give up, Linda sought help from the National Institutes of Health, the federal agency she knew was tied to research studies throughout the country. She followed up on their leads and other promising-sounding treatments at well-known programs at Johns Hopkins Hospital and Vanderbilt University.

"I found some help, but never enough," Linda says. "At one point I was told to take eight to 12 Sudafeds a day to keep my blood pressure up so that I wouldn't faint. Another doctor said to stop doing that because it would make problems with my heart and nervous system worse."

She was also given a diagnosis of Postural Orthostatic Tachycardia Syndrome (POTS), where the nervous system doesn't respond appropriately. For a while she found some relief from treatment, but not for long.

In 2010, Linda had no choice but to retire.

"I was couch-bound four out of seven days every week," she says.

Hope for relief from her migraines and

more came when she met Dr. Amelito Malapira from Virginia Beach in 2012. He mentioned Dr. Kamal Chemali, a physician who was soon to arrive in Norfolk and formalize the Sentara Neuromuscular and Autonomic Center, a fully equipped lab that is one of seven in the country. It is the only one in the mid Atlantic region.

Center Coordinator Kevin McNeeley led Linda through a battery of tests about a year ago.

"I try to get people to laugh," says Kevin. "It can be over two hours of tests. I like to say 'my jokes are the most painful part.' I also emphasize, 'when we're done we will find out all of this is in your head, but not your imagination.'"

Linda understood what Kevin meant: A few doctors had dismissed her and her symptoms. Kevin and Dr. Chemali, however, listened to her and presented her with a plan—infusions of immunoglobins, a protein found in blood.

"It's not a cure," says Linda, "but I have more energy than I've had in years."

This summer, the Center is introducing another rarely available diagnostic tool called Thermoregulatory Sweat Testing. Patients wear a bathing suit and are covered with a paprika-colored powder. After entering a sauna-like chamber, they see the powder turn purple everywhere that their sweat glands are functioning properly. Those areas that remain paprika-colored signify a concern.

Earlier in his career, Kevin used the test to help a 15-year-old wrestler discover he was diabetic.

With 23 years experience in the field, he knows how much the battery of tests is needed.

"We've had patients come from all over the country, California, Florida," he says, "even Canada."

Dr. Aaron Vinik



THE NERVE OF HIM

PHOTO BY JIM PILE

The joy in Dr. Aaron Vinik's voice is unmistakable as he says six deceptively simple words: "The dogma goes by the wayside." As director of research at Eastern Virginia Medical School's (EVMS) Strelitz Diabetes Research Center, Dr. Vinik could be talking about any of the studies he's conducted during his long career.

In this case, he's referring to his ongoing research of neuropathy.

Many diabetics suffer from the damaged-nerves condition, and most of them have been led to believe that the damage started in their hands and feet.

"They'd call it a 'glove and stocking abnormality,'" says Dr. Vinik. "We've learned that's not the case; we find it originating in the lower back or forearm."

Dr. Vinik's research starts with a funky-looking cap that has sensors linked to a Contact Heat Evoked Potential Stimulation (CHEPS) computer. Patients don the cap, and researchers activate the patients' nerves with mild heat. They track which

part of the patients' brain reacts and processes the pain.

Thanks to Dr. Vinik's findings, patients might avoid a skin biopsy previously used to identify nerve damage, and damage could be found earlier.

Someday, maybe, further research could lead to diabetics completely avoiding painful nerve damage—and the amputations that sometimes follow.

Those without diabetes could benefit, too.

"We're looking at what happens to the brain with processing pain," Dr. Vinik explains. "We're not good at managing pain, and this gives us insight that could help. We may have our finger on the pulse of a discovery."

He reports differences in how races and sexes process, conduct and perceive pain.

He sees females in general having a higher tolerance for pain. African-Americans he's studied have milder nerve damage, but the effect of the damage leads to a greater number of amputations.

"We ask 'are the rates of conduction different?,' and yes, they are," he notes.

In their fourth year of research, Dr. Vinik's team is taking a new step and applying agents topically to skin to see how each blocks pain's pathways.

"We're thinking about applications," he says. "The first year or two of research we were finding our way. Now we're finding what we can do with the information. We haven't finished our research with CHEPS and are excited to continue."

THE RIGHT DOCTOR AT THE RIGHT TIME

As a mom whose twins faced a rare, life-threatening condition in the womb, Crystal Springer, 27, certainly has scary memories of her second pregnancy, yet she mostly remembers being treated like royalty.

"I had a routine ultrasound at 22 weeks, and I could tell by the technician's face that something wasn't right," says Crystal, who was glad her husband, Nicholas, a sailor on the U.S.S. Eisenhower, was with her. "I found out the babies had Twin Twin Transfusion Syndrome (TTTS). They asked us to immediately go to EVMS (Eastern Virginia Medical School). We arrived around 5:45 p.m. on a Thursday, and everyone was bending over backwards to make sure I was comfortable and understood what was going on."

Crystal recalls Dr. Jena Miller, assistant professor and director of the EVMS Sentara Fetal Care Center, calmly explaining TTTS: Baby Arianna (nicknamed Anna) was receiving most of the blood and nutrient supply from the babies' shared placenta, and Baby Ariella (Ella) not enough.

"TTTS is a ruthless condition that affects about 15 percent of twins who share a single placenta," notes Dr. Miller. "It is the most common cause of pregnancy loss in this type of twins before viability."

"We had to do something quickly," Crystal says. "We could have lost both babies, or Anna could have had heart damage from an overload of blood and Ella brain damage."



PHOTO BY JIM FILE

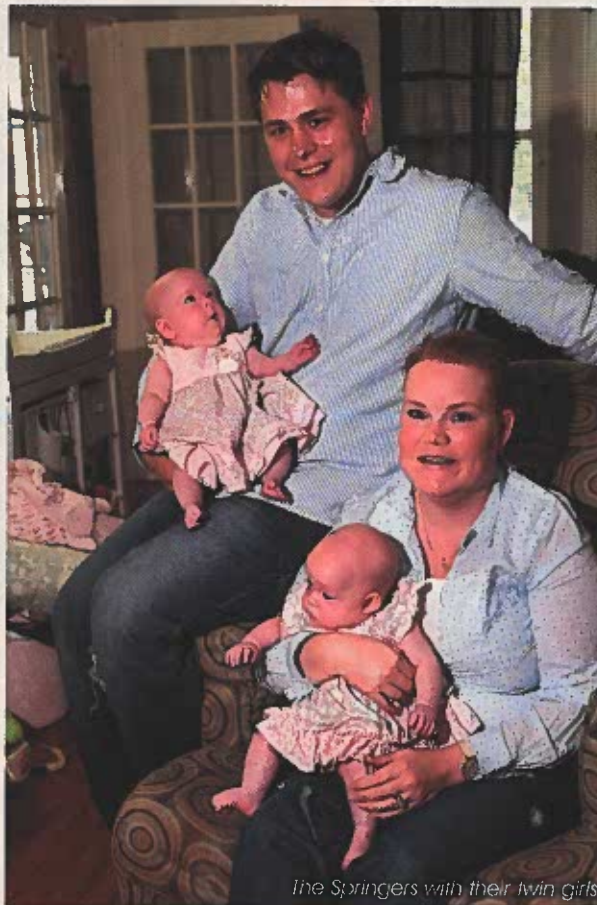


PHOTO BY JIM FILE

The Springers with their twin girls

Dr. Miller performed an in-utero laser surgery four days later on Dec. 9, 2013, making it the first time the surgery was completed at Sentara Norfolk General Hospital and the first time in Virginia.

Crystal was awake, having only received an epidural. Dr. Miller made a small incision near Crystal's belly button and guided a camera called a fetoscope into her abdomen. After analyzing the blood vessels in Crystal's placenta, she used a laser fiber to coagulate the affected vessels and then separate the area inside the placenta.

"I could feel fluttering, and it kind of tickled," says Crystal.

She experienced some contractions afterwards, but fortunately did not go into pre-term labor, a risk of the surgery. She went home the same day and was closely monitored for 10 more weeks, when the twins were born at 32 weeks on Feb. 21. Both are doing fine, and there's every reason to believe that they'll one day join their big sister (by three years) in a busy schedule of gymnastics, ballet and swimming.

"I was glad to be the first to have this surgery locally," says Crystal. "I got lucky. I might have had to travel to Florida or Maryland otherwise. I honestly don't think I would have handled it as well in that case."

Dr. Miller concurs: "With TTTS, time is often of the essence, and delay of treatment may impact outcomes in some cases."

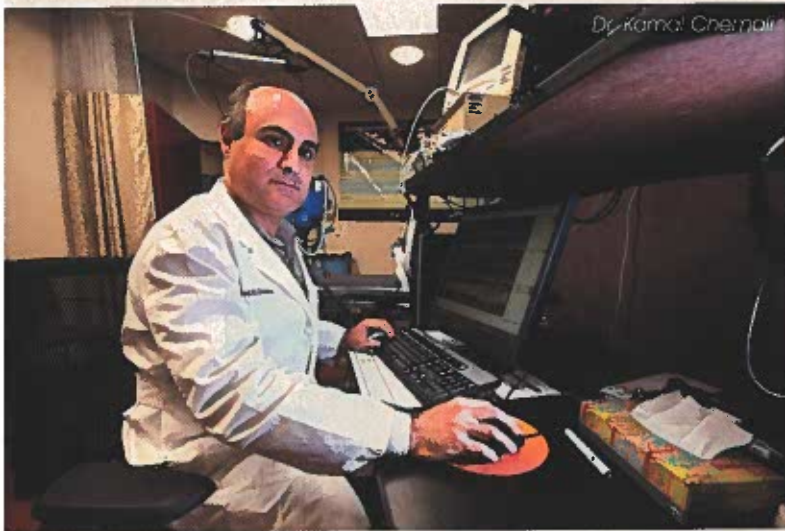


PHOTO BY JIM PILE

THE BEAT GOES ON

Trina Stout remembers the confused look on her husband John's face the night of Feb. 9, 2013, the night he suffered a stroke.

"He couldn't talk, and then he could when the paramedics arrived," says Trina, a teacher from Franklin. "He lost speech again at the hospital; we think he might have had a second stroke."

John's large motor skills returned after he worked with physical therapists and occupational therapists, but he couldn't speak much, despite speech therapy sessions.

Last summer, a friend of Trina's attended a conference about strokes and heard neurological music therapist Tracy Bowdish speak. Impressed, the friend urged Trina to contact Tracy.

Trina soon learned that Tracy is part of the Sentara Music and Medicine Center and works with patients who want to speak or move more freely. She also conducts research, coordinates community events and teaches students, all under the direction of Dr. Kamal Chemali, a neurologist and pianist who created the Center, one of just a few in the country, in 2010.

"Music works," says Dr. Chemali. "All civilizations have known this since the dawn of ages, and we now have proof. We can help people with Parkinson's, multiple sclerosis, stroke, language and cognitive disorders, anxiety disorders and walking disorders."

Chemali is currently conducting two studies related to music's healing powers, analyzing rhythm, melody, harmony and tempo and the body's physiological responses to each.

"I'm looking at all the components of music and how we combine them for the best results," he says.

No doubt that patients like John and many others stand to benefit from music.

John already has: Because of his stroke, he suffers from expressive aphasia, a condition in which a person knows what he wants to say but can't. Tracy used melodic intonation therapy to make it a little easier for him to speak.

"People who have expressive aphasia often retain their ability to sing.

In melodic intonation therapy, the therapist sets meaningful phrases to music. I used 'Hello, my name is John,' first," Tracy explains. "I composed a melody that accentuated the accents and inflection of the spoken phrase. I first hummed the phrase, tapping John's left hand to give additional rhythmical cues. Then, John hummed the tune with me. From there, I added the words and taught it to John."

Next, Tracy faded out the melody so that John was speaking the words.

"This technique uses music to tap into other neural networks to help a patient regain his ability to speak," Tracy says. "It is a form of rewiring around the damaged area of the brain to once again produce speech."

Trina was thrilled that John responded immediately to the music therapy.

"We were amazed at the progress he made just from the first visit. It worked!" she says. "After each session John was given a CD of the phrases Tracy taught, and he was encouraged to practice these at home. As our sessions ended with Tracy, she helped me learn how to work with John at home more."

A year later, John and Trina continue to do so.

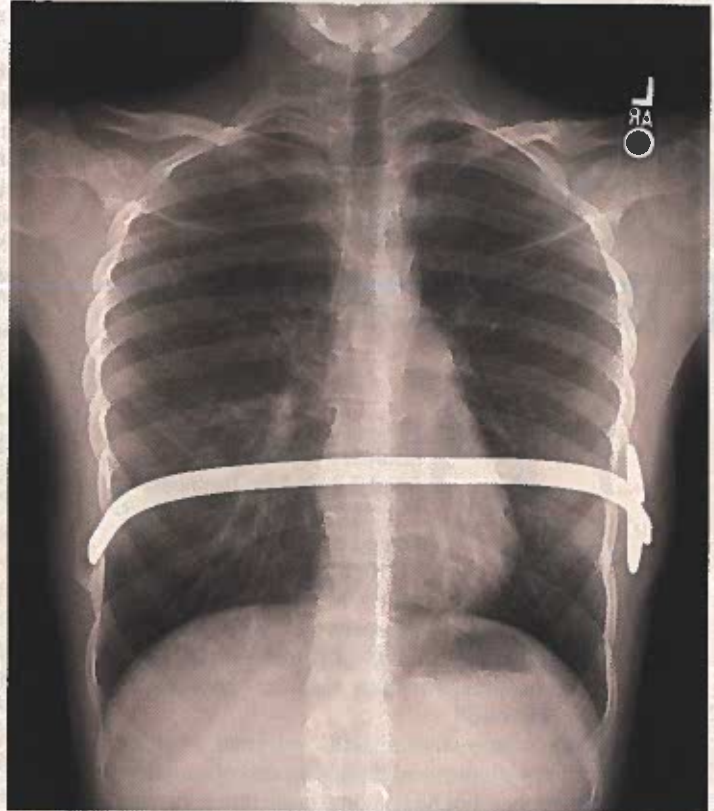
"John is speaking a whole lot," says Trina, "and he's excited for the summer, when I'm home after teaching all year. He tells me, 'we study!'" -



PHOTO BY JIM PILE



Dr. Donald Nuss



LOOK GOOD, FEEL GOOD

For the last 12 years, Children's Hospital of the King's Daughters (CHKD) surgeon and Eastern Virginia Medical School (EVMS) professor Robert Kelly has been working to prove what many suspected: The Nuss Procedure, a surgery to correct pectus excavatum (a sunken-chest deformity) not only returns children's chest to a regular appearance, it helps improve their cardiopulmonary function.

The Nuss Procedure was created by one of CHKD's own, Donald Nuss, in 1987. A professor of surgery and pediatrics at EVMS at the time, Nuss was performing another surgery to improve pectus excavatum when he had an idea for a simpler, less invasive method: insert a slender, curved metal bar beneath the ribs until the child's bones adjust to the expanded configuration. The bar gently nudges the ribs into their intended shape, and alters the appearance of the chest for thousands of children who face the condition each year. (They keep the bar in their chest for several years, and then have it removed.)

Kelly notes that the surgical advancement is one of only two in pediatrics over the last 40 years, and it has been accepted worldwide as standard care for chest deformity.

Nuss, who retired in 2009, previously hosted international seminars on the procedure and taught hundreds of doctors his technique.

About one in 1,000 children face the condition, more often boys than girls. It was once believed to be a purely cosmetic concern, causing children to be self-conscious at times, but not a potential burden on the child's lungs. However, Dr. Kelly and others believed children faced shortness of breath and some difficulties with exercise.

In December, the *Journal of the American College of Surgeons* published Dr. Kelly's report summarizing his 12-year study on the wide-ranging benefits of the Nuss Procedure. Eleven medical centers, including CHKD, Boston Children's Hospital, Johns Hopkins University Medical Center, Cincinnati Children's Hospital and the Hospital of Sick Children in Toronto, participated, with more than 300 patients studied. They were evaluated prior to their surgeries, shortly after, and years later. Researchers noted improvement in their physical appearance and their breathing functions.

The comprehensive study could lead to more children and their families seeking the Nuss Procedure, knowing that they aren't solely worrying about aesthetics—they're equally concerned about having enough oxygen to feel good as they look good. **CoVa**