

2020 CANCER PROGRAM ANNUAL REPORT

Hollings Cancer Center

A National Cancer Institute-Designated Cancer Center



Hollings Cancer Center
An NCI-Designated Cancer Center

Changing What's Possible

From the Leadership



David T. Mahvi, M.D.
Chief, Oncology
Integrated Center of
Clinical Excellence

At MUSC Health Hollings Cancer Center, our mission is to reduce the cancer burden in South Carolina by delivering the highest quality of care, supporting cutting-edge research, fostering the development of outstanding medical professionals and providing statewide cancer prevention programs, particularly for underserved populations. While we work together to achieve this goal, we are pleased to report a number of new initiatives and developments since the last Annual Cancer Program Report.

As the leading cancer treatment center in the state of South Carolina, Hollings Cancer Center combines the full range of cancer care, including:

- Medical Oncology
- Radiation Oncology
- Surgical Oncology
- Reconstructive Surgery
- Clinical Trials and Immunotherapy

More than 60 sub-specialists – each concentrating on a specific discipline of cancer – work with each patient and their family to develop a customized treatment plan. Hollings Cancer Center prides itself on our multidisciplinary approach, as we strive to deliver the highest level of care and most favorable outcomes for our patients. At the core of our patient experience, a trained team of nurse navigators guides patients through the process of receiving the difficult news of a cancer diagnosis and helps with quick access to a multidisciplinary team.

At Hollings Cancer Center, our care extends well beyond the scope of medical services. In addition to state-of-the-art treatments, our center offers myriad patient support services to assist with the financial, physical and emotional aspects of cancer, including nutritional services, a smoking cessation clinic, genetic counseling and an interfaith chaplain.

Additionally, Hollings Cancer Center is the only National Cancer Institute-designated center in South Carolina and one of only 71 in the nation. As such, we are recognized by the federal government's principal agency for cancer research, allowing patients to benefit from the latest clinical, laboratory and population-based research. Every day, more than 120 scientists from numerous disciplines conduct research and collaborate on innovative ways to prevent, detect, diagnose and treat this complex disease.

It has been an unprecedented year for Hollings Cancer Center. We have adapted to the challenges of a global pandemic, developing customized treatment protocols, implementing modified safety precautions and embracing virtual patient care options such as genetic telehealth. Even in the most difficult of years, our expert faculty continued to innovate and influence how patient care is delivered as seen with the adoption of virtual tumor boards for each of our services. From our Blood and Marrow Transplant team ranking in the top 10% of transplant centers that have exceeded predicted survival rates to the acquisition of a new mobile health unit which will bring health care screenings to the citizens of South Carolina and beyond, Hollings Cancer Center continues to serve our patients with distinguished care at every phase of their cancer journey.

As we further expand our services and outreach in the upcoming year, we will continue to work together toward reducing the burden of cancer on South Carolina residents.



Andrea Abbott, M.D., MSCR
Cancer Program
Committee Chair



Tara Lock, MHA
Administrator,
Oncology Integrated
Center of Clinical
Excellence



Dr. Brian Hess
Hematology
Oncology

Our Commitment to Quality Care Includes:

- Hollings Cancer Center offers patients state-of-the-art therapies, treatments and technologies, including Tomotherapy, TrueBeam STx, the Leksell Gamma Knife Perfexion and the da Vinci Robotic Surgical System.
- MUSC Health is one of a small number of health care centers in the nation offering orthopaedic/sarcoma oncology care.
- We offer South Carolina's first, largest and most comprehensive adult blood and bone marrow transplant program and the only pediatric blood and marrow transplant program in the state.
- MUSC Health is one of only a few centers in the Southeast using the video-assisted thoracoscopic surgery (VATS) technique in a large percentage of cases.
- Our Advanced Breast Reconstruction Program uses the revolutionary deep inferior epigastric perforation (DIEP) technique.
- We are the only center in South Carolina performing surgery for prostate cancer in four different ways: robotic, perineal, retropubic and laparoscopic.
- MUSC Health has one of the world's most renowned Endoscopic Ultrasound facilities.
- MUSC Health offers the most comprehensive program for advanced melanoma care in South Carolina.
- In collaboration with MUSC's Shawn Jenkins Children's Hospital, we treat a large percentage of all South Carolina children battling cancer.
- MUSC Health is the only center in the southeast to offer Scrambler Therapy for treatment of neuropathic pain.
- Hollings Cancer Center is the state's leading institution for immunotherapy clinical trials.
- MUSC Health is the first in the state to offer CAR T-cell therapy and is the only center in South Carolina with an adult and pediatric CAR T-cell immunotherapy program.

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HOLLINGS CANCER PROGRAM COMMITTEE

Cancer Program Committee Chair, Surgery

Administrator, HCC Oncology Service Line

Cancer Liaison Physician, Radiology, Quality Coordinator

Radiation Oncology

Medical Oncology

Pathology

Palliative Care Representative

Cancer Registrar

Health Information Services

Quality Improvement Coordinator

American Cancer Society Representative

Clinical Trials Coordinator

Nurse Manager, Inpatient

Nurse Manager, Outpatient

Marketing

Genetic Counselor

Social Work

Oncology Pharmacy Services

Psychosocial Services Coordinator

Rehab/Physical Therapy

Oncology Dietitian

Andrea Abbott, M.D., MSCR

Tara Lock, MHA

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Jennifer Harper, M.D.

John Kaczmar, M.D.

M. Timothy Smith, M.D.

Pat Coyne, MSN

Linda Cope, CTR

Christine Lewis, RHIA, CCS

Jennifer Wood, RN, BSN, CBCN

Carrie Klamut

Susan Shannon

Julie Morton, RN, BSN, NE-BC

Lisa Keleher-Otto, MSN Ed, BSN, RN

Emma Vought, MS, CMI

Metis Genetics

Crysta Schaff, LISW-CP, ACM-SW

Carolyn Bondarenka, PharmD, MBA, BCPS

Stacey Maurer, Ph.D.

Renee Garrison, PT, MHS, MTC

Mary Jo Turner, RD, LD, CNSC

Accreditations, Awards and Recognitions

NCI-Designated Cancer Center - Hollings Cancer Center is one of 71 cancer centers in the nation – and the only one in South Carolina – to receive National Cancer Institute designation.



In 2018, Hollings was awarded a three-year Accreditation with Commendation by the Commission on Cancer of the American College of Surgeons. Hollings has been continuously accredited since 1936.



MUSC Health is ranked #39 in Adult Cancer Care and the MUSC Children's Hospital as a "best hospital" for pediatric cancer by U.S. News & World Report (2020).



Our Breast Care Program is accredited by the National Accreditation Program for Breast Centers.



MUSC has been awarded with Magnet Recognition®, an acknowledgment of quality patient care, nursing excellence and innovations in professional nursing practice.



Our breast imaging staff was awarded a Breast Imaging Center of Excellence designation by the American College of Radiology.



The Jenny Sullivan Sanford Melanoma & Skin Cancer Program at Hollings was named a Melanoma Center of Excellence in 2011 by the Melanoma Hope Network.



The Blood & Marrow Transplant Program at Hollings has been accredited by the Foundation for the Accreditation of Cellular Therapy since 2003.



The Blood & Marrow Transplant Program is recognized by BlueCross BlueShield as a Blue Distinction Center +, one of only 11 centers nationwide demonstrating more affordable care in addition to quality care and treatment expertise along with better overall patient results.

Cancer Data Management

The Hollings Cancer Center Data Registry

The Cancer Registry is the data collection component of the Cancer Program. Cancer registries across the country share a core mission, performed by data specialists trained as Certified Tumor Registrars (CTRs). CTRs do the work of translating the medical narratives of cancer patients into a searchable database. The purpose for collecting information about cancer is to identify better ways to prevent and treat cancer.

Cancer Data Management Activity MUSC 2019 Calendar Year

Total Cases	6108
Analytic Cases	3919
Follow-up Rate-5 Year (Target 90%)	90.9%
Follow-up Rate-Reference Year 2000 (Target 80%)	85.5%
Complete Database-Reference Year 2019	77,823



Dr. Miriam Alexander
Assistant Professor,
Hematology/Oncology

Cancer Registry Data (January 1, 2019 - December 31, 2019)

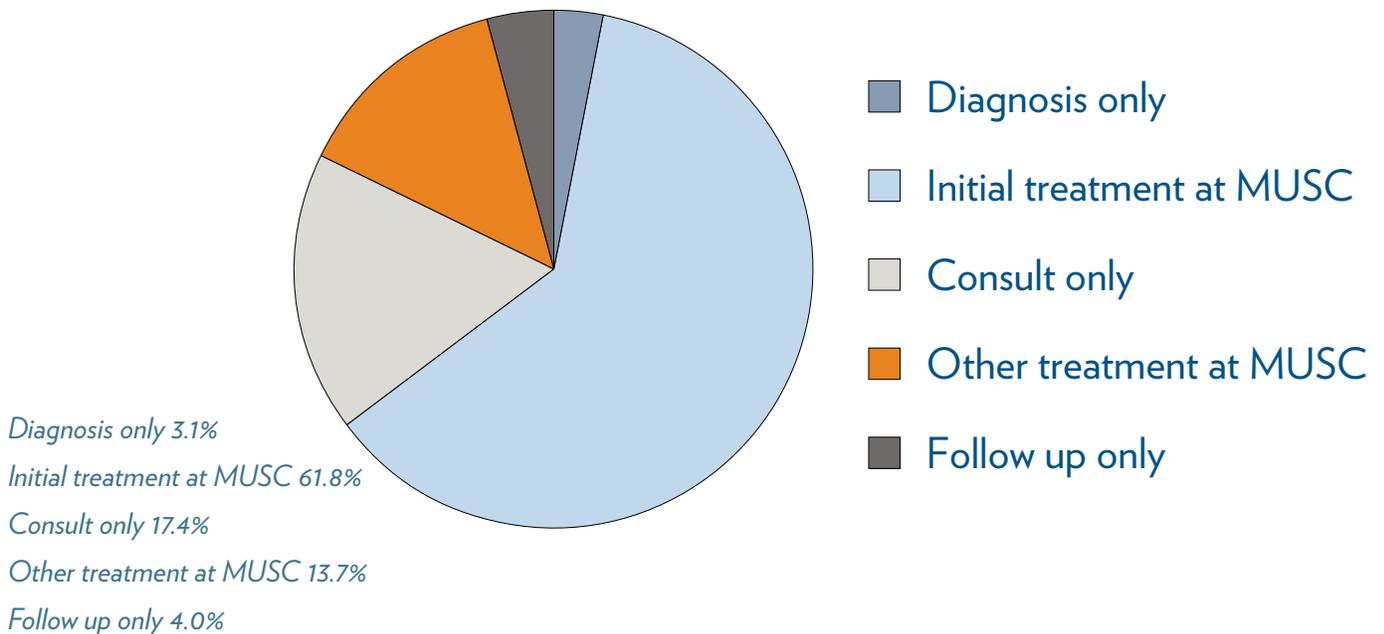
Hollings Cancer Center plays many different roles in cancer patient care. Hollings Cancer Center physicians may be involved in the diagnosis and/or treatment of the patient during the initial diagnosis of cancer. These patients' cases are described as analytic because they are used for analysis of treatment effectiveness. Our physicians may also see patients during the initial diagnosis of cancer for second opinions or specialized diagnostic tests. Patients who are initially diagnosed and treated elsewhere may come to MUSC for management of recurrent or persistent disease. These cases are described as non-analytic.

In the following chart:

Consult Only — patient was initially diagnosed at MUSC or came to MUSC for a second opinion, but received their treatment elsewhere.

All Other — patients are followed at MUSC for a history of cancer only (no active disease) or patients followed at MUSC as required by the South Carolina Central Cancer Registry.

Hollings Cancer Center's Role in Patient Care



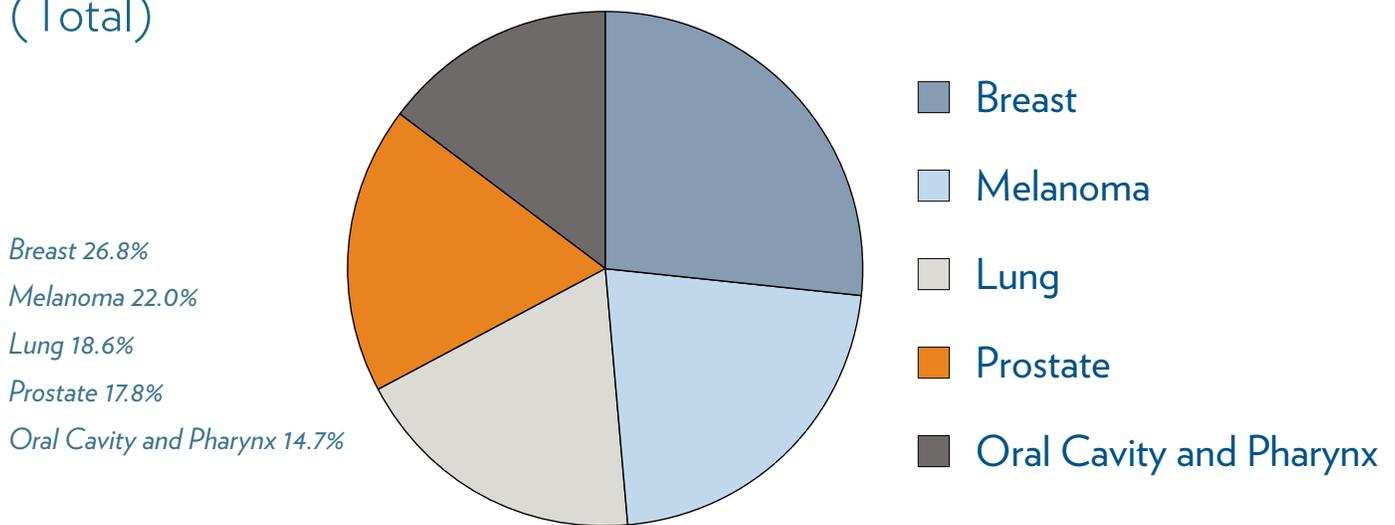
Total cases: 6,108



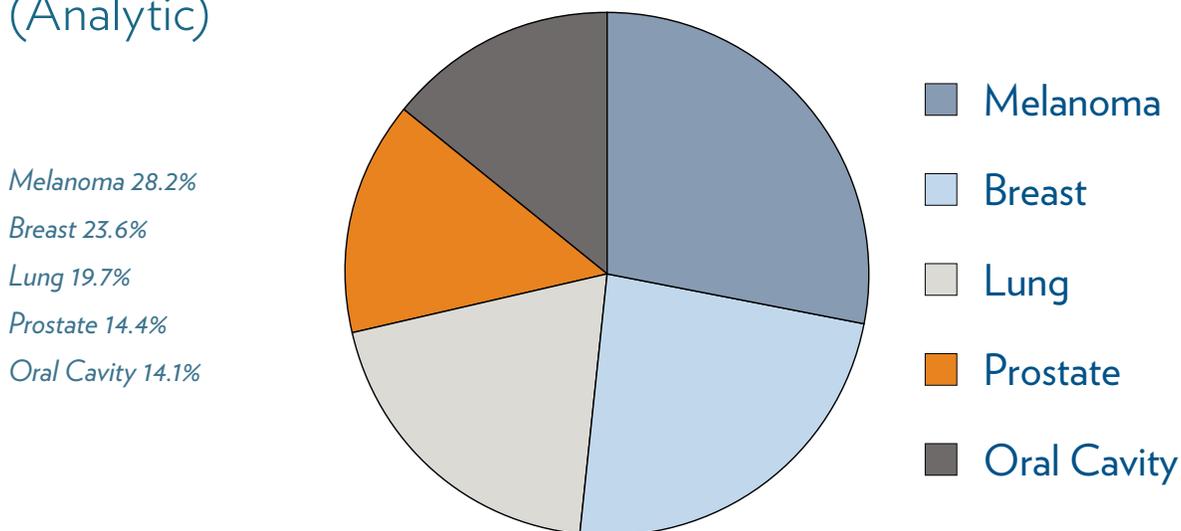
Most Common Types of Cancer Seen at MUSC

January 1, 2019 - December 31, 2019

Top 5 Primary Sites (Total)



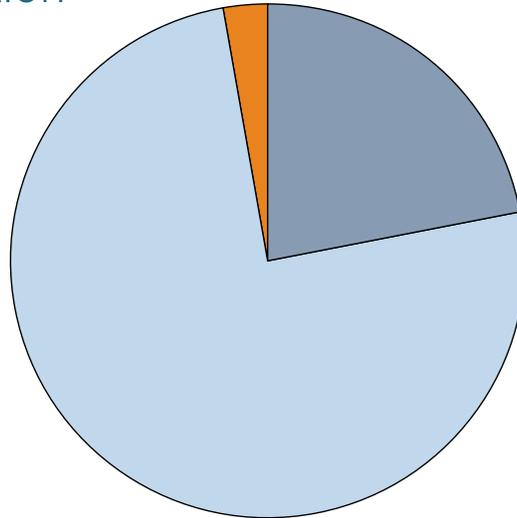
Top 5 Primary Sites (Analytic)



By the Numbers

Ethnologic Distribution

Race

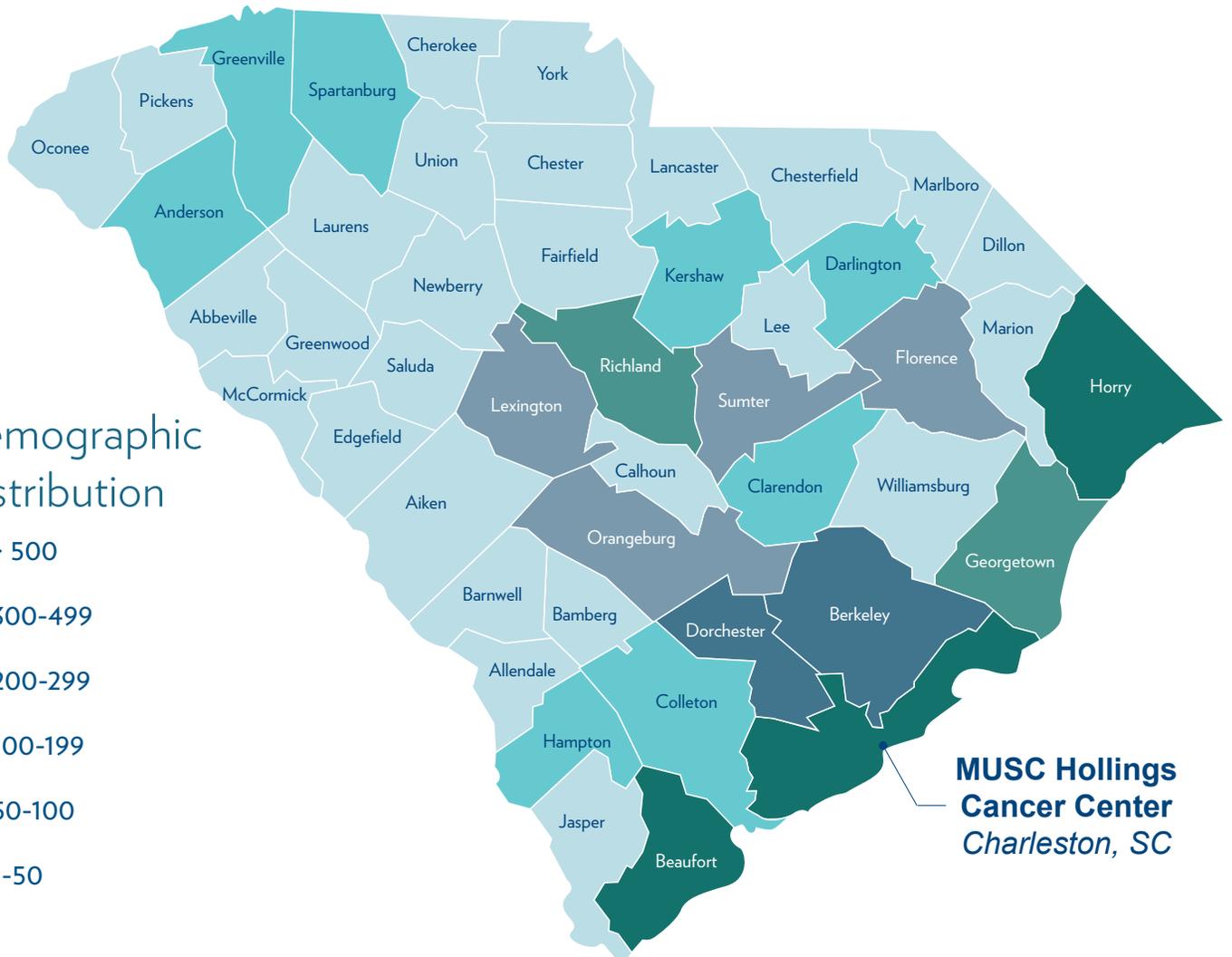


- African American
- European American
- Other

African American 22.1%
 European American 75.2%
 (1.3% Spanish Origin)
 Other 2.6%

Demographic Distribution

- > 500
- 300-499
- 200-299
- 100-199
- 50-100
- 1-50







Survivors' Fit Club taking part
in dragon boat session

Breast Imaging

The MUSC Health Breast Imaging Program is part of the Comprehensive Breast Care Program at the Hollings Cancer Center and is known as the Southeast's premier breast care program. The Breast Imaging Program offers traditional and diagnostic screening services by fellowship-trained breast radiologists who work closely with a team of breast surgeons, medical oncologists, pathologists and radiation oncologists.

Accredited by the American College of Radiology as a "Breast Center of Excellence," the Breast Imaging Program provides services at three locations across the Lowcountry including downtown Charleston, Mount Pleasant, and North Charleston.

Imaging Services

- Digital mammography (including 3-D mammography)
- Breast ultrasound
- Breast MRI
- Stereotactic biopsy (2-D and 3-D)
- US guided biopsy
- MRI guided biopsy
- Wire and wireless (radar) localization
- Clip placements

High Risk Breast Evaluation Program

For those at higher risk of breast cancer, the Breast Imaging Program team offers referrals to our MUSC High Risk Breast Evaluation Program. Our multidisciplinary team evaluates patients at increased risk for the development of breast cancer, determined by personal and hereditary risk factors. Genetic counselors also are available to provide genetic quantitative breast cancer and genetic risk assessment, consultation on the pros and cons of genetic testing as well as the coordination of genetic testing and interpretation of those results.

Lung Cancer Screening Program

The National Lung Screening Trial has shown that screening current or former heavy smokers with low-dose computed tomography (LDCT) decreases their risk of dying from lung cancer. The Lung Cancer Screening Program is recommended to current smokers or those who have quit within the last 15 years between 55 and 77 years old with a 30 pack-year history of smoking.

While not everyone who meets the initial criteria will be eligible for screening, our team of experts are able to guide patients to determine whether screening is appropriate. Screening is performed by LDCT available at one of three MUSC Health Radiology locations.

What is LDCT?

LDCT scanning combines special x-ray equipment with sophisticated computers to produce multiple, cross-sectional images or pictures of the inside of the body. LDCT uses less ionizing radiation than a conventional CT scan.

Genetic Counseling

MUSC Health is excited to offer our oncology and high-risk clinic patients tele-genetic consults and the expertise of genetic counselors to guide risk assessment, testing and post-test counseling. Through a collaboration with Metis Genetics, we connect patients with experienced cancer genetic counselors to discuss personal and family history, testing opportunities, results and impact to their care. Our genetics assistant facilitates the appointments, scheduling and patient needs. MUSC Health providers receive evaluation notes, results and recommendations through electronic health records to streamline workflows and ensure results are available to provide meaningful impact to treatment decisions.

Treatment

Patients are often faced with a difficult decision regarding cancer treatment using surgery, chemotherapy or radiation therapy. Using our multidisciplinary approach to cancer care, our team will work together to determine the best treatment recommendations for patients and their families while delivering the highest quality care.

Radiation Oncology

MUSC Health Radiation Oncology has a wide variety of modern technology enabling us to treat our patients with leading-edge techniques, advanced clinical protocols and the latest in innovative research and clinical trials.

Gamma Knife

One of only two in South Carolina, the Leksell Gamma Knife® Perfexion is considered the gold standard for non-invasive management of benign and malignant brain tumors, vascular malformations and other abnormalities of the head and neck areas. MUSC clinicians, physicists and engineers helped pioneer the science of radiosurgery more than 20 years ago, and this system represents our continuing commitment to offer patients the latest options in radiosurgery.

The Gamma Knife Center at MUSC Health is a joint effort between Hollings Cancer Center and the MUSC Neurosciences team, providing South Carolinians of all ages with state-of-the-art neuro-oncology care.

Advantages of the Leksell Gamma Knife® Perfexion

- The Gamma Knife Center at MUSC Health is recognized as an International Radiosurgery Association-designated Center of Excellence.
- Since the Center opened, more than 1,700 patients have been treated with the Leksell Gamma Knife.
- Sub-millimeter accuracy of the Gamma Knife minimizes dose exposure to surrounding healthy tissue.
- Use of the Gamma Knife also alleviates many risks associated with invasive surgical techniques, often allowing patients to go home the same day of treatment and even return to work or normal activities the next day.

TomoTherapy® Hi-Art®

Most conventional radiation therapy machines use five to nine beam angles, and were developed for 2D and 3D conformal therapy. The Hi-Art Treatment System delivers radiation continuously from all angles around the patient, and features patented beam-shaping technology created specifically for intensity-modulated radiation therapy. More beam angles, plus more precise beam modulation, creates dose distributions that conform to complex tumor shapes.

Advantages of the TomoTherapy Hi-Art Treatment System

- The TomoTherapy System looks like a CT scanner because it is a CT scanner, allowing efficient CT imaging to help ensure the accuracy of treatment.
- It leverages the ring gantry geometry used in CT scanning for the delivery of state-of-the-art, intensity-modulated radiation therapy from all angles around the patient.
- It was designed so that highly-precise treatment plans could result in more effective treatment deliveries.

TrueBeam™ and TrueBeam™ STx

TrueBeam provides noninvasive treatment of malignant and benign tumors and lesions located in the head and neck and throughout the body. Advanced imaging features allow physicians to pinpoint a patient's tumor by delivering high-dose radiation beams that match the size and shape of the tumor. This technology reduces treatment time while increasing accuracy.

Dr. Istvan Takacs and a patient receiving treatment with the Gamma Knife





With similar features and capabilities as TrueBeam, the TrueBeam STx also offers stereotactic radiosurgery and stereotactic body radiation therapy, a specialized type of treatment in which high-dose radiation is delivered to targeted locations in a patient's body in five or fewer treatments.

Advantages of TrueBeam:

- Treatment is a noninvasive and painless outpatient procedure.
- Extreme precision minimizes damage to normal tissue.
- Beam shaping offers highly accurate and uniform treatment.
- Short treatment times – about 15 minutes – eliminate errors from minor patient movements during longer treatments.
- Patients return quickly to normal routines with minimal side effects.
- No overnight hospital stay is required.

Medical Oncology

At MUSC Health Hollings Cancer Center, our team of fellowship-trained medical oncologists works with the patient's entire care team to determine how chemotherapy is best used as a stand-alone treatment or in conjunction with other options, such as radiation or surgery. As a pioneer in many types of blood and marrow transplants, MUSC serves as the state's go-to facility for patients battling hematological cancers and is on the cutting edge of precision medicine, immunotherapy and genomics.

Personalized Medicine – Pathology & Genomics

Each of us has a unique genetic make-up. Personalized medicine uses those specific identifiers to help predict disease risk, prognosis and to tailor treatment options. At Hollings Cancer Center, our team of experts are able to provide a personalized treatment plan for patients from risk assessment to gene-specific targeted therapy.

The Department of Pathology and Laboratory Medicine offers a number of tests aimed at personalized medicine for cancer. Many of these are performed on-site in the cytogenetic and molecular genomic laboratories, which are certified by the College of American Pathologists.

The MUSC Health Center for Genomic Medicine is designed to promote and support basic and clinical research and training in genetic and genomic influences on human health and disease and to translate these discoveries into patient care. The Center includes genomics experts as well as essential core resources that support ongoing research efforts.

Treatment

Surgery

MUSC Health Hollings Cancer Center offers a team of surgeons who specialize in treating cancer patients, including fellowship-trained surgical oncologists. We are also at the forefront of laparoscopic and endoscopic techniques for cancer surgeries that have previously been done via a full, open incision. These minimally invasive techniques improve precision and reduce the surgical impact on patients, including the reduction of tissue damage and post-surgical pain while promoting a faster recovery. Hollings is also home to da Vinci[®] Surgical System-trained surgeons and one of only two Hidden Scar[™] Breast Surgery certified surgical oncologists in the state.

Robotic Surgery

Robotic surgery is a type of minimally invasive procedure utilizing the da Vinci Surgical System to perform complex surgeries through incisions that are less than an inch long. This type of surgery offers many advantages, including less pain, quicker recovery times and decreased blood loss.

MUSC offers a comprehensive team of surgeons who have been trained with the da Vinci Surgical System for many different services, including a number of cancer treatments.



Dr. Terry Day
Director,
Head & Neck Tumor Center

“ Hidden Scar[™] Breast Cancer Surgery provides a woman the opportunity to preserve the natural look of her breast without a visible scar and without compromising outcomes. At a time when patients can feel like they have very few choices, this procedure allows women to have control over their bodies. ”

— Andrea Abbott, M.D.
Hidden Scar[™] Breast Cancer
Surgery certified surgical oncologist



Hidden Scar[™] Breast Cancer Surgery

Hollings Cancer Center's Dr. Andrea Abbott is one of only two Hidden Scar[™] Breast Cancer Surgery-certified surgeons in the state. Minimally invasive approaches like Hidden Scar[™] Breast Cancer Surgery, allow surgeons to remove the cancerous tissue through a single incision made in an inconspicuous area, preserving the natural shape of the breast while reducing visible scarring. Patients who undergo this approach – available for both lumpectomy and mastectomy procedures – experience optimal clinical and cosmetic outcomes, and are at no higher risk of recurrence than patients who undergo any other surgical technique.

Video-assisted Thoracoscopic Surgery (VATS)

More than 95 percent of surgical cases for stage 1 lung cancer are performed with Video-assisted Thoracoscopic Surgery (VATS) at MUSC. For patients with stage 1 non-small cell lung cancer (NSCLC) who have no anatomic or surgical contraindications, VATS is recommended as the standard of care by the National Comprehensive Cancer Network.

VATS uses an endoscopic camera to visualize the surgical field and special instruments to perform the surgery. As a less invasive procedure, it can be used in patients with NSCLC older than 65 who might not otherwise qualify for surgery. It offers improved overall and lung cancer-specific survival, decreased intensive care admissions and shorter hospital stays.

Blood & Marrow Transplant

For more than 30 years, MUSC has been South Carolina's leader in blood and marrow and stem cell transplantation. MUSC's experience and innovation with adult and pediatric blood and marrow transplantation have resulted in outcomes that are among the best in the country according to national rankings by U.S. News and World Report. Our team of specialists includes hematologists and oncologists, nurses, as well as blood bank and cryopreservation personnel. Together, these individuals collaborate to ensure each patient receives personalized care and all the information necessary to understand their treatment. Each week, the team reviews individual cases, makes treatment recommendations and identifies patients who may be eligible for a clinical trial. We are one of a few U.S. programs to have used bone marrow to treat autoimmune diseases, sickle cell disease and other red blood cell-related diseases.

MUSC is home to the only pediatric blood & marrow transplant (BMT) program in South Carolina. Certified by the Foundation for the Accreditation of Cellular Therapy, the MUSC Children's Health BMT Program offers cutting-edge clinical trials through the Children's Oncology Group, the BMT Consortium Clinical Trials Network, the Pediatric BMT Consortium and offers all transplant options to our patients.

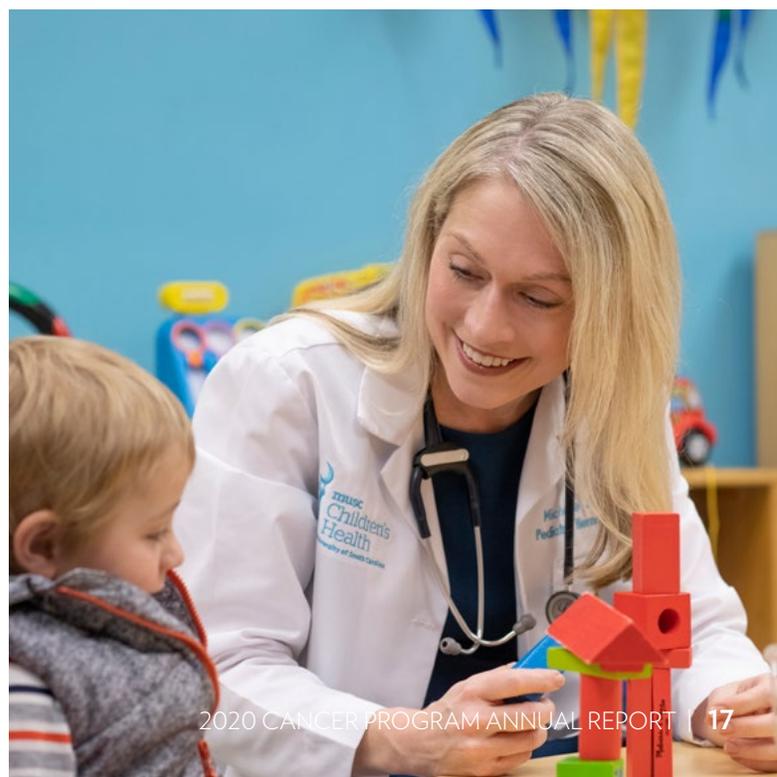
CAR T Immunotherapy Programs

The adult and pediatric CAR T-cell immunotherapy programs were successfully launched this year at MUSC Health. These programs provide adoptive cell transfer therapy, which is approved by the Food and Drug Administration for the treatment of children and adults with B-cell acute lymphoblastic leukemia (ALL) who haven't responded to standard treatment or have had the cancer recur. Bringing CAR T-cell immunotherapy to MUSC also offers the additional benefit of convenience for our patients.

Dr. Michelle P. Hudspeth and pediatric patient

BMT Program Highlights:

- Certified by the American Society of Blood & Marrow Transplantation
- Performed the first adult and the first pediatric bone marrow transplant in South Carolina (1987)
- Performed the first matched unrelated transplant in South Carolina (1993)
- Performed the world's first outpatient matched unrelated transplant (1996)
- Performed the first cord blood transplant in South Carolina (1997)
- Performed the first reduced intensity transplant in South Carolina (2000)
- Performed the first haploidentical transplant in South Carolina (2009)
- A designated blood and bone marrow transplant center for South Carolina's Medicaid program
- South Carolina's only approved umbilical cord blood transplant program
- A National Marrow Donor Program collection and transplant center since 1993



Multidisciplinary Care

At Hollings Cancer Center, we combine the full range of cancer specialties to deliver a higher level of care to the patients we serve. More than 60 sub-specialists – each concentrating on a specific discipline of cancer treatment and care – work with individual patients to develop customized treatment programs that target a broad range of conditions. Your care team may include a medical oncologist, radiation therapist, genetic counselor, nurse practitioner, patient navigator and pathologist, all working together to create your optimal care plan.

Blood & Lymphatic Cancers

Our blood and lymphatic cancer team specialize in diseases of the blood and blood-forming organs, including acute and chronic leukemias, myelodysplastic syndrome, Hodgkin's lymphoma, non-Hodgkin's lymphoma, and myeloma. Care for blood and lymphatic cancers is backed by a network of clinical trials for hematological cancers, stem cell transplantation and a team including experts in cytogenetics, infectious disease and hematopathology.

Program Highlights:

- MUSC remains the largest and most comprehensive Blood & Marrow Transplant Program in the state
- State-of-the-art infusion center staffed by Oncology Nursing Society chemotherapy-certified nurses, making outpatient treatment possible for many patients
- Technologically-advanced inpatient unit specially designed for immune-suppressed patients using the same HEPA filtration system found in operating rooms
- Nationally recognized for treatment of acute myeloid leukemia in adults
- Comprehensive management for lymphomas and myeloma, including stem cell transplantation

Sarcoma Program

The Hollings Cancer Center Sarcoma Cancer Program is the only such program in the state. It is also renowned as one of only a handful of centers in the country offering orthopedic oncology care.



Dr. Lee Leddy
Chair and Associate Professor,
Orthopaedics & Physical Medicine

Approximately 12,000 new cases of sarcoma are diagnosed in the U.S. each year. Sarcoma is a cancer found in bone, muscle, connective tissue, fat, nerves, blood vessels and cartilage. With a rare cancer like this, it's imperative patients are treated at a center with a team of physicians experienced in the diagnosis and management of these diseases.

Program Highlights:

- One of a small number of health care centers in the nation offering orthopedic oncology care, specializing in limb salvage
- Specialization in benign and malignant bone and soft tissue lesions in the pelvis and limbs
- Surgical care of benign tumors and malignant sarcomas of the musculoskeletal system
- Experts in pediatric and adult sarcoma medical oncology
- Collaborative team of specialists including plastic surgery, cardiothoracic surgery, vascular surgery, radiation oncology and therapists
- Each case is reviewed by our multidisciplinary team of experts to ensure accurate diagnosis and treatment recommendation
- MUSC has experienced sarcoma pathology and musculoskeletal radiology experts for proper diagnosis — imperative for effective treatment

Head and Neck Tumor Center

The MUSC Health Head and Neck Tumor Center offers personalized, comprehensive care to patients, while pursuing future goals of the control of head and neck cancer through prevention, outreach and research. Our specialists include experts in all types of head and neck cancers such as mouth, throat, voice box, thyroid, parotid, melanoma, salivary and skull base tumors. With a team of more than 40 specialists prepared to evaluate the complex needs of head and neck tumor patients, the program offers the latest treatment options, cutting-edge surgical techniques and reconstruction approaches, and complete rehabilitative options.

Program Highlights:

- State-of-the-art Wellin Head & Neck Clinic with digital and audiovisual patient examination with worldwide access
- Advanced surgical procedures including microvascular reconstruction, facial reanimation, Trans-Oral Robotic Surgery and minimally-invasive surgery for tumors of the thyroid, parathyroid, mouth, throat and base of the skull
- Weekly multidisciplinary tumor board conferences to discuss every patient's case
- Maxillofacial prosthodontics to create custom-made prosthetics for the head, face and neck
- Brachytherapy to implant radioactive seeds at the tumor site to provide targeted radiation
- Computerized three-dimensional planning for radiotherapy
- Thyroid and Parathyroid Tumor Clinic to include evaluation by a multidisciplinary team
- Speech and swallowing therapy at the Evelyn Trammell Institute for Voice and Swallowing

Dr. Virgilio George and patient in clinic

Gastrointestinal Cancers

MUSC Health's Gastrointestinal Cancers Program is a multidisciplinary collaboration between two nationally recognized leaders in the field – Hollings Cancer Center and the MUSC Digestive Disease Center. Together, the two centers diagnose and treat diseases of the esophagus, stomach, pancreas, liver, biliary tree, colon and rectum.

Program Highlights:

- Minimally invasive surgical techniques such as laparoscopic, robotic surgery and endoscopic mucosal resection
- CT Colonography also known as virtual colonoscopy
- Advanced staging technology including endoscopic ultrasound
- State-of-the-art screening techniques including Narrow Band Imaging, a powerful optical image enhancement technology



Multidisciplinary Care

Breast Care Program

Our Comprehensive Breast Care Program is the most advanced in South Carolina and is the only program in the state that's both accredited by the National Accreditation Program for Breast Centers and part of an NCI-designated cancer center. The Breast Care team works hand in hand with the MUSC Health Breast Imaging Program, a Breast Imaging Center of Excellence.

Together, doctors and nurses collaborate to treat patients' physical and emotional needs, providing expert guidance from diagnosis throughout treatment. Cases are reviewed during regular Breast Tumor Board Meetings, giving patients another level of analysis to ensure all options are thoroughly explored.

Program Highlights:

- Fellowship-trained surgical oncologists and radiologists specializing in breast cancer
- Digital and 3-D mammography
- High-Risk Breast Cancer Program
- State-of-the-art radiation therapy and techniques including hypofractionated radiation therapy given over a shorter period of time and the Deep Inspiration Breath Hold technique
- Advanced Breast Reconstruction Program offering the full spectrum of breast reconstruction options, including the deep inferior epigastric perforators flap procedure and Hidden Scar™ Breast Cancer Surgery

Brain & Spine Tumor Program

MUSC Health's Brain & Spine Tumor Program is a multidisciplinary collaboration among neurosciences, oncology, radiation oncology, neuro-imaging, neuropathology and the Hollings Cancer Center. The Program is committed to delivering the highest level of neuro-oncology care through a dedicated and experienced team focused on providing the most effective therapies. These efforts are backed by state-of-the-art facilities, cutting-edge technology and laboratory research. Advances in medical and surgical therapies and a broad array of clinical trials have expanded the types of tumors that the Program can treat, resulting in customized care via the latest treatments available

Program Highlights:

- Weekly multidisciplinary tumor boards reviewing 15-20 cases per week
- State-of-the-art radiation therapy including the Leksell Gamma Knife Perfexion
- Skull Base Surgery Program providing surgical management of complex lesions of the skull base and vascular lesions by board-certified and fellowship-trained specialists
- Advanced surgical techniques including endoscopic surgery, microneurosurgery and advanced repair and reconstruction
- The state's only multidisciplinary pediatric neuro-oncology program

Prostate & Genitourinary Cancers

Hollings Cancer Center provides patients with the latest techniques and therapies for all types of genitourinary cancers, including prostate, bladder, kidney, adrenal, penile and testicular cancer. It is the only center in South Carolina offering four options for prostate cancer surgery and is equipped with state-of-the-art radiologic and cancer imaging.

Program Highlights:

- ProstaScint scanning to detect the spread of prostate cancer
- Axumin PET scanning to detect recurrent prostate cancer
- Cutting-edge treatment options including a 4-week course of image-guided intensity-modulated external beam radiotherapy for many prostate cancer patients
- Bladder-sparing treatment of bladder cancer using surgery, radiotherapy and chemotherapy
- Non-invasive radiosurgery treatment of small volume metastatic disease
- Minimally invasive surgery including laparoscopic and endoscopic techniques and the da Vinci Surgical System
- Four types of prostatectomies or surgical removal of the prostate
- Targeted tumor ablation including cryotherapy, radio frequency ablation and brachytherapy

Lung & Thoracic Cancers

The Lung & Thoracic Cancer Program specializes in the treatment of lung cancer, esophageal cancer and Barrett's Esophagus, chest wall tumors and mediastinal tumors, bringing together specialists and sub-specialists into a highly-coordinated

care team. The Thoracic Cancer Program offers a complete diagnostic review of your cancer, from in-depth staging to molecular profiling. Hollings Cancer Center is also one of only a few centers in the Southeast using the video-assisted thoracic surgery technique in a large percentage of cases.

Program Highlights:

- In-depth staging protocol, which determines the stage of the patient's cancer and the optimal treatment
- Diagnostic staging procedures
- Molecular profiling of tumors - Personalized therapy with chemotherapeutic and targeted agents based on an individual patient's molecular characteristics
- State-of-the-art radiation therapy including stereotactic radiosurgery using the TrueBeam STx, 3D radiation therapy, TomoTherapy, high-dose radiation and brachytherapy
- Minimally invasive thoracic surgery including video-assisted thoracic surgery
- Virtual Tumor Board providing lung cancer consultations and second opinions to other physicians in the region

Gynecologic Cancers

Hollings Cancer Center is home to the region's only female gynecologic oncologist, nationally known radiation oncologists, ovarian cancer specialists and gynecologic pathologists. The Gynecologic Cancers Program specialize in the diagnosis, surgery, treatment and management of cervical cancer, endometrial cancer, ovarian cancer, uterine cancer and vulvar cancer with compassion and thoroughness.

Program Highlights:

- Advanced strategies for early diagnosis and staging of all types of gynecologic cancers, including HPV testing and colposcopic assessment
- Same-day in-clinic fine needle aspiration
- Interventional radiology for image-guided biopsy
- Minimally invasive surgery including laparoscopic surgery and the da Vinci Surgical System
- Robotic-assisted laparoscopic lymph node assessment
- Access to clinical trials through the Gynecologic Oncology Group
- State-of-the-art radiation therapy including intensity-modulated radiation therapy and vaginal brachytherapy, or internal radiation

Jenny Sullivan Sanford Melanoma & Skin Cancer Program

The Jenny Sullivan Sanford Melanoma & Skin Cancer Program at Hollings Cancer Center is committed to enhancing the care of melanoma and skin cancer patients. Based on the exceptional care we offer, the program has been designated a Melanoma Center of Excellence by the Melanoma Hope Network – one of the first 14 programs in the U.S. to receive this designation.

Program Highlights:

- Early diagnosis & staging including the minimally invasive sentinel lymph node biopsy
- Mohs Micrographic Surgery
- T-VEC injection for stage III melanoma that cannot be treated by surgery
- State-of-the-art radiation therapy, including the TrueBeam STx, TomoTherapy®Hi-Art® Treatment System and Leksell Gamma Knife® Perfexion™ and brachytherapy, also known as internal radiation
- Melanoma Center of Excellence by the Melanoma Hope Network

Primary Care Program

Here at MUSC Health, we understand a patients' needs go beyond cancer care. This innovative program provides in-house primary care services to patients at MUSC Hollings Cancer Center. Our dedicated primary care physician is an important resource for cancer and noncancer related illnesses, pre and postoperative care, recognizing and managing complications of cancer care and much more. This service is available exclusively for our oncology patients who are newly diagnosed or undergoing treatment.

Virtual Tumor Boards

Our virtual tumor boards aim to provide specialty consultation remotely to best care for patients. The multidisciplinary cancer teams at MUSC Health Hollings Cancer Center work to develop customized treatment plans that address factors unique to each patient's diagnosis and medical history.

Coordination of Care

Access to Care

Hollings Cancer Center includes 11 multidisciplinary care teams and dozens of cancer specialists who are experts in their fields. This breadth of knowledge offers myriad patient benefits, including access to the latest, most effective treatment methods and protocols. In an effort to increase patient satisfaction and decrease the financial burden of cancer care, a new initiative has been implemented to help patients navigate the complex healthcare system.

Features of the new access initiative:

- Increased staff with specialized training based on diagnosis
- Initial contact for new patients within 24 hours of referral
- A new Undiagnosed Clinic to ensure a quicker diagnosis and decreased time from diagnosis to treatment
- Appropriate scheduling of new patients with a team of multidisciplinary physicians
- Improved timeliness of new patient access
- Barriers to care are addressed and handled more quickly
- Increased enrollment and retention into clinical trials

Patient Navigation

At Hollings Cancer Center, our Navigation Program is at the core of the patient experience. Members of the navigation team are made up of highly trained professionals and personnel with expertise in all cancer types.

As an integral member of the care team, patient navigators are responsible for a number of services, both clinical and emotional, throughout the patient's cancer journey. In addition to patient support, navigators help to promote community awareness and prevention, maintain relationships with referring physicians and coordinate multidisciplinary tumor boards ongoing at Hollings Cancer Center.

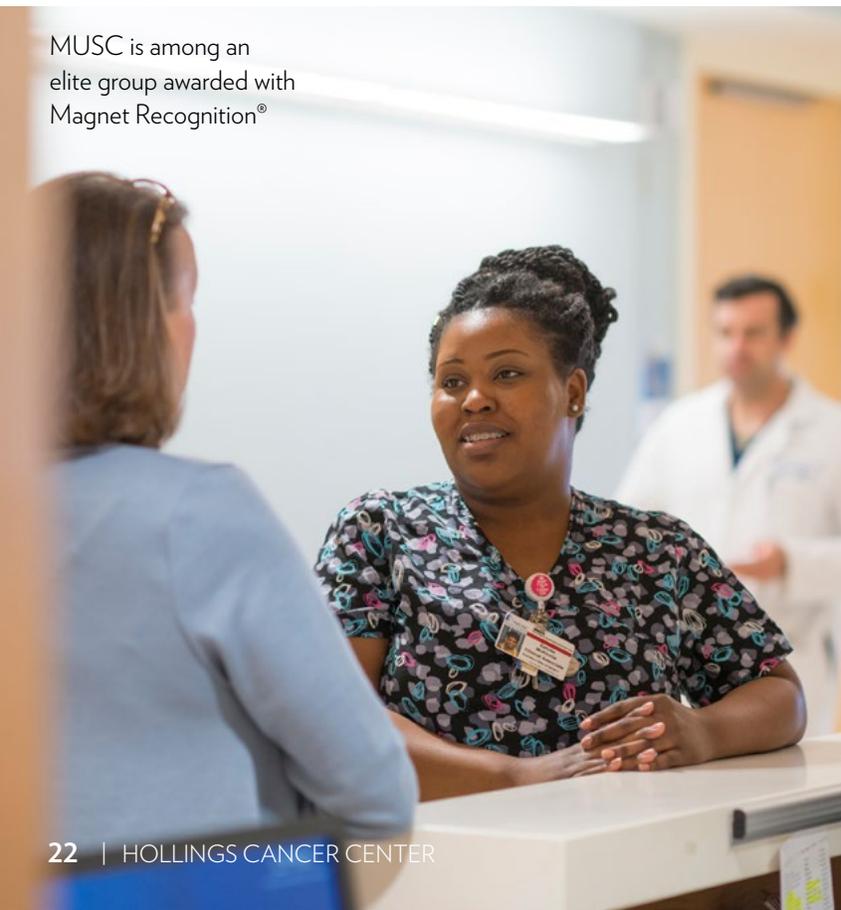
What to expect from the Patient Navigation Program:

- Connection to patient and family support services
- A maximized new patient experience during initial visits
- Educational and emotional support for the patient and family members
- Improve timeliness of appointments
- A comprehensive assessment of patients' needs to help identify barriers to care
- Improved patient outcomes through education, support, and performance improvement monitoring

Magnet Designation

MUSC is among an elite group of U.S. hospitals to achieve Magnet Recognition®, the gold standard for nursing excellence. The national designation from the American Nurses Credentialing Center places MUSC in a select group of 420 out of nearly 6,000 U.S. health care organizations. Magnet Recognition® exemplifies quality patient care, excellence and innovation in professional nursing practice.

MUSC is among an elite group awarded with Magnet Recognition®



Coordination of Care

Cindy Kramer, MS, RN, OCN, APHN-BC
*Program Director,
Blood & Marrow Transplant Program/Navigation Program*

Denise Kepecs, BSN, RN, CBCN
Breast Cancer Navigator

Judy Horton, BSN, RN, OCN, ONN-CG
Breast Cancer Navigator

Becky Bunton Woods BSN, RN, OCN
Gastrointestinal Cancer Navigator

Kim Croy, MSN, RN
Genitourinary Cancer Navigator

Stuart Foss, BSN, RN
Gynecologic Cancer Navigator

Mel Tozier, MSN, RN, CHPN
Gynecologic Cancer Navigator

Julie Molony, BSN, RN
Head & Neck Navigator

Colleen Butcher, MS, RN, OCN, BMTCN
Blood & Marrow Transplant Navigator

Taylor French BSN, RN
Blood & Marrow Transplant Navigator

Melinda Cone, BSN, RN, OCN, BMTCN
Blood & Marrow Transplant Navigator

Leah Judd, BSN, RN, CPHON
Blood & Marrow Transplant Navigator

Stacey Warneke BSN, RN, CPHON
Blood & Marrow Transplant Navigator

Bonnie Boyce, BSN, RN, OCN
Blood & Lymphatic Navigator

Melinda W. Ryan, BSN, RN
Melanoma & Sarcoma Navigator

Claudia Miller, BSN, RN, OCN, ONN-CG
Thoracic Navigator

Crystal Nance, CMA
Brain & Spine Navigator



Clinical staff in Ashley Rutledge Tower

Community Outreach

Mobile Health Unit

The MUSC Health Hollings Cancer Center Mobile Health Unit (MHU) has supported the greater Charleston and surrounding communities with cancer screenings, preventive health education, and wellness counseling since 1998. The MHU works to reach adults living in targeted areas of South Carolina with limited access to health care services and who are at risk of developing cancer including insured, uninsured, and underinsured individuals. Community partners include Federally Qualified Community Health Centers, local health care providers and worksites.

In 2016, the Hollings Cancer Center announced a collaboration with Clemson University and the South Carolina Department of Health and Environmental Control to provide access to screenings for breast and cervical cancer, heart disease and stroke risk factors, and tobacco cessation specifically for women in underserved communities.

Current screening services include:

- Breast health: mammograms
- Skin cancer: visual inspection of skin for suspicious moles or lesions
- Cervical health: Pap test, pelvic exam



**Total counties reached in
South Carolina: 31**



**Total patients served: 1,369
(FY2018)**

Cancer Screening & Early Detection

Clinical Research

MUSC is the state's only comprehensive academic medical center. It's changing what's possible in health care through its ongoing mission to provide excellence in patient care, education, and research. MUSC Health and MUSC Children's Health offer advanced care across South Carolina through hospitals, an extensive network of doctors' offices, telehealth services, and the state's only National Cancer Institute (NCI)-designated Cancer Center.

NCI-Designation

One of only 71 NCI-Designated Cancer Centers, Hollings continues to attract top cancer researchers from leading institutions across the country who are conducting research in the community, laboratory and clinic. All while more than 100 researchers are working to develop new therapies for our physicians to deliver to patients right here in South Carolina.

Clinical Trials

As an NCI-Designated Cancer Center, MUSC Hollings Cancer Center is part of a national network of clinical trials. Our network includes access to hundreds of trials across the country and the ability to offer interventional and non-interventional therapies not available elsewhere in South Carolina. Hollings Cancer Center is currently enrolling in over 200 clinical trials that target virtually every type of cancer and is the state's leading institution for immunotherapy trials and therapies.



To learn more about NCI-designation, please visit www.cancer.gov/research/nci-role/cancer-centers



(top) Dr. Mark Rubinstein, Cancer Immunology Researcher;
Dr. Zongyang Lyu, Researcher

Support Services

At Hollings Cancer Center, our care extends beyond the scope of medical services to resources that support our patients and their families in all areas of life. Along with state-of-the-art treatments, Hollings assists patients in dealing with the financial, physical and emotional aspects of having cancer.

Genetic Counseling

When cancer is diagnosed, it is important to consider whether family members are at risk, too. Genetic counselors at the Hollings Cancer Center are masters-level trained and certified through the American Board of Genetic Counseling, ensuring qualified, professional care.

Nutrition Services

MUSC Health's Cancer Center's Nutrition Services provides proactive and individualized nutritional consultation for cancer outpatients across the continuum of cancer care, including prevention, treatment, recurrences, palliative care and survivorship.

Our Registered Dietitian and Board Certified Specialist in Oncology Nutrition can answer questions and assist with a variety of issues such as recommendations for nutritional supplements or managing nutrition-related symptoms and eating problems as a result of cancer treatment.

Social Work

Social workers offer patients and family members support as they adjust to a cancer diagnosis, providing direct services such as making referrals, screening and assessment of patients, short term counseling and crisis management. They also are involved in advocating for the patient both within the hospital and providing linkages to the community. Social workers also facilitate support groups and provide community education.

Chaplain

The Hollings Cancer Center provides spiritual care to meet the needs of patients and their families while respecting their individual values, beliefs and religious orientation. These services are offered on an interfaith or individual basis honoring the broad diversity of religious practices and beliefs.

Café

The Hollings Café located on the first floor of the Center, offers fast, friendly service and a variety of options including breakfast, lunch, snacks or food to-go.

Psychological Support

The Psychosocial and Behavioral Oncology program at the Hollings Cancer Center assists patients, family members, and caregivers to cope with the distress that can accompany a cancer diagnosis. With sensitivity and understanding, we can provide the support services needed to adjust to cancer and treatment and to live life with improved quality and purpose.

Smoking Cessation

The MUSC Health Tobacco Treatment Program provides an assessment of tobacco use for all cancer patients and treatment to interested patients. It is staffed with a full-time telephone counselor for out of area patients, two full-time inpatient counselors, and outpatient support consisting of six clinical pharmacists, a psychologist and psychology resident. The Tobacco Treatment Program provides nicotine medications, tobacco treatment counseling and has the ability to connect patients with the South Carolina telephone quitline.

Financial Counseling

Hollings Cancer Center offers full-time, professional financial counselors who specialize in oncology care to help patients and their families to better understand insurance coverage and the complete financial picture prior to their first appointment.

Patient & Family Resource Center

The Hollings Cancer Center's Patient & Family Resource Center is dedicated to helping patients and loved ones empower themselves with information that can help them understand the disease better and communicate effectively with their health care team. The center provides the latest information about all cancer types. All services provided by the center are free and available to cancer patients and survivors in the community.

Creative Arts Therapy

Creative arts therapy services offer a breadth of expertise in clinically creative interventions that are substantiated by ongoing research. Under the creative arts therapy continuum, MUSC Health currently offers art and music therapy with the hopes to integrate other modalities such as dance/movement and drama therapy in the future.

The creative arts therapies help children and adults of all ages to identify, explore and transform emotional, psychological, physical and spiritual difficulties. Providing patients with an outlet for expression within a therapeutic relationship, services can enhance the healing process in an innovative and safe manner.

Mind -Body Class

Hollings Cancer Center offers cancer patients and survivors a free, monthly class to promote health and wellness. This one-hour mind-body class is geared to accommodate all fitness levels and focuses on simple movements and meditative practices to help participants during their healing journey.

Palliative Care Program

Palliative care is a special service for patients suffering from a serious illness. Palliative care providers work with your care team to ease symptoms and suffering and to improve quality of life. Palliative care is not hospice care; palliative care differs from hospice care in that it may be offered at all stages of illness.

Scope of Care

- Pain and symptom management
- Medical decision help
- Medical condition education
- Resources for the health care system
- Communication between patients, families and medical providers
- Development of medical care goals
- Assistance with spiritual needs
- Social challenges
- Help with home health care and hospice

Scrambler Therapy

Scrambler therapy – a new treatment for neuropathic pain – is now being offered at MUSC Health Hollings Cancer Center. The device uses electrical stimulation to “scramble” the painful sensations traveling between the nerves and the brain. Results have shown that about 80 percent of the patients who try it feel a substantial difference and the results can be long-lasting.

Common Conditions Treated with Scrambler Therapy

- Chemo-induced neuropathy
- Diabetic neuropathy
- Phantom limb pain
- Failed back syndrome
- Trigeminal neuralgia, a chronic pain condition that affects the trigeminal nerve
- Postherpetic neuralgia, a complication of shingles
- Chronic regional pain syndrome

Additional Resources

FOR INFORMATION ABOUT CANCER AND SURVIVORSHIP PROGRAMS:

The American Cancer Society

www.cancer.org

CANCERcare

www.cancercare.org

The Livestrong Foundation

www.livestrong.org

FOR INFORMATION ABOUT CANCER DIAGNOSIS AND TREATMENT OR QUALITY OF CARE, VISIT:

American College of Radiology

www.acr.org/quality-safety/accreditation

American College of Surgeons Commission on Cancer

www.facs.org/cancer

American Society of Clinical Oncology

www.asco.org

Breast Imaging Center of Excellence

www.acr.org/quality-safety/accreditation/bicoe

Centers for Medicare and Medicaid Services

www.cms.gov

National Accreditation Program for Breast Centers

www.accreditedbreastcenters.org

National Cancer Institute

www.cancer.gov

National Comprehensive Cancer Network

www.nccn.org

National Quality Forum (NQF)

www.qualityforum.org

Oncology Nursing Society

www.ons.org

South Carolina Cancer Alliance

www.sccanceralliance.org

SC DHEC Central Cancer Registry

www.scdhec.gov/Health/DiseasesandConditions/Cancer

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86 Jonathan Lucas Street
Charleston, SC 29425
843-792-9300
MUSChealth.org/cancer



Changing What's Possible