Dartmouth Cancer Center

Dartmouth Health | Dartmouth Geisel School of Medicine

Cancer Center Compendium

A Comprehensive Review of Dartmouth Cancer Center Innovations

What's inside

Our Cancer Center, a partnership with Dartmouth Health and the Geisel School of Medicine, has the responsibility and the mission to put an end to cancer. We provide critical services to our patients across a five-state catchment area and are advancing medical discoveries that impact the world.

Dartmouth Health

Dartmouth Geisel School of Medicine

Dear Colleagues,

Welcome to this compendium exploring recent changes, advances, and success stories at Dartmouth Cancer Center. As we look to the future, Dartmouth Cancer Center (DCC) continues to evolve, reaffirming our commitment to delivering world-class, patient-centered cancer care.

Dartmouth Cancer Center is proud to announce the renewal of our National Cancer Institute (NCI) Comprehensive Cancer Center designation. There are only 57 Comprehensive Cancer Centers in the nation, and three in New England. This prestigious designation recognizes our excellence in research, clinical care, and community outreach. Our robust research enterprise with more than 240 active clinical trials means patients have access to the latest therapies and the opportunity to contribute to discoveries that will shape the future of cancer care.

This year marks a significant milestone with the expansion of our cancer center clinical footprint, to Manchester, NH. By adding radiation oncology at Dartmouth Hitchcock Clinics Manchester, we are streamlining care, improving access, and ensuring that patients in southern New Hampshire benefit from the full spectrum of advanced cancer treatments, close to home.

As we continue to grow, a key focus will be building upon our strong foundation in fluorescence-guided surgery. Dartmouth has a legacy in this area, and we aim to broaden its application to a wider range of solid tumors. This includes exploring multi-channel imaging, which is underway via the current $31 million ARPA-H award.

Our patients are at the heart of everything we do. Our commitment to delivering an exceptional experience has been recognized with the Press Ganey Human Experience Pinnacle of Excellence Award for five consecutive years. This, paired with our renewed NCI designation, is proof positive that we offer specialized clinical and research skills along with profound caring and compassion. All across the Cancer Center and in our many research labs, it is a spirit of collaboration, innovation, and shared commitment that enables outstanding outcomes while advancing the frontiers of cancer science.

We invite you to read on and discover how DCC's growth, innovation, and dedication are making a difference for patients today and for generations to come.

Sincerely,

Steven D. Leach, MD
Director of Dartmouth Cancer Center

Cancer Compendium - Summer 2025

On the cover: The da Vinci 5, a state-of-the-art surgical robot, is being used to to improve efficiency, accuracy and patient outcomes.

BY THE NUMBERS
50 Years of Care, Research and Hope

>200
Cancer Specialists

17
Interdisciplinary, Cancer-Specific Patient-Centered Programs

>74,000
Annual Patient Appointments

FY24 Stats

7,737
New Patients

28,800
Radiation Procedures

33,500
Infusions

Since its founding over 50 years ago,

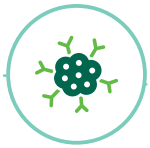
Dartmouth Cancer Center remains the only National Cancer Institute (NCI)-designated Comprehensive Cancer Center in the United States that's not located in an urban hub.

We are the only cancer center to be fully integrated within a world-class liberal arts college, medical school, engineering school, business school, graduate school, and academic health system—a truly joint venture between Dartmouth College and Dartmouth Health, and a top priority for both institutions.

Research and Innovation

162 senior scientific investigators attract **$47 million** annually in research grants and contracts.

Ranked 6th in entrepreneurship among cancer centers nationally.



Pioneer in tumor genomic sequencing **> 5,000 tumor genomes sequenced.**

One of only 30 NCI National Clinical Trials Network Lead Academic Participating Sites with **160 open trials.**

National leader in cancer prevention research, especially regarding e-cigarettes and environmental contaminants.

More than 240 research projects within four programs

- Cancer Signaling Genomes and Networks
- Cancer Population Sciences
- Translational Engineering in Cancer
- Immunology and Cancer Immunotherapy

Leader in **engineering new technologies** for precision cancer surgery and radiation therapy.

Renowned in immunotherapy research
Launched Medarex (developer of Opdivo and Yervoy) and recently discovered both a next-generation immune checkpoint inhibitor and new technology for universal, "off-the-shelf" anti-cancer CAR T cells.

Dartmouth Cancer Center locations: Bennington | Keene | Lebanon | Manchester | Nashua | St. Johnsbury

Dartmouth Cancer Center Launches Radiation Therapy Services in Manchester

Dartmouth Cancer Center will offer radiation therapy services at Dartmouth Hitchcock Clinics Manchester as of July, 2025.

This new addition expands access to comprehensive cancer care in southern New Hampshire from the state's only NCI-designated Comprehensive Cancer Center. The expansion coincides with Dartmouth Cancer Center's clinical and hematology/oncology infusion services in Manchester moving to the clinic from Catholic Medical Center, giving patients greater access and efficiency in their care and treatment.

"Services delivered in one place will provide greater access and efficiency for the important care and treatment you need," said Steven D. Leach, MD, director of Dartmouth Cancer Center.

Dartmouth Hitchcock Clinics Manchester is conveniently located off Interstate 93. This location features ample parking, an on-site café, a walking trail, and a full array of services including ambulatory surgery, lab, radiology and other specialties.

Dartmouth Cancer Center leadership and Radiation-Oncology team members celebrate a construction milestone at Dartmouth Hitchcock Clinics Manchester.

> "We are excited to grow the extraordinary group of committed caregivers here and we look forward to working together to benefit our region."
>
> **–Pamela M. Hofley, MD**

"The co-location of cancer services on the Manchester campus and the introduction of radiation oncology services in the southern region will enable us to deliver more coordinated care for our patients throughout the greater Manchester, Concord and Nashua communities," said Pamela Hofley, MD, medical director of Dartmouth Hitchcock Clinics Manchester. "We are excited to grow the extraordinary group of committed caregivers here and we look forward to working together to benefit our region."

Technology in Prostate Cancer Surgery Goes Further with $31 Million Award

(Left to right): Dartmouth grad student Wisse Haakma and Kimberly Samkoe.

Advanced Research Projects Agency for Health (ARPA-H), an agency within the US Department of Health and Human Services, awards a team of Dartmouth engineers and cancer researchers up to $31 million through its Precision Surgical Interventions (PSI) program for their work in surgical image guidance.

Dartmouth Health surgeon Eric R. Henderson, MD, serves as the clinical director for the award while Lawrence M. Dagrosa, MD, and Elinar F. Sverrisson, MD, are the surgical investigators who will conduct clinical testing. Team leaders include Kimberly Samkoe, PhD, Keith Paulsen, PhD, Ryan Halter, PhD, and Scott Davis, PhD, all members of Dartmouth Cancer Center's Translational Engineering in Cancer (TEC) Research Program. They will lead researchers at six collaborating organizations to develop a laparoscope-integrating imaging solution that will be especially helpful in prostate cancer surgeries.

The goal of the project is to be able to identify and locate critical structures such as nerves, vessels, ducts, or glands that currently cannot be imaged in real-time. They will use nerve-dyeing and ureter-dyeing contrast agents, in addition to vascular dyes, to cause these structures to fluoresce, or light up. They will then map and visualize the 3D shape and depth of the structures. With this capability, surgeons would be able to make rapid intra-operative decisions to avoid unnecessary injury to the patient.

SPOTLIGHT:

Illuminating Cancer Care

New technology developed by a team of researchers at Dartmouth is making radiation therapy more precise in cancer treatment.

BeamSite Cherenkov imaging cameras have made radiation visible—allowing radiation therapists to direct radiation to cancer cells more accurately, preserving healthy tissue. With a visible radiation beam, radiologists can also quickly intervene if a patient moves and the radiation is off-target.

Dartmouth Cancer Center's locations in Lebanon, Manchester and Keene, NH are equipped with Cherenkov imaging cameras, with plans to expand access to locations in St. Johnsbury, VT. The BeamSite system is now used by over a dozen medical centers with more being installed this year.

Scan the code to read more.

COPPER TRIAL

for Triple-Negative Breast Cancer

Linda T. Vahdat, MD, MBA

Cancer cells are master manipulators in the body,

but clinical researcher and breast oncologist Linda T. Vahdat, MD, MBA, shares a promising way to stop them that she is studying in a new clinical trial for triple-negative breast cancer.

Triple-negative breast cancer is so named because the estrogen and progesterone receptors—hormone receptors in the tumor—are negative, and so is the HER2/Neu receptor, a growth accelerator. Triple-negative represents about 17 to 20 percent of all breast cancers. It can be more aggressive than non-triple-negative breast cancers. Triple-negative breast cancer grows differently and, therefore, needs to be treated differently to improve outcomes.

17-20%
breast cancer cases are triple-negative

Dr. Vahdat and her team have been building on an earlier concept that found copper depletion could reduce the spread of tumors. In their work, Dr. Vahdat's team found, thanks to their 2007 clinical trial, that an oral copper depletion compound was safe, well-tolerated, and effective at reducing instances of tumor recurrence. Those important early findings led them to design their new trial, which has opened for enrollment at Dartmouth Cancer Center and several other participating cancer centers.

Eligible patients are those who have received standard-of-care treatment for triple-negative breast cancer, which is chemotherapy and immunotherapy before surgery, but still have residual disease after treatment. The clinical trial will help them by seeing if adding an oral copper depletion pill to change what is called the "tumor microenvironment" can prevent their disease from spreading, prevent recurrence, and ultimately improve their outcome.

This is a multi-center study, with seven other cancer centers participating. With more grant money, Dr. Vahdat and her team hope to expand it to more sites. They feel poised to make a difference.

Positively Shining in Patient Experience: The 2024 Press Ganey Pinnacle of Excellence Award

Dartmouth Cancer Center has earned, for the fifth year in a row, the 2024 Pinnacle of Excellence in Patient Experience Award by Press Ganey, the global leader in healthcare experience solutions and services.

This award is part of Press Ganey's annual ranking of the top hospitals and health systems in the country. Each award honors sustained performance in patient experience measured over a 3-year time period. Earning the award five years in a row (2020–2024) means that patients have placed Dartmouth Cancer Center in the top 5% of healthcare providers nationwide since 2017. Dartmouth Cancer Center is one of only four NCI Comprehensive centers to win the Pinnacle award for five consecutive years.

In other words, the Pinnacle of Excellence Award in patient experience recognizes organizations who not only create, but maintain an environment year-over-year that puts human experience at the heart of healthcare.

"Care experience is not a simple goal to check off a list. It's at the very core and foundation of who we are as people and as providers," says Dartmouth Cancer Center director Steven D. Leach, MD.

"We are committed to caring for our neighbors and our community by easing the challenges and improving the lives, now and in the future, of those who have been touched by cancer. It's our heartfelt mission to advance the human experience of healthcare by creating a kind and trusting care environment that puts patients, families, care partners, healthcare teams and community first."

– Steven D. Leach, MD

YOUR WAY FORWARD

PETER'S STORY

"This program is so important to the fire service. People are going to be given another chance."

– Peter Lennon

Peter Lennon, 45, was climbing castles in Scotland with his family and found himself lagging behind. It was odd. Walking around and being on his feet all day shouldn't have been a problem.

As the Fire Marshal for the city of Manchester, New Hampshire, work keeps Lennon active with code enforcement, reviewing plans, public education, and fire investigations for every incident in the city. He's held the position for 18 years, and also serves as a police officer in the neighboring town of Auburn.

For over a year, Lennon was experiencing fatigue and other symptoms, including restless legs that would keep him up at night. "I just thought it was my age, life over 40," he said. He tried more exercise, cutting out alcohol, and taking vitamins, but he still wasn't feeling like himself.

In May 2023, the Local 856 firefighter's union and the City of Manchester launched the city's first free cancer screening program for the fire department. The screening program, organized by Dartmouth Health and Anthem Blue Cross Blue Shield—along with a tumor removal surgery performed by Dartmouth Hitchcock Clinic Manchester's Jeffrey R. Harnsberger, MD—saved Lennon's life.

Screening, Surgery, Recovery

Risk and reward

From firefighter, to fire inspector, and now Fire Marshal, Lennon has dedicated his life to keeping people safe.

"Like anything in emergency services, we're reactive to what's going on that day," he said. A good day is quiet. But those are rare. The adrenaline rush of calls, and the camaraderie among his colleagues is deeply rewarding, despite the risks that come with the job.

According to the International Association of Fire Fighters (IAFF), firefighters are at a higher risk for cancer than the general population. Exposure to chemicals, toxins, and other carcinogens from clothing, furniture, and flooring puts them at risk, causing 65 percent of line-of-duty deaths each year—highlighting the need for PPE, personal protective equipment, and thorough decontamination after every fire.

On the first day of the new screening program, almost 200 firefighters and fire officials were shepherded through a low-dose CT lung scan and dermatology screening at Dartmouth Hitchcock Clinics Manchester. "We figured that somebody was gonna have a positive finding from this. I didn't think it was gonna be me," Lennon said.

A grim diagnosis

After the screening, Lennon was sent for a follow-up appointment, which included blood tests and a colonoscopy. While two polyps were removed in-office, Lennon also had a tumor that would require surgery. He was quickly referred to Harnsberger, Colon and Rectal Surgeon, at Dartmouth Hitchcock Clinics Manchester.

Peter Lennon playing cards with his family at home.

You can get another opinion, Lennon recalls Harnsberger saying, but my opinion is take the tumor out and make it better. Lennon knew that time was of the essence: Harnsberger said that if this wasn't taken care of immediately, the tumor could grow, and he'd only have three or four years to live. Surgery was scheduled for October 20. During surgery, Harnsberger removed a foot of colon, around 25 lymph nodes, and Lennon's appendix—in addition to the tumor—as an extra precaution. He also spent time on Lennon's spleen. "The surgery was longer than usual, but more thorough. I feel very confident that Dr. Harnsberger got everything," Lennon said. The nurses, also, were incredible, he said.

Six weeks later, Lennon went back to work. His colleagues welcomed him and offered support. Lennon knew that he'd be back: he made it his mission. "I really wanted to retire when I was ready to retire. Not because of a sickness or injury," he said.

Now, he sees it as his role to be an advocate for preventative care and screenings like this. "This program is so important to the fire service," he said. "People are going to be given another chance."

Another chance for family, life, work, and adventure—including an upcoming one across the pond. "We're gonna do round two in Scotland this year," Lennon said. He might even climb a castle or two.

Scan to read Peter's full story

Patients Served

2022 Pilot Program: 150

2024 Program: 2,000

Dartmouth Cancer Center Celebrates Expansion of Food Pantry, Funded by Philanthropy

Dartmouth Cancer Center celebrated the expansion of its Healing Harvest Food Pantry at Dartmouth Hitchcock Medical Center earlier this year. Increasing the food pantry's capabilities aligns with the Cancer Center's ongoing commitment to provide whole-person care to patients and their care partners.

The food pantry was established in 2022 when Continuing Care Manager Catherine M. Reed, MSW, realized that food insecurity was a serious issue among her cancer patients. From an initial pilot program providing 150 patients a week's worth of groceries every two weeks, the pantry, now Healing Harvest, expanded to serve 2,000 cancer patients in need with greater quantities and variety of foods available. Many items, including fresh bread, produce and dairy, are sourced from local vendors in New Hampshire and Vermont.

"Proper nutrition is crucial for healing and recovery. Because cancer treatment is challenging enough without the added stress of wondering where your next meal will come from," said Steven D. Leach, MD, director of Dartmouth Cancer Center. "By addressing food insecurity, we're not just feeding people; we're supporting their treatment and improving their chances of recovery."

"As we open this new space, it's truly amazing to see what we can achieve when we come together as a community to help our community," said Deborah F. Scribner, vice president of oncology services at Dartmouth Cancer Center. "It's a reminder that small acts of kindness, like offering a bag of groceries, can make a world of difference to someone facing cancer. It shows that treatment involves more than medical interventions to ensure our patients' wellbeing."

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>
> **– Steven D. Leach, MD**
> Director of Dartmouth Cancer Center

WHERE DO PROUTY DONATIONS GO?

From increasing colorectal screening for at-risk younger adults to combining technology to detect cancer earlier, last summer's record-breaking Prouty fundraiser event raised more than $8 million for ground-breaking research.

44th Annual Prouty

Saturday, July 12
Hanover, NH

The Prouty

The Prouty is northern New England's largest family-friendly fundraising event combining cycling, walking, rowing, golf and more to raise funds and awareness for life-saving research and critical patient and family support services at Dartmouth Cancer Center.

Here are two of these projects:

Why aren't younger adults getting screened for colorectal cancer?

In response to rising cases of colorectal cancer in younger adults, in 2021, the U.S. Preventive Services Task Force lowered the recommended screening age from 50 to 45. However, despite effective screening options where polyps can be found and removed before they become cancerous, many people aged 45-54 are still not getting screened as often as hoped.

In a new Pilot Project, researchers J. Henry Feng, MD, MPH, and Christine Gunn, MA, PhD, will figure out what is preventing younger adults who are at higher risk for developing colorectal cancer from getting screened. The team will then develop a patient-centered program that addresses the challenges faced by people in this at-risk group to improve screening.

Seeing the complete picture

Acute myeloid leukemia (AML) is a common and aggressive cancer of the blood. Genomics, which analyzes a person's entire genome (all their genes at once), can be used to better understand and treat AML. But, current genomic testing methods have drawbacks, including processing time and result limitations.

With Prouty funding, pathologists Jeremiah Karrs, DO; Lauren Wainman, PhD; and Parth Shah, MD, want to use a newer technology called "long-read sequencing" to analyze the entire genomic makeup of AML cells. Current whole-genome testing looks at small pieces of DNA. LRS looks at much longer stretches of DNA, giving a more complete picture and uncovering changes that short-read sequencing could potentially miss. LRS also offers the possibility of faster results. Faster and more complete genomic information could help oncologists choose the most effective treatments for each individual patient and ultimately improve outcomes.

Dartmouth Cancer Center

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NCI Designated Comprehensive Cancer Center

Dartmouth Cancer Center Renews NCI Comprehensive Cancer Center Designation

There are approximately 1,500 cancer centers in the U.S. Only 57 are National Cancer Institute (NCI) Comprehensive Cancer Centers. Dartmouth Cancer Center is proud to announce that our designation as an NCI Comprehensive Cancer Center has been renewed! With a score of "Outstanding," the NCI has renewed our Comprehensive Cancer Center designation through 2029, making it one of the longest-standing NCI-designated centers.

"We are entering our second half-century of continuous NCI designation," said Dartmouth Cancer Center Director Steven D. Leach, MD. "In renewing our grant and our designation, the NCI has affirmed that DCC provides the same level of cancer care and research as a major metropolitan Comprehensive Cancer Center, but with a small-town, compassionate community face. This distinction is more than a title; extending our NCI designation means extending our legacy of making discoveries that are truly practice-changing, paradigm-shifting, and policy-influencing."