

Lindvall is winner  
of NQF Innovation  
Challenge



Annual luncheon  
highlights advances  
in genetic testing



Getting to know  
Nina Scott



## Large-scale cancer gene profiling is feasible

The success of the Profile program at Dana-Farber/Brigham and Women's Cancer Center and Boston Children's Hospital shows that genomic tumor profiling is technically feasible in a broad population of adult and pediatric patients with many different types of cancer, according to a new study.

The Profile experience has also demonstrated that some patients can benefit from tumor analysis by having precision drugs targeted to their cancer's specific mutations or by enrolling in clinical trials of experimental drugs.

Still, the researchers caution that challenges remain in adopting the practice on a wide scale and integrating it into routine cancer care.

Tumor profiling uses DNA sequencing and other tools to analyze a patient's tumor tissue for mutations and other abnormalities that drive the cancer's growth. This genomic "fingerprint" may help to refine the patient's diagnosis, predict how the cancer will behave, and enable doctors to select the best drug treatment.

The report, published online by the journal *JCI Insight*, covers 3,727 patients whose samples were analyzed during the first year of the Profile

*Gene profiling, page 4*

## Collaborative model between oncology and palliative care benefits patients



Jeffrey Meyerhardt and Lida Nabati are part of a team piloting a new model of care in which palliative care clinicians are embedded on treatment floors.

A cancer care team includes nurses, radiation oncologists, social workers, psychiatrists, oncologists, and others. While so many experts often improve patient outcomes, such a multidisciplinary team can sometimes make communication and coordination difficult. Dana-Farber's Psychosocial Oncology and Palliative Care department is working to change that.

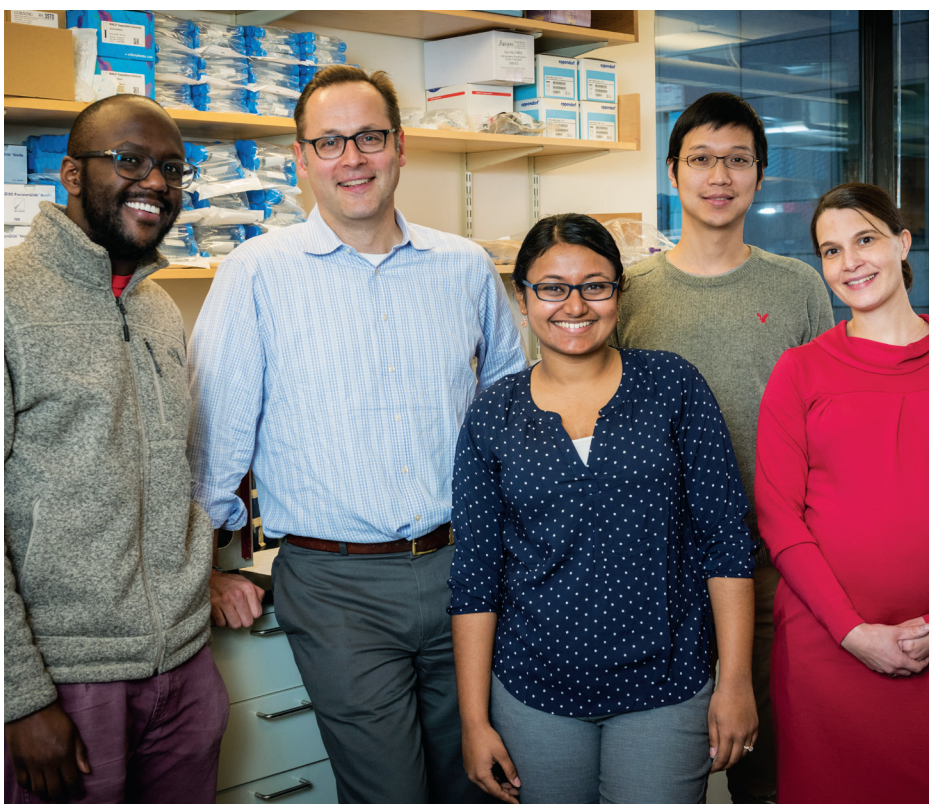
Since October, palliative care clinicians have been embedded on several treatment floors in the Yawkey Center, including the Gastrointestinal

Cancer Treatment Center on Yawkey 7. In this new model, palliative care clinicians see patients with their oncologist or one-on-one, or simply offer guidance to providers. Having palliative care appointments readily available in the treatment center streamlines the process for both providers and patients, removing the need for time-consuming referrals or extra trips to Dana-Farber.

"At times, sending patients up to the palliative care clinic [on Yawkey 11] causes a bit of a

*Collaborative model, page 4*

## Research suggests way to boost staying power of immunotherapy



Pictured from left to right are Flavian Brown, W. Nicholas Haining, Debattama Sen, Hsiao-Wei Tsao, and Ulrike Gerdemann. Their study's findings may suggest a way to increase the staying power of CAR-T cells.

In people with chronic infections or cancer, disease-fighting T cells tend to behave like an overwhelmed militia – lethargic, ill-prepared, tentative – a state of "exhaustion" that allows disease to persist. In a recent paper in *Science*, researchers at Dana-Farber/Boston Children's Cancer and Blood Disorders Center report that, in mouse and human cells chronically infected by a virus, exhausted T cells are controlled by a fundamentally different set of molecular circuits than T cells engaged in battling disease. The finding suggests a way to increase the staying power of CAR-T cells, a promising form of immunotherapy for cancer.

The study brings renewed focus to the epigenetics of T cells – the multilayered system of molecular switches, accelerators, and throttles

that controls the activity of genes. Scientists have known for years that the pattern of gene activity is different in exhausted than in robust T cells, but the actual extent of these differences has been uncertain.

One difference that is clear is that exhausted T cells express the programmed cell death protein-1 (PD-1), which commands them not to attack normal, healthy cells, but can also prevent them from striking at cancerous or chronically infected cells. Blocking PD-1 with checkpoint-inhibiting drugs – thereby restoring the cancer-killing zeal of T cells – has become one of the most successful new approaches to cancer treatment in nearly a decade. However, it has provided a benefit in only about a quarter of cases.

"Exhausted T cells display a variety of

*Immunotherapy, page 2*



# News of Note



Charlotta Lindvall

## Lindvall recognized for innovative natural language processing research

**Charlotta Lindvall, MD, PhD**, of Adult Palliative Care, is one of five winners of an Innovation Challenge issued by the National Quality Forum (NQF), which aims to introduce novel methods to improving quality measurement in health care. Lindvall's project, for which she is partnering with surgeons at Brigham and Women's Hospital and researchers at Massachusetts Institute of Technology, focuses on improving care for palliative surgery patients using natural language

processing to mine the electronic medical record. Lindvall and the other winners will be part of NQF's first Measure Incubator™ Learning Collaborative, which will connect them with experts, resources, and data to implement their measures nationally.

"Our natural language processing method can access rich information in the patients' charts that reflect what matters to them and their families," says Lindvall, who joined Dana-Farber's Psychosocial Oncology and Palliative Care department in July. "This is documented in the medical record, but patients with a serious illness like cancer have so many notes that the patient experience often gets lost in manual chart review."

Currently, providers need to search through hundreds of pages of notes to find information on symptoms, health care proxies, or end-of-life conversations and preferences. With Lindvall's method, she hopes to aggregate this information and allow providers to access it as easily as they might find lab information.

In her palliative surgery project, Lindvall is analyzing documentation of goals of care prior to surgery. The typical quality measure for surgery is 30-day survival, but the goal of palliative surgery is symptom improvement, not curing the disease. By assessing patients' symptoms and goals of care, rather than survival, providers can get a better sense of whether surgeries are successful.

"We are ensuring that patients' voices have been heard and documented, and that conversations about their goals take place," says Lindvall. "There is real data in the conversations palliative care providers have with patients; we want to make this data easily available to researchers so we can better understand patients' experiences."

While the project is focused on palliative surgery, she is working to expand her methods throughout palliative care and medical oncology, and eventually across all research areas at Dana-Farber, as the technology can be used to find any data in the medical record. Lindvall will present an NQF webinar on her research in January, and her team hopes to publish their first paper on natural language processing methods. [SEW](#)

## Newton-Wellesley oncologists join DF/BWCC



Jeffrey Wisch

Three oncologists from Newton-Wellesley Hospital (NWH) joined Dana-Farber/Brigham and Women's Cancer Center on Oct. 1: **Jeffrey Wisch, MD**, in the Gastrointestinal Cancer Treatment Center, and **Caroline Block, MD**, and **Susan Schumer, MD**, in the Susan F. Smith Center for Women's Cancers.

"We welcome Drs. Wisch, Block, and Schumer," says Eric P. Winer, MD, chief strategy officer and director of Breast Oncology at the Susan F. Smith Center. "We look forward to collaborating with them and are delighted that our patients can benefit from their extensive experience and skill."

Wisch cares for patients with gastrointestinal cancers at DF/BWCC in the Longwood Medical Area and Dana-Farber Cancer Institute at St. Elizabeth's Medical Center, and is a liaison to its broader network of community-based satellites and practices. A graduate of Mount Sinai School of Medicine, he completed a residency at the University of Pennsylvania and a fellowship in hematology and oncology at Brigham and Women's Hospital (BWH) and the Sidney Farber Cancer Institute before it became Dana-Farber. He has served at NWH since 1983 in various roles, including division chief of Hematology/Oncology, clinical director of the Vernon Cancer Center, medical director of Inpatient Oncology Unit, and president of New England Hematology Oncology Associates, PC. He oversaw the Tanger Infusion Center at NWH and was instrumental in the creation of the Vernon Cancer Center there.

Block cares for breast cancer patients at DF/BWCC in the Longwood Medical Area and Dana-Farber Cancer Institute



Caroline Block



Susan Schumer

## Immunotherapy, continued from page 1

functional defects," says W. Nicholas Haining, MD, of Dana-Farber/Boston Children's and the Broad Institute of Harvard and MIT, the co-senior author of the study with Nir Yosef of the University of California, Berkeley, and the Ragon Institute of Massachusetts General Hospital, Massachusetts Institute of Technology, and Harvard University. "They are paralyzed and don't have the firepower to destroy cancer or virally-infected cells. In this study, the question was, 'do exhausted cells represent a distinct type of T cell, or are they merely a 'groggy' version of functional T cells?'" Helping lead the research were Debattama Sen of Dana-Farber and James Kaminski of the University of California, Berkeley.

With chronically infected mice as their model, the researchers used a new technology called ATAC-seq to map the regulatory regions of the genome – the sections of DNA involved in switching genes on and off – in the animals' exhausted and functional CD8+ T cells. (CD8+ T cells help identify and eliminate cancerous and infected cells.)

"We found the landscape of regulatory regions to be fundamentally different in exhausted and functional T cells," Haining says. "There were thousands of instances where

a regulatory region appeared in exhausted T cells but not in their functional counterparts, and vice versa. This tells us the two types of cells use very different wiring diagrams to control their gene activity."

The researchers then tested whether removing a stretch of DNA that spurs the production of PD-1 protein would drive down its expression. Using CRISPR/Cas9 gene-editing technology, they snipped out that region and PD-1 expression indeed fell.

The success of this approach may offer a key to improving CAR-T cell therapy. In this form of therapy, T cells are removed from a patient, genetically engineered to grow a protein sensor that directs them to tumor cells, and then re-injected into the patient.

Although the resulting CAR-T cells are skilled at tracking down and killing cancer cells, the attackers tend to become exhausted over time. The study authors suggest that at the same time the T cells are being engineered to produce the sensor, they could also be retooled to delete the genetic wiring that causes them to express excessive levels of PD-1 and other exhaustion genes. The newly persistent CAR-T cells would be better at stalking cancer and more aggressive in attacking it. [RL](#)

## Urgent need for platelet donors

An extreme shortage of necessary blood products is affecting the Kraft Family Blood Donor Center, which provides life-saving platelets to patients at Dana-Farber and Brigham and Women's Hospital. In particular, there is an urgent need for male platelet/plasma donors. The shortage of platelets is nationwide.

Platelets are the body's internal bandages, have a shelf life of five days, and can be donated every seven days. The Kraft Family Blood Donor Center collects platelets seven days a week.

Email [BloodDonor@partners.org](mailto:BloodDonor@partners.org), or call 617-632-3206 to make an appointment.

### Kraft Family Blood Donor Center



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at St. Elizabeth's Medical Center and is also a liaison to its broader network of community-based satellites and practices. She earned her medical degree from the University of Michigan, and after her residency at Beth Israel Deaconess Medical Center, she completed a fellowship in medical oncology at Dana-Farber, a clinical fellowship in hematology at BWH, and a Kellogg fellowship in Clinical Effectiveness, Epidemiology Program, at the Harvard T.H. Chan School of Public Health. She was on staff at NWH from 1991 through 2016, where she was assistant chief of Hematology and Medical Oncology, medical director of the Breast Clinic, director of Oncology Clinical Research, and director of the Anticoagulation Clinic.

Schumer cares for breast oncology and gynecologic oncology patients. A graduate of Tufts University School of Medicine, she completed her residency at New England Medical Center and a fellowship at Beth Israel Deaconess Medical Center. She was a medical oncology attending physician there from 2003 to 2008, then served on staff at NWH since 2009. [CC](#)

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Story ideas are welcome. Please contact Naomi Funkhouser at 617-632-5560 or [Naomi\\_Funkhouser@dfci.harvard.edu](mailto:Naomi_Funkhouser@dfci.harvard.edu). Visit the Dana-Farber website at [dana-farber.org](http://dana-farber.org) or the intranet at [dfcionline.org](http://dfcionline.org).

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# Mobile art cart a welcome diversion for patients

Calling all creative types: A traveling mobile art cart, sponsored by the Leonard P. Zakim Center for Integrative Therapies, now offers Dana-Farber patients an outlet to reduce stress through expressive arts such as coloring, weaving, and card-making. The small metal cart is lined with multi-colored drawers filled with adult coloring books, packs of colored pencils, high-quality art paper, and more.

Heather Woods, MT-BC, manager of Expressive Arts Therapies at the Zakim Center who runs the mobile art cart program, says the cart can help make the side effects of treatment a little more manageable.

“Our goal is to bring more creative opportunities directly to patients in these

stressful moments so they can have a break and gain new coping skills,” Woods says.

The mobile art cart travels to waiting and infusion areas to help patients pass time before appointments. It is on floors six through eleven in the Yawkey Center every day.

“It’s a non-threatening way for people to explore themes that might be coming up in their life,” says Woods.

The cart is an extension of the Open Arts Studio, a walk-in space in the Eleanor and Maxwell Blum Patient and Family Resource Center on the first floor of the Yawkey Center. The studio, open from 10 a.m. to 4 p.m., offers all kinds of arts and crafts materials, including yarn, paints, fabrics, and canvases. It is open to



Heather Woods (left) offers supplies from the art cart to patients waiting for their next appointment.

patients, families, friends, and staff.

Medical experts now view integrative therapies as an effective complement to traditional treatment. Studies show that expressive and other integrative therapies, such as massage, acupuncture, and yoga, help patients relieve stress, ease pain, and

enhance quality of life. Woods says the mobile art cart does just that.

“Offering a way for patients to smile and relax when they are going through tremendous challenges brings a lot of meaning to my work and my life,” explains Woods. [AK](#)

## Two lab scientists receive new NCI Research Specialist Awards

Last year, the National Cancer Institute (NCI) created a new category of grants providing higher salaries and long-term funding for laboratory research scientists who have critical expertise but don’t choose to become principal investigators.

Dana-Farber research scientists Gregory Bird, PhD, and Sachet Shukla, PhD, have won two of these coveted R50 grants, known as Research Specialist Awards.

Bird, a former postdoc, is now a senior scientist in the laboratory of Loren Walensky, MD, PhD, of Pediatric Oncology. Shukla is a computational biologist and senior scientist in the laboratory of Catherine Wu, MD, of Medical Oncology.

In announcing the new grants program, the NCI noted that biomedical research is starting to rely more on staff scientific specialists within laboratories and core facilities.

Previously, research scientists like Bird and Shukla were dependent on grants held by their principal investigators – an unpredictable form of support which, according to the NCI, lacks the recognition or independent funding to attract the best scientists.

With the launch of the R50 grants, research scientists who receive the awards will be funded independently for five years with what the NCI calls “desirable salaries” and greater career continuity. The grants are subject to renewal after five years, and if the research scientists move to other programs or institutions, they can take the funding with them.

“These awards are not only impressive endorsements of Greg’s and Sachet’s skills, but they’re also an external validation of Dana-Farber’s Scientist Program, a career track that we’ve devoted a tremendous amount of time and effort to,” says Chief Scientific Officer Barrett Rollins, MD, PhD. “This is a wonderful confirmation of the value scientists bring to Dana-Farber’s mission.”

In Walensky’s lab, Bird directs the Stapled Peptide Design Group. Walensky’s lab has pioneered the design and synthesis of stapled peptides – compounds that can enter cells and act as probes or switches to engage proteins. They’re being used as research tools and developed as new therapies, owing to their ability to modulate targets in cancer cells that can’t be hit by conventional small-molecule drugs. Other potential uses are in treating diabetes and infections including HIV.

Bird says the five-year duration of the grant gives him “recognition and job security,” and that he “won’t have to ponder alternatives” to the work

he loves being a part of in the Walensky lab at Dana-Farber. Walensky says, “Greg has been instrumental in generating thousands of novel compounds for innumerable collaborative cancer research projects. We are just now beginning to see the clinical impact of our decade of work together. I am thrilled that Greg’s contributions are being recognized and supported as we continue to drive our cancer research initiatives forward.”

In Wu’s laboratory, Shukla’s specialty is analyzing large data sets in immunogenomics – using genomic tools to study the complexity of the immune system and related diseases, including cancer.

Originally trained as a chemical engineer in India, Shukla switched to molecular biology with a bioinformatics emphasis. He worked at a startup company in Iowa and received his PhD from Iowa State University while a member of Wu’s lab at

Dana-Farber. Shukla began as a non-tenure-track scientist and is now a senior scientist.

“The award is a good fit for what I’m doing,” says Shukla. “It supports scientists who have a track record of publishing and doing good research” within a broad laboratory program. Shukla is applying his bioinformatics expertise to two clinical trials led by Wu evaluating NeoVax, a personalized cancer vaccine, in patients with melanoma and glioblastoma. He’s also involved in developing new bioinformatics tools for analyzing trial data.

Wu says, “This award rightly recognizes the critical contributions of research staff scientists, ensuring the continuation and stability of deep knowledge and expertise – in this instance, in immunogenomics – within our research unit, so that we can continue to build our science in cutting-edge directions.” [RS](#)

## Beyond Boston Luncheon highlights advances in genetic testing

The eighth annual Beyond Boston Luncheon, held Nov. 15, is an educational forum and fundraising event hosted by the Executive Council of the Susan F. Smith Center for Women’s Cancers. The event gave more than 280 attendees an inside look at how Dana-Farber is advancing genetic testing for women’s cancers.

“[Genetic testing] is an area that has exploded over the past few years, all to the benefit of patients around the world,” remarked Eric P. Winer, MD, director of Breast Oncology and chief of the division of Women’s Cancers, who moderated a panel featuring Huma Rana, MD, clinical director of the Center for Cancer Genetics and Prevention, and Jill Stopfer, MS, LGC, associate director of Genetic Counseling. Rana and Stopfer provided an extensive overview of the role genes play in causing cancer, when genetic testing



Eric P. Winer speaks to attendees at the annual Beyond Boston Luncheon.

is appropriate, and how it can affect treatment decisions. Rana, Stopfer, and Winer were three of 13 faculty members who participated in the event and shared insight with attendees.

Katherine Saunders also took the stage at the Wellesley Country Club, sharing her experience with genetic testing and counseling at Dana-Farber. When Saunders’ father tested positive for a BRCA mutation, the 37-year-old decided to have testing and found she, too, was a carrier. The mother

of two chose to be proactive about reducing her risk of breast and ovarian cancers, and had her ovaries and fallopian tubes removed. Her story highlights the importance of being informed about genetic testing and knowing your family history.

This year’s luncheon is close to raising its goal of \$250,000. Since 2002, the Executive Council has raised more than \$11 million in support of research at the Susan F. Smith Center. [TT](#)



research project, which launched in 2011. Laura MacConaill, PhD, of Dana-Farber and Brigham and Women's Hospital (BWH), the scientific director of the Profile program, is the corresponding author of the publication; first author is Lynette M. Sholl, MD, of BWH.

To date, Profile researchers have analyzed more than 15,000 individual tumors. Unlike most other genomic testing programs, Profile tumor analysis is offered to all patients, regardless of age, cancer type, or stage of the cancer.

According to the report, at least one “actionable” mutation – one that could aid diagnosis or guide treatment – was discovered in about two-thirds of patient samples. In 20 percent of cases, such mutations could enable doctors to match a patient's tumor profile to a targeted drug or improve the original diagnosis. In the remaining cases, the information could help patients be referred to clinical trials of approved or investigational drugs.

The authors listed several cases in which the results

of Profile analysis led to improved diagnoses and better outcomes. For example, a patient with blood cancer who received several diagnoses was found, through testing, to have an unusual form of acute myeloid leukemia that often responds to imatinib. He was treated with that drug and experienced a “dramatic and sustained clinical response.”

While determining the genetic makeup of a patient's tumor is a critical tool for precision cancer medicine, the report's authors noted several challenges and unanswered questions about large-scale clinical application of the methods. Just over half of patients in the study who had tumor profiling ordered by a physician actually received results, due to a variety of technical and logistical factors. For example, some patients' cancer samples didn't have sufficient material for study or for DNA sequencing.

And in only a minority of cases – about 10 percent across the cohort, the researchers estimated – was the test information used in caring for the patient, although in some cancer types the rate was much

higher. Reasons for the high level of attrition included absence of effective drugs, timing of genomic testing in the course of a patient's disease, less-than-optimal access to targeted drugs or clinical trials, and patient and provider preferences. Identifying these barriers allows researchers to develop and implement new solutions, with the goal of improving the rate of use of the genomic results, the authors say.

MacConaill notes that the results of Profile genomic testing are being used to further research within the institutions and are shared more widely with initiatives like Project GENIE of the American Association for Cancer Research, which will help advance the field of precision medicine.

The study wasn't designed to measure whether tumor profiling made a difference in how patients fared, but “it nonetheless lays the groundwork for more systematic study of the impact of genomics on clinical practice and patient outcomes,” according to the report. [RS](#)

## IN THEIR OWN WORDS

“Dr. Matulonis and Cathy Earley, NP, are angels. They took phenomenal care of my mother for 11 years. I am so glad to see they continue to be the best and are able to help others.”

–Allison G. [f](#)

## STAFF ID



### Nina Scott, CMI

**Department:** Interpreter Services

**Title:** Supervisor of Interpreter Services

**Years at DFCI:** 1

**Describe your role here:** Interpreter services are an important component of delivering safe, high-quality, and equal care.

Dana-Farber provides medical interpreters at no charge to patients and their families who speak a language other than English. As supervisor of Interpreter Services, I oversee department operations

and support my staff of 50 medical interpreters to make sure that limited-English-proficiency patients and providers can communicate. I also manage Dana-Farber relationships with third-party language services vendors and develop policies and procedures to ensure DFCI is compliant with language access guidelines set by federal and state mandates, as well as other regulatory agencies like the Joint Commission.

**Where did you go to school?** I earned my bachelor's degree in international cultures and economics from Bentley University. I received my certificates in medical, legal, and community interpreting from Boston University. I also earned my master's degree in human services management from UMass Boston.

**What brought you to Dana-Farber?** Formerly, I worked at both McLean and Shriners hospitals, so I was very attracted to the specialized hospital atmosphere and big-mission agenda of Dana-Farber.

**What do you love about your work?** I enjoy helping to bridge the cultural and linguistic gaps between two people who need to communicate for a specific purpose.

**What is your biggest challenge?** Educating providers and patients alike on the benefits of using qualified medical interpreters and the dangers of using untrained interpreters such as family members, friends, or other bilingual persons.

**What book are you reading?** I like to alternate between reading something serious and something fun. I recently finished *The Girl on the Train*, and now I am reading *Is that a Fish in Your Ear?: The Amazing Adventure of Translation*.

**If you didn't work in your current role, what job would you most like to do?** Something involving language, culture, and helping others. These are very much part of who I am.

**What do you do for fun?** I enjoy running, gathering with family and friends, and movie nights with my husband and kids. [ITI](#)

## Collaborative model, continued from page 1

disconnect, but when providers are right here, it's easier to communicate,” says Jeffrey Meyerhardt, MD, MPH, clinical director of the Gastrointestinal Cancer Treatment Center.

Meyerhardt and his group have teamed with Lida Nabati, MD, of palliative care, who is on the floor every Wednesday afternoon, as well as Andrea Enzinger, MD, a medical oncologist in the center who also provides palliative care on Thursdays and Fridays. Nabati often starts her afternoons with a visit to the provider workroom, where she gets a report on patients from nurse practitioners and provides advice on cases.

“Patient care can be pretty dynamic, and having the opportunity to check in face-to-face with other clinicians has been helpful,” she says.

Nabati tells providers that it is never too early to refer a patient to palliative care; having a serious illness like cancer can be reason enough to introduce it. She and her colleagues – including Doug Brandoff, MD, with the Center for Sarcoma and Bone Oncology, and John Halporn, MD, in the Gynecologic Oncology Program, among others – work with not only oncologists, but also social workers and infusion nurses to identify appropriate patients for palliative care.

“My role is to preserve the primary relationship between the oncology team and the patient,” Nabati explains. “Patients and I discuss symptom management and how they're coping with their illness, and, if desired, we work with them and their oncology team to define their goals and determine what's best for them in their treatment.”

While palliative care has become more mainstream in recent years, and the palliative care clinic even sees some self-referrals, some education is still necessary about what the specialty is and how it can help.

“There are many parts to treating cancer, and people have different perspectives on how to help a patient,” Meyerhardt says. “The understanding that cancer care is a collaborative effort is much more accepted today.”

Nabati adds that by the time patients see her, the oncology team has already dispelled most misconceptions patients may have about palliative care.

“This collaboration helps us better communicate with each other and share our perspective of what's going on with each patient,” Meyerhardt explains. “The more we can provide services like palliative care when patients are here for treatment, the more we enhance their care and experience.”

Embedded palliative care clinicians currently work in gastrointestinal, sarcoma, gynecologic, and head and neck clinics on certain days per week as part of a collaborative pilot project involving oncologists, palliative care clinicians, and Quality and Patient Safety. This is in addition to the ongoing Adult Palliative Care Clinic on Yawkey 11. James Tulsy, MD, department chair and chief of palliative care, hopes to expand the program to more treatment centers in the next several years. [SEW](#)