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2019 Cancer Committee Members

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Chief, Division of Hematology/Oncology Cancer Committee Chair

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Director of Interventional Pulmonary/Cancer Liaison Physician
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Director, Surgical and Cytology Services
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Director, Carole and Ray Neag Comprehensive Cancer Center
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Assistant Professor, Surgery/Breast Program Medical Director

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Nurse Practitioner
Christopher Niemann, PharmD, BCOP
Pharmacy Department Clinical Coordinator
Darlene Price-Wood, BS, RHIT, CTR
Cancer Registry Manager
UConn Health has continued its dedication to growth of its cancer program both in terms of new technology and new staff. In the Carole and Ray Neag comprehensive cancer center we continue our dedication to quality and personalized care utilizing state-of-the-art facilities.

Our programs include comprehensive care for the cancer patient. Patients enter our cancer network through the assistance of nurse navigators that help obtain appointments and records necessary for initial consultation. Our staff includes surgical, radiation, medical oncologists, pathologists, and plastic surgeons. Ancillary services for all patients include the involvement and expertise of bone health experts, cardio-oncologists, genetic counselors and as importantly a growing supportive care service which includes nurse practitioners, chaplains, social workers, psychiatrists, and a new health psychologist, focused on lifestyle modification for the cancer patient. Patients’ cases are discussed and reviewed by these specialists at a multidisciplinary tumor board so that their care is well integrated. Patients may then see some or all of these providers as they navigate through their treatment and survivorship.

New technology and innovative ways of diagnosis and treating of our patients is a continuous process here at UConn Health. As an example this past year, in order to diagnose and treat lung cancer at earlier stages, our institution brought in the Monarch platform for robotic bronchoscopy, which allows for earlier assessment of lung nodules especially in distant locations of the lung. To expand our brain tumor program and in multi-departmental collaboration between the cancer center, neurosurgery, and neurology program, we have recruited a Neuro-oncologist specializing in all central nervous system tumors as well as metastatic disease to brain and spine. On a larger scale, the development of a hematologic malignancy program will enhance our capacity as our bone marrow transplant center grows.

In collaboration with our GYN oncology colleagues and our cancer center director Dr. Pramod Srivastava, we have watched the first launch of a neo-peptide vaccine trial in women in remission from their initial ovarian cancer diagnosis. We also welcomed a new GYN oncologist, Dr. Jennifer Jorgensen, expert in robotic technology, to assist in this and other clinical ventures. We have completed phase 1 trials using novel immune therapy in our solid tumor patients; this in conjunction with our basic science immunology colleagues. A goal in our cancer program is early phase studies that are translational and offer our patients new hopes for treatment and for cancer care moving forward.

In the pages to follow, you will see more detailed descriptions of some of the exciting programs and technologies we have offered and will offer in the coming year. This will give you a brief overview of our 2019 cancer program and look to the future.

Susan H. Tannenbaum, M.D., Associate Professor, Medicine
Chief of the Division of Hematology and Oncology at UConn Medical Director Carole and Ray Neag Comprehensive Cancer Committee Chair

Cancer Liaison Physician 2019 Review

The Commission on Cancer (COC) was established in 1962. Since that time, the role of the Cancer Liaison Physician (CLP) has grown. The foundation and fundamental goal is to ensure that the cancer program is reaching standard of care and perpetually improving the program within.

The use of real time data from the National Cancer Data Base (NCDB) allows the program to compare benchmarks, patient demographics and treatment modalities regionally and across the country. The Rapid Quality Reporting System (RQRS) dashboard also allows us to ensure that active patients meeting benchmarks during their treatment phase of care.

Lastly, the Cancer Program Practice Profile Reports (CP3R) provides a review of standards that are set forth by COC and allows us to compare data year to year.

I was appointed to the position of CLP in 2016, since that time we have taken the opportunity to not only improve our rates of compliance in the treatment standards but also provide additional information to key care providers to improve patient care. One of the first examples of this was reviewing lymph node sampling in early stage lung cancer. We reviewed our
internal data, compared it to national standards and with a few adjustments were able to provide a more effective definitive care.

As the Cancer Liaison Physician at the Neag Compressive Cancer Center, I look forward to delivering providers the tools to ensure exceptional care in the years to come.

Omar Ibrahim, M.D.
Assistant Professor of Medicine
Director, Interventional Pulmonary and Thoracic Oncology
Cancer Liaison Physician

**UConn Health’s American College of Surgeon’s Commission on Cancer Accredited Cancer Program**

UConn Health continues to be proud of its’ American College of Surgeon’s Commission on Cancer (ACoS-CoC) accredited Academic Comprehensive Cancer Program. We are one of the oldest continuously ACoS-CoC accredited cancer programs in the nation after successfully becoming accredited in July 1977; and successfully passing ACoS-CoC’s rigorous triennial surveys to maintain that designation since then. ACoS-CoC is recognized nationally as one of the leading cancer program standards of care setters validating that a facility provides or facilitates patient access to state of the art cancer diagnostics, cancer treatment, and the necessary supportive care services to enable cancer patients to achieve the most optimal clinical outcomes possible. Additionally, as an ACoS-CoC accredited cancer program UConn provides onsite genetic counselling and testing services, as well as access to the latest clinical trials, and research programs available either onsite or in collaboration with our community clinical partners. After completing clinical cancer care our patients matriculate on to our survivor’s program. More information about ACoS-CoC can be found at https://www.facs.org/quality-programs/cancer/coc/about

Our program is staffed by physician’s board certified in surgical specialties, medical oncology, radiation oncology, urologic oncology, gynecologic oncology, dermatology, endocrinology, neuro-surgery, neurologic oncology, pathology, diagnostic radiology, interventional radiology, pulmonology, and palliative care medicine. Enhancing the medical staff are advanced practice nurses, and physician assistants, oncology certified nurses, board certified oncology pharmacists, certified clinical research professionals registered dieticians, board certified genetic counselors, licensed clinical social workers, professionals expert in cancer prevention and early detection, palliative care professionals, and registered nurse navigators who shepherd and mentor patients, and their families from cancer diagnosis through survivorship. Dedicated interdisciplinary teams meet regularly in our cancer program sponsored multidisciplinary cancer conferences to discuss and customize patient cancer care. Cancer care services are available at the Carole and Ray Neag Comprehensive Cancer Center and throughout the UConn Health System.

We remain passionate in ensuring high quality holistic cancer care for our patients. In 2019 the cancer program continued to improve its’ Bone Marrow Transplant Program, its’ Division of Neurology’s partnership with the Duke Preston Robert Tisch Brain Tumor Center, growth of our cardiology program, Supportive Care Services, Survivorship Care Program, as well as its’ National Accreditation Program for Breast Centers (NAPBC) accredited Breast Program.

For more information contact
The Carole and Ray Neag Comprehensive Cancer Center
UConn Health
263 Farmington Avenue
Farmington, CT 06030
Monday thru Friday 8:00 to 4:30 AM, 860-579-7822
https://health.uconn.edu/cancer/about/overview/

**Cancer Treatment Services**

- Bile Duct Cancer
- Bladder Cancer
- Bone Health Management
- Bone Marrow Transplant
- Brain Cancer
- Breast Cancer
- Cervical Cancer
- Colon Cancer
- Endocrine Neoplasia
- Endometrial Cancer
- Gall Bladder Cancer
- Head and Neck Cancers
- Hereditary Cancers
- Kidney Cancer
- Leukemia
- Liver Cancer
- Lung (Thoracic) Cancer
- Lymphoma
- Multiple Myeloma
- Neuro-oncology
- Oral Oncology
- Ovarian Cancer
- Pancreatic Cancer
- Prostate Cancer
- Radiation Oncology
- Reconstructive (Plastic) Surgery
- Rectal Cancer
- Sarcoma
- Skin Cancer
- Stomach (Gastric) Cancer
- Testicular Cancer
- Uterine Sarcoma
- Vaginal Cancer
- Vulvar Cancer
MS5 staff has provided high quality care to these patients, both in the inpatient and outpatient setting. Over the course of the last year, there were 514 outpatient hematology/oncology appointments, including physician consultations and treatment visits. There were 176 cancer directed treatments, including chemotherapy, immunotherapy and supportive care. In addition, patients have been treated with various oral targeted therapies, i.e. small molecule drugs and hormone therapy. DoC patients also benefit from multidisciplinary cancer conferences where personalized treatment plans are created by teams of healthcare providers to ensure the highest quality of care.

**Diagnostic, Supportive, and Complimentary Care Services**

**Histology**
- Full-service laboratory
- Routine surgical pathology
- Routine oral pathology
- Routine and complex special stains: IHC and IF
- Turnaround time
  - Surgical and Oral Pathology (routine) - 24 hours
  - Verbal reports given on rush basis and include unexpected or malignant results

**Electron Microscopy**
- Nerve, tumors, skin and platelets can be processed
- An out-of-paraffin workup may be helpful for diagnosis
- Turnaround time
  - Electron Microscopy - 48 to 72 hours

**Cytology**
- Full-service diagnostic laboratory
- ThinPrep® and conventional Paps and Reflex HPV testing
- One-vial Pap testing with microbiology laboratory
- Fine needle aspiration
- Non-gynecologic specimens
- ThinPrep® imaging system
- Extensive quality assurance program
- Access to three board-certified cytopathologists for questions and interpretations
- Turnaround time
  - Cytology - 48 hours

**Oral and Maxillofacial Pathology Biopsy Service**

The only oral pathology biopsy service in Connecticut, this service reviews approximately 4,300 diagnostic specimens annually. Board-certified oral pathologists provide oral diagnostic services based on the latest research and innovations in healthcare.
- General Dentistry: Comprehensive oral assessment and treatment for cancer patients requiring urgent dental care in the Advanced Education in General Dentistry (AEGD) clinic.
Clinical trials are available, including studies focused on oral mucositis, a common side effect of cancer treatments

- Oral and Maxillofacial Radiology: Dental and oral imaging for assessment and diagnosis of dental conditions that occur before and after cancer treatment
- Prosthodontics: Prosthetic reconstruction of oral defects resulting from cancer surgery performed in the prosthodontic clinic

State of the Art diagnostic imaging and interventional radiology services:
- Magnetic Resonance Imaging (MRI)
- Computed Tomography (CT)
- Ultrasound
- Digital Radiography
- 3D Mammography (Tomosynthesis)
- Nuclear Medicine Imaging,
- PET/CT
- Breast MRI with MR guided biopsy capability
- Advanced Imaging Techniques for musculoskeletal, body, and neuroradiologic imaging (e.g., DTI, spectroscopy, liver elastography, pelvic floor, and prostate imaging
- Our Interventional Radiology Division performs a full complement of diagnostic and therapeutic services for vascular and body cases. In addition, musculoskeletal interventional services are performed for pain control, biopsy, and ablation
- We also offer low dose lung cancer screening services and a wide array of fluoroscopy and nuclear medicine imaging, including SPECT and PET/CT

Oncology Supportive Care Service

Oncology Supportive Care Service Update: The interdisciplinary supportive care service celebrated its third year integrated within the Neag Comprehensive Cancer Center with continued growth. Our service aligns with evidence-driven national clinical practice guidelines recommending supportive care concurrent with oncology care at any point during cancer treatment or beyond. Our weekly interdisciplinary team meetings coordinate patient care to provide optimal multidimensional care to patients and their family. Sarah Loschiavo, APRN was promoted to Program Director and Maria Ziello joined the team full time. A quality improvement project aimed at increasing patient awareness of advance directives and planning was undertaken in May of 2019 along with the creation of the Head & Neck Support group. Palliative & Supportive care educational lectures and preceptorship opportunities have provided enrichment opportunities for UConn students and staff members.

- The service celebrated its 3rd year integrated in the cancer center
- Consistent program growth over the last 3 years with increased integration of services to meet the physical, psychosocial and social needs of our patients
- Over 140 patient contacts occur each month with the goal of addressing psychosocial concerns of our patients and families
- New UConn Head and Neck Support Group was also formed in August of 2019
- Supportive Care team presence at tumor boards, Breast Leadership Committee and weekly Supportive Service Interdisciplinary team meetings
- Social Work closely joins with our Supportive Services Program Director Sarah Loschiavo APRN to intervene with patients across the disease continuum and especially as they approach end of life
- A quality improvement project aimed at increasing patient awareness of advance directives and planning was undertaken in May of 2019. The full report will be presented at the Cancer Committee in October 2019-over 90 patients were interviewed and offered education and opportunity to increase understanding of this document. Further analysis of the results may yield research opportunity in the field of palliative care
- Social Work led a presentation for the in-patient nursing staff in early 2019 which focused on coping with difficult and complex cancer patients and developing a better skill set to decrease staff stress
- Social Work also participated in 2 Schwartz Rounds panel discussions that focused on meeting the emotional needs of Cancer patients and increasing self-awareness in caregiver/providers

Multidisciplinary Cancer Conferences (Tumor Boards)

The UConn cancer program convenes seven specialty multidisciplinary cancer conferences annually. Multidisciplinary cancer conferences also known as tumor boards are physician directed conferences where multidisciplinary medical teams and allied healthcare professionals discuss the diagnosis and treatment options of cancer patients. These conferences serve as an augmentation to the formal interdisciplinary consultation
process and expedites the development and implementation of the patients personalized treatment plan.

List of Conferences
• Breast
• Gastrointestinal
• Genitourinary
• Gynecology-Oncology
• Hematopoietic
• Lung
• Melanoma
• Musculoskeletal
• Molecular Tumor with JAX labs

2019 Breast Cancer Program Activity

Breast Program NAPBC Reaccreditation
We are pleased to report that our Breast Program received a Three-year Accreditation from the National Accreditation Program for Breast Centers (NAPBC) after the site visit. NAPBC Accreditation is the seal of approval for the UConn Health Neag Comprehensive Cancer Center from the American College of Surgeons and formally acknowledges our commitment to providing the highest quality evaluation and management of our patients with breast disease. The surveyor commented that the beautiful, large center has excellent resources to the breast program director Dr. Christina Stevenson. Overall strengths were noted in the dedication, cohesiveness and enthusiasm of the multidisciplinary group and excellent community outreach. Best practices were identified in breast pathology’s comprehensive review of outside cases, the extensive Breast Cancer Resource Guide for patients, and the wealth of Oncology support care services which includes a psychiatrist, social work therapist and psychiatric social worker. In the surveyor’s words “It was a privilege to survey this Center and its wonderful, passionate, dedicated staff.” We could not have accomplished this without the help from the Breast Care Team as this was truly a team effort.

Breast Cancer Support Group
The Breast Cancer Support Group at UConn Health allows young breast cancer survivors to engage with other women who have “been there” and understand the challenges that a breast cancer diagnosis brings into everyday life. Survivors can share stories, concerns, victories, and much more with other women who have also gone through it. The group is intended for women under the age of 45 who have been diagnosed with non-metastatic breast cancer. We welcome those at any point in their cancer survivorship journey, whether in active treatment or years out of treatment.

Susan G. Komen Funded ‘Community Breast Navigation in the Greater Hartford Area’ Outreach Program
The Breast Program’s Community Health Specialist and Susan G. Komen grant funded Community Breast Navigator provide navigation services by educating and assisting underserved women in community health centers in Hartford County to receive mammography screening. The community health specialist and community breast navigator educate patients on the importance of receiving breast screenings, clinical breast exams and performing self-breast exams. The navigators then assist patients by calling imaging centers to schedule mammogram screening appointments for the patients. Patients are offered free gas cards and bus passes along with the free mammogram, all supported by philanthropic funding. The program has navigated underserved women from the Community Health Center in New Britain and currently at Community Health Services Inc. in Hartford, First Choice Health Center in East Hartford, UConn Health Partners in East Hartford and West Hartford, and the Unitarian Universalist Church in West Hartford. The program targets underserved female patients who are African American and Latino, uninsured and underinsured ages 40 and older in Hartford County. In 2018, 1182 patients were educated and 212 of them received screenings.

Linda Clemens Breast Cancer Foundation Philanthropic Funding
Through the support of generous donors, the Linda Clemens Breast Cancer Foundation continues to fund the Free Mammogram Program that covers the cost of mammograms for women with little or no health insurance. The Foundation has helped hundreds of Connecticut women get access to mammography.

The Foundation awarded funds to support breast cancer patients with costs associated with egg freezing, embryo freezing, ovarian tissue freezing, ovarian suppression and/or donor embryos or eggs so that they may conceive following breast cancer treatment.

In addition, the Foundation sponsored families of women who are undergoing treatment. Many women are unable to prepare for the holidays due to being in treatment. The foundation fulfilled each wish list in hope to bring holiday cheer.

Other Breast Cancer Services
• Care from nationally recognized experts and an accomplished and experienced medical team
• Today’s most sophisticated technologies including 3D genius mammography (Tomosynthesis) and 3D automated ultrasound at the Beekley Imaging Center with same day readings in a comfortable spa-like environment
• Experienced support care services including lymphedema therapy, nutrition, reproductive endocrinology and infertility, survivorship care planning, and a support group
• Access to today’s most promising clinical trials to enhance care
• Unique services to address all of your concerns, such as the Cancer Fatigue Clinic to help patients manage fatigue during treatment
• Emotional support through our social work service, caregiver lounge, support care APRN, and pastoral care program

• Expert care through the Hereditary Cancer Program to empower patients with ongoing knowledge in genetics to identify individuals at high risk for breast and other cancers

• An onsite American Cancer Society Navigator to assist patients every step of the way throughout care

Christina E. Stevenson, M.D. F.A.C.S.
Assistant Professor
Breast Cancer Program Director
Neag Comprehensive Cancer Center-UConn Health
Outpatient Pavilion, 4th Floor
263 Farmington Avenue
Farmington, CT 06030
Cancer Committee Surgery Representative

The Rapid Quality Reporting System

<table>
<thead>
<tr>
<th>Treatment Guidelines</th>
<th>Expected Performance Rate</th>
<th>UConn Rates*</th>
</tr>
</thead>
<tbody>
<tr>
<td>*BCSRT - Radiation is administered within 1 year (365 days) of diagnosis for women under the age of 70 receiving breast conservation surgery for breast cancer</td>
<td>90%</td>
<td>97%</td>
</tr>
<tr>
<td>*HT - Tamoxifen or third generation aromatase inhibitor is recommended or administered within 1 year (365 days) of diagnosis for women with AJCC T1c or stage IB-III hormone receptor positive</td>
<td>90%</td>
<td>100%</td>
</tr>
<tr>
<td>*MAC - Combination chemotherapy is recommended or administered within 4 months (120 days) of diagnosis for women under 70 with AJCC T1cN0, or stage IB - III hormone receptor negative breast cancer</td>
<td>90%</td>
<td>100%</td>
</tr>
<tr>
<td>*MASTRT - Radiation therapy is recommended or administered following any mastectomy within 1 year (365 days) of diagnosis of breast cancer for women with &gt;= 4 positive regional lymph nodes</td>
<td>90%</td>
<td>100%</td>
</tr>
<tr>
<td>nBx - Image or palpation-guided needle biopsy to the primary site is performed to establish diagnosis of breast cancer</td>
<td>80%</td>
<td>90%</td>
</tr>
<tr>
<td>BCS - Breast conservation surgery rate for women with AJCC clinical stage 0, I, or II breast cancer</td>
<td>NAPBC Expected rate &gt; 50%</td>
<td>79%</td>
</tr>
</tbody>
</table>

*These rates are from the most current rates posted in CoC’s Rapid Quality Reporting System. Other rates are from the last posted rates in CoC’s Cancer Program Practice Profile (CP3R) Reports

Bone Marrow Transplant Program

Stem Cell Transplant (SCT) Program at UConn Health:
The need for autologous transplant has grown for blood cancers, especially as tolerability has increased so it is possible to accomplish safely in patients over 70 years old. Additionally, the utilization of effector cell therapy, CAR-T cells, is expanding in many areas and currently requires the expertise of a stem cell program to utilize it safely and effectively. UConn Health is positioned to fill the need in North and Eastern CT.

The establishment of a Stem Cell Transplant Program began in 2017 with 3 successful autologous transplants. Due to a transition in the leadership of the program over the last year and with the plan for the addition of 3 new faculty members to build a Hematologic Malignancy and SCT Program, UConn Health is poised to be the provider for these services in the region and a center for excellence for all blood disorders. This will enable patients and their families to be treated closer to home, reducing both the financial and emotional burden of such an intensive procedure.

Many of the needed resources are already in place including a 6 bedded state of the art inpatient area on the 6th floor of the University Tower. We are enhancing and building other clinical areas including hematopathology, transfusion support and blood bank, infectious disease, Intensive Care Unit services and Interventional Pulmonology. Hiring of the needed staff including SCT Quality Manager, SCT nurse coordinators and collaboration with a commercial stem-cell processing lab will follow.

We dedicate this program to fill the needs of physicians and their patients who strive for outstanding and state of the art care in their own backyard.

Management of Neurologic Tumors

The frequency of brain and spine tumors, whether primary or metastatic continues to increase. There has been tremendous growth in Neurosurgery at UConn Health. With investments in state-of-the-art technology and the establishment of multidisciplinary patient tailored team care, everything is done to optimize patient surgical/medical care and outcomes focused on quality of life. In addition to the cranial expertise already developed at UConn Health, new neurosurgery hires with specific oncology interests have been added to the team. Dr. David Choi brings to us fellowship training expertise in spinal oncology. Dr. Kevin Becker also joins us from Yale and brings to us his experience and expertise in Neuro-oncology. Thus in terms of cranial and spine tumor work, through neurosurgery and its collaborators in the comprehensive spine center, we provide the full range of treatment options.

We have made progress on our two major initiatives thus far. The first is an effort to gain access to Duke’s world renowned...
Preston Robert Tisch Brain Tumor Center, the UConn Health Division of Neurosurgery is collaborating with Duke's PRT BTC for the co-management of UConn Health’s brain tumor patients. This important relationship will provide UConn Health’s tumor patients access to very specialized tumor treatments available at Duke. UConn Health and Duke envision the surgical treatment, if needed done by the neurosurgery team at UConn Health with evaluation for additional treatments by Dr. Henry S. Friedman’s team at Duke’s Preston Robert Tisch Brain Tumor Center. Dr. Kevin Becker, who starts with us this year will be an important liaison to strengthen and further develop this relationship.

The second is the collaboration with Jackson Laboratories to sequence all tumor types, including brain tumors, for those patients in whom there may be few standard of care treatment options. This personalized approach regarding tumor types has been shown to improve survival in some tumor types. The first UConn Health/JAX genomics tumor board was held on August 24, 2018 and has been held as needed since then. The tumor biorepository has been a valuable source of tissue in collaboration with translational researchers as we try to further improve treatment options.

Ketan R. Bulsara, MD, MBA
Professor and Chief, Division of Neurosurgery
Director, Endovascular and Neurovascular Surgery
Director, Skull Base Microsurgery

**Cardio-Oncology Program**

Cardiovascular (CV) disease is the leading cause of death in the U.S., followed closely by cancer. Until recently, these diseases were thought of as independent entities. However, growing research suggests that CV disease is a significant cause of morbidity and mortality in patients who are actively undergoing, or have completed, cancer treatment. Not only can cancer therapy result in both acute and delayed CV toxicities, but poor CV health can affect the ability to tolerate cancer treatment, thus affecting cancer outcomes and survivorship. Optimizing a patient’s CV health prior to receiving cancer treatment is one of the major goals of a cardio-oncology clinic. This is accomplished by managing their pre-existing heart condition and by modifying their CV risk factors.

Omar Ibrahim, MD
Assistant Professor of Medicine
Director of Interventional Pulmonary and Thoracic Oncology/Cancer Liaison Physician

**Thoracic Oncology Program**

UConn Health like many institutions provides a multidisciplinary approach to lung cancer care, but our approach is vastly different than most institutions.

At the Neag Cancer Center our approach is designed around the patient, and not the provider. Our tumor board, nodule clinic, thoracic oncology and radiation oncology clinic all occur simultaneously in order to allow patients one visit to UConn Health and to expedite their care.

Our state of the art facility provides the latest in innovative diagnostic equipment. This includes, but is not limited to video-guided 3D navigational bronchoscopy technology, endoscopic ultrasound technology, and newly built hybrid operating room, which provides real time images during biopsies. These modalities allow us to condense diagnosis, and staging into a same day procedure. We have also acquired the first robotic bronchoscope platform (Auris Monarch Platform) in the New England area and have been doing procedures since February of 2019. This technology has allowed us to further push the boundaries in thoracic oncology and leading to earlier diagnosis.

While our technology is the best in the area, perhaps our most valuable asset is our people and our pathways for patients that allow for efficient and expedited care. UConn Health’s Low Dose Screening Program developed and run by Dr. Electra Kaloudis is a prime example of this. Dr. Kaloudis not only notifies the ordering physician about high-risk abnormal scans, but she also provides a pathway to rapid diagnosis and treatment.

Our patient centered care and service has shifted our stage of diagnosis to 43% for stage I disease. This is treated by surgery or radiation therapy with curative intent.

We have also hired in the last year a dedicated thoracic surgeon who specializes in robotic surgery to allow our patients minimally invasive and cutting edge treatment options. The next year holds promise to bring new and exciting clinical trials to the Neag Cancer Center in the realm of thoracic oncology.

Omar Ibrahim, MD
Assistant Professor of Medicine
Director of Interventional Pulmonary and Thoracic Oncology/Cancer Liaison Physician

**Figure 1.** Number of patient visits per quarter to the UConn Health cardio-oncology clinic from January 2014 to December 2018.

Since UConn Health cardio-oncology clinic began in January 2014, its clinic volume has steadily increased over time, and it continues to grow at a rapid pace (Figure 1).

In our cardio-oncology program, we have devised new clinical protocols in the following areas: 1) surveillance of cardiac...
function in patients receiving cardiotoxic chemotherapy;
2) prevention and management of cardiotoxicity; 3) risk stratification of patients who are scheduled to receive cardiotoxic chemotherapy; and 4) reduction of CV risk in patients and survivors of cancer.

One of the main goals of this clinic is to assess the underlying CV risk factors (hypertension, hyperlipidemia, diabetes, obesity, smoking) and help manage these risk factors in order to reduce long-term CV event rate in the oncology patient. The cardio-oncology clinic, together with the Lifestyle Modification Clinic, have been effective in managing these CV risk factors with the use of pharmacologic and nonpharmacologic interventions (counseling on diet, stress management, and exercise promotion).

With the growth of this program, cancer survivors major concerns of disease and treatment-related injury to their future health can be addressed.

Agnes S. Kim, M.D., Ph.D.
Assistant Professor of Medicine
Director of Cardio-Oncology Program
Director of Noninvasive Cardiac imaging and Echocardiography Lab

Bladder Cancer Facts

What is Bladder Cancer?
Bladder cancer is the fourth most common cancer among men and the eighth most common among women in the United States. In 2018, more than 81,000 cases of bladder cancer will be diagnosed and 17,000 people will die from this disease. Bladder cancer arises from cells that line the inside of the urinary bladder called urothelial cells, and most bladder cancers are termed urothelial cancers for this reason.

Are there risk factors for bladder cancer?
The most common modifiable risk factor for bladder cancer is a history of cigarette smoking. Carcinogens from tobacco smoking are filtered by the kidneys and excreted in the urine. Because urine is stored in the bladder until we are ready to urinate, these carcinogens come in contact with the bladder lining and increase the risk of bladder cancer.

Other modifiable risk factors include occupational exposures such as certain organic chemicals and aromatic amines used in the dye industry. Recently, the diabetic medication pioglitazone (trade name Actos) was linked to an increased risk of bladder cancer.

Non-modifiable risk factors such as age, sex (bladder cancer is more common among men), chronic bladder infections, and certain genetic conditions (e.g. Lynch syndrome) also increase the chances of developing bladder cancer.

What are the symptoms of bladder cancer?
The most common symptom of bladder cancer is painless blood in the urine (also called hematuria). Other symptoms include irritative voiding symptoms such as urinary frequency and urgency. These latter symptoms tend to be more common among women.

How is bladder cancer diagnosed?
The first step in bladder cancer diagnosis is a cystoscopy. Cystoscopy is an office procedure where a small scope – akin to a catheter with a camera at the tip - is inserted through the urethra to examine the bladder. If a bladder tumor is seen, the next step is a transurethral resection of bladder tumor (TURBT). This is an outpatient procedure typically performed under general anesthesia in which the bladder tumor is removed in a minimally invasive fashion through the urethra. There is no cutting or sewing of the skin. The goal of a TURBT is to determine whether a bladder tumor has started to invade through the bladder wall (stage) and how aggressive the bladder tumor is (grade).

How is bladder cancer treated?
There are two categories of bladder cancer. Most bladder cancers (~80%) are non-muscle invasive at diagnosis. These “nuisance” tumors are not usually life threatening and typically do not require removal of the bladder. However, non-muscle invasive bladder cancers commonly recur (~50-70% recurrence); therefore, lifelong surveillance is required. The remaining 15-20% of bladder cancers are muscle-invasive at diagnosis. These are treated with a combination of chemotherapy and surgery (bladder removal and urinary tract reconstruction). Our fellowship-trained urologic oncologist performs bladder removal surgery using either a minimally invasive approach with the da Vinci robotic surgical system or through a traditional open incision. Urinary tract reconstruction is done in a continent (neobladder, Indiana pouch) or incontinent (ileal conduit) fashion.

Are there any support groups for patients with bladder cancer at UConn?
The diagnosis of bladder cancer can be anxiety provoking and overwhelming. We are very fortunate to have a strong group of patients who meet monthly as a bladder cancer support group. These meetings occur on the first Saturday of the month in the cafeteria at John Dempsey Hospital. For more information or to attend a meeting, please contact Amber Tillinghast, American Cancer Society Patient Navigator at the Carol and Ray Neag Comprehensive Cancer Center at Tillinghast@uchc.edu.

Benjamin T. Ristau, M.D., M.H.A.
Assistant Professor of Surgery-Urologic Oncology
Cancer Committee Urology Champion

Melanoma Program Facts

Melanoma Report: 2018-2019
Cutaneous melanoma is the fifth most commonly diagnosed cancer in the United States that arise from epidermal melanocytes of the skin with exposure to ultraviolet light being the most well studied carcinogen. The incidence of melanoma has increased rapidly in the last 30 years and its rate of increase in incidence is fastest in man and woman age 50 years and over while being stable in younger people. Although Caucasian population with fair skin are at the highest risk, increasing incidence is also reported in Hispanic, black
and Asian populations. In 2019, in the United States of America, about 96,480 new invasive melanoma cases will be diagnosed (57,220 in men and 39,260 in women) with estimated death from melanoma of about 7230 people.

Advances in harnessing one’s own immune system to fight melanoma as well as our ability of accurately targeting growth-promoting effects of mutated BRAF gene of melanoma has helped improve melanoma survival in patients as is seen in the national trends in survival between 2007-2017. The current statistics suggest that the death rate from melanoma is decreased by 2% in patients over 50 years of age and 4% in patients under 50 years. The decrease in death rates of melanoma are directly linked to approval of newer treatments.

The incidence of melanoma in Connecticut is about 25-30 cases per 100,000 population and amongst highest in the Country. At UConn Health, Melanoma represents the largest number of cancer cases seen among cancer diagnosis comprising between 25-30 patients a month. While the majority of melanoma cases are diagnosed in early stages, significant number of patients are also diagnosed at high risk of recurrences (high-risk melanoma), and with spread to systemic organs requiring effective treatment to improve survival and quality of life.

Melanoma program at UConn is pioneered around a comprehensive theme that incorporates emphasis on prevention and early diagnosis while bringing cutting-edge treatment to patients at high risk of recurrence following surgical treatment of primary melanoma and those with disseminated tumors in the systemic organs including brain and spinal cord.

1. A multidisciplinary melanoma clinic: has helped bring to-gather experts in dermatology including Moh’s surgeons, melanoma surgery, radiation therapy, and medical oncology for optimal management of patients diagnosed with cutaneous melanoma.

2. Melanoma outreach program in the community: Every year volunteers from dermatology provide education and screening services to residents of communities around UConn where awareness of melanoma is prioritized leading to emphasis on early diagnosis and surveillance to prevent complications in patients.

3. Dermatology network in the community and Melanoma tumor board: Incidence of cutaneous melanoma in Connecticut is amongst the highest in the country with prevalence of between 25-29 cases per 100,000. UConn serves as a reliable referral center for diagnosis and risk stratification of newly diagnosed cutaneous melanoma leading to effective treatment selection. The melanoma program prides itself by its multidisciplinary team approach consisting of dermatologist, dermatopathologist, melanoma surgery and medical oncology experts equipped with a melanoma tumor board that facilitates accurate assessment of melanoma risk and stage as per American Joint Committee on cancer that is critical to develop a consensus and peer reviewed plan of melanoma treatment.

4. Melanoma education: Every patient diagnosed with invasive cutaneous melanoma receives an extensive education about the disease, its histogenesis, risk factors and prognostication leading to risk stratification of the tumor and treatment decisions. This practice leads to patient empowerment and compliance for melanoma surveillance plans and promote personalized treatment decisions in patients based on potential benefits, risks and toxicity of available treatment modalities.

5. Genetic counselling services: Melanoma patients identified in the clinics to be at high risk of carrying inherited melanoma are offered genetic counseling services so as to risk of melanoma to the patients and their family. The expertise helps provide services to the selected patients and their family leading to development of a surveillance plan for prevention and early diagnosis of melanoma and related cancers.

6. Managing patients diagnosed with high risk and metastatic melanoma: Transitioning from the traditional high dose interleukin-2 and bio-chemotherapy based immune approaches to the present cutting edge new generation immune therapy based on inhibitory anti-melanoma T cell checkpoint blockade as well as novel targeted therapy, Melanoma Program at UConn has seen vastly improved outcomes in patients. The growing experience in newer immune therapies has helped incorporate safety mechanisms to deal with autoimmune side effects associated with this treatments.

7. Melanoma in the older population: Since older patients are at highest risk of developing and dying from cutaneous melanoma and its complications, efforts are directed towards better understanding interaction between aging associated weakening of immune system (immune-senescence) and melanoma in older patients. To this end, we are gaining experience of treating older melanoma patients through our insights both in the clinics and in the laboratory. Management of autoimmune toxicity, an important side effect associated with immune checkpoint inhibitory treatment of melanoma require participation in patient care from multiple medical specialties. To that end, we have expanded collaborative relationships with multiple medical specialties at UConn that help mitigate autoimmunity and achieve safety goals in patients undergoing treatment.

8. Pain and palliative care program and social services: provide critical needs of patients diagnosed with metastatic melanoma helping with quality of life and supportive services for patients.

9. Multidisciplinary management of metastatic melanoma: The surgical expertise at UConn attracts a vast referral base from the community physicians of patients requiring surgical management. Additionally, melanoma patients requiring surgical management to complement medical treatment or improve quality of care, receive expert treatment from novel surgical approaches available at the UConn. These include surgical procedures to address melanoma metastasis to the spine and brain available through our highly rated...
Spine Center and Neurosurgery department. Additionally, the state of the art radiation treatment program provides opportunities for pain management as well as non-invasive radio-surgery approaches to treat brain melanoma metastasis complementing neurosurgical needs as well as emerging immune based treatments of melanoma. These services are critical to optimizing treatment outcomes of melanoma patients leading to improved survival and quality of life in patients through a truly multi-disciplinary approach under one roof.

10. Outcome Statistics following incorporation of immune based treatment of melanoma: Our success with emerging immune based treatment of melanoma is evident from our treatment outcomes in melanoma patients compared to the era before new treatment was introduced.

11. Melanoma research: Melanoma program is actively engaged in understanding T cell function of patients undergoing melanoma treatment in relation to tumor microenvironment. To this end we have developed an active collaboration with basic immunology laboratories in UConn and Jackson laboratory to study anti-melanoma T cell activity, its regulation and profile of generated cytokines. Our findings are providing basis of outcomes in older melanoma patients following immune checkpoint inhibitor treatment, that is corroborated by others. Tumor tissue is deposited in tissue bio-repository facility of UConn after patient’s consent for access to relevant research in future.

12. Melanoma clinical trials: We have partnered with Memorial Sloan Kettering Hospital to examine the relevance of tumor mutation burden in melanoma patients receiving immune checkpoint inhibitor treatment. Additionally, we are preparing for novel clinical trials that examine the role of combining immune checkpoint inhibitor treatment with melanoma vaccines derived from patient’s own melanoma tumors. The tumor vaccines have been prepared by careful scrutiny of their genetic footprints that predicted high capabilities by sophisticated bioinformatics platforms. Additional studies are under consideration to test newer agents in melanoma patients failing standard immune checkpoint inhibitor treatment.

13. Additional research studies: are ongoing that examine risk of autoimmunity in patients receiving immune checkpoint inhibitor treatment and predicting anti-melanoma immunity following immune checkpoint inhibitor treatment by primary tumor characteristics.

Upendra P. Hegde, M.D.
Associate Professor of Medicine
Medical Oncologist, Chief Melanoma and Cutaneous Oncology; and Head and Neck Cancer/Oral Oncology
Cancer Committee Registry Quality Coordinator

**Radiation Oncology Facts**

The Radiation Oncology Department offers a wide range of services including a complete array of external beam and brachytherapy techniques.

Robert Dowsett, M.D.
Chief of Radiation Oncology
Cancer Committee Radiation Oncology Champion

**Head and Neck Program in the Neag Comprehensive Cancer Center**

Head and neck cancer represent group of cancers that arise in the epithelium of the oral cavity, oropharynx, hypopharynx and larynx. This year, an estimated 65,410 people (48,000 men and 17,410 women) will develop head and neck cancer. It is estimated that 14,620 deaths (10,980 men and 3,640 women) from head and neck cancer will occur this year. Majority of the tumors are squamous cell carcinomas, while tumors arising from the submucosal salivary glands of the head and neck tumor sites represent less than 5%. Traditionally caused by smoking and alcohol use, an emerging trend of association with High-Risk Human Papilloma Virus (HR-HPV) is linked to sexual lifestyles of patients exposing oral epithelial cells to the virus.

While the incidence of smoking associated head and neck cancers have continued to decline due to the success of smoking cessation programs, HR-HPV related head and neck cancers are emerging to be a growing problem. Typically seen in the non-smoking population in the age group of 45-60, smoking history complicates the natural history and biology of these tumors resulting from additional genetic mutations associated with smoking. Testing the tumors in the oropharynx for HR-HPV has become important due to the clinical relevance of this biomarker.
At UConn, the multidisciplinary head and neck cancer program attracts patients diagnosed with head and neck cancers from around the state for its long experience and multidisciplinary approach. The patients are typically seen together in a clinic that meets twice a month with Ear Nose Throat surgeon, radiation therapy and medical oncology experts. The combined approach helps to provide independent input from all three specialties so as to determine tumor characteristics, stage and develop optimal management in patients.

The multidisciplinary head and neck cancer team is ably supported by a very elaborate team critical to the success of treatment of patients diagnosed with head and neck cancers. The supportive care team brings in the expertise from dental surgery, oral medicine, nutrition, speech therapy, social work, pain and palliative care and experienced nursing staff. Those requiring psychologic support are referred to the psychiatrist who is available for patients in need.

The multidisciplinary approach helps provide state of the art treatment to patients diagnosed with head and neck cancer that include surgery, chemo-radiation and sequential treatment. Patients diagnosed with recurrent head and neck cancers are offered standard of care and clinical trials.

**Clinical Trials**

We participated in MK 3475 study examining role of combining anti PD-1 agent Pembrolizumab to chemotherapy in patients diagnosed with recurrent head and neck cancers. The results of this study has led to approval of combining chemotherapy with anti PD-1 agent in patients diagnosed with recurrent or metastatic head and neck cancers.

**Quality Improvement Project**

Patients diagnosed with oropharyngeal squamous cell carcinoma have high likelihood of HR-HPV association. HPV associated oropharyngeal squamous cell carcinoma demonstrate dramatic responses to systemic therapy and resulted in improved outcomes in patients. These findings have resulted in down-staging of head and neck tumors by HR-HPV status and required treatment outcomes to be linked to HR-HPV status of oropharyngeal tumors. The findings have led to clinical research inquiry into de-escalation strategies of HR-HPV associated head and neck tumors as compared to the traditional smoking associated tumors. Additionally, survivorship plans in patients treated for HR-HPV associated tumors require emphasis on sexual lifestyle modifications. New clinical trials have stratified patients by the HR-HPV status resulting in guidelines by American Society of clinical Pathology to require HR-HPV status in newly diagnosed patients with oropharyngeal tumors.

Since oropharynx represents most likely site of HR-HPV association, testing for non-oropharyngeal head and neck cancers for HR-HPV is not required. This helps appropriate use of resources in diagnosing HPV association of oropharyngeal cancer. Although multiple methods are available for this testing, tumor cell expression of p16 and detected by immuno-histochemistry is considered a standard approach in diagnosis.

In a collaborative quality improvement study we examined the prevalence of testing of HR-HPV in tissue specimens obtained from patients diagnosed with oropharyngeal cancer between 2008-2017, we found that our testing prevalence was much below the required number.

These findings have led to recognize challenges in testing of tumors for HR-HPV and efforts in improving testing of this virus in our Hospital involving Surgery and Pathology services. The quality improvement project was accepted for presentation at the National Quality Care Symposium held in San Diego September 6-7, 2019.

**Cancer Diagnostics – The Foundation For Treatment Planning**

The department of pathology is integral to the function of the cancer center at UConn Health. It’s critical at the time of biopsy or surgical accrual to accurately and in a timely fashion collect and process specimens. As part of this, Pathology has created a research biorepository for fresh frozen tissue to be utilized in basic and clinical research at UConn Health and elsewhere. As our new electronic medical record, EPIC was installed; it transformed reporting of all pathology cancer diagnosis to a format called the synaptic report. The synoptic report follows current CAP (College of American Pathologists) Cancer checklist and Protocol guidelines which not only makes our pathology reporting more universal and translatable to other institutions, but also ensures compliance with the American College of Surgeons Commission on Cancer as a quality assurance measure.

As part of the multidisciplinary team for Cancer care, our pathologists review, present, and discuss the pathologic diagnosis and implications for every patient.

- Participates in multidisciplinary tumor boards
- Banks in the biorepository tumor, non-tumoral tissue and blood from consented patients for future research
- Provides fresh samples through the biobank coordinator for ongoing trials
- Supports collaborative research with colleagues in the cancer center
UConn Health Diagnostic Imaging: The Role in Treating Cancer

Cancer is the second leading cause of death in the United States after heart disease. It can manifest in more than 200 different forms and attack any cell in the human body. Cancer has an expansive reach with nearly everyone who has been touched by this deadly disease in some capacity.

Diagnostic radiology and interventional treatment services continue to make huge headways in the fight against cancer. X-ray imaging (chest x-rays, bone x-rays, mammography, and barium studies) continue to allow physicians to see into the human body and identify changes in tissues and organs. Physicians also utilize cross sectional high-definition radiology tools such as computed tomography (CT scan) to create 3-D images of a potentially affected area of the body and help identify the exact location and size of tumors, equating to a more accurate diagnosis and treatment.

Magnetic resonance imaging (MRI) is another advanced imaging tool used by physicians to get a clearer picture of a potential cancer. MRI is used to stage a cancer, which can affect the treatment a patient will undergo to cure the disease.

Radiology continues to improve cancer diagnosis and treatment. Today, physicians are able to use radiology to identify the properties and growth of foreign cells and cancerous tumors, treat the patient and monitor a patient’s treatment. This advanced care has given patients a chance for a longer and healthier life.

2019 UConn Health Beekley Imaging Center News and Updates for 2019

- Beekley Imaging Center converted to “low dose” mammography which uses synthesized 2D mammography based of 3D data. Synthesized 2D technology significantly lowers patient radiation dose, reduces compression and exam time, and yields greater patient comfort
- UConn Health welcomed Dr. Jonathan Hargreaves, M.D. to the women’s imaging team. Dr. Hargreaves trained at Brigham and Women’s Hospital and is an expert in breast imaging and intervention
- UConn Health was awarded the Breast Imaging Center of Excellence designation by the American College of Radiology (ACR)
- UConn Health received Mammography and Breast Ultrasound Accreditations from the ACR
- UConn Health now offers Breast MRI imaging on the new 3 Tesla GE MRI unit located in the MARB
- UConn Health has been selected as 1 of 9 worldwide sites for a phase 3 clinical trial of a novel MRI contrast agent

What is the best test to diagnose cancer?
There is no single test that alone can accurately diagnose cancer. The complete evaluation of a patient usually requires a thorough history and physical examination, laboratory tests and diagnostic imaging. Effective imaging, along with laboratory tests, can confirm the disease, monitor the diseases progress, and help plan and evaluate the effectiveness of treatment. UConn Health offers the latest state-of-the-art cancer diagnostic imaging technology, which includes x-ray imaging, ultrasound, CT, MRI, and PET/CT.

How is diagnostic imaging used for cancer treatment?
Diagnostic imaging is the process of producing anatomic images of the human body systems and organs. Imaging is used to:

- Detect cancer
- Determine whether the cancer has spread
- Assess the effectiveness of a cancer treatment plan
- Identify re-staging of an existing cancer
- Imaging may also be used when performing biopsies and other surgical procedures.

What screening and wellness testing is offered at UConn Health?

- Breast Cancer Screening
- Cardiac (Heart) Screening
- Carotid Artery Screening
- Colorectal Cancer Screening
- Lung Cancer Screening

What are the subspecialties for diagnostic radiologists at UConn Health?

A radiologist, through extensive clinical work and related research, may also specialize in one or more radiology subspecialties, which include:

- Breast imaging
- Thoracic and Cardiovascular Radiology
- Emergency Radiology
- Gastrointestinal (GI) Radiology
- Genitourinary (GU) Radiology

Head and Neck Radiology

- Musculoskeletal Radiology
- Neuroradiology
- Pediatric Radiology
- Interventional Radiology
- Nuclear Radiology
UConn Health Diagnostic Radiology is committed to providing outstanding patient care by combining excellence in clinical imaging, research and educational programs with state-of-the-art technology. Our team of medical professionals conducts more than 30,000 studies each year, maintaining the highest standards of clinical excellence provided in a compassionate, caring environment. If you or a family member would like to have your diagnostic radiology services done at UConn Health, simply talk to your doctor when the referral is made.

Alex Merkulov, M.D.
Associate Professor of Radiology
Section Head of Women’s Imaging
Cancer Committee Diagnostic Radiology Champion

Genetic Counseling/Risk Assessment
Genetic counseling and testing services are provided by our two genetic counselors with the Neag Cancer Center’s Hereditary Cancer Program. Our program follows recommendations from the National Comprehensive Cancer Network for hereditary cancer risk assessment.

What is Genetic Counseling?
This comprehensive service includes reviewing personal and family medical history to better determine cancer risk.

Pre-test counseling typically includes the following:
• collection of a comprehensive family history
• evaluation of a patient’s cancer risk
• discussion of the risks, benefits and limitations of genetic testing

Did you know that most cancers are not inherited?
Hereditary cancers are rare. For example, approximately 10% of breast cancers are linked with a mutation (or altered gene) that can run in families. These high-risk families may include individuals with ovarian cancer, pancreatic cancer, and breast cancer diagnosed under the age of 45.

Did you know that genetic testing has changed since 2012?
Patients who had genetic testing prior to 2012, without a known mutation, will often qualify for “updated” genetic testing. Our testing technology has expanded over the years. In 2012, our testing routinely analyzed two genes (BRCA1 and BRCA2). Our current testing technology now includes over 30 rare genes linked to hereditary cancer syndromes.

Did you know that more patients are eligible for genetic testing for hereditary breast and ovarian cancer?
The National Comprehensive Cancer Network (NCCN) recently expanded the criteria for offering genetic testing for hereditary breast and ovarian cancer. Testing criteria (version 3.2019) now includes the following:
• personal history of male breast cancer
• personal history of pancreatic cancer

Genetics can often seem scary and confusing. Our goal is to help translate current technology and information to help empower patients and their families.

Coming soon!
We are looking forward to the launch of our High Risk Clinic with Dr. Dana Scott and our two genetic counselors. Dr. Scott completed a fellowship in cancer genetics and breast health at University of Michigan Medical School, making her uniquely qualified for this new service for patients. The high risk clinic will provide comprehensive care for patients at increased risk for breast cancer, including patients with BRCA and other gene mutations.

We often encourage patients to contact us over the years as information about hereditary cancer changes over time. We are excited to be working with myGeneCounsel, which creates personalized online updates for patients who have had genetic testing (www.mygeneconsult.com/mgc).

Connor Linehan, M.S., L.G.C.
Licensed Genetic Counselor
Department of Genetics and Genome Sciences

Jennifer Stroop, M.S., L.G.C.
Licensed Genetic Counselor
Department of Genetics and Genome Sciences

Clinical Trials & Research 2019 Report
The Clinical Trials Office within the Carole and Ray Neag Comprehensive Cancer Center is focused on supporting high-quality cancer research and thus help promote better care for cancer patients at UConn Health. The staff consists of qualified, trained and certified professionals who are committed to assisting in the planning, development, implementation, and regulatory oversight of all phases of cancer clinical trials.

The office was created under the Medical Directorship of Pramod K. Srivastava, Ph.D., M.D., and Director of the Cancer Center and provides a dedicated team to enable Cancer Center faculty to bring to UConn Health, innovative treatment options that otherwise would not be available to cancer patients. The Clinical Trials Office actively partners with various cancer cooperative groups, pharmaceutical firms, and other academic centers to bring revolutionary cancer research studies to UConn Health. By supporting clinical research, the
We have enrolled 20 patients on this study. Our site remains the highest accruing site for USA and so far the study will explore how well IMR-687 works to reduce SCA measurements in the blood as well as symptoms. In addition, the study will explore how long IMR-687 stays in the blood, and how it is broken down and processed by the body. The study will also look at how IMR-687 is affected by environmental and lifestyle-related factors have an effect on how long it stays in the blood, and how it is broken down and processed by the body. In addition, the study will explore how well IMR-687 works to reduce SCA measurements in the blood as well as symptoms.

Our site remains the highest accruing site for USA and so far we have enrolled 20 patients on this study.

Current Phase 1 Clinical Trials Opened to Accrual
Phase 1 Study of IMR-687 in Adult Patients with Sickle Cell Anemia (Homozygous HbSS or Sickle-β0 Thalassemia). (NCT# NCT03401112)

The U.S. Food and Drug Administration (FDA) has approved our Investigational Drug Application for this clinical study at UConn Health for patients with advanced stage (stage III or IV) ovarian cancer. (NCT# NCT02933073) Patients shall receive the standard of care treatment including surgery and chemotherapy, followed by a personalized cancer vaccine, which will be developed for each patient. Blood and cancer samples will be obtained from each patients at the time of surgery, and shall be used to generate and compare the genomic information in each patient’s cancer. Personalized vaccines will be made on basis of the genetic differences between the blood and cancer samples of each patient. The patients shall receive the vaccines by an injection in an outpatient setting, once every month for 6 months.

The study is estimated to enroll a total of 15 patients and currently a total of 7 patients have been enrolled to the Tissue and Blood Phase of the study. Our first patient was enrolled to the vaccine and follow-up phase of the study in November, 2018 and successfully received three doses of the vaccine administration. We are hoping to have 2 more patients enroll to the vaccine and follow-up phase in October, 2019.

To learn more about this study please visit: https://clinicaltrials.gov/ct2/show/NCT02933073

Other Studies Currently Open to Accrual
IMR-687 is an investigational medication that is being evaluated for the treatment of patients with sickle cell anemia (SCA). The main purpose of this study is to examine the safety, tolerability, and PK, as well as the potential PD effects and clinical efficacy, of IMR-687 across a range of doses. In addition, the study will explore how well IMR-687 works to reduce SCA measurements in the blood as well as symptoms.

Our site remains the highest accruing site for USA and so far we have enrolled 20 patients on this study.

Current Phase 1 Clinical Trials Opened to Accrual
Phase 1 Study of IMR-687 in Adult Patients with Sickle Cell Anemia (Homozygous HbSS or Sickle-β0 Thalassemia) Who Participated in Study IMR-SCD-102 (NCT04053803).

IMR-687 is an investigational medication that is being evaluated for the treatment of patients with sickle cell anemia (SCA). The main purpose of this study is to extend your treatment with IMR-687 in order to assess whether it has any long-term unwanted effects. The study will also look at how long IMR-687 takes to get into the bloodstream, the length of time that it stays in the blood, and how it is broken down and processed by the body. In addition, the study will explore how well IMR-687 works to reduce SCA measurements in the blood as well as symptoms.

The study is estimated to enroll a total of 5 patients for this study and expected to open in October, 2019 at UConn Health.

To learn more about this study please visit: https://clinicaltrials.gov/ct2/show/NCT04053803.


Sickle cell disease is a disease that can cause severe pain from clogged blood vessels, which is called a vaso-occlusive crisis (VOC). One type of VOC that is associated with SCD is...
priapism. Priapism is a prolonged painful erection of penis that lasts for more than 60 minutes and may happen without sexual arousal. The study drug, crizanlizumab (SEG101) is the investigational drug for this clinical trial. Crizanlizumab is an antibody that was designed to attach to proteins on the cells in the blood and blood vessels that cause VOC and prevent these cells from sticking together.

The primary purpose of this study is to evaluate the effect of crizanlizumab on priapic episodes in sickle cell patients with a history of priapism. This study will also help to understand whether crizanlizumab may have a positive effect on the complications associated with SCD, such as kidney and heart complications and leg ulcers.

The study is estimated to enroll a total of 5 patients for this study and expected to open in October, 2019 at UConn Health.

To learn more about this study please visit: https://clinicaltrials.gov/ct2/show/NCT03938454

TESARO- FIRST Randomized, Double-Blind, Phase 3 Comparison of Platinum-Based Therapy with TSR-042 and Niraparib Versus Standard of Care Platinum-Based Therapy as First-line Treatment of Stage III or IV Nonmucinous Epithelial Ovarian Cancer (NCT03602859)

This is a global, multicenter, randomized, double blind, controlled Phase 3 study in patients with newly diagnosed, Stage III or IV non-mucinous epithelial ovarian, fallopian tube, or peritoneal cancer (collectively referred to as “ovarian cancer”). The current recommended standard of care therapy for the first line treatment of Stage III or IV ovarian cancer is the combination of paclitaxel and carboplatin, with or without concurrent and maintenance bevacizumab. The purpose of this study is to determine if adding the investigational drugs (TSR-042 and niraparib) to SOC delays or prevents ovarian cancer recurrence.

TSR-042 is an investigational drug that belongs to a class of drugs called PD-1 inhibitors that use your own immune system to treat cancer (immuno-therapy). It is given through an intravenous infusion (IV) into your veins. Niraparib belongs to a class of drugs called PARP inhibitors that prevent cancer cells from growing. In this study, the use of niraparib is investigational because it is not yet approved for use in frontline (initial) treatment of ovarian cancer.

The study is estimated to enroll a total of 12 patients for this study and expected to open in October, 2019 at UConn Health.

To learn more about this study please visit: https://clinicaltrials.gov/ct2/show/NCT03602859

Genentech- A PHASE II, OPEN-LABEL, MULTICENTER, RANDOMIZED STUDY OF THE EFFICACY AND SAFETY OF RO7198457 IN COMBINATION WITH PEMBROLIZUMAB VERSUS PEMBROLIZUMAB IN PATIENTS WITH PREVIOUSLY UNTREATED ADVANCED MELANOMA (NCT03815058)

This is a multicenter, randomized, Phase 2 study in patients with previously untreated advanced melanoma. The purpose of this study is to compare the effects of RO7198457 plus pembrolizumab versus pembrolizumab alone on patients with melanoma. In this study, patients will get either RO7198457 plus pembrolizumab or pembrolizumab alone.

Pembrolizumab is approved in the United States and the European Union, as well as other countries, for the treatment of unresectable or metastatic melanoma, and several other indications. For this study, it is used in combination with RO7198457 in investigational. RO7198457 is an experimental drug, which is not approved to utilize in combination with pembrolizumab for the treatment of melanoma, and it has not been tested in people with untreated melanoma prior to this study.

The study is estimated to enroll a total of 6 patients for this study and expected to open in October 2019 at UConn Health.

To learn more about this study please visit: https://clinicaltrials.gov/ct2/show/NCT03815058.


This is a global, multicenter, randomized, double blind, controlled and crossover Phase 3 study for breast cancer patients undergoing a routine Breast MRI. The purpose of this trial is to assess the efficacy (ability to show contrast of images) and safety (tolerability of a new investigational contrast agent, gadopiclenol, developed by Guerbet and not approved by health authorities such as the Food and Drug Administration (FDA)). The new product will be compared to another contrast agent, Gadavist® (gadobutrol), which is approved by most health authorities and is approved in United States.

Half of the study patients will receive gadopiclenol for their first MRI and then gadobutrol for their second MRI. The other half of the patients will receive gadobutrol for their first MRI then gadopiclenol for their second MRI. Since this is a double-blinded study, both the research provider and the study patients will not know which contrast agent they are receiving.

The study is estimated to enroll a total of 24 patients for this study and expected to open in October 2019 at UConn Health.

To learn more about this study please visit: https://clinicaltrials.gov/ct2/show/NCT03986138.

QCDx - Clinical Correlation of High Precision Liquid Biopsy and Genomic Signature in Patients with Breast Cancer - A Prospective Proof of Concept Study (CLINBREAC).

This is a pilot study in patients with newly diagnosed (non-metastatic) and Metastatic breast cancer and patients. The purpose of this study is to determine if QCDx-br™ liquid biopsy test will be an effective tool for finding and further characterizing circulating tumor cells (CTCs) in the blood of patients with breast cancer. CTCs are cells that have shed from a tumor into the bloodstream. Measuring their presence and understanding their characteristics may help in future treatment decisions for breast cancer patients, both early and later stages.

In addition, next generation sequencing (NGS), a method looking at patient's genes in their original tumor, will be done
by the Tempus Labs using the available and/or recurrent tumor samples and saliva samples provided. NGS is a commercially available test that may add information about the tumor characteristics and may assist in the use of new cancer therapies outside the scope of this study.

The study is estimated to enroll a total of 60 patients for this study and expected to open in October 2019 at UConn Health.

Pramod Srivastava, Ph.D., M.D.
Professor of Immunology and Medicine
Eversource Energy Chair in Experimental Oncology
Director, Carole and Ray Neag Comprehensive Cancer Center

Quratulain (Annie) Ali, MPH, CCRP, MSHS
Clinical Trials Office Supervisor
Cancer Committee Clinical Research Coordinator

Bone Health Management

The goal of the Cancer and Bone Health Clinic is to offer comprehensive bone health evaluation and treatment to individuals receiving medical therapies for cancer that is an important part of treatment but may increase the risk of bone loss and debilitating fractures such as those of the spine and hip. These include chemotherapies, immunotherapies and hormonal manipulation for common cancers such as those of the breast, ovary, prostate and lung among others. Full evaluation including imaging and laboratory assessment will be completed, and a comprehensive treatment plan will be devised for each patient.

Patients with complications from their long-term medical therapies for cancer that has spread to the bone, including fractures, are evaluated by a multi-disciplinary team including Dr. Taxel for treatment options. In addition, continuous monitoring for long-term complications of bone therapies such as osteonecrosis of the jaw and atypical femoral fractures is an important objective of this service.

Pam Taxel
Professor of Medicine, Division of Endocrinology and Metabolism, UConn Health
UConn Musculoskeletal Institute

Patient Navigation Program

Patients face multiple issues that can radiate to all areas of their lives when diagnosed with cancer. Navigators at the Neag Comprehensive Cancer Center assess for barriers to care that with early intervention results in timely diagnosis and treatment. Navigators help guide and coordinate patient’s care during this very difficult time. The navigation program has 4 nurse navigators, and a American Cancer Society patient navigator. Navigators are assigned to patients either from screening for cancer or at diagnosis through survivorship or end of life care. Navigators provide education, resources, coordination of care and support throughout the cancer continuum. Each year barriers to care are assessed and one is chosen to address by the Nurse Navigators. We recently worked on creating a Financial Guide for cancer patients that reviews what they need to know about their insurance and the costs they may encounter. This guide will be given to every new patient with contact information if they should encounters any of these barriers.

Survivorship

Patients continue to encounter many challenges as they complete their treatment that include physical, emotional, and even financial issues. The survivorship program at the Neag Comprehensive Cancer Center was built to ensure patients have the resources they need to transition to survivorship. Navigators and the patient’s team work on putting a survivorship care plan together that includes diagnosis and treatment, follow up plan, late and long-term effects of treatment, and counseling on lifestyle and behaviors that affect their ongoing health. The care plan is reviewed with all patients who have completed primary treatment with curative intent for any stage I-III cancers.

This year we expanded our reach to patients diagnosed and treated outside the cancer center, but still within our UConn Home. Many patients are diagnosed at an early stage and may need only surgery to treat their disease. They are never seen in the cancer center. These patients still need follow up surveillance, may have long term side effects and need counseling on lifestyle and behaviors. A process was put in place in Urology, ENT and Dermatology to reach these patients.

• Sarah Loschiavo, APRN, FNP-C, ACHPN accepted the position at the Program Director for Oncology Supportive Care & Survivorship

• Beginning stages of developing an interdisciplinary survivorship program to meet the needs of cancer survivors and the updated Commission on Cancer Survivorship guidelines
  - Survivorship Project ECHO participant (National Telehealth model) working with survivorship programs across the country

• Successful survivor’s day with over 170 patients and families in attendance

• Earlier this year, the oncology dietitians completed a demonstration project designed to support breast cancer survivors and improve adherence to nutrition and exercise recommendations. In April, they presented a poster highlighting this initiative at the Connecticut Academy of Nutrition and Dietetics Spring Meeting

• This summer, our oncology dietitians participated in an outreach program at the Hartford Public Library to educate the community about foods that reduce the risk of colorectal cancer. They participated in 3 sessions which included presentations and cooking demonstrations in conjunction with Cooking Matters and other community partners
Cancer Prevention and Early Detection

Outcomes of 2019 Activities
In the summer of 2019, two programs were held focusing on Cancer Prevention and Early Detection:

Colorectal cancer prevention – this was a 3-week long program at the Hartford Public Library for individuals interested in learning about healthy eating to prevent colorectal cancer. The program was a collaboration between a National cooking program called Cooking Matters and UConn Health Dieticians. Participants were hands on during cooking demonstrations, received useful giveaways such as water bottles and salad shakers, and learned about important facts related to preventing colorectal cancer. There were 20 participants at each session on average.

Skin Cancer Early Detection – On July 20th, Dermatology students and faculty joined the Cancer Center at the Hartford Jazz Festival to offer free skin cancer screenings. Attendees received related skin cancer prevention items such as sun block and lip balm. Altogether, there were 22 people screened at the event.

Dignicap (Cooling Cap system)
The Dignicap program is a program that is currently available to all patients who qualify based on their diagnosis and treatment as an optional scalp-cooling therapy to reduce a patient’s chance of hair loss from chemotherapy treatments.

The Dignicap Cold Cap can help to significantly reduce the risk of hair loss in breast cancer patients who choose it as part of their treatment plans. Hair loss is a negative side effect of chemotherapy that causes much anxiety and depression, and in some cases can even deter women from chemotherapy altogether. It consists of a snug-fitting silicone cooling cap connected to a cooling unit that reduces the temperature of the scalp, reducing the hair loss effects of chemotherapy. The technology’s arrival was spearheaded by donations from UConn Health professors Dr. William B. White and Nancy M. Petry, Ph.D., of the Pat & Jim Calhoun Cardiology Center and grant funding awarded to the UConn Foundation by the CT Breast Health Initiative.

UConn Health’s Cancer Registry

What Is a Cancer Registry?
A cancer registry is a standardized data system used to collect, and analyze data on patients treated with cancers and central nervous system neoplastic diseases. The UConn’s Commission on Cancer (CoC)-approved cancer registry database contains clinical and treatment data for patients newly diagnosed at UConn or/and who or treated with first course cancer therapy at UConn since January 1, 1989. The cancer registry contains data rich for analysis and outcomes assessment for 20,481 patients. Post completion of their first course treatment patients are monitored for life. Surveilling patients for outcomes enables providers to measure the effectiveness of the treatments administered, and may help ensure that patients are receiving appropriate post cancer treatment medical follow-up.

What Data Are in the Cancer Registry?
Our cancer registry database includes data of patient demographics, social and family history, tobacco usage, primary cancer site, histologic tumor type and grade, cancer stage at diagnosis, cancer site specific prognostic indicators, first course treatment information, and subsequent treatment for patients that might experience recurrent disease/progression, and annual follow-up information including vital status and disease status.

How Is Cancer Registry Data Used?
Hospital Uses

• Cancer therapies are administered in accordance with evidence-based treatment guidelines and national quality of care standards. The hospital uses cancer registry data to confirm adherence to national quality of care standards and to detect if improvements are needed
• Monitor UConn patient clinical outcomes
• Monitor the cancer program’s patient population to plan patient services and initiatives
• Can help Inform planning for research projects and prevention and screening activities

Connecticut State Cancer Registry

• CT state law requires that all CT cancer diagnosing and treating facilities to report cancer registry data to the CT state cancer registry. The state registry uses these reported data to measure state-wide cancer prevalence, and the CT state Epidemiologists analyze the data to plan statewide cancer education initiatives, and prevention and early detection programs that can be customized for targeted communities in effort to reduce/alleviate cancer burdens for all CT residents. The state cancer registries also report de-identified cancer registry data to the Centers for Disease Control’s (CDC) National Program of Cancer Registries (NPCR), and some report to the National Cancer Institute’s (NCI) Surveillance, Epidemiology, and End Results (SEER) Program. The SEER and NPCR data are the basis for the official federal statistics on cancer incidence, and cancer mortality statistics

National Cancer Database

• The National Cancer Database (NCDB) is a clinical oncology database that is jointly operated by the American College of Surgeon’s Commission on Cancer (ACoS-CoC) and the American Cancer Society (ACS). ACoS-CoC accredited hospitals are required to report cancer registry data to the NCDB annually. The data are used to evaluate and track prevalence as well as assess patient treatment patterns and outcomes. The NCDB also contains many online data tools to assist the CoC cancer programs to use to monitor that patients receiving first course treatment are receiving evidenced based treatments in the most optimal time frames. Programs can measure their individual performance against local and national performance of other CoC accredited hospitals
The Cancer Data Management Team

Cancer data management professionals, known as Certified Tumor Registrars (CTRs) prepare clinical summaries of patients newly diagnosed with cancer and benign CNS tumors. The CTRs convert complex clinical data into a coded format in accordance with national standardized cancer data collection rules. The standardization of these data and the coded format allows for the easy analysis of cancer prevalence and patient clinical outcomes. This allows epidemiologists to monitor trends and plan interventions and allows physicians and health care providers to evaluate treatment practices locally, regionally and nationally to assess and correct any potential negative variations in patient outcomes. The cancer registry’s clinical summaries are updated as warranted to reflect the patient’s cancer experience from diagnosis through survivorship.

Review of 2018 Cancer Registry Data

The Certified cancer registry staff added an additional 1054 analytic cases to the database in 2019. Analytic cases are patients who were newly diagnosed and/or receiving first course therapy at UConn for a newly diagnosed cancer or central nervous system tumor. This represents a 2.5% of the analytic cases from the 2017 cancer registry case accession year. The top 10 primary sites for newly diagnosed cases for the 2018 cancer registry accession year were melanoma (26.7%), breast (9.1%), prostate gland (8.8%), lung (6.5%) bladder (4.9%), brain/CNS tumors (4.9%), colorectal (4.3%), corpus uteri (3.4%), lymphoma (3.3%), and kidney/renal pelvis (2.9%). See data graph displays below of 2018 accession year analysis. In keeping with the Commission on Cancer’s requirement for lifetime patient follow up which requires the hospital to maintain a minimum 80% patient follow up rate for all applicable patients and a 90% rate for applicable patients diagnosed within the last five years the cancer registry staff consistently maintained rates well above minimum requirements. Assessment of follow rates at the time of this report showed a 97% overall patient follow up rate as well as a 97% rate for patients diagnosed within the last five years. See data graphs below for demographic analysis of the 2018 cancer registry accession year.

The UConn Cancer Program cancer registry database includes data on cancer patients diagnosed back to January 1, 1989. Review of 20 years of cancer registry data demonstrated a 42% increase in the new cancer patient load since 1999.
2018 Cancer Registry Accession Year - Hispanic Ethnicity

- Non-Hispanic: 93.1%
- Hispanic: 6.9%

2018 Cancer Registry Accession Year by State Of Residency

- CT: 98.0%
- Out of State: 2.0%

2018 Cancer Registry Accession Year - by Sex

- Male: 52.0%
- Female: 48.0%

2018 Cancer Registry Accession Year - County Of Residence

- Fairfield: 71.0%
- Hartford: 7.0%
- Litchfield: 3.7%
- Middlesex: 6.0%
- New Haven: 1.9%
- New London: 1.9%
- Out of State: 6.3%
- Tolland: 2.1%
- Windham: 0.1%
### Breast Cancer Measures

<table>
<thead>
<tr>
<th>Commission on Cancer Standard</th>
<th>Quality Measure</th>
<th>Expected Performance Rate</th>
<th>Actual Overall Rates for Patients Treated at UConn Health Cp3R Data Last Posted</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.4</td>
<td>BCSRT - Radiation is administered within 1 year (365 days) of diagnosis for women under the age of 70 receiving breast conservation surgery for breast cancer</td>
<td>90%</td>
<td>94%</td>
</tr>
<tr>
<td>4.4</td>
<td>HT - Tamoxifen or third generation aromatase inhibitor is recommended or administered within 1 year (365 days) of diagnosis for women with AJCC T1c or stage IB-IIl hormone receptor positive breast cancer</td>
<td>90%</td>
<td>95%</td>
</tr>
<tr>
<td>4.4</td>
<td>MASTRT - Radiation therapy is recommended or administered following any mastectomy within 1 year (365 days) of diagnosis of breast cancer for women with &gt;= 4 positive regional lymph nodes</td>
<td>90%</td>
<td>100%</td>
</tr>
<tr>
<td>4.5</td>
<td>nBx - Image or palpation-guided needle biopsy to the primary site is performed to establish diagnosis of breast cancer</td>
<td>80%</td>
<td>90%</td>
</tr>
</tbody>
</table>

### Colon-Rectal Cancer Measure

<table>
<thead>
<tr>
<th>Commission on Cancer Standard</th>
<th>Quality Measure</th>
<th>Expected Performance Rate</th>
<th>Actual Overall Rates for Patients Treated at UConn Health Cp3R Data Last Posted</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.5</td>
<td>12RLN - At least 12 regional lymph nodes are removed and pathologically examined for resected colon cancer</td>
<td>85%</td>
<td>86%</td>
</tr>
<tr>
<td>4.5</td>
<td>RECRTCT - Preoperative chemo and radiation are administered for clinical AJCC T3NO, T4NO, or Stage III; or Postoperative chemo and radiation are administered within 180 days of diagnosis for clinical AJCC T1-2NO with pathologic AJCC T3NO, T4NO, or Stage III; or treatment is recommended; for patients under the age of 80 receiving resection for rectal cancer</td>
<td>85%</td>
<td>100%</td>
</tr>
</tbody>
</table>

### Lung Cancer Measures

<table>
<thead>
<tr>
<th>Commission on Cancer Standard</th>
<th>Quality Measure</th>
<th>Expected Performance Rate</th>
<th>Actual Overall Rates for Patients Treated at UConn Health Cp3R Data Last Posted</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.4</td>
<td>LCT - Systemic chemotherapy is administered within 4 months to day preoperatively or day of surgery to 6 months postoperatively, or it is recommended for surgically resected cases with pathologic lymph node-positive (pN1) and (pN2) NSCLC</td>
<td>85%</td>
<td>100% Represents cases submitted to NCD8 for 2012-2015</td>
</tr>
<tr>
<td>4.4</td>
<td>LNoSurg - Surgery is not the first course of treatment for cN2, MO lung cases</td>
<td>85%</td>
<td>100% Represents cases submitted to NCD8 for 2012-2015</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>-------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>ORAL CAVITY &amp; PHARYNX</td>
<td>64</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>Lip</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Tongue</td>
<td>29</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Salivary Glands</td>
<td>4</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Floor of Mouth</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Gum &amp; Other Mouth</td>
<td>17</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Nasopharynx</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Tonsil</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Oropharynx</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Hypopharynx</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>DIGESTIVE SYSTEM</td>
<td>84</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Esophagus</td>
<td>4</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Stomach</td>
<td>7</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Small Intestine</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>COLON EXCLUDING RECTUM</td>
<td>34</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Cecum</td>
<td>8</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Appendix</td>
<td>5</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Ascending Colon</td>
<td>5</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Transverse Colon</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Descending Colon</td>
<td>6</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Sigmoid Colon</td>
<td>6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Large Intestine, NOS</td>
<td>3</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>RECTUM &amp; RECTOSIGMOID</td>
<td>11</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Rectosigmoid Junction</td>
<td>4</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Rectum</td>
<td>7</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>ANUS, ANAL CANAL &amp; ANORECTUM</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>LIVER &amp; INTRAHEPATIC BILE DUCT</td>
<td>9</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Liver</td>
<td>7</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Intrahepatic Bile Duct</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other Biliary</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Pancreas</td>
<td>10</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Peritoneum, Omentum &amp; Mesentry</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Other Digestive Organs</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RESPIRATORY SYSTEM</td>
<td>87</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>Nose, Nasal Cavity &amp; Middle Ear</td>
<td>3</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Larynx</td>
<td>16</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Lung &amp; Bronchus</td>
<td>68</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>BONES &amp; JOINTS</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Bones &amp; Joints</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>SOFT TISSUE</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Soft Tissue (Including Heart)</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>SKIN EXCLUDING BASAL &amp; SQUAMOUS</td>
<td>287</td>
<td>18</td>
<td>19</td>
</tr>
<tr>
<td>Melanoma -- Skin</td>
<td>279</td>
<td>18</td>
<td>19</td>
</tr>
<tr>
<td>Other Non-Epithelial Skin</td>
<td>8</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
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