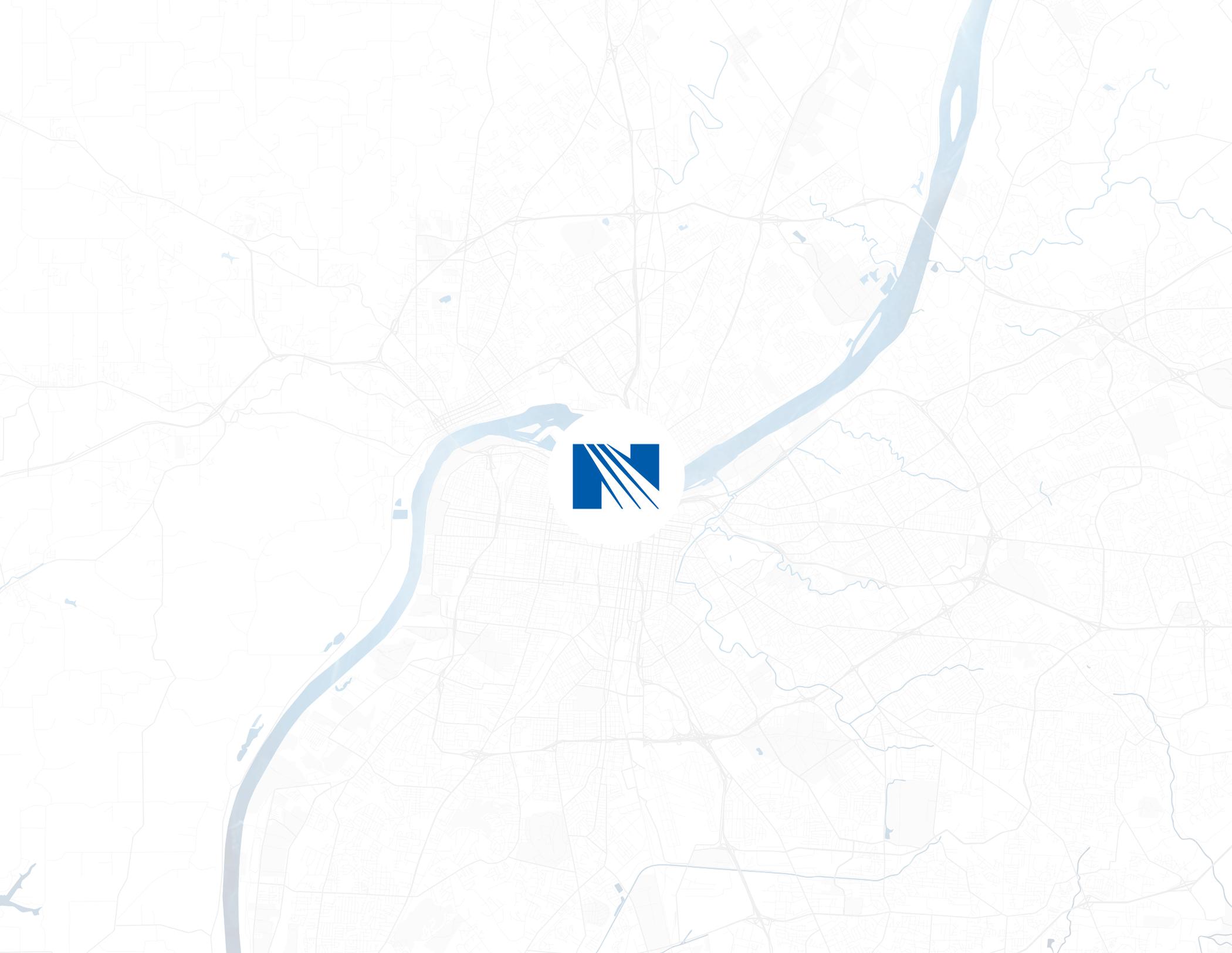


Navigating

the Future of Cancer Care







Navigating the future of cancer care

The focus of this year's annual report has a lot of meaning to me. This is one of the most dynamic and exciting times in the history of cancer medicine, and Norton Cancer Institute remains at the forefront. While we have experienced unparalleled growth and success across multiple programs within our cancer service line, it's our ability to appropriately interpret the winds of change that has helped us become the foremost cancer program in our region.

This report highlights many of our impactful programs. All are built on our commitment to offering subspecialty care, expanded access to clinical trials and ease of access to care. During the past year, we have continued our evolution to one of aligned, multispecialty, prospective and integrated care, where we leverage the full breadth of our expertise to work in sync to battle each individual's cancer.

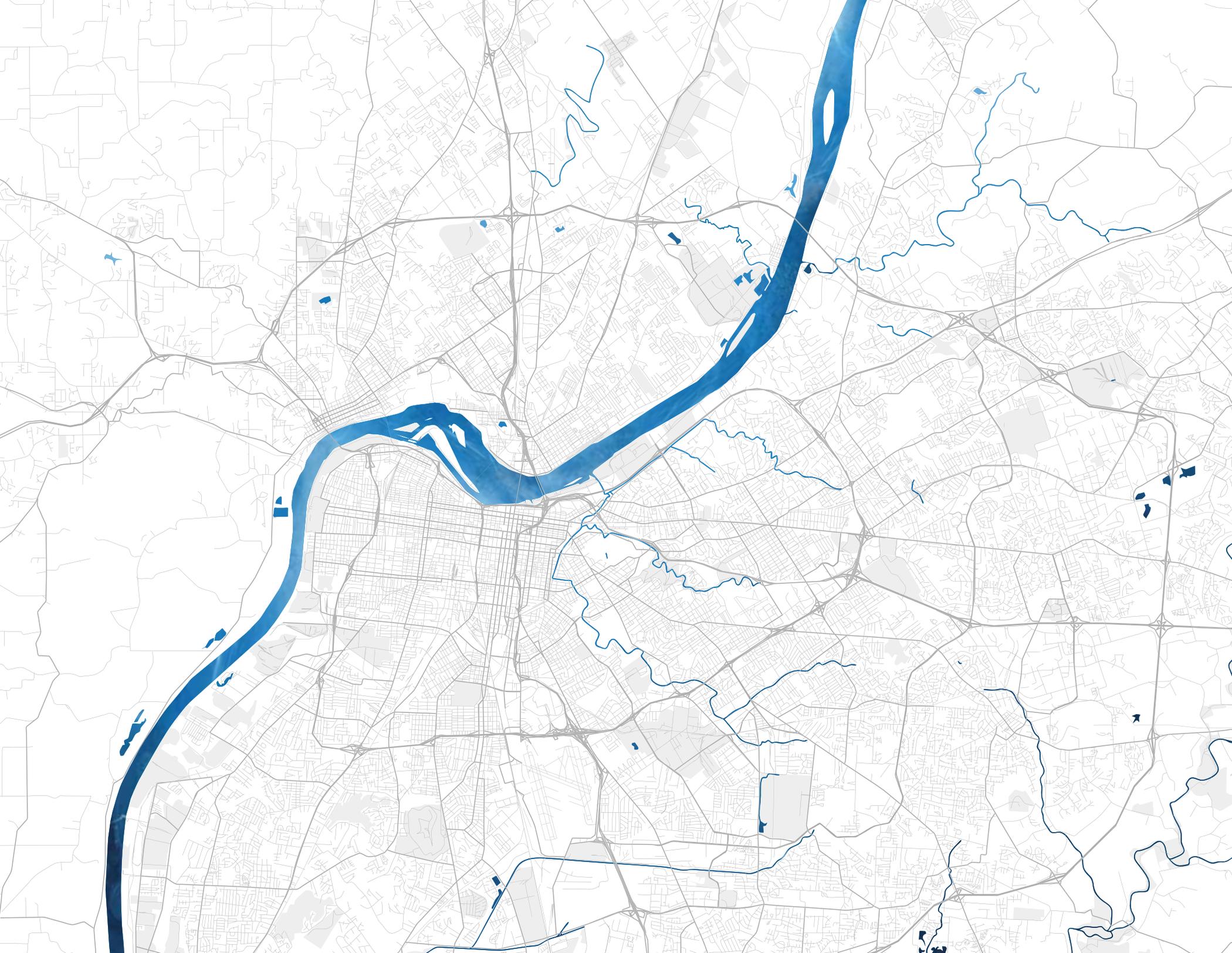
Along with our new programs, you will be introduced to our new cancer specialists and learn how each is fully aligned with our goals of being the preferred provider of cancer care in this region and offering access to an extensive array of novel treatments. We are thrilled to bring such talented and compassionate specialists to our team. It is this combination of new talent working with our proven skilled providers and support staff that will ensure we are best able to navigate and lead the future of cancer care.

Joseph M. Flynn, D.O., MPH, FACP
Physician-in-Chief
Norton Cancer Institute

The year in achievements

Growing to meet an ever-expanding need





Major downtown renovations will expand services

As a leading regional provider of comprehensive cancer care, we continually invest in growing and improving our quality, patient-centered services. In 2019 we launched a major renovation and reconstruction project to expand and relocate various downtown facilities and programs across a wide range of subspecialties.

Work was completed in February 2020 at these two locations:

- **Norton Cancer Institute – Downtown (676 S. Floyd St.)**

This site houses our Prompt Care Clinics for patients with urgent care needs related to cancer, hepatitis C and sickle cell disease. Advanced radiation therapy services continue to anchor the first floor. New multidisciplinary care space was created for our Head and Neck Tumor Program and Comprehensive Lung Center. Current skin cancer resources were expanded to include innovative new technology. The third floor houses a state-of-the-art oncology pharmacy and an expanded chemotherapy and infusion suite.

- **Norton Cancer Institute Women’s Cancer Center (234 E. Gray St.)**

Located in Medical Towers South, this location houses administrative and provider offices, plus education and meeting space. The first floor houses a new women’s cancer center with offices for gynecologic oncologists Lynn P. Parker, M.D., and Charles B. Palmer, D.O., along with six large gynecologic oncology exam rooms.

Other significant first-floor space is used for a new expressive art and music therapy suite. The second floor houses new administrative offices for our research program. The fifth and sixth floors include a new central call and scheduling center, plus space for our financial services team.

Additional enhancements include a multidisciplinary breast clinic led by medical oncologist Laila S. Agrawal, M.D., and a designated pull-in valet area to facilitate quick service for those visiting for outpatient blood tests.

This project reflects a focus on making access to care easier and improving coordination among our multidisciplinary teams. Oncology is a rapidly changing field. As new treatments, technologies and processes emerge, we are committed to planning ahead to meet the ever-changing needs of those we serve.



Multidisciplinary work drives robust research program

Clinical trials are vital tools in our fight against cancer. These have become an important link in determining the best new treatments and how therapies are best administered. In 2019, Norton Cancer Institute offered nearly 130 active clinical trials for cancers ranging from phase I to late-phase pivotal studies, and from first-line diagnoses to recurrent cases. Cancer represents the single largest segment of Norton Healthcare's 800-plus research portfolio.

A cancer research program this robust is uncommon in a nonuniversity-based community hospital setting. Our program's success hinges on a wide array of clinical and scientific expertise among our providers, a strong support infrastructure and multidisciplinary integrated teamwork.

As highlighted below, immunotherapy is a major focus for many of our current clinical trials.

Outsmarting blood cancers with cellular therapies

Medical oncologist Don A. Stevens, M.D., is encouraged by clinical trials using CAR-T (chimeric antigen receptor T cells) to fight lymphoma.

CAR-T cells are created by removing some of a patient's white blood cells through apheresis, then engineering the lymphocytes to more aggressively target a person's specific lymphoma. When CAR-T cells are reinfused into the patient, they act as "living drugs." Unlike a set dose of chemotherapy, they live on and keep fighting the cancerous cells they're engineered to target.

The success rate is quite good, especially for patients who have failed to respond to previous chemotherapy.

"We hope to look at expanding CAR-T's use for other blood cancers, including myeloma and acute leukemia," Dr. Stevens said.

Two other emerging cellular therapies also are showing promise against blood cancer. Antibody drug conjugates are being used to deliver chemotherapy to specific targets without exposing other healthy areas of the body to the drug. Bi-specific T cell engagers (BiTE) technology is using antibodies to put a patient's own T cells into direct contact with their cancer cells.

"BiTE technology has been used to cure leukemia, so future clinical trials may help us see if it can be used to treat myeloma," Dr. Stevens said.

Upper gastrointestinal cancer program simplifies, expands care

The Norton Cancer Institute Upper Gastrointestinal Cancer Program was formed in 2018 with the chief objective to provide faster, easier access to evidence-based, compassionate care and novel treatments for gastrointestinal (GI) malignancies. These include cancers of the liver, pancreas, biliary tract, stomach and esophagus. The cornerstone of the program is the closer alignment of specialists with individual patients in a multidisciplinary care team. Paramount to our success has been using the skills and expertise of a dedicated GI patient navigator who works closely with patients and their families, and simplifies their access to this specialized care.

The GI patient navigator facilitates timely appointments with multiple specialists. This can include medical oncologists, radiation oncologists, surgical oncologists, interventional radiologists, an interventional gastroenterologist, geneticists and dietitians. The navigator also provides education on available patient resources and can connect patients with specialists for consultations. Processes have been implemented so primary care and specialty care providers can make referrals directly to the GI patient navigator via electronic medical record or telephone. This important team member is a vital link between patients, families, referring providers and the program's multidisciplinary specialists.

Case review by a multidisciplinary team takes place at regularly scheduled tumor conferences, which is further augmented through videoconferencing that allows the widest access to all credentialed providers. Treatment plans cross multiple disciplines and can include innovative clinical trials, immunotherapy, minimally invasive procedures, state-of-the-art radiation and advanced diagnostics.



Paramount to our success has been using the skills and expertise of a dedicated GI patient navigator.

Targeting the No. 1 cancer killer

Despite earlier detection efforts and improved treatment options, lung cancer remains the top cancer killer in the United States.

According to Adam D. Lye, M.D., medical oncologist/hematologist, the majority of lung cancer clinical trials at Norton Cancer Institute focus on nonsmall cell lung cancer, the most common form of lung cancer.

“We’re working with targeted therapies that can identify a specific mutation within a tumor,” Dr. Lye said. “This allows us to deliver treatment directed at that specific mutation.”

Dr. Lye credits new targeted therapies and our high-risk multidisciplinary program for giving hope to the many patients and families touched directly and indirectly by lung cancer.

The multidisciplinary team’s expertise encompasses medical oncology, radiation oncology, thoracic surgery and pulmonary medicine. The group meets every Wednesday to review images, pathology and other relevant tests prior to seeing prospective patients. This allows them to move quickly when developing multimodality treatment plans for patients.

The same day that patients meet with the team, they can leave with a personalized treatment plan highly tailored for their specific tumor and needs.



Lung cancer remains the top cancer killer in the United States.

Taming aggressive brain cancers

Renato V. LaRocca, M.D., values the opportunity to be at the forefront of brain cancer research. As a neuro-oncologist and cancer medicine specialist, Dr. LaRocca has treated many cases of glioblastoma. He is grateful to be part of a clinical trial to assess the effectiveness of a novel immunotherapy vaccine for taming this aggressive, difficult-to-treat brain cancer.

“Vaccines are basically a means to try to activate one’s own immune system to recognize the presence of cancer and eliminate it,” Dr. LaRocca said.

The phase 2 clinical trial for this vaccine is being conducted by AIVITA Biomedical. Patients who are part of this trial have all followed the same process:

- A blood sample was collected and submitted to be processed for antigen-presenting immune cells.
- Proteins from each patient’s tumor cell line were used to develop a specific vaccine personalized for that patient.
- AIVITA Biomedical shipped each patient’s prepared vaccine to Norton Cancer Institute, where it was administered at specific time points in addition to the patient’s standard treatment.

Initial trial results, released by AIVITA in August 2019, suggest a significant decrease of tumor burden among study participants. Should this ultimately translate to survival, we will be honored to have been part of the work to move glioblastoma from largely untreatable to treatable.



Local foundation's \$250,000 gift supports new genomic testing lab, honors former patient

Thanks to a generous gift to the Norton Healthcare Foundation from the Steven Vanover Foundation, Norton Cancer Institute will soon revolutionize our use of next generation sequencing (NGS) technology to offer advanced treatments tailored to specific tumors, better diagnostic abilities and better prognostication of cancer.

Genomic testing looks at a tumor's unique genetic composition and determines what is driving a specific tumor's growth. This highly specialized testing provides information about a tumor's aggressiveness, prognosis and potential target for treatment.

Slated for widespread use by late 2020, Norton Healthcare will be the first medical facility in Louisville to bring this game-changing technology directly to the region. The new equipment will provide quicker, more focused lab results and help providers deliver genomic-specific tailored treatments. The new genomics lab will be able to cut the time it takes to get test results in half.

The Steven Vanover Foundation, which honors former patient Steven Vanover, donated \$250,000 to support the genomics lab. Steven, who passed away at age 24, had sarcoma, a rare and aggressive form of cancer. His family and friends created the foundation to honor his spirit and generosity, and to make a meaningful difference in treating and curing cancer.



Telehealth: Quality care beyond our walls

Technology is everywhere: tracking our steps, keeping us in touch with family and friends, even protecting our homes. Norton Cancer Institute is committed to using advanced technologies to serve our oncology and hematology patients through regional outreach using new telehealth technologies.

Interactive video conferencing and telehealth tools help our subspecialty care teams work together more effectively. They allow our specialists and providers to deliver the same quality care patients would receive in a traditional face-to-face visit.

Transportation can be one obstacle to obtaining leading-edge cancer care. Telehealth technology helps us deliver quality care beyond our brick-and-mortar walls. For example, we can remotely reach out to patients for regular follow-ups and remind patients to take medications or keep up with scheduled activities.

A study presented in 2017 at the American Society of Clinical Oncology supports telehealth's benefits. The study found that individuals with advanced cancer who used an online tool to report symptoms between provider visits survived an average of five months longer than those who did not use the online tool. Moreover, patients who used the online tool reported improved quality of life.



Increased subspecialization deepens knowledge, expertise

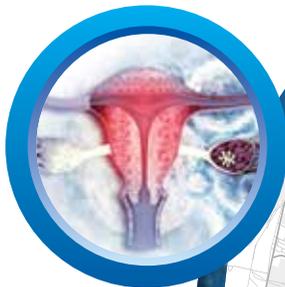
Advances in oncology are developing at warp speed. Consider, for example, that recent breakthroughs make it possible for oncologists to practice subspecialties that didn't exist 20 years ago.

In 2019, Norton Cancer Institute continued the journey of dedicated subspecialization in cancer care. As cancer care becomes increasingly complex, subspecialization is one way oncologists can best use new information and practices to benefit patients. This initiative, which centers around providers' focused subspecialization around specific cancers and a weekly cross-specialty team meeting, enriches the experience of patients and providers alike.

Subspecialists come to the weekly meeting prepared to recommend appropriate clinical trial options for cases within their disciplines, which inherently allows for harnessing the latest information for each patient's care needs. Recommendations are based on a thorough screening of available clinical trials and a detailed review of the patient's history. Patients' scans and slides are reviewed beforehand by pathologists who subspecialize in that individual's specific type of cancer.

Norton Cancer Institute is committed to evolving and elevating subspecialization with a continued focus on:

- Central nervous system and spine tumors
- Eye, head and neck tumors
- Lung and breast cancers
- Upper and lower gastrointestinal/hepatobiliary cancers
- Gynecologic and genitourinary cancers
- Sarcoma in the extremities
- Hematologic malignancies
- Pediatric oncology
- Adolescent and young adult cancer care
- Skin cancer
- Phase I clinical trials
- Geriatric oncology



Adult cancer services

The community's source for expertise



NORTON
CANCER INSTITUTE

Bobie Pirle, R.N., CCU
Patient Navigator



Comprehensive cancer care

Norton Cancer Institute is the largest comprehensive oncology practice in the region, offering medical oncology/hematology, radiation oncology, gynecologic oncology, neuro-oncology, surgical oncology, orthopedic oncology, oncologic dermatology, behavioral oncology, and genetic counseling services.

Our physicians, oncology-certified nurses and staff provide advanced treatment options and offer compassionate services for patients and their families. With eight outpatient office locations, three radiation centers, three chemotherapy infusion centers and access to numerous clinical trials, patients have high-quality, multidisciplinary care right here in Greater Louisville.

Inpatient cancer care is provided at Norton Healthcare's four adult-service hospitals — Norton Audubon Hospital, Norton Brownsboro Hospital, Norton Hospital and Norton Women's & Children's Hospital.

Norton Cancer Institute is accredited by the Commission on Cancer, an American College of Surgeons program based on 34 quality care standards for comprehensive and patient-centered cancer care. The accreditation signifies that we are committed to offering patients a range of services, from diagnostic imaging, radiation oncology and systemic therapy, to clinical trials, psychosocial support, rehabilitation and nutritional guidance. This multidisciplinary approach leads to improved patient care and better outcomes.



Norton Cancer Institute
is accredited by the
Commission on Cancer.

Same-day appointments

Patients who have been diagnosed with cancer may struggle to figure out where to go and what happens next. The last thing they want to hear is that it will be a week or two before they can get an appointment with a cancer specialist.

To further the ways in which Norton Cancer Institute offers care and service, we offer same-day appointments Monday through Friday for breast, colon, lung and other cancers. In most cases, depending on the level of care needed and the time of the call, a physician can see the patient that day.

It's natural to have many questions after learning you have cancer. Providing basic human compassion means we should be here for patients when they need us most.

Prompt Care Clinics

Norton Cancer Institute's commitment to compassionate whole-person care means we should be here for patients and families when they need us most. Our two Prompt Care Clinics — located at our downtown and St. Matthews offices — are open extended hours to make sure those who are in the midst of cancer treatment can find medical help quickly should they need it.

Individuals who are experiencing cancer treatment side effects or other troubling concerns might think about seeking after-hours care at an urgent care center or emergency department. A Prompt Care Clinic visit offers patients two clear benefits: They can avoid a long wait; and they will be triaged by specially trained advanced practice providers who will work closely with their primary cancer care team to determine the best course of action.

Prevention and early detection

Currently, Kentucky's cancer rates are among the highest in the nation. Norton Cancer Institute is committed to significantly reducing those numbers by providing our communities with the screenings tools and education they need to stay proactive about their health.

Our Prevention & Early Detection Program offers no-cost and low-cost cancer screenings, testing, assessments and follow-up care throughout the community at health events and aboard the Norton Healthcare Mobile Prevention Center.

2019 prevention efforts by the numbers:

- 2,050 people screened for breast, cervical and colon cancers
- 10% of women who received mammograms had never been screened
- 10% of women who received mammograms had not had one for five or more years
- 14 women had precancer or cancer diagnosed and treated as a result of a mammogram they received on the Mobile Prevention Center
- 4,146 people received 14,611 screening services that included blood pressure, body mass index, blood glucose, skin survey, A1C testing and cholesterol testing, as well as education about tobacco cessation, diet and exercise



Treatment and services

Norton Cancer Institute offers state-of-the-art medical, surgical and radiation therapies to our patients.

Some of the treatments and services we offer include:

- The latest medical, pharmaceutical and chemotherapy treatments, including oral chemotherapy
- Immunotherapy and targeted therapy
- Minimally invasive robotic prostatectomies and gynecologic and colorectal surgeries
- Radiofrequency ablation, a less invasive nonsurgical treatment to remove liver tumors
- Cryoablation, a minimally invasive alternative to surgery for kidney tumors
- Radiopharmaceuticals for the diagnosis and treatment of specific cancers, such as non-Hodgkin lymphoma, thyroid cancer, prostate cancer, neuroendocrine cancer and liver cancer
- Stereotactic radiosurgery for precision hypofractionated radiation treatment and imaging; used to treat lung and brain cancers as well as many other cancerous and noncancerous conditions, such as trigeminal neuralgia and arteriovenous malformation
- High-dose radiation (HDR) brachytherapy for highly localized radiation administered internally to tumors while minimizing exposure to surrounding healthy tissue and reducing side effects; used to treat breast, lung and gynecologic cancers
- NeuroBlate laser interstitial thermal therapy for the treatment of brain tumors
- Optune for noninvasive brain tumor treatment
- DigniCap cooling cap for use in preventing chemotherapy-related hair loss in cancer patients



Geriatric Oncology Program

This program is the first of its kind in the area to bring together expertise across several areas to meet the complex care needs of older adults. The unique program provides high-quality multidisciplinary cancer treatment plans for patients over age 70.

Cancer disproportionately impacts patients over age 70, and we understand the many unique needs of our patients in this group. Our Geriatric Oncology Program focuses on assessing individuals who may face multiple needs and challenges, and connects them with specialists to help ease the impact of cancer on their lives. Common issues often exacerbated by a cancer diagnosis can include transportation issues, difficulty with daily activities, weakness or frailty, functional decline and confusion.

Each patient's individualized care plan begins with a comprehensive assessment by a geriatrician and a pharmacist to identify specific medical, pharmacological and psychological needs. Plans of action can include access to:

- A nurse navigator to help ensure full usage of the program's resources
- A nutritionist to develop an eating plan
- A social worker to discuss ways to improve quality of life and use support services
- A physical therapist to help with movement or mobility issues
- A pharmacist to assess current medications and their impact on cancer care



Thomas M. Woodcock, M.D.

Pioneering oncologist retires, leaves 40-year legacy

For medical oncologist Thomas M. Woodcock, M.D., his greatest inspiration throughout his nearly 40-year career has always been his patients. In 2019, he retired from Norton Cancer Institute but left a lasting legacy.

As one of the four founders of what is now Norton Cancer Institute, Dr. Woodcock had a vision to “take care of the community.” He helped pioneer state-of-the-art regional oncology care throughout the Louisville area and led the charge to expand it to Southern Indiana.

Dr. Woodcock was dedicated to seeing Norton Cancer Institute – Corydon offer the same advanced therapies, technologies and access to top-level clinical research as the institute's other regional practice locations.

During his esteemed career, Dr. Woodcock saw tremendous advances in cancer prevention, diagnosis and treatment. In the 1970s, at a time of limited treatment options, he had a ringside seat for the “War on Cancer,” a national initiative that spurred a revolution in oncology research.

He witnessed the advent of breakthrough technologies and treatments such as immunotherapy, which arms the body's own immune system to attack cancer cells.

“Over the last decade our successes have increased dramatically,” he said.

Shortly before his retirement, Dr. Woodcock supported Norton Healthcare's commitment to strengthen medical care in underserved areas. He was part of a special outreach effort to diagnose and treat hepatitis C, a viral infection linked to increasing risk for certain cancers.

In honor of Dr. Woodcock's contributions, the Norton Healthcare Foundation has created the Tom Woodcock, M.D. Founders Fund to support innovation and research.

For information on ways to help, call **(502) 629-8060** or visit **[NortonHealthcare.com/WaysToHelp](https://www.nortonhealthcare.com/WaysToHelp)**.



New space slated for growing Head and Neck Tumor Program

As Norton Cancer Institute undertakes a major renovation of its downtown location, the building's second floor will be remodeled to expand access to our Head and Neck Tumor Program. The aim is to optimize the program's ability to meet the specific needs of patients with benign or malignant tumors of the head, neck or nearby related areas.

Treating tumors of this type requires an organized care plan created by specially trained and skilled clinicians. Our diverse multidisciplinary team includes oncologists, an oncologic dermatologist, neurosurgeons, radiation oncologists, otolaryngologists and plastic surgeons. A specially trained patient navigator works closely with the care team to meet each patient's specific needs. Patients also may need behavioral oncology, oral prosthodontistry, speech pathology, nutritional counseling and physical therapy.

Our multidisciplinary team treats various tumors of the head and neck, including:

- Basal cell carcinoma
- Melanoma
- Merkel cell carcinoma

- Oral cancer
- Papillary, follicular, medullary and anaplastic thyroid carcinoma
- Throat cancer
- Squamous cell carcinoma
- Other tumors and cancers in the head and neck region

Treatment options can vary and may include:

- Surgery, including minimally invasive endoscopic endonasal surgery
- Stereotactic radiosurgery and external beam radiation therapy
- Chemotherapy, immunotherapy and targeted therapy
- Clinical trials
- Plastic and reconstructive surgery
- Observation

Multidisciplinary clinics

The importance of a multidisciplinary team care approach is simple: Cancer is complicated, and bringing specialists together allows for each patient to access the expertise of many providers. Patients don't have to travel to multiple offices to have their care needs met — the doctors come together in one place. Traditionally, cancer patients have had to juggle separate appointments with medical, surgical and radiation oncologists — often at various locations. Our multidisciplinary approach brings oncology specialists together in one location.

At any appointment, patients have access to a wide array of specialists they need. They also have access to a nurse, social worker and others who make assessments and treatment recommendations. This team approach improves coordinated care and communication among medical professionals and caregivers, especially for those dealing with advanced cancers including tumors of the brain, breast, head, neck or lung. Better coordinated care means fewer appointments and makes it easier for patients and their loved ones to engage more fully as key members of the decision-making team.

Comprehensive Lung Center

Norton Cancer Institute is the first and only health system in Kentucky to become an Addario Lung Cancer Foundation Center of Excellence. This designation reflects the use of:

- A patient-centric, collaborative care model that means patients can see an oncologist, surgeon, radiation oncologist, counselor, nutritionist and other members of their care team all in one visit
- The most effective diagnostic and therapeutic technologies and techniques available

Electromagnetic navigational bronchoscopy is one advanced technology the center is using to detect lung cancer in its earliest stages. This minimally invasive procedure uses an advanced navigation system known as LungGPS to access even the most difficult-to-reach areas of the lung. The procedure takes 30 minutes to an hour to complete, and patients may be discharged the same day.

Lung cancer accounts for about 27% of all cancer deaths and is the leading cause of cancer death among men and women. Early detection dramatically improves survival rates for lung cancer. The specialized LungGPS navigation system that helps increase early detection is made possible through funding from the Norton Healthcare Foundation.



Chandler H. Park, M.D.

Expanding quality cancer care in Southern Indiana

When it comes to expanding quality cancer care in Southern Indiana, Chandler H. Park, M.D., is building on a rich tradition Thomas Woodcock, M.D., began more than 25 years ago when he helped found Norton Cancer Institute in 1994. Dr. Park sees patients at Norton Cancer Institute – Corydon, adjacent to Harrison County Hospital in Corydon, Indiana.

Dr. Park is Norton Cancer Institute's newest oncologist/hematologist. He earned his medical degree from the University of Louisville School of Medicine and completed his residency in radiology and internal medicine at Indiana University Health, Indianapolis, followed by fellowships in hematology/oncology at West Virginia University, Morgantown, and immunotherapy at University of Virginia, Charlottesville.

Breast Health Program



The Breast Health Program provides patients in our community and region with comprehensive breast care that ranges from prevention to diagnostic and treatment services. This program offers education and support from a team of oncology-certified nurse navigators who are specially trained in breast health issues and breast cancer treatment. These registered nurses are available to assist patients and their families from the point of an abnormal mammogram through diagnosis, treatment and survivorship.

Support groups and community education are hallmarks of the program, which hosts a monthly breast cancer support group for any woman affected by breast cancer. It also offers Young Survivors Day Out, a targeted outreach initiative for women diagnosed at age 45 or younger. Community education is delivered at numerous health fairs booths. For high school girls, nurse navigators travel to area schools for “Think Pink,” an age-appropriate education project that educates teenage girls on breast health, self-exams and cancer risk factors.

The Breast Health Program is accredited by the National Accreditation Program for Breast Centers (NAPBC), a consortium of national professional organizations dedicated to improving quality outcomes through evidence-based standards and education.

NAPBC-accredited centers demonstrate the following services:

- A multidisciplinary team approach to coordinate treatment options
- Access to breast-specific information, education and support
- Data collection on quality indicators for subspecialties involved in breast care
- Ongoing monitoring and improvement of care
- Information about participation in clinical trials and new treatment options

Derby Divas

Derby Divas is a Norton Healthcare Foundation fundraising event that takes place each April. This much-anticipated event kicks off the Kentucky Derby season with an evening of shopping and Derby-themed entertainment. It generates significant awareness for breast cancer screening and recognizes an annual honoree whose breast cancer journey has made a positive impact in the community by inspiring or helping educate others.

Since its launch in 2007, the annual volunteer-driven fundraiser has generated more than \$1.78 million to support breast health at Norton Cancer Institute. These funds help provide mammograms for women who cannot afford them and helped establish the Derby Divas Breast Health Center on the Norton Healthcare – St. Matthews campus.

Churchill Downs Pink Out partnership

As part of the 2019 Kentucky Derby Festival, Norton Cancer Institute enjoyed a major opportunity to increase breast cancer awareness and benefit from a charitable partnership with Churchill Downs, famed home of the Kentucky Derby. The partnership, which is scheduled to run through 2020, centers around the annual Kentucky Oaks Day “Pink Out” celebration. The Pink Out includes a survivors’ parade broadcast nationwide among a sea of pink to millions of viewers and other public awareness activities.

Churchill Downs has donated more than \$330,000 since 2017 through the Norton Healthcare Foundation for breast health programs, including supporting women who lack access to breast cancer screenings and other services.



Specialty pharmacy

Norton Specialty Pharmacy offers Norton Cancer Institute patients comprehensive and convenient pharmacy services. The pharmacy has two full-time pharmacists and two pharmacy technicians specializing in oncology and specialty medications. The pharmacists work closely with providers and patients to address any treatment issues.

Those who use the specialty pharmacy receive their cancer medications more quickly than at other area pharmacies, where availability often is limited. This minimizes delays in treatment, ensuring patients have what they need to begin or continue the healing process.

Norton Specialty Pharmacy also offers personalized information about medications and financial assistance, specialized billing to Medicare Part B and Part D patients, commercial plans and options for delivery and pickup.

Specialty lab and pathology

CPA Lab is a Norton Healthcare-employed and -owned laboratory that provides outpatient lab and pathology services to Norton Cancer Institute and other Norton Healthcare facilities. Its 20 pathologists support Norton Cancer Institute by providing routine and subspecialty pathology diagnoses related to cancer. These pathologists work in the subspecialty areas of neuropathology; hematopathology; molecular pathology; cytopathology; and gynecologic, breast, genitourinary and gastrointestinal pathology.

CPA Lab's service to Norton Cancer Institute goes beyond routine pathology. The lab also develops testing algorithms for various tumors, such as lung adenocarcinoma, acute leukemia, and breast and colon cancers, for which molecular testing is needed to help determine prognoses and treatment regimens. CPA Lab works with Norton Cancer Institute to develop these algorithms so that once the pathologist makes a diagnosis, the pathologist can implement the appropriate testing algorithms, making appropriate diagnostic and treatment data available to the oncologist.

Examples of these algorithms include MSI testing with reflex to appropriate KRAS, NRAS and BRAF testing in colon cancer as well as KRAS and EGFR mutational analysis and ROS-1 and ALK-1 rearrangement analysis in lung adenocarcinoma.

Radiation beyond cancer

While there are diseases other than cancer that have no cure, there always is hope. Norton Cancer Institute works in collaboration with Norton Neuroscience Institute to care for patients with painful neurological conditions that respond to radiation, such as trigeminal neuralgia and glossopharyngeal neuralgia. Working with a functional neurosurgeon, radiation oncologists can treat these patients with just one dose of radiation from our TrueBeam STx, a frameless radiosurgery system. They've seen a success rate of 70% to 80% in relieving pain.

Radiation therapy basically "turns down the volume" on the nerve so that it doesn't fire as often. The same technology is being used to treat children and adults with arteriovenous malformations. And because of the success seen thus far, our radiation oncologists are exploring the use of frameless radiosurgery for the treatment of epilepsy, movement disorders and brain-mediated obesity as well.



Personalized care for adults with sickle cell disease

Norton Cancer Institute's Adult Comprehensive Sickle Cell Program is a multidisciplinary clinical program offering care for all aspects of sickle cell disease. It works with patients to prevent related illnesses, alleviate and treat acute crises, and manage long-term effects.

The program's caregivers include physicians specializing in hematology, advanced practice providers, nurses, infusion center teams, licensed clinical social workers, dietitians, pain management specialists, behavioral health specialists, chaplains and many others.

Every patient's care journey requires more than directed medical care. The program also includes educational programs, coordination of care and supportive care resources, such as spiritual care, social services, alternative therapies and behavioral health services.

Through our Prompt Care Clinics, sickle cell patients with nonlife-threatening complications, such as dehydration, headache, routine infections and early-onset pain, can get a same-day or evening visit to avoid a trip to an emergency department.

Unique program shines light on cutaneous lymphoma

As the only cancer specialist in the Louisville region with a subspecialty in oncologic dermatology, Jae Y. Jung, M.D., Ph.D., treats various forms of skin cancer. She also treats other serious skin-related conditions, such as cutaneous lymphoma.

Cutaneous lymphoma is a rare subtype of non-Hodgkin lymphoma. Although cutaneous lymphoma involves the skin, it is not classified as a skin cancer because it originates from cancer cells that start in white blood cells (lymphocytes) rather than skin cells.

Many top cancer centers use skin-directed phototherapy to treat cutaneous T-cell lymphoma (CTCL). Norton Cancer Institute is the only provider in Louisville currently offering specially calibrated "light boxes" to treat cutaneous lymphoma with narrow band ultraviolet (UVB) light.

As is the case with most cancers, effective treatment of cutaneous lymphoma involves many complex factors. To address these, Dr. Jung and Joseph J. Maly, M.D., medical oncologist, are joining forces to start a Multidisciplinary Cutaneous Lymphoma Clinic that will be unique in Louisville.

"There are a few other UVB light units in the area being used for treating conditions such as psoriasis and eczema," Dr. Jung said. "But those providers do not have the expertise to care for cutaneous lymphoma."



Charles B. Palmer, D.O.

New specialist joins gynecologic oncology team

Norton Cancer Institute welcomed a new gynecologic oncologist in 2019 to provide patients with the latest in targeted therapies, including minimally invasive robotic surgery. Charles B. Palmer, D.O., specializes in diagnosing and treating cancers of the female reproductive system, including ovarian, uterine and cervical cancers.

Dr. Palmer earned his medical degree from the University of Pikeville Kentucky College of Osteopathic Medicine. He completed his residency at Greenville Hospital System University Medical Center, South Carolina, specializing in obstetrics and gynecology, followed by a fellowship at WellSpan York Hospital in York, Pennsylvania.

Dr. Palmer is certified through the American Board of Obstetrics and Gynecology. He is a member of several professional organizations, including the American College of Obstetricians and Gynecologists, American Society for Colposcopy and Cervical Pathology, and American Association of Gynecologic Laparoscopists.

PALLIATIVE CARE

Systemwide focus, same support for those facing tough journeys

While hospice care generally covers up to six months and focuses on comfort rather than cure during a person's remaining time of life, palliative care is for individuals with a life-limiting condition at any point in their diagnosis. It generally focuses on managing symptoms, controlling pain and optimizing comfort as part of ongoing curative medical care.

In 2019 Norton Cancer Institute began coordinating palliative care services across the Norton Healthcare system. The focus on compassionate, whole-person care and support services aligns with palliative care's aims to:

- Enhance quality of care
- Help patients and families understand all treatment options
- Respect care choices that reflect individual and family decisions

Norton Healthcare's team of nurse practitioners, social workers, chaplains and physicians provide palliative care across physical and nonphysical dimensions. Two new physicians joined Edward J. Dunn, M.D., and the palliative care team in 2019. They bring a wealth of experience in caring for complex medical conditions, from cancer to heart failure, kidney disease and beyond.

- Edward J. Dunn, M.D., decided after 20 years in cardiovascular surgery to make a career change and concentrate on helping people with chronic debilitating or life-limiting illnesses enjoy the best quality of life they can. He sees each person as a fellow human and not a diagnosis, and spends most of his time listening to patients and their families.
- Mary R. Hubert, M.D., enjoys getting to know people. Understanding their values and interests helps her provide individualized care that truly meets each person's needs and expectations. Her philosophy is to slow down and make time to deliver personalized holistic care that goes beyond physical symptoms to meet spiritual and emotional needs as well.
- Nathan M. Riley, M.D., has dual specialties in OB/GYN and palliative care. He is committed to easing suffering and meeting his patients' spiritual and emotional needs. Dr. Riley loves music. He encourages patients to find support and comfort from music or other hobbies they enjoy.





Support services

Genetic counseling

While genetic testing could be viewed as a service that cares for the body, we look at it as a means of offering patients and their family members peace of mind — whether through understanding their risk (or lack of risk) or through making a plan for early detection, as well as determining treatment options.

The Norton Cancer Institute Genetic Counseling Services team carefully evaluates each individual's family history, conducts personal cancer risk assessments and provides guidance through the genetic testing process if needed.

Our team recognizes that the impact of an inherited risk for cancer extends beyond the patient being tested to include family members, some of whom also might carry the increased risk. Our counselors work in partnership with our medical geneticist and patients' physicians to provide personalized recommendations.

Benefits of genetic testing:

- Finding out why cancer is occurring can help relieve uncertainty
- Knowing whether a diagnosed cancer is hereditary can help the patient and physician decide which treatment options are the most appropriate
- Knowing whether a cancer is hereditary can help the patient and physician take steps to prevent the development of certain cancers in the future

- Genetic testing provides support for insurance coverage of more frequent screenings and preventive measures
- Genetic testing can relieve concerns that family members may be at increased risk for developing cancer

Behavioral oncology

For many individuals, a cancer diagnosis can bring about a wide range of emotions, including sadness, fear and worry associated with the uncertainties that come with cancer. Unresolved psychological distress can contribute to a desire for death, reduced adherence to cancer treatment, decreased quality of life, prolonged hospitalizations, increased health care costs and exacerbation of challenging caregiving needs and family dynamics. Norton Cancer Institute is one of the few oncology programs nationwide offering a robust program for addressing patients' mental and emotional needs that often accompany cancer care.

The Behavioral Oncology Clinic is staffed by a team of advanced practice providers, social workers and nurses trained in the mental and emotional care of oncology patients. The program offers a full spectrum of services, including individual therapy, couples therapy, medication management and interdisciplinary collaboration. The Behavioral Oncology Clinic had approximately 7,593 patient encounters in 2019.

Knowing whether a cancer is hereditary can help the patient and physician take steps to prevent the development of certain cancers in the future.

Patient navigators

When facing one of the greatest challenges in life, our patients shouldn't have to deal with added obstacles. Whether it's financial concerns, confusion about a diagnosis or uncertainty about a treatment plan — we believe it's our job not to let these barriers get in the way of timely care for our patients.

Our Patient Navigator Program is available through our five Norton Cancer Institute Resource Centers. It's designed to guide patients and their family members from diagnosis through treatment, recovery and survivorship.

Our team of 22 oncology-certified patient navigators specialize in colorectal/gastrointestinal cancer, genitourinary conditions, lung cancer, breast cancer, brain tumors, liver cancer, general oncology, pediatric oncology and survivorship. Our two genitourinary patient navigators connect patients with noncancerous genitourinary conditions to urologists to help facilitate diagnostic testing and educate on next steps for care.

Navigators take the following steps to assist patients:

- Coordinate care and assistance to streamline appointments, allowing for more timely treatment
- Identify and assist with any barriers to cancer care, such as educational, financial, transportation, language, cultural, communication and fear
- Oversee the educational, emotional and social needs of patients and families
- Provide one-on-one education to help patients and families understand diagnosis and treatment options
- Link patients, families and caregivers to community resources to address specific needs during the cancer treatment experience
- Lead and facilitate support groups for patients and their families

Equipped with an in-depth understanding and familiarity of the health care system, our patient navigators offer their services at no cost to the patient and are available to anyone in the community, regardless of where they receive care.

Resource centers

Five Norton Cancer Institute Resource Centers offer patients and their families a place to turn for support, assistance and education. In 2019, cancer support services had more than 58,572 interactions through the resource centers.

The centers provide personal attention to address patients' physical and emotional needs before, during and after cancer treatment. Their mission is to offer comfort as well as to educate. The resource centers also serve as the base for our patient navigators.



The resource centers offer the following services:

- Community support and Norton Cancer Institute-sponsored support groups
- A wide variety of monthly classes and seminars
- Complementary therapies, including acupuncture; tai chi; and art, pet and music therapies
- Private educational sessions with oncology-certified nurses
- Support of social workers to assist with overcoming barriers and evaluating resource and support needs
- Nutritional counseling
- Wigs, turbans and hats
- Head scarves and caps in partnership with Hope Scarves and Cap on Cancer
- Breast prosthetics and mastectomy bras (Pat Harrison Resource Center only)
- Lending library with current educational information
- Tobacco cessation programs

Supporting — and celebrating — survivorship

Norton Cancer Institute's survivorship program is one of our greatest — yet humbling — successes. We are privileged to deliver care tailored to meet the specific needs of those who have completed active cancer therapy.

A hallmark of our comprehensive clinical support services is individualized survivorship care and education plans for patients, families and caregivers. Plans may cover relevant screenings, how to maintain a long-term patient/physician relationship and other key survivor-related topics.

The American Cancer Society reported in 2019 that cancer deaths in the United States had dropped 25% over a 25-year period. Many cancer experts see great promise in being able to move cancer from a life-threatening disease to a chronic, manageable illness. As Norton Cancer Institute works to fulfill this promise, we celebrate the hope of cancer survivorship.

Two annual community events supported by the Norton Healthcare Foundation offer a chance to spread hope beyond our doors:

- Fourth annual Celebration of Courage. This free event is held every September on the evening before the Bike to Beat Cancer, which supports cancer research and programs. It brings together cancer survivors, families, caregivers, medical providers, cyclists and volunteers for fellowship, food, live music, children's games and more. A 2019 highlight was having participants add their thumbprints to a colorful butterfly painting that represents hope. The finished work from this project, which is part of the national Lilly Oncology on Canvas campaign, will be displayed in our facilities.
- 10th annual Bra Party. This October event recognizes Breast Cancer Awareness Month and brings survivors together for friendship, advocacy and the "ultimate support group." The evening features good fun as participants decorate and bedazzle bras.



Norton Cancer Institute's survivorship program is one of our greatest — yet humbling — successes.



ART AND MUSIC

Expressive therapies propel healing and hope

Art and music therapies are critical assets in our broad mission to cure cancer and eliminate suffering. Through our five resource centers, art and music therapists — along with patient navigators and other key professionals — help provide whole-person care that goes beyond disease treatment alone.

As an expressive art therapist, Laura Chamberlin knows from professional and personal experience how powerful expressive therapy can be. In 2011, Laura was diagnosed with triple negative breast cancer. She has been cancer-free for about seven years but faced multiple rounds of chemotherapy since hormone and other related therapies are ineffective against triple negative cancer. She then had a double mastectomy to reduce her risk of recurrence.

“There’s a lot of fear, anxiety, anger and frustration as you go through this,” Laura said.

Art therapy helps patients work through such emotions, while reducing stress and anxiety. For example, Laura found a sense of empowerment by drawing a picture of her body and chemo going through it to her golf ball-sized tumor.

Laura joined Norton Cancer Institute as an art therapist in 2018. She uses some of the same techniques that helped her to help her patients and their families.

Laura shares her story as a way to help her patients and others find hope and reassurance in overcoming and living beyond cancer. She recalled working with a patient who had her same diagnosis.

“I could tell that sharing my story brought her a sense of comfort and relief,” Laura said. “In that moment there was a very powerful connection between us.”

Music therapy at Norton Cancer Institute and Norton Children’s Cancer Institute, affiliated with the University of Louisville, have garnered international attention for many programs that positively impact patients. The Cancer Beats program for adolescents has become the national standard-bearer for adjunct supportive programming and offers patients an avenue to ease anxiety, depression and other negative impacts of their diseases. This program has served to connect patients within our community and across the country.



Community support through the Norton Healthcare Foundation

The Norton Healthcare Foundation, the philanthropic arm of the not-for-profit Norton Healthcare system, provides valuable resources for Norton Cancer Institute to continue our mission of building hope for patients and families. Thanks to the generosity of our community, the foundation gave more than \$2.8 million for a variety of cancer programs and services in 2019.

Grants by the Norton Healthcare Foundation included funding for:

- Continuing education for registered nurses seeking to become oncology certified through the foundation's Oncology Education and Prevention Fund, established by the Nixon family of Louisville
- Ongoing outreach activities and peer support opportunities for young adult survivors of cancer through the Young Survivors support group
- Funding for two free lectureships, the Gail Klein Garlove and Nixon lectureships, for physicians, clinicians and the public on timely topics in cancer prevention, detection and treatment.
- Lifesaving screenings aboard the Mobile Prevention Center in underserved areas in our community
- Cutting-edge videoconferencing technology that enables Norton Cancer Institute physicians to collaborate remotely for the benefit of patients throughout the region
- The Norton Healthcare Breast Health Program
- Clinical research programs at Norton Cancer Institute
- Unique partnerships with community cancer groups to provide emotional support and strength to men and women facing cancer

For ways to help, visit NortonHealthcareFoundation.com.

In 2019, the foundation gave more than \$2 million for a variety of cancer programs and services.

Putting mettle to the pedal to fight cancer

The 2019 Bike to Beat Cancer marked the 11th year for cyclists to support adult and pediatric cancer programs and services at Norton Cancer Institute by collectively pedaling thousands of miles. This fundraiser generated nearly \$540,000 in 2019.

The one-day event offers options for various levels of fitness or experience. An easy 5-mile ride is designed for families. Open road routes cover from 15 to 100 miles along some of Kentucky's most scenic backroads. Some log their miles on a spin bike, or as virtual riders.

The 2019 event generated impressive numbers:

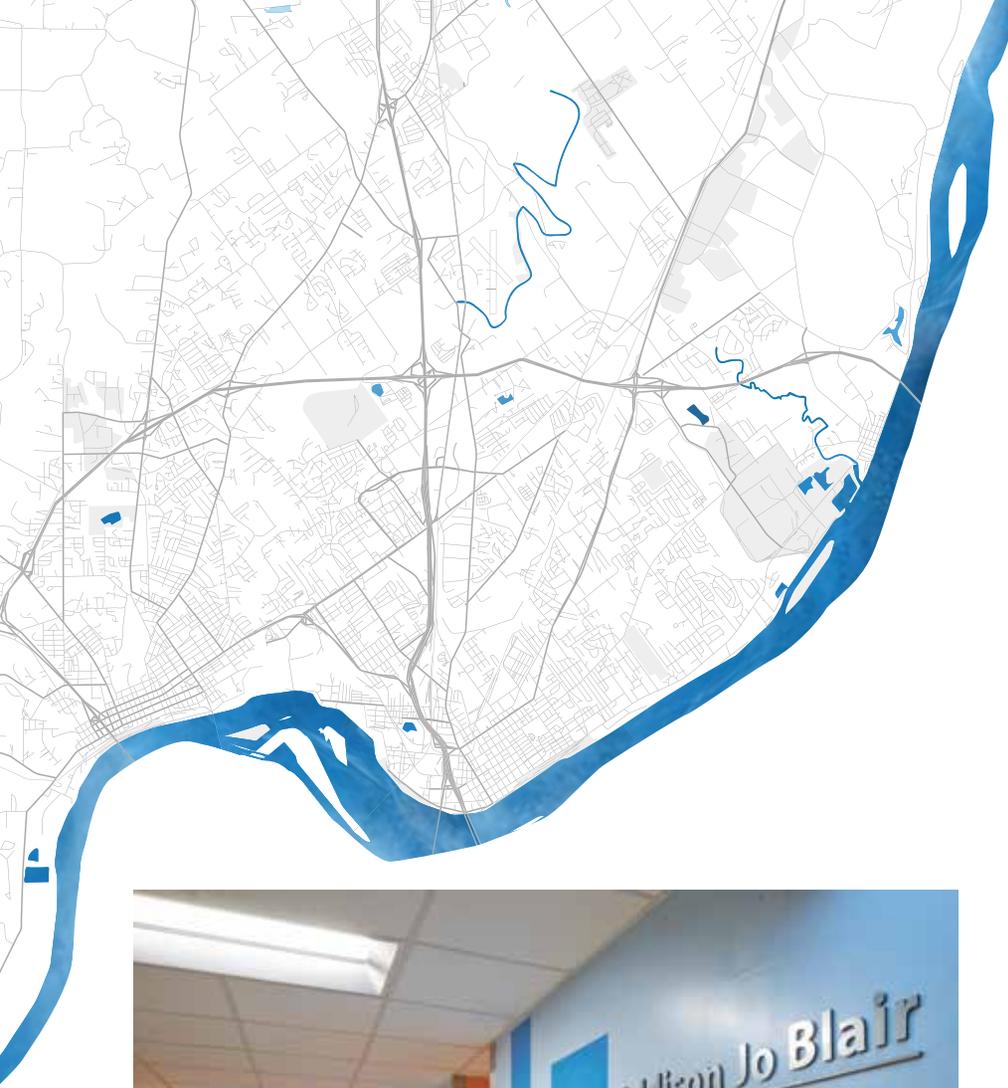
- 994 riders
- 625-plus volunteers
- 75 survivors
- 169 family riders
- 44 spin riders
- 28 virtual riders



Pediatric cancer services

Expanding resources for families
facing childhood cancer





Norton Children's Cancer Institute

Norton Children's Cancer Institute, affiliated with the University of Louisville, is a source of hope and healing for more than 100 children newly diagnosed with cancer each year and nearly 1,000 children annually who are in ongoing cancer treatments, clinics and follow-ups.

As the teaching facility for the University of Louisville School of Medicine Department of Pediatrics, Norton Children's Hospital maintains an unwavering dedication to the children of our community and region. The hospital's oncology specialists also are faculty members of the UofL School of Medicine Department of Pediatrics.

Cancer patients who require inpatient care stay in the Addison Jo Blair Cancer Care Center at Norton Children's Hospital. It is the oldest continuously accredited children's oncology program by the American College of Surgeons' Commission on Cancer, holding accreditation since 1959.

The Addison Jo Blair Cancer Care Center provides inpatient and outpatient multidisciplinary evaluation and treatment of children with a wide range of cancers, including leukemia, Hodgkin and non-Hodgkin lymphoma, brain tumors and all types of childhood solid tumors. It also includes the state's only stem cell and bone marrow transplant program specifically for children and an eight-bed, HEPA-filtered stem cell transplant unit designed for stem cell/bone marrow transplant patients and other patients who may be immunocompromised.

The unit, which has about 8,000 visits per year, also is affiliated with the Children's Oncology Group and the National Cancer Institute. Children may enroll in any of the Children's Oncology Group 50-plus clinical studies, in addition to other studies offered by the National Cancer Institute.

Teens who require inpatient cancer care stay in the adolescent and young adult unit located within the Addison Jo Blair Cancer Care Center. This special area includes three teen patient rooms, spaces that appeal to teenage patients, quiet space for private time and a common space for social gatherings. The teen unit is complete with age-appropriate technologies and décor.



Treatment and services

Each child is different, and multiple treatment options are available to meet their special needs. These include chemotherapy for all types of pediatric cancers, high-dose chemotherapy with stem cell rescue, reduced-intensity stem cell transplants, autologous and allogeneic stem cell/bone marrow transplants, and supportive care.

Norton Children's Cancer Institute also cares for kids with blood disorders, such as sickle cell anemia, hemophilia, idiopathic thrombocytopenic purpura, neutropenia and other types of anemias. Norton Children's Hospital has the region's only pediatric apheresis program, offering many types of apheresis procedures, including photopheresis to treat blood disorders, rejection after solid organ transplantation, graft-versus-host disease that sometimes occurs after stem cell/bone marrow transplant, and autoimmune disorders such as Crohn's disease. The institute also is among the first in the region to offer a red blood cell exchange program, which is a virtually painless treatment for sickle cell disease that helps to minimize complications such as acute chest syndrome.

Cord blood storage

The Family Link Cord Blood Storage Program is a service of Norton Healthcare for storage of umbilical cord blood from newborns. A private facility established in 1998, Family Link serves families delivering within a four-hour driving distance from Louisville.

A baby's stem cells are preserved from the umbilical cord and placenta at birth. The cells are kept at ultra-low temperatures through a process called cryopreservation and stored in the Stem Cell Laboratory located at Norton Children's Hospital for up to 20 years.

Family Link provides access to stored stem cells for transplants, one of the best methods of treatment for several types of leukemia as well as other cancers and diseases. Stem cell transplants can help the body rebuild blood cells destroyed by disease or treatments such as chemotherapy. Norton Healthcare is the only organization in the region offering a private cord blood storage program.

Norton Healthcare is the only organization in the region offering a private cord blood storage program.



Blood and bone marrow care

Norton Children's Cancer Institute is home to Kentucky's only pediatric hematology program and the largest pediatric coagulation (clotting) center in the state. The program cares for patients with:

- Blood cancers (leukemia, lymphoma)
- Benign blood disorders (hemophilia, sickle cell disease)
- Hemophilia and other bleeding disorders, including gynecological bleeding disorders
- Clotting disorders (thrombosis and thrombophilia)

Treatments include chemotherapy, blood and marrow transplantation (stem cell), blood transfusions (apheresis and photopheresis) and radiation therapy.

Blood and marrow transplantation

Norton Children's Cancer Institute is home to the region's only dedicated pediatric blood and marrow transplant program. Norton Children's Hospital is a member of the Pediatric Blood & Marrow Transplant Consortium and the Blood and Marrow Transplant Clinical Trials Network.

There are two types of stem cell transplants: autologous (self), in which the child's own stem cells are used; and allogeneic (nonself), in which the stem cells from either a family member or an unrelated donor are used. The type of transplant depends on the child's particular disease.

Leukemia/Lymphoma Clinic

Leukemia is the most prevalent type of cancer in children, accounting for 40% of all pediatric cancer diagnoses. Two of the most common types of leukemia treated at Norton Children's Cancer Institute are:

- Acute lymphoblastic leukemia, also called acute lymphocytic leukemia
- Acute myelogenous leukemia, also called acute myeloid leukemia or acute myelocytic leukemia

Available treatments include chemotherapy, blood and marrow transplantation, blood transfusions and radiation therapy.

Lymphomas are a group of cancers of the lymphatic system, a part of the body's immune system that includes the bone marrow, spleen, thymus, lymph nodes and lymphatic vessels. The clinic cares for kids with Hodgkin lymphoma and non-Hodgkin lymphoma.

Care for solid tumors

Solid tumors represent 30% of all the cancers in children. They can occur in several parts of the body, including bones, muscles, organs and soft tissues. Treatment for solid tumors includes surgery, chemotherapy and, in some cases, radiation therapy.

Norton Children's Cancer Institute has a number of specialized clinics to treat solid tumors, including:

- Germ cell tumors in the reproductive cells, abdomen, chest, neck, head and brain
- Hepatoblastoma, a rare type of malignant liver cancer
- Nephroblastoma, also called Wilms tumor, a malignant tumor in the kidney
- Neuroblastoma in the tissues that form the sympathetic nervous system
- Retinoblastoma, a rare form of eye cancer





William T. Tse, M.D., Ph.D.



Jennifer Thomas, DNP, R.N.

Curing what once was incurable

William T. Tse, M.D., Ph.D., and a multidisciplinary team at Norton Children's Hospital are working hard to bring a new form of advanced immune cell-based therapy to children with severe childhood leukemia.

Chimeric antigen receptor T cell (CAR-T) therapy is one new approach scheduled to roll out at Norton Children's Cancer Institute in 2020. In this approach, patients' own T cells will be genetically re-engineered to enable them to target leukemia cells. It will be used to treat certain forms of acute lymphoblastic leukemia (ALL) that recur or fail to respond to traditional treatment.

Dr. Tse, director of the Norton Children's Cancer Institute Pediatric Blood and Marrow Transplant Program and a pediatric hematologist/oncologist with UofL Physicians, describes CAR-T cells as "immune system homing devices" that will find and kill leukemia cells.

Only a select group of hospitals nationwide offer CAR-T therapy, which is a powerful anti-leukemia tool but carries a risk of serious side effects. Bringing it to Norton Children's Hospital requires creating a safe and effective delivery environment, providing advanced training for medical staff and developing new clinical guidelines for managing possible complications.

Jennifer Thomas, DNP, R.N., nurse manager of transplant services, is helping spearhead this preparation. According to Jennifer, offering CAR-T therapy to patients will take a dedicated team of specially trained physicians, nurses, nurse clinicians, clinical laboratory scientists and many others.

The program's success will be measured when children leave the hospital, get back to their lives and reach milestones.

"That is where the importance of this program is revealed," she said.

Haploidentical transplant expanding donor and patient options

Dr. Tse and the transplant team recently completed the first haploidentical transplant at Norton Children's Cancer Institute. This special variation of an allogeneic transplant utilizes half-matched donors. This expands the donor pool so children can get a blood or marrow transplant even when there are no other suitable, conventional donors available.



Hematology

Sickle cell disease services

Sickle cell disease is a complicated condition with various manifestations. The abnormal structure of red blood cells causes them to break down at a faster rate and leads to anemia. It also can cause sudden pain anywhere in the body, as well as damage to tissues and organs over time, placing patients at a higher risk of serious infections.

A broad range of specialty services are available through the Sickle Cell Disease Program, including access to pediatric general surgeons, orthopedists, ophthalmologists and pulmonologists with expertise in caring for children with this disease.

Offerings include:

- Transfusion services to prevent stroke
- Newborn screening and genetic counseling
- Pulmonary care to treat asthma, which is common in children with sickle cell disease
- Cerebrovascular care for children at risk for or who have experienced cerebrovascular complications, including stroke
- Imaging to detect or evaluate potential issues such as gallstones, stroke and narrowed blood vessels
- Psychosocial services for families to help in coping with chronic illness and associated issues affecting school, employment, financial issues and more



Apheresis and photopheresis

Norton Children's Cancer Institute features the region's only pediatric apheresis and photopheresis program as part of the Norton Children's Infusion Center in the new Novak Center for Children's Health. Apheresis and photopheresis are used to treat leukemia, sickle cell disease and graft-versus-host disease. The center also treats adult patients.

- Apheresis is a process involving the removal of whole blood from a patient or donor and then separating the components of the blood. The separated portions are either returned to the bloodstream or replaced with donor blood or plasma.
- Photopheresis is a type of apheresis in which a small amount of white blood cells is treated with an ultraviolet light-activated photoactive drug before being retransfused into the patient.
- Plasmapheresis replaces blood plasma with plasma from a healthy donor.



Care for immune system disorders

The Immunodeficiency and Histiocytosis Clinic cares for young patients with conditions that affect the immune system. Patients are treated by a team that includes immunologists, infectious disease specialists and hematology/oncology specialists. Conditions treated in the clinic include:

- Primary immunodeficiency disorders caused by a lack of, or dysfunction of, white blood cells, which play an important role in fighting infections
- Histiocytosis, a group of diseases that are not necessarily cancer but involve abnormal growth of immune system cells, most notably histiocytes (a form of white blood cell)

Care for soft tissue and bone sarcomas

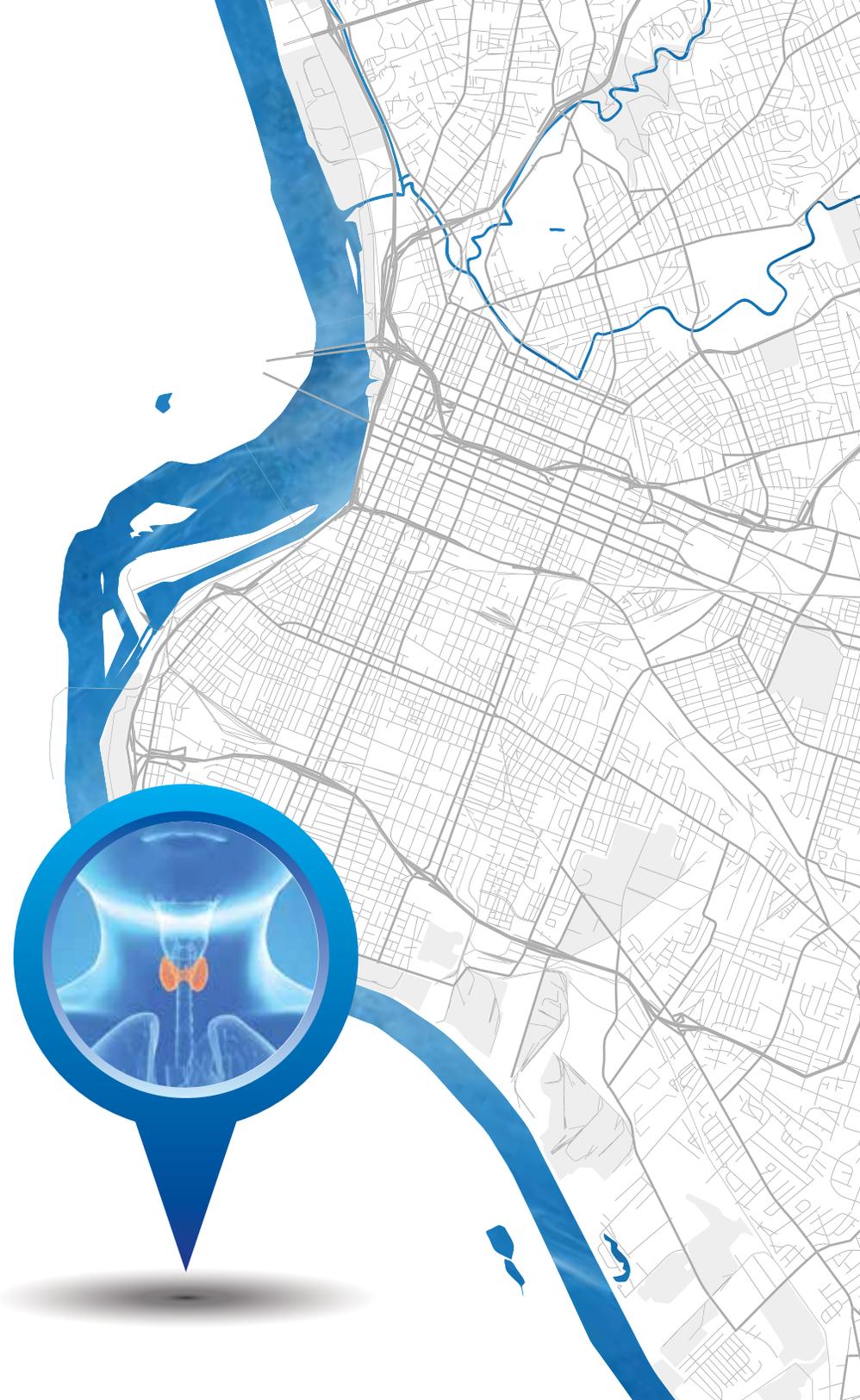
Sarcomas are cancers that occur in the muscles, bones or tendons. These tumors are the focus of the Soft Tissue/Bone Sarcomas Clinic. The clinic treats a number of conditions, including:

- Osteosarcoma, the most common type of bone cancer and third most common pediatric cancer after lymphomas and brain tumors
- Ewing sarcoma, the second most common malignant bone tumor
- Rhabdomyosarcoma, a tumor of the skeletal muscles, the most common soft tissue sarcoma in children
- Non-rhabdomyosarcoma, a tumor of the tendons, nerves, fatty tissue and fibrous tissue

Thyroid cancer services

Care for all types of thyroid carcinoma, a rare cancer in children, is available in the Endocrine Center. Differentiated thyroid cancer is the most common type of thyroid carcinoma and includes papillary thyroid cancer and follicular thyroid cancer. Papillary thyroid cancer affects both children and adults, and represents about 85% to 90% of all thyroid cancer diagnoses.

Care for all types of thyroid carcinoma, a rare cancer in children, is available in the Endocrine Center.



Specialized programs

Adolescent and Young Adult Program



Care for teens and young adults at Norton Children's Cancer Institute includes Kentucky's only Adolescent and Young Adult (AYA) Program and Transition Clinic.

The AYA Program was made possible through a \$300,000 investment from several key donors through the Norton Children's Hospital Foundation. These include \$100,000 from Teen Cancer America (founded by Roger Daltrey and Pete Townshend of The Who), \$98,000 from Freudenberg Medical, \$89,000 from local high schools' pink and white football games, and \$30,000 from Northwestern Mutual.

The AYA Transition Clinic is a multidisciplinary collaboration between Norton Cancer Institute and Norton Children's Cancer Institute. It's available to patients ages 18 and older who are survivors of childhood cancer and have been off therapy for at least two years.

The AYA Transition Clinic is run by clinicians with expertise in the individual needs of these patients. To provide seamless care, a patient navigator works with each patient to provide clinical and emotional support, education and assistance in addressing barriers to care. The navigator may assist with providing disease-specific education and compiling a summary of cancer treatment and health promotion education.

Other navigator services include coordinating appointments; scheduling and coordinating studies; and explaining screenings, procedures, exams and lab work. Navigators also serve as advocates, assessing the physical, emotional and social needs of patients and their families.

Pediatric Brain Tumor Program

Outcomes for children with brain tumors have improved significantly in the past two decades. Most children with brain and spinal cord tumors are long-term survivors due to the many advancements made in the field, including improved surgical techniques, chemotherapy and radiation therapy.

The Pediatric Brain Tumor Program is a collaboration among specialists from Norton Cancer Institute, Norton Neuroscience Institute and UofL Physicians. Every child in the program is cared for by a multidisciplinary team of pediatric neuro-oncologists, radiation oncologists, neurosurgeons and specially trained support staff. These children also benefit from an integrated rehabilitation facility offering physical and occupational therapy. Several phase I and II and supportive studies for pediatric brain tumors also are available.

Immunotherapy and Cancer Vaccine Program

Immunotherapy for pediatric cancer has the potential to provide medical oncologists new, effective treatment options with fewer side effects. Immunotherapy seeks to induce, enhance or suppress the body's immune response. In cancer immunotherapy, the goal is to stimulate the immune system to help the body reject or destroy tumors. When combined with conventional cancer treatments, the efficacy of immunotherapy increases by nearly 30%. This treatment is the focus of the Immunotherapy and Cancer Vaccine Program. Available immunotherapies include:

- Monoclonal antibodies
- Cancer vaccines (vaccine therapy)
- Cellular therapies
- Interleukins
- Interferons
- Granulocyte-macrophage colony-stimulating factor

Precision Cancer Medicine Clinic

One of the latest advancements in cancer treatment is the use of precision cancer medicine. With advances in mapping DNA, scientists have discovered that each patient's cancer is the result of unique and individual changes to their cells' DNA. Together, these changes build a tumor "profile."

The Precision Cancer Medicine Clinic uses this profile to tailor treatments by focusing on the genetic characteristics of each patient's cancer, selecting drugs that would better match the profile.

Pediatric radiation therapy

Children who require radiation therapy receive it two blocks away from Norton Children's Hospital in the state-of-the-art Norton Cancer Institute Radiation Center – Downtown. But that doesn't mean children have to go to a facility geared to adult patients. The radiation center was designed with kids in mind.

Children have a dedicated wing within the radiation center that incorporates a kid-friendly theme and is equipped to care for the needs of the whole family. Siblings are welcome to come to appointments so that parents don't have to worry about finding child care. Families have access to two dedicated playrooms to keep children occupied and at ease. Because this part of the radiation center is separate from the area for adult patients, distractions are kept to a minimum.

A pediatric anesthesia team from Norton Children's Hospital is available for children who need sedation during their radiation therapy sessions.

Because the radiation center is equipped with the most current technology, pediatric radiation oncologists have the ability to adjust dosages to minimize radiation exposure in our smallest patients.

These cancer patients and their families cope with different issues and in different ways from adult patients. That's why we make available integrated behavioral oncology services for our young radiation therapy patients and their families.

Total body irradiation

Thanks to a grant from the Norton Children's Hospital Foundation in 2018, Norton Children's Cancer Institute is now offering total body irradiation for leukemias, lymphomas and multiple myeloma before stem cell transplantation. The grant allowed Norton Cancer Institute to purchase the microSTARii system for monitoring radiation dosing. Using hundreds of "readers" attached to the patient, specialists can ensure dosing is symmetrical across the body. Total body irradiation is given twice a day over three days, as opposed to once a day over a longer period of time with targeted radiation. The therapy also is available for adults.



Hearts & Hands Care Team

The Hearts & Hands Care Team at Norton Children's Hospital focuses on treating the pain, symptoms and stress faced by children and families during treatment for complex or life-threatening medical conditions.

The team assists families, community members and medical providers with education, advocacy, communication and palliative expertise to promote the best quality of life for patients. The team includes experienced pediatric specialists with expertise in palliative care and symptom management, as well as social workers and interfaith spiritual care.

Hearts & Hands provides:

- Help and knowledge for anticipating what may occur during a child's illness
- A multidisciplinary approach to care that involves the entire family
- Coordination of care and medical conferences to keep providers and the family informed
- Decision-making assistance for the child, family and medical team
- Support for the child and family throughout their medical journey



'Glowing Gold' for childhood cancer awareness

Each September, Norton Children's Cancer Institute celebrates survivors and raises awareness for Childhood Cancer Awareness Month. This year, physicians, staff, cancer survivors, families and community members, came out to the newly remodeled Norton Children's Hospital lobby to "Glow Gold." The lobby was illuminated by flashlights and glow sticks that formed a huge cancer awareness ribbon. The families also were invited to lunch and a day at Joe Huber's Family Farm in Starlight, Indiana.



Support services

Patient and family navigation

A certified nurse navigator is available to every family facing a childhood cancer diagnosis. The navigator:

- Coordinates care by streamlining appointments with physicians as well as social workers, child life therapists and other support services
- Identifies and assists with barriers to care, such as educational, financial, transportation, language, cultural, communication and fear
- Oversees the educational, emotional and social needs of patients and their family members
- Provides education to help patients and families understand the cancer diagnosis and treatment plan
- Links families to community resources to address specific needs

Child life and expressive therapies

A cancer diagnosis is a traumatic, life-changing event at any age. For children who don't understand what their diagnosis means, why they have to spend time in the hospital or why painful treatments are necessary, child life therapists are available to help families understand and manage stressful hospital experiences.

Expressive therapists incorporate art, puppetry, writing and drama as therapeutic interventions to help patients and their family members express feelings, fears, worries, hopes and dreams. By expressing themselves, patients have an outlet to externalize their energy and allow their bodies to heal, and families are better able to cope with their cancer experiences.

Music therapists address physical, psychological, cognitive and social functions through a variety of music-related activities. Benefits of music therapy include improved sleep and appetite, pain relief and increased relaxation.

All child life services are funded by the Norton Children's Hospital Foundation.



Getting back to life after cancer

School Re-entry Program

Child life therapists are available to visit a cancer patient's school to educate classmates and teachers about the patient's illness and return to school. Classmates learn what to expect when the patient returns and possible side effects or changes to their classmate from the recent medical experience. Classmates have the opportunity to share their feelings and ask questions about cancer.

Support groups

Norton Children's Cancer Institute hosts several ongoing support groups for family members of children with cancer:

- Sib Stars is a group for siblings ages 6 to 11 of kids with chronic diseases. Weekly meetings include dinner, games and therapeutic activities that address common issues.
- A parents' dinner meets monthly to allow parents the opportunity to support one another.
- Teen Warriors is a group for youth ages 15 to 18 affected by cancer. They meet weekly for music jam sessions and have monthly "hangouts" that include dinner and an activity.
- 7 West Warriors is a private Facebook group named after the floor where the Addison Jo Blair Cancer Care Center is located in Norton Children's Hospital. The group provides information and support for patients, parents and family members.

Community support through the Norton Children's Hospital Foundation

Donations to cancer care through the Norton Children's Hospital Foundation are aimed at ensuring Norton Children's Cancer Institute has the equipment and resources to provide the most specialized treatments for children and teens.

The Norton Children's Hospital Foundation funded several initiatives to support a variety of pediatric cancer services that ensure all children diagnosed with cancer at Norton Children's Cancer Institute, and the hundreds receiving ongoing treatment, have access to the care they need. For ways to help, visit HelpNortonChildrens.com.

Chili's Clip for Kids

Chili's® Clip for Kids was a major cancer fundraising event for the Norton Children's Hospital Foundation in 2019. Held in May, the event challenged participants to raise funds in return for shaving, trimming or clipping their hair in solidarity with kids fighting cancer.

Nearly 1,000 people came together to raise more than \$54,199. These funds were used to continue the comprehensive support and educational programs, advanced treatments and research available through Norton Children's Cancer Institute.



MUSIC THERAPY

hits high note with Cancer Beats

At Norton Children's Cancer Institute, young patients are learning to tune out cancer with a powerful new music therapy program called Cancer Beats.

This inventive program gives patients an outlet for artistic expression — such as when they took the stage at a popular concert venue to perform “Victory Dance,” their own remix of a rock song made popular by My Morning Jacket.

Jim James, My Morning Jacket's vocalist and guitarist, hails from Louisville, Kentucky, and is passionate about music's healing power. He and the band gave Norton Children's Cancer Institute permission to remix “Victory Dance” as a theme song for the Cancer Beats program.

“Victory Dance” features several Norton Children's Cancer Institute patients — each with great victories to share. Performing and recording the song helped one 15-year-old find strength in her battle with cancer.

“I am strong, stronger than a hurricane and I'll fight through the pain, 'cause I know I can do it,” she sang.

Cancer Beats originated in Louisville with special support from the Norton Children's Hospital Foundation and Teen Cancer America (founded by Roger Daltrey and Pete Townshend of The Who). The program takes music therapy to a new level by introducing patients to musical instruments and connecting them with experienced professional musicians. Patients learn new skills and coping strategies, meet peers and gain support. They can express themselves and their creativity in a safe and controlled environment.

“The music gives them a new normal and new way of coping,” said Brett Northrup, music therapist, Norton Children's Hospital.



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Norton Brownsboro Hospital campus

Norton Cancer Institute – Brownsboro
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Norton Healthcare – St. Matthews

Norton Medical Plaza 2 – St. Matthews
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Jeffersonville, IN 47130
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(502) 259-PINK (7465)

Genetic Counseling Services

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(502) 629-GENE (4363)

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Oncologic Dermatology Program

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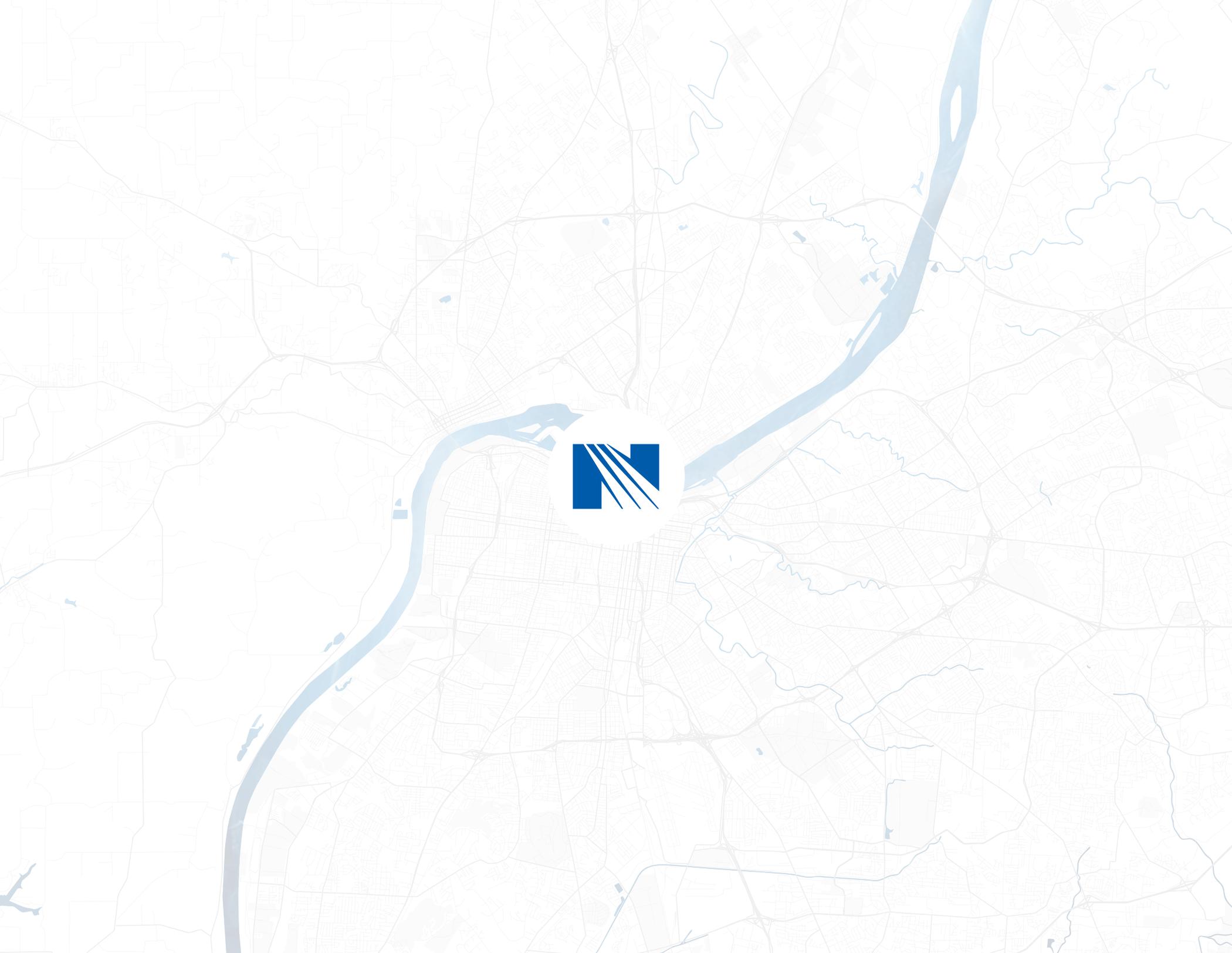
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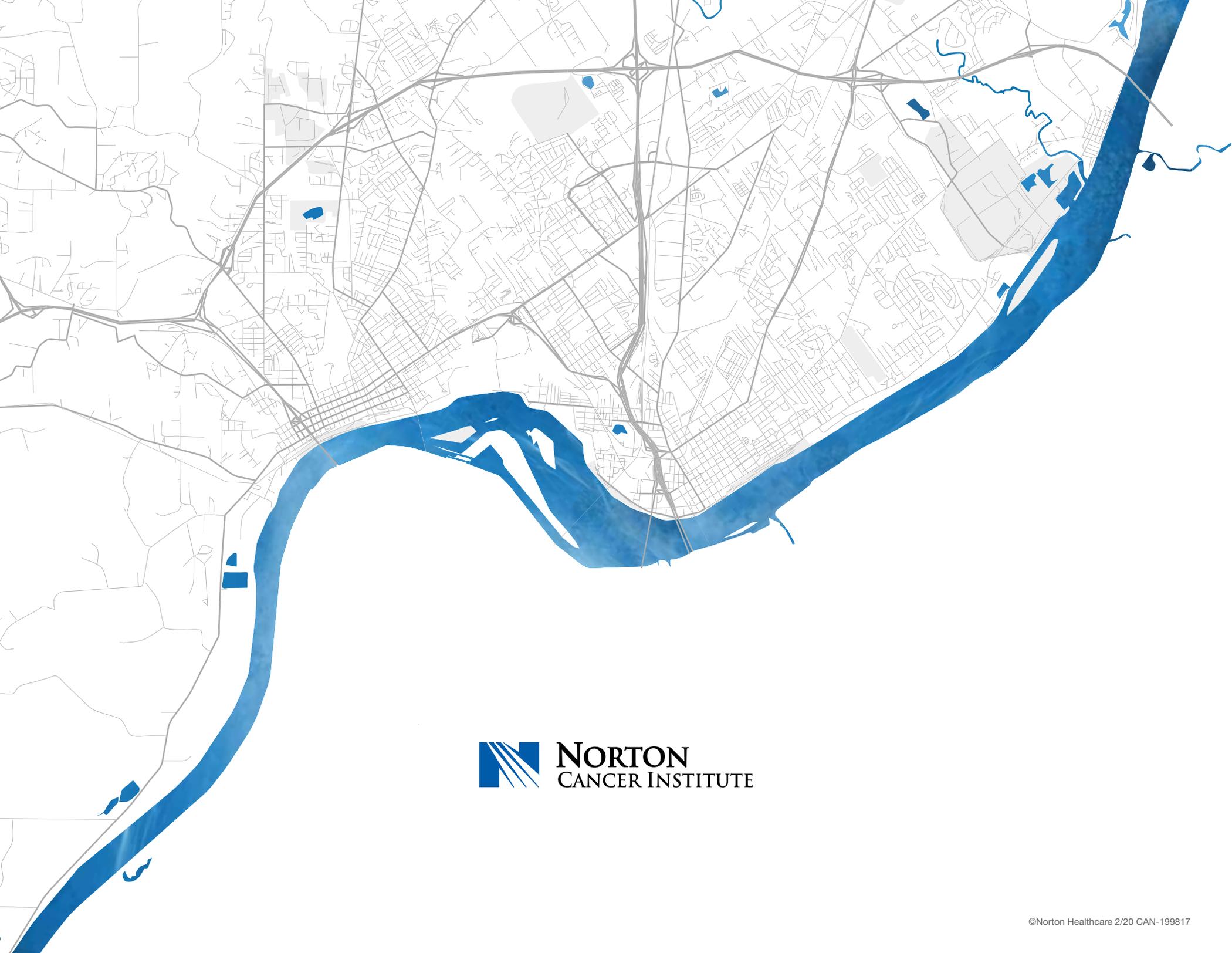
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