

The future of care is NOW

From robotic arms to AI eyes: How SNHMC is raising the bar

By Roberta Baker
Union Leader Staff

Robotic surgical assistants, enhanced imaging, and AI-assisted diagnostics are changing the landscape for doctors and the outcomes for patients, including at Southern New Hampshire Medical Center in Nashua.

Here’s a quick guide to what’s happening now at SNHMC.

Stryker Airo TruCT

Dr. Tung Nguyen, a neurosurgeon at SNHMC’s trauma center, describes his high-stakes role: “If you can think of any trauma to the body, that’s what we deal with.”

Southern New Hampshire Medical Center is the first hospital in northern New England to offer the Stryker Airo TruCT, a portable, high-resolution 3D imaging system now being used in neurosurgery while the patient is under anesthesia and on the operating table.

Before the arrival of this portable unit, CT scans were performed in an outpatient setting before surgery. With the scanner in the operating room, surgeons benefit from real-time imaging during complex procedures without moving the patient.

This improves accuracy when placing hardware, such as screws during spinal fusions, and shortens the time in surgery, with fewer complications, said Nguyen, chief of neurosurgery at SNHMC.

“When a patient comes into our trauma system with a fracture, the CT scanner allows us to work around that fracture and treat it accordingly. It supplements our surgical techniques,” he said.

“The surgery goes a little faster, and we don’t have to remove as much soft tissue to see the bone. With shorter operative time, there’s less blood loss and better patient outcomes.”

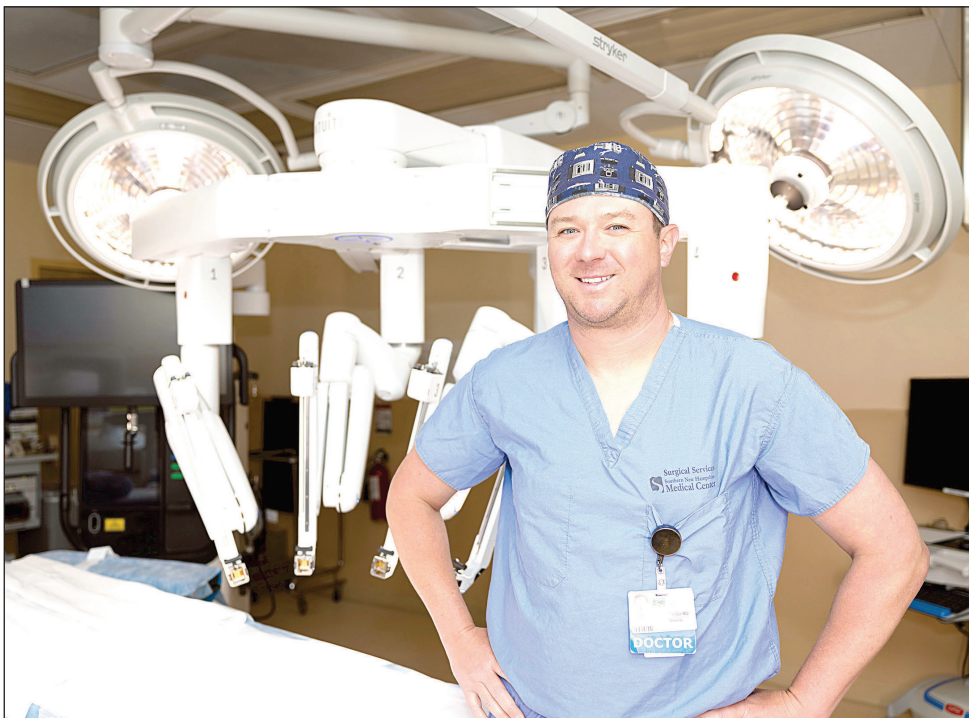
When a stroke patient comes into the ER with a brain hemorrhage, the mobile scanner allows surgeons to see how well the blood clots have been removed before closing the open area.



Dr. Tung Nguyen, head of neurosurgery at Southern New Hampshire Medical Center in Nashua, with the neurosurgery team, in front of Stryker Airo TruCT, a portable CT scanner that provides 3D imaging of patients on the operating table.

“The Intuitive da Vinci 5 system “enables us to provide cutting-edge care in the community, in their backyard, start to finish, instead of traveling to Boston or Lebanon.”

DR. BRETT BAKER
Surgeon, SNHMC



Dr. Brett Baker, a general and bariatric surgeon at SNHMC, with Intuitive da Vinci 5, a robotic surgical assistant.

The Stryker Airo TruCT aids decision making, quick and accurate scans of the spine and brain, Nguyen said.

Intuitive Da Vinci 5

This month, Southern New Hampshire Medical Center upgrades to the latest generation of technol-

ogy for robotic surgery.

The Intuitive da Vinci 5 system will increase access to minimally invasive procedures and boost surgical

precision, providing more efficient workflow and better patient outcomes, physicians say.

“It expands what we can

do, minimizes pain and incision size, and speeds recovering,” said Dr. Brett Baker, who performs general and bariatric surgery at SNHMC. “You can see better and be a lot more precise. With less pain, people are able to get back to their day-to-day activities quicker.”

Previously, patients had to go to Boston for surgery with this technology.

Operating on heavier patients can be difficult, Baker said. With da Vinci 5, “We can operate on patients that were challenging even with laproscopic and open surgery.”

Hernia repairs by open surgery can require up to a week in the hospital. With robotic surgery, patients can go home the same or next day, Baker said.

Robotic surgical technology has advanced during the past 15 to 20 years, and now can be used in obstetrics for hysterectomies, in stomach cancer, hiatal hernia and reflux surgery, in kidney, bladder and prostate surgery, and in emergency surgery, Baker said.

With da Vinci 5, two cameras at the end of a probe enable the surgeon to see in 3D. With its force feedback system, “You can feel how much tension you’re putting on tissue so you can avoid injury,” the SNHMC surgeon said.

“It’s a fairly significant upgrade over the previous model” of the system. “It enables us to provide cutting-edge care in the community, in their backyard, start to finish, instead of traveling to Boston or Lebanon.”

Baker said SNHMC surgeons are using it daily, and during about 78% of the hours allotted for surgery.

“In hiatal hernia, you’re operating on a portion of the stomach that has pushed up into the chest,” removing scar tissues between the lungs, “with the heart beating above you and the aorta just below. Robotically it’s a bit easier and safer because I can see better and see 3D.” When Baker is on the da Vinci 5 control console, “It’s like I’m operating with both arms, with freedom of

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New tech transforms breast cancer detection, treatment

By Roberta Baker
Union Leader Staff

Breast cancer is the most common cancer for women in New Hampshire and across America.

According the New Hampshire Department of Health and Human Services, roughly 180 Granite State women die from breast cancer each year, and almost 1,300 new cases are diagnosed across the state.

New Hampshire has the fifth highest rate of breast cancer in the country, a rate that’s attributed mostly to detection, experts say. The state’s five-year survival rate is 93%, according to data from 2024.

As science and technology transform diagnostics, treatment and outcomes, breast cancer detection, removal and reconstruction are taking a leap.



Dr. Jessica Ryan, a breast care oncologist at Catholic Medical Center, points to a diagnostic image on a computer monitor.

Optimizing tumor removal and reconstruction

Dr. Rong Tang, a breast surgeon at Exeter Hospital since 2022, trained and

worked as a plastic surgeon in China before relocating to the United States in 2011 to research how to improve outcomes in breast cancer

surgery.

She now performs “oncoplastic surgery” on breast cancer patients, removing tumors and the surround-

ing tissue at risk while reconstructing the damaged breast.

Instead of two separate surgeries — such as a lumpectomies or mastectomy first, followed by a second to reshape and reconstruct the damaged tissue — it’s done at the same time.

Tang is one of the first surgeons nationwide to attain the Oncoplastic Surgery Level 1 certification from the American Society of Breast Surgeons.

The value to patients? More than the expense of two separate operations and the risk of infections or complications that exists for any surgery, the leap forward is in appearance and outcomes.

Breast cancer surgery can be disfiguring or produce mixed results. It’s life changing for women, affecting body image, self-esteem, confidence, mental

health and the desire to feel whole.

It’s not just getting rid of the tumor. It’s what life looks like going forward.

Enter oncoplasty, an alternative to standard and traditional breast surgery that combines cancer removal and plastic surgery in a single procedure.

“Treating breast cancer is always the top priority,” Tang said by phone last week. “It allows the surgeon to remove a larger volume of tissue. Sometimes the patient has a larger mass and we need to get the margins. Wider margins improve the oncology outcome.”

Reconstruction doesn’t mean a flap or an implant, the common options for women, she said. In oncoplasty, reconstruction is done using surrounding breast tissues, after a series

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Breast Cancer

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of planning sessions involving surgeon and patient, so the patient understands the goals and what to expect.

Reconstruction on both breasts can make them symmetrical and similar in shape. Some women opt for a breast lift and reduction, she said.

“For every surgery, we’re always thinking about where to place the incision to hide the scar,” said Tang. “Anyone with larger tissue, we rearrange the surrounding tissue to avoid a local defect.”

“There’s no one size fits all,” said Tang, who does roughly 150 oncoplastic procedures each year. “Lots of times the breast looks just as good and sometimes better than before the surgery. A woman can have a larger amount removed and improved cancer treatment because the margin is removed.”

Tang said there are no limitations on age, provided the candidate is healthy enough to undergo surgery.

“It’s important to consider every breast cancer surgery as oncoplastic, including where to place the scar,” she said. “There are very few contraindications.”

Because two surgeries are combined, overall recovery time is minimized and the infection risk is lower. She said the pain experienced and the pain management required are no different than in traditional operations for breast cancer.

“Patients are actually very happy. The scar is barely visible and there is minimal change to breast shape,” Tang said it improves patient satisfaction because it produces better cosmetic results.

Breast cancer basics

The data on breast cancer incidence is disheartening and should be a wake-up call to all women, breast care experts report.



Mammograms remain a key in early breast cancer diagnosis and eliminating false alarms.

According to the American Cancer Society, roughly 1 in 8 women will have breast cancer in their lifetime. Every year the disease accounts for almost a third of all new cancer cases in U.S. women.

Genetics, smoking, regular alcohol consumption, obesity and breast tissue density increase the risk.

“We are seeing a small increase in breast cancer across the country, including at earlier ages,” said Dr. Jessica Ryan, a breast care oncologist at Catholic Medical Center in Manchester.

New Hampshire continues to be in the top five states for breast cancer rate, a ranking that Ryan attributes to early detection. “We do a pretty good job at screening.”

Mammography powered by artificial intelligence is improving early detection, accuracy and speed.

MIT researchers collaborated on an AI model to potentially identify precancerous changes five years before breast cancer is diagnosed.

Mayo Clinic researchers are using artificial intelligence to analyze tissue samples; spot metastatic breast cancer in lymph nodes; improve ultrasound imaging to catch small, malignant tumors; and identify women at high risk for breast cancer who might benefit proactively from lifestyle changes and certain medications.

The earliest detection is stage 0, or noninvasive breast cancer. “No matter what stage it will be, the earlier we detect it the less likely it is to spread, the less aggressive the treatment, and the better the chances of recovery,” Ryan said.

Some stumbling blocks stand in the way, she said,

including cost of a diagnostic mammogram when a problem or irregularity is found on a screening mammogram.

Another barrier for some women is reluctance to get mammograms, for fear of exposure to excess radiation. This reason rankles Ryan and other breast care experts.

According to radiology-info.org, the average home exposes women to the same quantity of radiation (due to radon gas) in one year as five mammograms.

A single mammogram is equivalent to one month of background radiation from walking around, and it’s the same amount of exposure to a single cross-country flight (cosmic radiation).

One diagnostic CT scan, used across medical disciplines, equals the amount of radiation in 50 mammograms.

Regular screening is critical

There have been conflicting reports on the value of self-exams for breast lumps, but Ryan encourages the practice. “It’s important for women to be generally aware of their bodies so if there is a major change, they can bring it to the attention of a doctor,” she said.

Medical checkups and mammograms remain key in early diagnosis and eliminating false alarms.

According to state health department data, 70% of breast cancers are found in the early stages, and 74% of New Hampshire women age 40 and older have had a mammogram in the last two years.

“If women are not screened or they miss a mammogram,” they jeopardize timely, life-saving detection, long before they

might notice a problem, Ryan said. “The anti-mammogram rhetoric does such a disservice.”

Catholic Medical Center offers contrast-enhanced mammography (contrast fluid delivered by IV before the X-ray) to better illuminate tiny aberrations in challenging cases, she explained.

Breast density, a little-known risk factor, refers to the pattern of breast tissue — fibrous (denser) or fatty.

“It’s not something you can feel,” said Ryan. Forty percent of women have dense breasts, which statistically increases their risk, she said. “Cancer can hide in dense breast tissue.”

Women with dense breasts and a family history of breast cancer qualify for an MRI (magnetic resonance imaging) and an automated ultrasound. “The more ways I’m looking at dense breast tissue, the more likely I’m going to find something that’s there,” she said.

Ryan tells women age 40 and older to get mammograms annually. AI-assisted mammograms provide “pattern recognition shown to be more accurate than the human eye in diagnosing subtle problems,” she said.

AI also reduces unnecessary callbacks for follow-up diagnostics that may not be fully covered by insurance. With some insurance plans, there can be a surcharge for mammograms with AI interpretation.

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No Flavors this week

The monthly NHMedical section takes the place of this week’s Flavors section. Flavors, with Our Gourmet, returns next week.

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Michael Culbert, director of radiology at Southern New Hampshire Medical Center, in front of the Nashua hospital's PET/CT scanner.

SNHMC

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movement.”

“If you have the option, robotic surgery can offer a significant benefit,” he said.

GI Genius

Southern New Hampshire Health was the first in southern New Hampshire to offer colonoscopies using the GI Genius Intelligent Endoscopy Module. This AI-powered system helps physicians detect potentially precancerous polyps that may be missed during a traditional colonoscopy.

GI Genius scans every visual frame taken during a colonoscopy procedure in milliseconds and alerts physicians to lesions — including the small, flat polyps that can easily go undetected by the human eye, according to Medtronic, the manufacturer. Increasingly used by gastroenterologists

(Spear Hospital in Plymouth was the first New Hampshire hospital to use it), GI Genius is now a standard part of every colonoscopy performed at SNHMC with no added costs to patients, according to the hospital.

PET/CT Scanner

SNHMC is one of three New Hampshire hospitals with a permanent PET/CT scanner on site.

The GE Omni Legend PET/CT enables the hospital to serve more oncology patients and others who require advanced diagnostics with greater speed and precision, according to Michael Culbert, the center’s director of diagnostic imaging.

The scanner provides earlier and faster cancer detection and quicker and more accurate exams.

“By imaging at a cellular level, the PET/CT scan-

ner gives us the ability to detect the early onset of diseases, such as cancer, before other imaging modalities,” Culbert said via email.

The “high-resolution images help us make more informed and accurate care decisions,” Culbert said. “It’s not just for cancer; the technology helps us evaluate a range of conditions.”

PET stands for positron emission tomography. A PET scanner picks up radioactive signals from an sugar-based tracer that contains a safe and small amount of radiation, Culbert explained.

“Since cancer cells ‘love’ sugar, they grab onto it. When we scan the patient, the cancer cells appear as glowing spots on the image, like the lights on a Christmas tree.” This enables the detection of disease at the cellular

level.

The PET/Scanner doesn’t emit radiation, it detects it, producing images that indicate medical status and biochemical activity, according to the Mayo Clinic and other clinical sources. It’s used to diagnose and monitor cancer, heart disease, and brain and neurologic disorders such as tumors, Parkinson’s disease and epilepsy.

It also can be used in endocrinology and urology, Culbert added.

Use of the PET/CT scanner is covered by health insurance. It’s also a big capital investment.

“I’m proud of the teamwork that made this investment in state-of-the-art technology possible,” Culbert said. “We’re excited to bring these advanced capabilities to the Greater Nashua area and the surrounding communities.”

AI tool identifies nine dementia types, including Alzheimer’s, with one scan

Mayo Clinic News Network

Mayo Clinic researchers in Minnesota have developed a new artificial intelligence (AI) tool that helps clinicians identify brain activity patterns linked to nine types of dementia, including Alzheimer’s disease, using a single, widely available scan — a transformative advance in early, accurate diagnosis.

The tool, StateViewer, helped researchers identify the dementia type in 88% of cases, according to research published online on June 27 in *Neurology*, the medical journal of the American Academy of Neurology. It also enabled clinicians to interpret brain scans nearly twice as fast and with up to three times greater accuracy than standard workflows. Researchers trained and tested the AI on more than 3,600 scans, including images from patients with dementia and people without cognitive impairment.

This innovation addresses a core challenge in dementia care: identifying the disease early and precisely.

The rising toll of dementia

Dementia affects more than 55 million people worldwide, with nearly 10 million new cases each year. Alzheimer’s disease, the most common form, is now the fifth-leading cause of death globally. Diagnosing dementia typically requires cognitive tests, blood draws, imaging, clinical interviews and specialist referrals.

Even with extensive testing, distinguishing conditions such as Alzheimer’s, Lewy body dementia and frontotemporal dementia remains challenging.

StateViewer was developed under the direction

of Dr. David Jones, a Mayo Clinic neurologist and director of the Mayo Clinic Neurology Artificial Intelligence Program.

“Every patient who walks into my clinic carries a unique story shaped by the brain’s complexity,” Jones says. “That complexity drew me to neurology and continues to drive my commitment to clearer answers. StateViewer reflects that commitment — a step toward earlier understanding, more precise treatment and, one day, changing the course of these diseases.”

Turning brain patterns into clinical insight

The tool analyzes a fluorodeoxyglucose positron emission tomography (FDG-PET) scan, which shows how the brain uses glucose for energy. It then compares the scan to a large database of scans from people with confirmed dementia diagnoses and identifies patterns that match specific types, or combinations, of dementia.

Alzheimer’s typically affects memory and processing regions, Lewy body dementia involves areas tied to attention and movement, and frontotemporal dementia alters regions responsible for language and behavior.

StateViewer displays these patterns through color-coded brain maps that highlight key areas of brain activity, giving all clinicians, even those without neurology training, a visual explanation of what the AI sees and how it supports the diagnosis.

Researchers plan to expand the tool’s use and will continue evaluating its performance in a variety of clinical settings.



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Michael Rezaee, MD and Lani Burnham, RN

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Lighting the way

Dartmouth's new tool makes cancer cells glow in surgery

By Roberta Baker
Union Leader Staff

Researchers and bio-medical engineers from Dartmouth Health, Dartmouth Cancer Center and the Thayer School of Engineering at Dartmouth College have discovered a new fluorescent molecule that makes cancer cells “glow” during surgery, enabling more precise removal of tumors and nearby tissue at risk.

Their study, published recently in the journal *Molecular Cancer Therapeutics*, demonstrated the safety and effectiveness of the luminous ABY-029 molecule in surgery for soft-tissue sarcomas, a rare but aggressive form of cancer that begins in muscles, tendons, fat cells, blood vessels and other supporting tissues.

Over 13,500 new cases of soft-tissue sarcoma are expected to be identified in the U.S. this year, in 7,700 men and boys and 2,890 women and girls, according to the Sarcoma Foundation of America.

Roughly 5,420 people are predicted to die from soft-tissue sarcoma in 2025. The five-year survival rate is around 65%, according to cancer research. If the sarcoma is found early, surgery can be a cure.

ABY-029 illuminates the cancerous area by binding to a protein in the cancer cells.

“Visually highlighting soft-tissue cancers so that they can be removed more reliably will lead to higher cure rates,” Dr. Eric Hen-



Dr. Eric Henderson, left, and Dr. Samuel Streeter review Dartmouth Cancer Center's advancements in precision cancer surgery and the new fluorescent probe, ABY-029, that illuminates cancerous tumors, shown in purple.

derson, a sarcoma specialist at Dartmouth Cancer Center and lead co-author on the study, stated in a news release.

Henderson, an orthopedic and oncology surgeon, believes the molecule can revolutionize cancer treatment.

“We are improving the safety and effectiveness of cancer surgery to increase cure rates and minimize injury to nearby structures, especially nerves,” Henderson said.

“The goal is to identify tumors and ensure that they don’t recur, and to ensure the patient is cured,” Henderson said by phone last week. “Cancer has the capacity to spread. We use the fluorescence to see through surrounding tissues to identify where the cancer is and to assess the margins and ensure they’re clean.”

The fluorescent agent is injected into the bloodstream intravenously. Pre-clinical studies have

shown how long it takes to illuminate “tissues of interest,” the surgeon said.

Compared to a CT scan, which is done ahead of surgery and not in the operating room, “a fluorescent probe is more of an active participant. It can be used to aid and guide surgery real time,” Henderson said.

Medical fluorescence has been used since the 1900s, he added. The field took off in 2006 when a German surgeon demonstrated improved survival following

brain tumor surgery with the use of fluorescence. There are currently six fluorescent probes with seven uses, strictly defined by the FDA, Henderson said.

Samuel Streeter, an assistant professor of orthopedics at Geisel School of Medicine at Dartmouth and a biomedical engineer specializing in biomedical optics and imaging, co-authored the study. He said ABY-029 has undergone rigorous toxicity testing to make sure it’s safe for pa-

“Cancer has the capacity to spread. We use the fluorescence to see through surrounding tissues to identify where the cancer is and to assess the margins and ensure they’re clean.”

DR. ERIC HENDERSON
Sarcoma specialist,
Dartmouth Cancer Center

tients. Studies have shown no adverse effects.

“There’s a whole lot of work to be done to get this technology to be used more broadly,” Henderson said. “Medical oncology has seen huge additional benefits that have enhanced the ability to do much better cancer surgery in the next 20 years.”

Dartmouth Cancer Center, with 14 locations in New Hampshire and Vermont, schedules 74,000 cancer-related appointments each year and sees more than 4,500 newly diagnosed cases annually, Dartmouth reports. Patients can participate in more than 240 current clinical trials.



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Freezing away the pain

Manchester doctors lead breakthrough in recovery after amputation

By Roberta Baker
Union Leader Staff

It's not every day that a pioneering medical treatment is born in Manchester, New Hampshire, and tested across the nation and the world, expanding how it can be used and who it can help — including victims of limb loss.

Dr. Curtis Quinn, M.D., a thoracic surgeon at Elliot Hospital, has harnessed cryoanalgesia, a deep-freezing technology, to control pain in lung cancer and chest surgery patients.

It has enabled his patients to recover with very little pain, without opioids, and go home after major surgeries with instructions to take Tylenol as needed.

Dr. Bryan Houseman, D.O., an orthopedic and trauma surgeon at Elliot Hospital, often operates on emergency patients.

Their skills multiplied and their universe expanded in January 2023 when Houseman faced a young woman in need of radical surgery for what he called “horrific trauma” from an accident. Her injuries were extensive and daunting. Her left arm needed amputation.

“We were staring at nerves coming out of the neck,” Houseman recalled last week in an interview in his office at The Elliot at River’s Edge.

The question looming was how to reduce her pain, even temporarily.

Houseman and Quinn decided to try cryoanalgesia. Not only did freezing the exposed nerves at minus 70 degrees Celsius — cold enough to arrest nerve function — stop the



Dr. Bryan Houseman stands in an exam room at The Elliot at River’s Edge outpatient facility in Manchester on June 30.

woman’s discomfort, it erased her phantom pain, the post-surgery pain that amputees feel in limbs that no longer exist, as if those limbs are still attached.

“We prevented her phantom limb pain following amputation. We were applying well-founded science to identical tissues in different parts of the body,” said Houseman.

Cryoanalgesia, a technology originally designed to help cardiac surgery patients, prevents opposing nerve signals of sensation and motor function from crossing and causing a disturbance.

“Think of two wires, one connected to a blender, the other to a lamp,” said Houseman, “and they’re

“*“We’re trying to change the gold standards in this procedure and its outcome for patient care.”*”

DR. BRYAN HOUSEMAN
Orthopedic and trauma surgeon, Elliot Hospital

not supposed to cross, but they do.” Surgery is “like splicing a cable and putting an end cap on it. It’s the ‘radio static’ from the area “that the brain interprets as pain.”

Once phantom pain starts, it’s nearly impossible to stop.

Cryoanalgesia’s success

on nerves leading from the neck prompted Houseman and Quinn to try it in different types of amputations. They studied what happened when cryoanalgesia was used to kill pain in surgery to remove a leg below the knee. They conducted a 25-case study with virtually identical results, they said.

Now Elliot Hospital is involved in a three- to five-year study of the freezing technology’s efficacy in amputations performed at medical centers across the U.S. and the United Kingdom. Houseman said the results have been promising.

“We’re trying to change the way patient care and amputation can happen on an international level. We’re trying to make it so that that whoever does this procedure gets a reproducible result. We’re all pretty happy with the way things are going,” he said.

Houseman said he uses cryoanalgesia in surgeries once every couple of weeks, but that could increase to two or three times a week.

“If used in large-volume hospitals, it could be dozens in a week,” he said.

“If patients are experiencing pain with amputation, you’re talking about improvement in six or seven out of 10 patients and making an impact on long-term narcotic needs.”

The hope is that cryoanalgesia can be used for pain mitigation in specialties such as orthopedics, plastic surgery and vascular surgery, whenever severed or severely damaged nerves are involved.

“We’re trying to change the gold standards in this procedure and its outcome for patient care,” said Houseman.

“The sensation of missing a limb is not something patients are afraid of. It’s the pain. Now, maybe there’s a solution that can be universally applied, irrespective of the discipline of medicine.”

In thoracic (chest region) surgery, cryoanalgesia provides 6 to 12 weeks of pain control, he said.

Houseman and Quinn helped Atricare, the cryoanalgesia technology manufacturer, design a similar tool for use on extremities. It’s been approved by the U.S. Food and Drug Administration and is now in internal testing prior to market release, Houseman said.

In medicine, “We all know in general that the way we’re doing things is not always the best way,” the surgeon said. “If something decreases the need for narcotics, that’s improvement, especially when the outcomes are identical.”

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A photograph of an older woman with short blonde hair and glasses, wearing a blue cable-knit sweater. She is smiling and holding a white mug with a large red heart on it. She is also holding a spoon in her other hand. The background is a softly lit room with a window and a lamp.

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High-tech men’s health

In Laconia, state-of-the-art diagnosis and treatment for prostate cancer

By Roberta Baker
Union Leader Staff

Prostate cancer is a stealthy disease with no attention-grabbing symptoms at first. It’s also a private and sensitive topic that men don’t want to discuss. But for men age 40 and older, it’s a good reason for annual checkups, regular blood work and vigilance before serious problems start. Prostate cancer is the second most common cancer in men, behind only skin cancer, according to the American Cancer Society.

It’s the second deadliest cancer for men, trailing only lung cancer. It will affect 1 in 8 men in their lifetime — a rate comparable to breast cancer in women.

The Cancer Society predicts about 313,780 new cases and about 35,700 deaths from prostate cancer in the United States this year. The average age of diagnosis is 67.

Although deaths from the disease dropped by 50% between 1993 and 2022, most likely because of advancements in detection and treatment, the decline in prostate cancer deaths has slowed in the last three years. More cases are being discovered at earlier ages and advanced stages, physicians report.

Dr. Michael Rezaee, a urologist at Concord Hospital-Laconia, is a guardian of prostate health in a state whose aging population includes an abundance of men who are at heightened risk because of their age and genetics.



Dr. Michael Rezaee, a urologist with advanced training in urologic oncology at Concord Hospital-Laconia, explains a prostate procedure. His care team, Susan Buckley, APRN, and Steven Alexakos, PA-C, are standing.

Who’s most at risk

Most of Rezaee’s patients are in their 60s. Not infrequently, he diagnoses and treats men in their 40s and 50s whose close family members (brothers, fathers, grandfathers) have or had prostate cancer — or whose mothers had a common form of breast cancer known as the braca mutation.

Environmental factors have little impact. Certain ethnic and racial groups, including African Americans, appear to have increased risk. Hereditary links are the biggest predictors, Rezaee said, followed by age.

“Men are embarrassed

about it. In different racial and ethnic groups, the last thing they want to talk about is anything related to genitalia,” said Rezaee, who completed a fellowship in urologic oncology. “Prostate cancer is directly linked to aging, and there are a lot of patients with it. If they’re noticing changes with blood in their urine, that’s more than just getting old.”

Rezaee’s kit includes tools you may not recognize, such as high-intensity focused ultrasound, or HIFU, a noninvasive treatment that uses high-frequency ultrasound waves to attack cancer cells inside the prostate gland.

Concord Hospital-La-

conia is the only hospital in northern New England that currently offers HIFU treatment, according to the Concord Hospital system. It’s also one of the region’s first centers to provide UroNav Fusion Transperineal prostate biopsies, which test for cancer by sampling cancerous cells through the skin rather than through the rectum, which carries double the infection risk.

The goal of urologists, Rezaee said, is to catch prostate disease and cancer early and treat it with the least invasive means possible with the fewest complications.

Rapidly spreading prostate cancer typically

requires radiation treatment and/or removal of the prostate to stop the malignant cells from invading bones and lymph glands. But in the earlier stages and in slower-growing prostate cancer, both detection and treatment are improved by less invasive technology.

An MRI (magnetic resonance imaging) scan is used to locate prostate cancer. The strategy of HIFU “is similar to trying to burn an ant on the ground with a magnifying glass,” Rezaee said. “A special ultrasonic probe delivers ultrasound waves to a pinpoint.” The cancerous tissue gets hot and is obliterated. “The purpose is to treat prostate

“Going through the skin is a big game-changer. Patients are seeking this out now because they don’t want to have complications.”

DR. MICHAEL REZAEЕ
Urologist, Concord Hospital-Laconia, on new type of prostate biopsies

cancer without treating the whole prostate.”

Once-a-year screening for prostate cancer should begin between ages 40 and 45, Rezaee added. It’s important to watch the trend. A PSA (prostate-specific antigen) level under 4 is considered “fairly safe.” A PSA reading over 4 means it’s time to see a urologist for a cancer workup.

Through the skin

In UroNav Fusion Transperineal prostate biopsies, prostate cells are extracted through the skin and sent to a lab for testing. The procedure is done under local or general anesthesia. The transdermal procedure eliminates the risk of rectal bleeding and blood in the urine and cuts the infection risk from upwards of 2.4% to less than 1%.

Rezaee estimates that he’s performed at least 200 transperineal biopsies in the last two years on patients with elevated PSA

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THANK YOU, N.H. SENATE FINANCE COMMITTEE, FOR SUPPORTING SENIOR CARE!



Over the past five years, average wage costs for nursing homes have gone up over 34%, with costs for food and medical supplies rising similarly.

Medicaid reimbursement hasn't kept pace, and now fear exists over Medicaid cuts in Washington, DC.

Here, however, the N.H. Senate Finance Committee stepped up in bipartisan fashion to stop state cuts and help nursing homes receive more timely Medicaid payments. Thanks to Chairman Jim Gray, Vice Chairman Daniel Innis, and Senators Regina Birdsell, Sharon Carson, Tim Lang, Howard Pearl, Cindy Rosenwald and David Watters.

For more information, see savenhseniors.com

HELP in Concord is needed so facilities can meet rising costs and recruit, and retain, staff to serve the most vulnerable Granite Staters

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Prostate

From Page B6

counts. The procedure has been used at major medical centers for about 10 years.

“Going through the skin is a big game-changer,” said Rezaee. “Patients are seeking this out now because they don’t want to have complications.” Roughly 100,000 infections result from rectal biopsies in the U.S. each year, according to medical data, he said.

“We understand” that the potential risks of rectal biopsies and the effects of radical prostate cancer treatments are “a big problem for men and their families. We’re trying to be cutting edge, like some of these big medical centers.”

Between October 2023 and September 2024, 2,008 patients with a prostate cancer diagnosis were seen by Concord Hospital Urologic Institute, according to hospital records.

A recent study in Norway showed that high frequency ultrasound treatment is equivalent to a prostatectomy in eliminating cancer, Rezaee said. “The biggest thing we worry about is not getting it all. We may need to do HIFU again. If the cancer is more aggressive, we can pivot and do surgery and radiation.”

HIFU is designed to treat intermediate risk prostate cancer at one spot in the prostate, said Rezaee. “It’s not the treatment for really aggressive cancer, and it’s not for everyone.”

The side effects include pain or difficulty urinating while healing during the first few weeks, he said.

But guys seem happy with the non-surgical option, he said.

“As men age, they want to be healthy and active, playing pickleball without leakage and having a healthy sexual relationship if they want it. The closest place to go is Boston if you don’t get it done by us.”

rbaker@unionleader.com

Mayo Clinic doctor explores how space could heal us

Mayo Clinic News Network

JACKSONVILLE, Florida — Mayo Clinic physician and researcher Dr. Abba Zubair’s work combines two passions — medicine and space — for the benefit of astronauts and people on Earth. His research in space is yielding discoveries in cancer, stroke, bone loss and more.

In this expert alert, Zubair answers five questions about his studies in microgravity.

What are you hoping to accomplish through your research?

“The goal is to harness the uniqueness of the space environment for the betterment of humanity, be it on Earth or in space,” Zubair says. “We wanted to take advantage of the environment at the International Space Station to study how it affects human physiology.”

The absence of gravity and the impacts of radiation and vacuum are three fundamental aspects of the uniqueness of space, adds Zubair, who has sent three research projects to the International Space Station (ISS) since 2017, with more to come.

As a regenerative biotherapeutics specialist, Zubair’s work focuses in part on adult stem cells—known as mesenchymal stem cells—and their use in future treatments for stroke. He noted that he uses stem cells in regenerative medicine and in supporting Mayo’s bone marrow transplant program.

“I also know how challenging it is to grow them in the lab. One of the first fundamentals is to see how the absence of gravity influences how stem cells divide and the growth rate,” Zubair says. “We wanted to see whether cells grown in space are any better



NASA/GETTY IMAGES/TNS

It’s snack time on the International Space Station as NASA astronaut Scott Kelly watches a bunch of fresh carrots float in front of him while preparing to partake in April 2015. Scott is one of the One-Year crew members on the station to test how the human body reacts to an extended presence in space as preparation for the long flights NASA plans to Mars and back in the future.

or grow faster than cells grown in the lab. When we did our first space flight, we had a really interesting finding, because we realized that the absence of gravity affects stem cells, but it depends on the type of stem cells.”

That led Zubair to another project on the ISS: studying how mesenchymal stem cells, the precursor for bone-forming cells, play a role in bone formation or osteoporosis, bone loss. He notes that astronauts tend to lose bone density despite rigorous exercise.

How might your research benefit people with cancer?

Zubair is also studying how leukemia stem cells, the cells that form the seed of this blood cancer, respond to the space environment.

“We are also working to understand the impact of space radiation, from the angle of how we can mitigate the effect of radiation and prevent cancer,” Zubair

says. “In the long run, we really want to protect astronauts, especially during long-term space travel, such as to Mars, where they would be deep in space and away from any magnetic field protection that we get from Earth.”

The research also may benefit people on Earth by revealing how to protect stem cells or cells in general when there is radiation exposure, such as nuclear accidents, he adds.

You’ve remarked that you can envision a time when people might go into space to receive certain medical treatments. How would that work, and might it be possible to simulate microgravity for those treatments on Earth?

If cells proliferate more in space, for example if cancer cells go into what is called cell cycle and they proliferate, then chemotherapy will be more effective, Zubair says.

“If that is the case, that

absence of gravity can induce leukemia cells or other cancer cells to go into cell cycle, that makes them susceptible to chemotherapy,” he explains. “So instead of giving the chemo on Earth, you might go into space where the absence of gravity makes the cancer cells more vulnerable to chemotherapy. That would be one more reason to go to space. That is definitely something that I would love to explore.”

It would be difficult to create a comparable microgravity environment on Earth, but technically, it could be done, Zubair adds.

“Microgravity on Earth is basically like going into a swimming pool, a state of buoyancy where you are kind of in suspension; the gravity is canceled out by the effect of the water,” he says. “Now, obviously it wouldn’t be pleasant to be in water for quite some time. In the lab, we use a microgravity simulator where cells are suspended.

It would be interesting if you could do the same for a human being.”

What attracted you to space research?

Zubair grew up in Kano, Nigeria, and remembers gazing at the night sky as a child.

“As far back as I can remember, I was always fascinated by what is out there in space. Looking at the moon and all the stars, and really that ignites my passion for space and space exploration,” Zubair says.

Zubair’s first dream was to become an astronaut, but an adviser in high school counseled him to find a more practical career, and he pursued medicine.

What’s next?

One of Zubair’s next two payloads to the International Space Station, not yet scheduled for launch, will examine whether umbilical cord blood cells, rich in stem cells and potential therapeutic value, can be expanded.

Another study will explore different cell types that participate in bone formation and whether the problem of bone loss in space can be alleviated through use of a special compound.

“If it works, then definitely we will see how we can treat patients with osteoporosis, particularly women, cancer patients, or people who are bedridden for a long time and are not weight-bearing, which affects their bone,” Zubair says.

Zubair notes that all of his space experiments are done in parallel on Earth with identical cells to compare the two results and validate the findings from space.

“I really think there is a lot out there that is just waiting for us to explore and use,” he says. “And that’s why I do what I do.”

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