ANNUAL REPORT 2016-2017

Aurora Health Care®

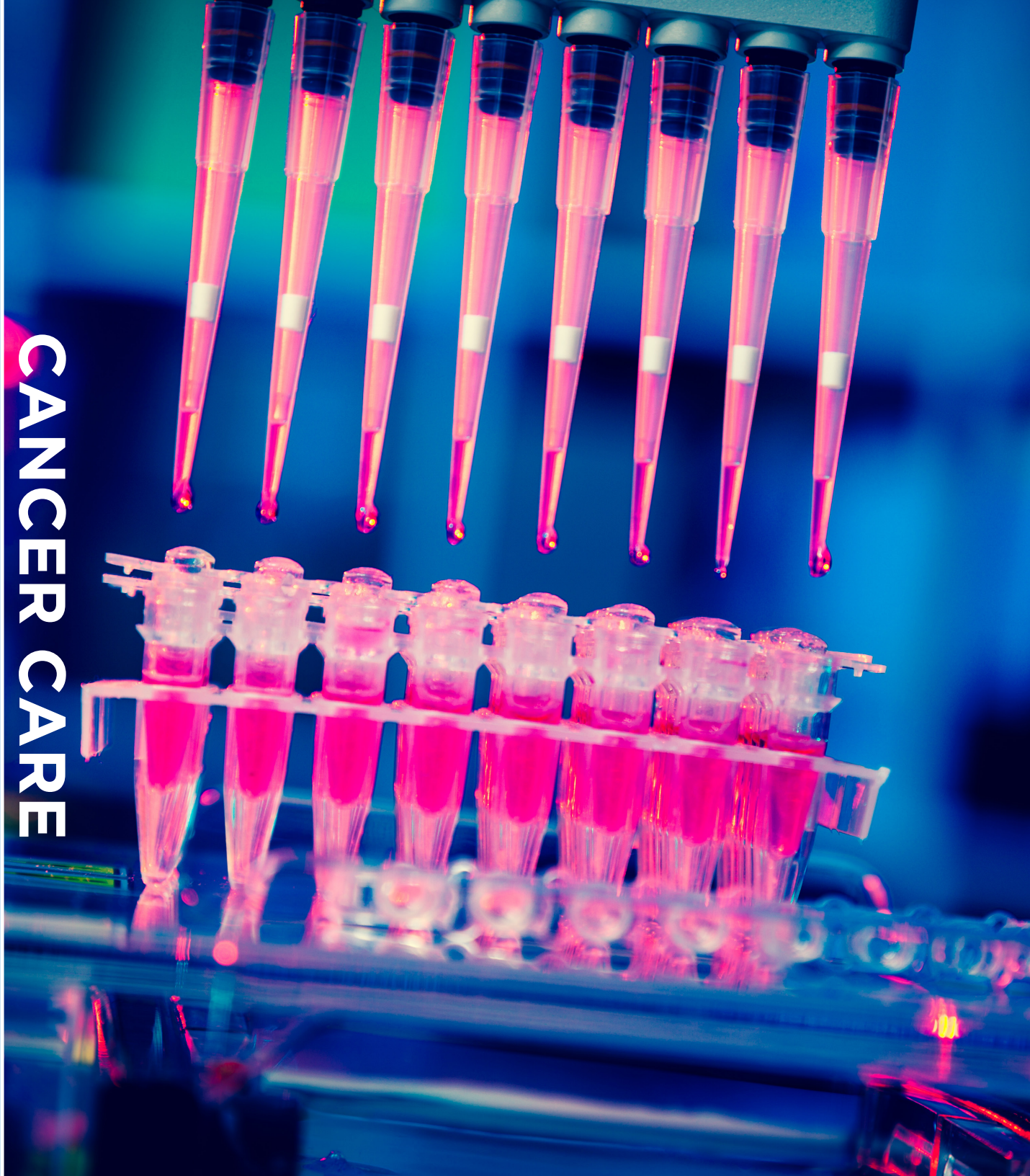
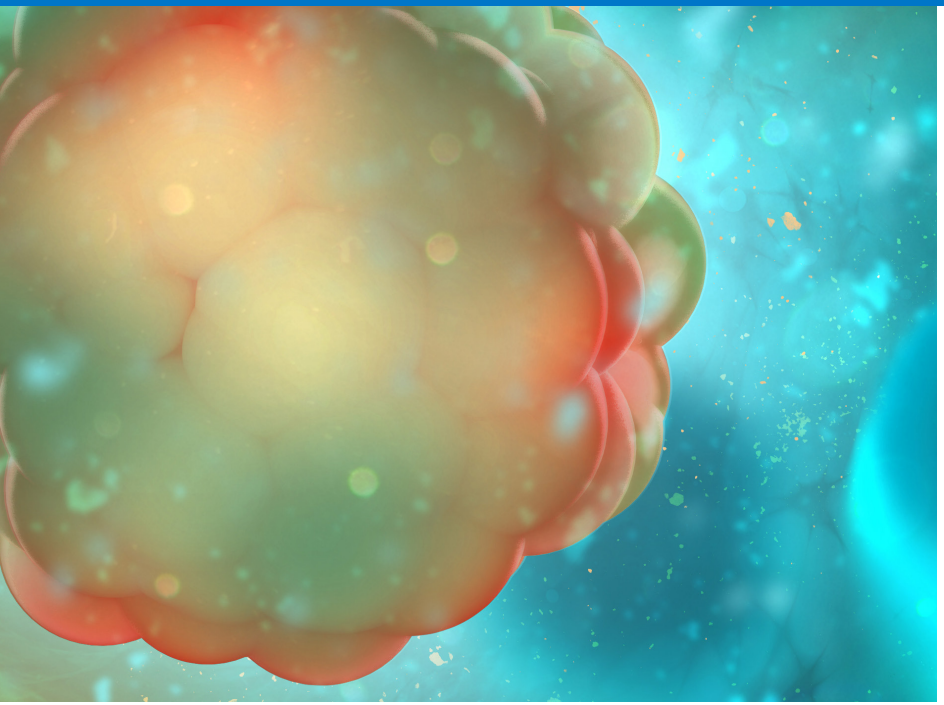


Table of Contents



Aurora Cancer Care

In the past five years, Aurora Cancer Care has experienced a 17% growth in new patients. Each year additional experienced, fellowship-trained physicians and cancer care experts are recruited. Technology and system-wide collaborations and programs are continuously improved and updated to ensure best practices are developed through evidence-based pathways. Aurora Cancer Care is committed to providing the most efficient, effective, affordable quality cancer care with innovative health care solutions to provide patients with the best possible outcomes.

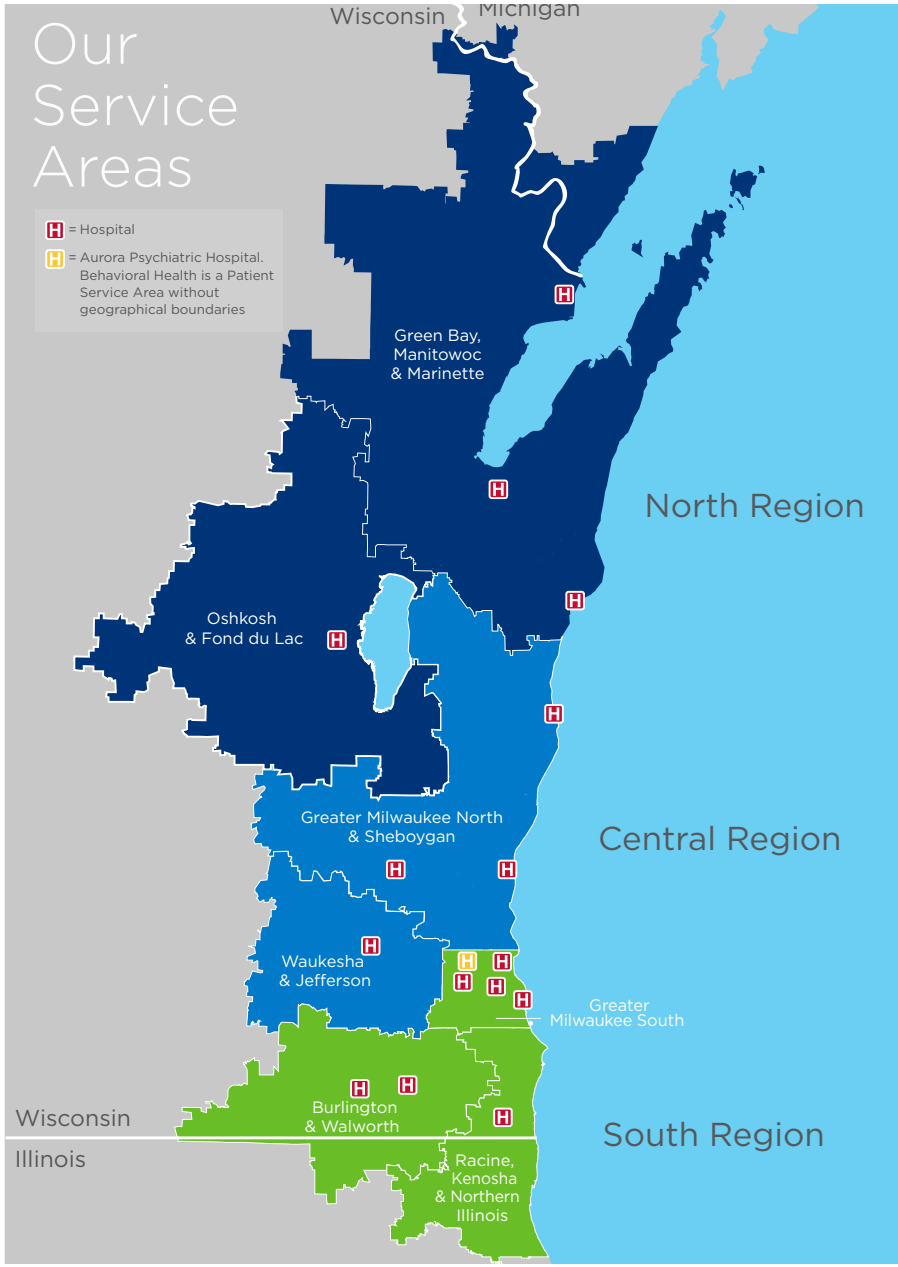
Aurora Cancer Care is the largest cancer program in Wisconsin. One in every four patients diagnosed with cancer in the state of Wisconsin comes to the cancer experts and clinical teams at Aurora Cancer Care.

Our team of world-class specialists is here for you to bring hope and the answers you need. From initial diagnosis to treatment and follow up, our coordinated approach is designed to give you the very best care, all in one place.

Aurora Cancer Care has extensive cancer screening, prevention, cancer nurse navigation, treatment, and survivorship programs. We treat patients using cutting edge technology that no other health care systems in Wisconsin have.

Cancer Care Close to Home

Aurora Cancer Care's **154** oncology physicians currently care for over **25,500** patients with cancer, including over **8,100** newly diagnosed patients annually. Aurora Cancer Care is able to provide patients care close to home through our **19** medical oncology locations and **11** radiation oncology treatment locations throughout eastern Wisconsin and northern Illinois.



Awards & Recognitions

Aurora Cancer Care is committed to providing patients with the highest-quality, personalized care. We accomplish this by adopting best practices designed around evidence-based national standards for quality and care as determined by multiple accrediting organizations. In addition, many of our oncology physicians have received national recognition through American Society of Clinical Oncology (ASCO) for their expertise.

ASCO NATIONAL RECOGNITION

Dr. Michael A Thompson

2016-2017 – Chair ASCO Education Committee
2016-2017 – Chair ASCO Research Community Forum

Dr. Michael Mullane

2017-2018 – Track Leader, ASCO Cancer Prevention, Hereditary Genetics, and Epidemiology

Dr. Federico Sanchez

2017-2018 – Track Leader, ASCO Education, GI, non-CRC

Dr. Elizabeth Dickson-Michelson

2017-2018 – Track Leader, ASCO Education, GYN-ONC

Dr. Nicholas Webber

2017-2018 – Track Leader, ASCO Education, Sarcoma

ACCC
Association of Community Cancer Centers

Commission on Cancer

QCP
QOPI® Certification Program
Quality Cancer Care: Recognizing Excellence

NCI
Community Oncology Research Program

fact
ACCREDITED

NAPBC
NATIONAL ACCREDITATION PROGRAM FOR BREAST CENTERS

The National Pancreas Foundation

sarcoma alliance

BY THE NUMBERS

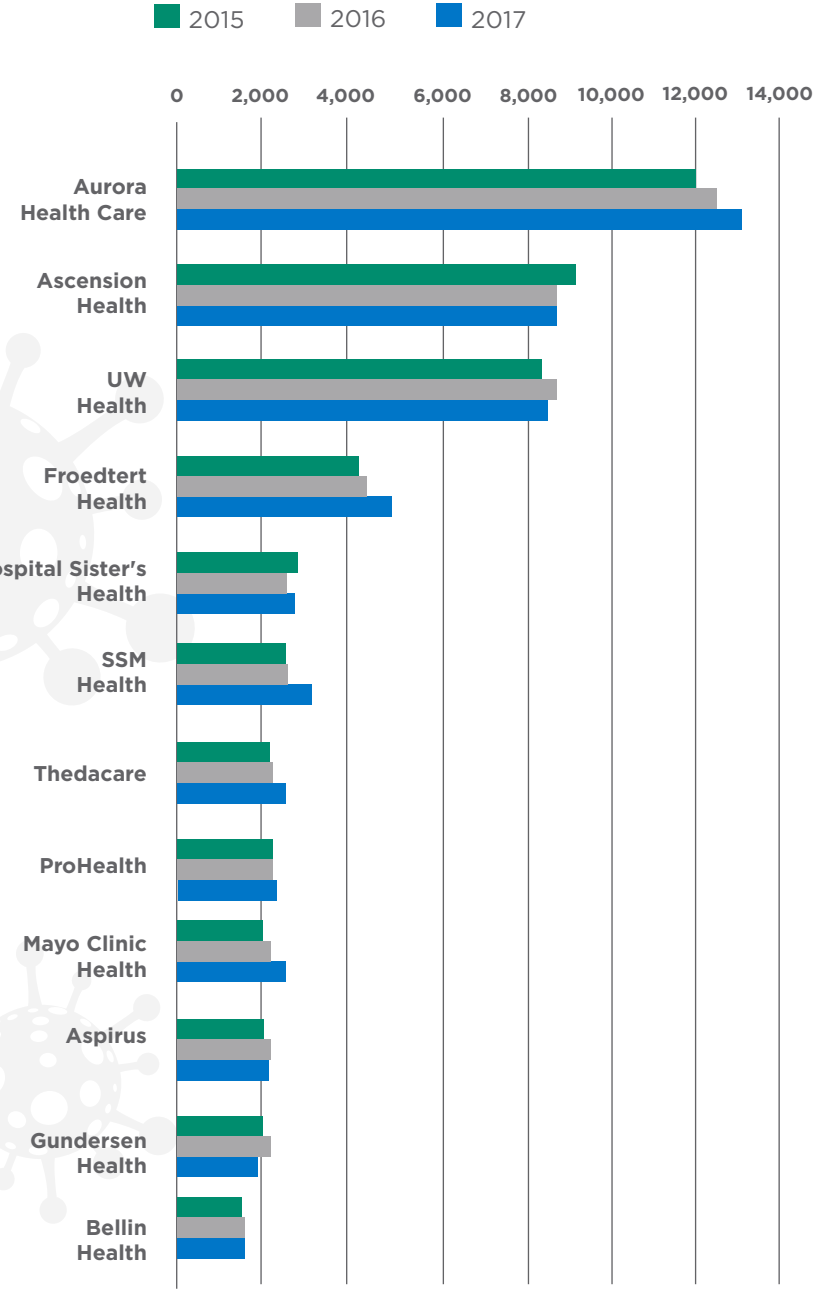
Wisconsin Hospital Utilization for Cancer Care - Top Volume Health Systems Cancer Cases Based on Primary (ICD) Diagnosis

HEALTH CARE SYSTEM	2015	2016	2017
Aurora Health Care	**12,104**	**12,513**	**13,209**
Ascension Health	9,656	8,965	8,879
UW Health	8,440	8,689	8,629
Froedtert Health	4,589	4,671	5,053
Hospital Sister's Health	3,122	2,977	2,929
SSM Healthcare	2,633	2,663	2,776
Thedacare	2,239	2,476	2,605
ProHealth	2,307	2,370	2,471
Mayo Clinic Health	2,083	2,169	2,456
Aspirus	2,010	2,128	2,252
Gundersen Health	1,894	2,094	1,939
Bellin Health	1,393	1,475	1,479

Source: WHA 2015 - 2017

Top 12 Volume Wisconsin Health Systems

Hospital Utilization for Cancer Care by Volume



Cancer Types Diagnosed at Aurora Cancer Care

Primary Site 2016

HEAD & NECK	**238**
Oral Cavity	67
Oropharynx	62
Major Salivary Gland	14
Nasopharynx	3
Hypopharynx	12
Larynx	57
Nasal/Paranasal	8
Other	15
ENDOCRINE	**228**
Thyroid	160
Other	68
DIGESTIVE SYSTEM	**1133**
Esophagus	80
Stomach	85
Colon	378
Rectum	144
Anus/Anal Canal	34
Liver	99
Pancreas	179
Other	134
RESPIRATORY SYSTEM	**892**
Lung/Bronchus	877
Other	15
BLOOD & BONE MARROW	**467**
Leukemia	279
Multiple Myeloma	92
Other	96
BONE	**11**
CONNECT/SOFT TISSUE	**48**
SKIN	**406**
Melanoma	348
Other	58
BREAST	**1301**
FEMALE GENITAL	**577**
Cervix Uteri	61
Corpus Uteri	304
Ovary	126
Vulva	57
Other	29
MALE GENITAL	**966**
Prostate	921
Testis	38
Other	7
URINARY SYSTEM	**701**
Bladder	394
Kidney/Renal	284
Other	23
BRAIN & CNS	**506**
Brain (Benign)	39
Brain (Malignant)	68
Other	399
LYMPATHIC SYSTEM	**336**
Hodgkin's Disease	38
Non-Hodgkin's	298
UNKNOWN PRIMARY	**65**
OTHER/ILL-DEFINED	**43**

Message from the Vice President

James Weese, MD
Vice President, Aurora Cancer Care

Aurora Cancer Care has shown significant growth and broadening of our services over the past five years and this continues to accelerate. During this time our medical oncologists have subspecialized, recognizing the explosive growth of new research and cancer treatments. This has also allowed us to provide valuable internal in-depth consultation across the system. Aurora Cancer Care's successful recruitment of patients into our National Cancer Institute Community Oncology Research Program (NCORP) trials has been recognized by the National Cancer Institute (NCI) with nearly $500,000 of additional award money given to Aurora, in addition to our original $3.8 million NCORP grant. We were recognized with Platinum (Virani) and Gold (Mullane) award winners for patient accrual into NCORP trials and an additional 11 of our physicians received honorable mentions. VIA oncology pathways have been successfully integrated into our Electronic Medical Record by their incorporation into Beacon and EPIC. Our group runs approximately 85% on pathway. The placement of clinical trials as the first pathway option has resulted in a 150% increase in patients placed on clinical trials since the year before VIA and NCORP were introduced at Aurora. In addition, seven of the 18 medical disease committees of VIA are co-chaired by Aurora medical oncologists. Under the leadership of Aaron Chevinsky, MD, new chief of surgical oncology, extensive work has been done to standardize the work up and treatment of gastrointestinal cancers and breast cancers across the system. He will also lead incorporation of VIA's surgical oncology pathways into management of patients with breast and pancreatic cancer this year.

Aurora Cancer Care members have received significant national recognition, raising the profile of our Cancer Service Line. Michael Thompson, MD, PhD, received great recognition and accolades for his leadership of the American Society of Clinical Oncology (ASCO) education committee for the 2017 ASCO national meeting. Many of our physicians also spoke and chaired sessions at ASCO. Leadership continues with Dr. Thompson as the immediate-past-chair of education, as well as track chair leaders for cancer prevention, hereditary genetics, and epidemiology (Mullane), gastrointestinal-noncolorectal (Sanchez), gynecologic cancer (Dickson-Michelson), and sarcoma (Webber). Our medical oncology program continues as one of the largest programs in the country that has achieved ASCO's quality certification through their Quality Oncology Practice Initiative (QOPI) program. Aurora Cancer Care was recertified by QOPI in 2017 for another three years.

The importance of patient education was highlighted by Aurora Cancer Care being awarded the Innovator Award by the Association of Community Cancer Centers. This reflected over 125 individual therapy videos made by our oncology certified nurses (OCNs) and oncology pharmacists to ensure that patients across all of our sites receive consistent chemotherapy/immunotherapy education.

In 2016, I had the privilege of attending the National Cancer Moonshot Summit on an invitation from Vice President Joe Biden. The Summit brought together more than 350 oncologists, researchers, data and technology experts, cancer patients, patient advocates, and others involved in cancer research and patient care. The meeting, held at Howard University in Washington, D.C., focused on precision medicine, data sharing, and collaboration as strategies to advance cancer research and treatment.

President Barack Obama announced the $1 billion National Cancer Moonshot initiative on January 12 during his 2016 State of the Union address and appointed Vice President Joe Biden to lead it. The initiative's goal is to double the pace of advances in cancer prevention, diagnosis, and treatment — in other words, making strides in five years that used to take ten years. There was a particular focus on data sharing and earlier release of information about new discoveries.

Precision medicine is a major focus of where the field of cancer research and treatment is moving. Our ability to identify genetic markers within a cancer's DNA is becoming a powerful tool in the development of new therapies. Because these new treatments can be extraordinarily expensive, it becomes critically important to identify those patients whose tumors are most likely to respond to the new agents. In this capacity, Aurora Cancer Care is analyzing the genetic makeup of cancer patients' tumors to help oncologists determine exactly which treatments will likely work best for each individual patient. Such a customized approach to cancer is called precision medicine. This will become increasingly important, and we anticipate it will yield significant progress, particularly in patients with advanced disease over the next few years. To ensure Aurora Cancer Care remains at the forefront of this field we have adopted use of the Syapse platform which will share our de-identified data with that of nine other health care systems so that we can see the treatment results of genetically similar tumors in patients across the country. This data will be available to us in real time rather than having to wait the typical two to three years for publication. This will allow us to select those new treatments most likely to benefit patients treated at Aurora. Our precision medicine clinic, started in March 2017, has exceeded our anticipated one-year accrual of patients by 60% in just the first six months of operation. This clinic is led by Dr. Thompson and Jennifer Godden, Pharm.D.

Precision medicine can also help identify patients who are at risk of serious adverse effects from cancer treatments, such as heart failure. At Aurora's new Karen Yontz Center for Cardio-Oncology, for example, physicians can determine a patient's risk for developing heart disease after cancer treatment by assessing the patient's medical history and genetic profile.

These and many other exciting initiatives have resulted in a nearly 17% increase in new patients seen over the past five years at Aurora Cancer Care. At this time, nearly one of every four patients diagnosed with cancer in Wisconsin is seen at an Aurora facility.

We are very proud of the many accomplishments outlined in this annual report and look forward for continued success and growth in the future.


COMPREHENSIVE
CANCER CARE

Multidisciplinary Cancer Care

A diagnosis of cancer can bring about many emotions and questions. The multidisciplinary cancer care approach at Aurora Cancer Care provides patients and their families with a collaborative team of world-class specialists to work together to work together to bring hope and provide answers to meet patient needs.

The multidisciplinary team members can include:

- Medical oncology
- Financial counseling
- Radiation oncology
- Genetic counseling
- Surgical oncology
- Nutrition counseling
- Interventional radiology
- Pain management
- Pathology
- Pastoral care
- Aurora Behavioral Health
- Rehabilitation
- Cancer counseling
- Resource library
- Cancer nurse navigators
- Social workers
- Clinical research trials
- Support services
- Integrative Medicine
- Survivorship programs
- Diagnostics and imaging

MULTIDISCIPLINARY CANCER CONFERENCES

Aurora Cancer Care has developed system-wide multidisciplinary cancer conferences. These conferences are an opportunity for Aurora physicians to present patient cases to colleagues from anywhere within Aurora. Technology has enabled us to conduct these conferences, not only in person, but also via high-definition video conferencing. This advancement creates a greater opportunity for attendance for all caregivers involved which translates greater involvement to:

- Discuss the most current and appropriate medical management strategies;
- Stay current with evidence-based practices to provide improved outcomes for patients;
- Apply treatment plans agreed upon by consensus at the conference to their patients;
- Add to their knowledge base in cancer care management by interaction with colleagues; and
- Become aware of available clinical trials that their patients may be eligible for participation.

MULTIDISCIPLINARY CANCER CLINICS

Aurora Cancer Care is committed to providing patients with an unparalleled level of care and an exceptional patient and family experience. Our doctors come from every cancer field, and work as a team to provide a coordinated approach that is specific to each patient.

Our multidisciplinary cancer clinics are designed to give the patient the very best care, all in one place:

- Patients meet with their entire cancer team during the first appointment – making things easier for patients during their appointment.
- The cancer team will review each patient's case and develop an effective treatment plan based on National Comprehensive Cancer Network guidelines, a national organization dedicated to improving the quality and effectiveness of cancer care. The plan will be personalized to each patient and their cancer.
- The cancer team will explain test results, discuss recommended treatment options, listen to questions, concerns and fears, and will develop a partnership that enables the patient and family to participate in their care.
- Newly diagnosed cancer patients can leave the clinic with a comprehensive plan for their work up and treatment.

Prevention Screening

Creating awareness about the importance of screening for at-risk diseases is the first step in early detection. Our cancer experts follow a uniform approach using evidence-based national guidelines for best care practices.

Prevention and screening is a system-wide collaborative effort among:

- Community Outreach
- Primary Care Physicians
- Women's Health
- Population Health
- Dermatology
- Wellness Programs
- Surgery
- Gastroenterology

Diagnosis & Treatment

If cancer is diagnosed by a primary doctor, the patient may be referred to cancer specialists. One doctor will lead treatment, and all providers will work together as a team to provide the best care. Depending on where the tumor originated, the care team may include some of the following specialties:

- Gynecological Oncologist
- Hematologist
- Medical Oncologist
- Neurologist
- Occupational Therapist
- Pathologist
- Plastic Surgeon
- Physical Therapist
- Primary Physician
- Pulmonologist
- Radiation Oncologist
- Registered Nurse
- Surgeon (Thoracic, Breast, GI)
- Urologist
- Gastroenterology

Support Care

Patients may be referred to other caregivers who are available at the doctor's request. Patients and loved ones may request care from the following caregivers:

- Cancer Nurse Navigator
- Chaplain
- Child Life Specialist
- Clinical Nurse Specialist
- Clinical Research Nurse
- Complementary Therapists (Massage, Aromatherapy, Acupuncture, Reiki)
- Dietitian
- Financial Counselor
- Genetic Counselor
- Palliative Care Specialist
- Pharmacist
- Psychologist, Counselor
- Rehabilitation Specialist
- Social Worker

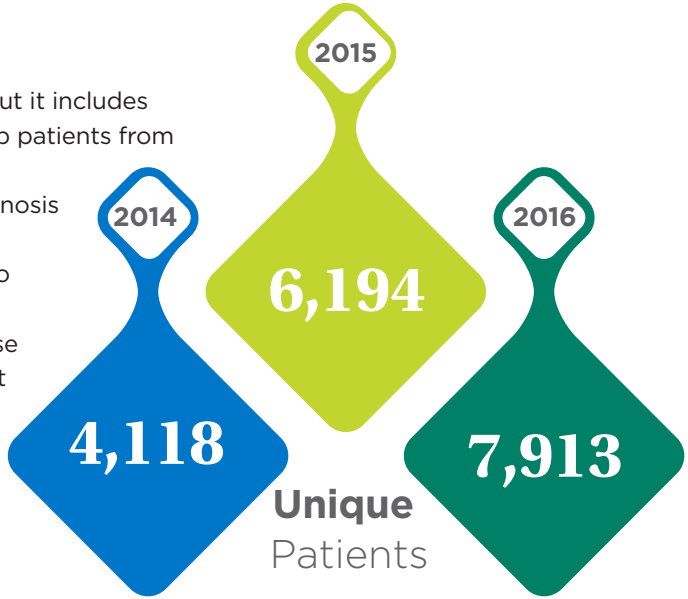
Survivorship

Cancer specialists remain on patient care teams throughout survivorship. A care plan will be suggested and patients will continue to see their primary physicians and surgeons as needed. Patients may also continue with caregivers such as:

- Nurse Practitioner
- Integrative Medicine
- Acupuncturist
- Massage Therapist
- Reiki
- Yoga
- Tai Chi
- Physical Therapy
- Spiritual Counselor
- Psychologist, Counselor
- Financial Counselor
- Dietitian

Cancer Care Team

The treatment Aurora Cancer Care provides patients is not only top-notch, personalized cancer care, but it includes integrated care for the whole person. Cancer care is a collaboration among several departments to help patients from prevention through outreach and wellness programs, to early detection by working with primary care physicians, women's health, and dermatologists to develop best practices for cancer screening, to diagnosis in coordination with radiology and surgical oncology, to treatment with a multidisciplinary team of surgical oncology, medical oncology, radiation oncology, and interventional oncology, to survivorship to ensure the best possible post-treatment care through cancer rehabilitation, spiritual care, counseling services, survivorship programs, and support groups. This is a process that is all guided by Cancer Nurse Navigators to ensure patients are on the appropriate path through diagnosis and treatment in the most efficient manner possible.

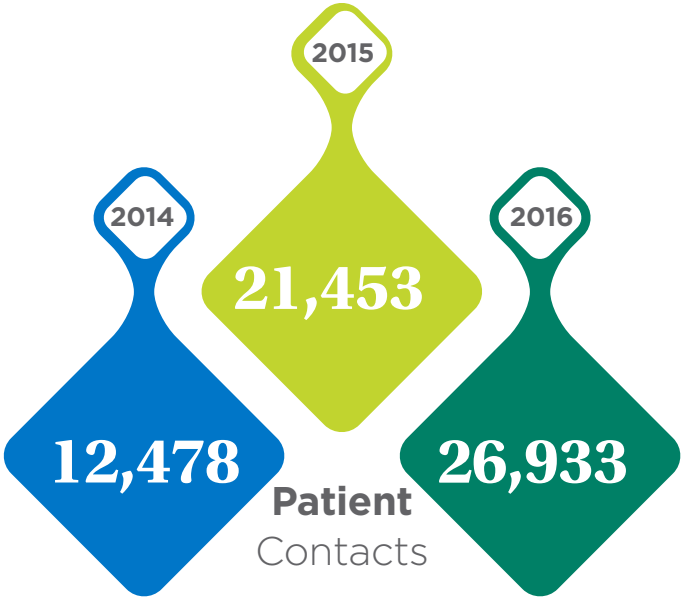


CANCER NURSE NAVIGATORS

Facing a cancer diagnosis can be overwhelming to patients and their loved ones. Once diagnosed, a patient is often presented with large amounts of new information and have to quickly make a decision on treatment plans.

Cancer Nurse Navigators are nurses who serve as advocates, helping to guide patients through the health care system and provide emotional support throughout diagnosis, treatment, and survivorship. Our Cancer Nurse Navigators will listen to concerns, help patients understand what to expect of any tests or treatments, answer questions, and provide the resources needed to make informed decisions about care.

Our Cancer Nurse Navigators effectively and efficiently provide patients with help in everything from understanding the diagnosis and treatment options, to coordinating appointments, to providing support along the way.



Surgical Oncology

Our board-certified, fellowship-trained general, breast, gynecologic, colorectal, thoracic, neuro, head and neck and musculoskeletal surgical oncologists provide the most advanced therapies and surgical treatments available, including minimally invasive options that reduce recovery times and get patients back faster to what matters most in life.

Our comprehensive resources include:

- Minimally invasive surgery
- Laparoscopic surgical approaches for cancer and benign conditions
- Robotic-assisted surgery for treating esophageal, lung, gynecologic, urologic, pancreatic, gastrointestinal and head and neck issues, in addition to performing cranial and spine neurosurgery
- Video-assisted thoracoscopic surgery (VATS)

- The only Robotic Thoracic Surgery Training Center in Wisconsin
- Sentinel lymph node biopsies to determine if cancer has spread to the lymphatic system
- Nipple-sparing mastectomy
- Transoral laser surgery
- Microsurgery
- Plastic/reconstructive surgery
- Hyperthermic Intraperitoneal Chemotherapy (HIPEC), a concentrated and heated treatment delivered directly to the abdomen during surgery
- Intraoperative Radiation Therapy (IORT), which delivers a concentrated dose of radiation to the tumor site during surgery, immediately after a cancer tumor has been removed
- NanoKnife®, which uses electrical currents to destroy cancerous tumor cells
- Cryotherapy
- Radiofrequency
- Microwave Ablation

Medical Oncology and Hematology

The medical management of cancer care is provided by our board-certified medical oncologists and hematologists to address all aspects of health.

- All board-certified medical oncologists with subspecialization in specific types of cancers
- Board-certified hematologists with expertise in cancer and benign diseases of the blood
- Immunotherapy treatment options that stimulate the body's immune response to fight disease
- Chemotherapy infusion areas with comfort and support in mind
- Clinical trials through the National Cancer Institute (NCI) Community Oncology Research Program (NCORP)
- Experienced nurses for chemotherapy and biotherapy administration who are certified by the National Oncology Nurse Society (ONS)
- Autologous bone marrow stem cell transplant, which uses a patient's own stem cell as part of their treatment

Radiation Oncology

Radiation therapy is an important tool for the treatment of most types of cancer and even several noncancerous conditions. Our board-certified radiation oncologists are specifically trained to consult, recommend and oversee all aspects of radiation therapy treatment, whether alone or in combination with surgery and/or chemotherapy.

The Varian TrueBeam® Radiation System is part of our state-of-the-art care:

- We use a fully integrated system for image-guided radiotherapy (IGRT) and radiosurgery.
- TrueBeam treats cancer wherever radiation treatment is necessary, including lung, breast, prostate and head and neck.
- IGRT takes an X-ray before each radiation treatment. The images help the radiation oncologist to more precisely target existing cancers while sparing nearby healthy tissue from potential damage and reducing the risk of side effects.
- Intensity-modulated radiation therapy (IMRT) is a procedure that uses linear accelerators to safely and painlessly deliver precise radiation doses to a tumor while minimizing the dose to surrounding normal tissue.
- RapidArc is an advanced form of IMRT that uses software and an advanced linear accelerator to deliver IMRT treatments up to eight times faster than was previously possible.
- 3D conformal radiation therapy, which sculpts radiation beams to the shape of a tumor, provides a more precise delivery of radiation designed to avoid healthy surrounding tissues and organs.

Other forms of radiation therapies:

- Cyberknife® Robotic Radiosurgery System is a noninvasive treatment option for tumors anywhere in the body that delivers beams of high-dose radiation to tumors with extreme accuracy.
- Accelerated partial breast brachtherapy, which treats cancer with radioactive implants carefully placed into the tissue.
- Intraoperative Radiation Therapy (IORT) delivers a concentrated dose of radiation to the tumor site during surgery, immediately after a cancer tumor has been removed.

Interventional Oncology

Interventional oncology is the use of image-guided, minimally invasive techniques by fellowship-trained, board-certified interventional radiologists. Interventional oncology approaches can be used in conjunction with surgery or with patients who are not candidates for surgery.

Our interventional radiologists perform minimally invasive oncology procedures such as the following:

- Radiofrequency ablation (RFA) is a nonsurgical, localized treatment that is easier on the patient than other therapies. It kills tumor cells with heat while sparing healthy tissues.
- Chemoembolization is a minimally invasive treatment for liver cancer that can be used when there is too much tumor mass to treat with RFA, when the tumor is in a location that cannot be treated with RFA, or in combination with RFA or other treatments.
- Cryoablation is similar to RFA, but uses an extremely cold gas instead of heat to kill the tumor.
- Yttrium-90 radioembolization uses radioactive microspheres to treat both primary liver tumors and metastatic ones that have spread to the liver by delivering the isotopes directly to the tumor.
- Microwave ablation uses heat-generating electromagnectic waves to destroy tumors.
- NanoKnife uses electrical currents to destroy cancerous tumor cells.

Together with the other cancer team members, we provide the most advanced, minimally invasive approaches to cancer treatment available. Most interventional procedures are either outpatient or require an overnight stay in the hospital with a brief recovery time.

Aurora Cancer Care Spanish Clinic

WHEN YOU NEED THE BEST CANCER CARE, WE'RE SPEAKING YOUR LANGUAGE.

The Aurora Cancer Care Spanish Clinic is the first — and only — fully bilingual, Spanish-speaking cancer clinic in Wisconsin. Dr. Federico Sanchez and his staff provide exceptional care in the management of cancer and other serious hematologic diseases, while also meeting the language and cultural needs of patients and their families.

The diagnosis of cancer crosses all cultures and is often life changing. Patients may feel overwhelmed at first and have many questions. At Aurora Health Care, we know how important it is to have effective communication with the care team. Because the more a patient understands their condition, the less anxiety they will have while treating it.

Federico Sanchez, MD, is the visionary leader behind the Aurora Cancer Care Spanish Clinic. As medical director of this groundbreaking clinic, he ushers in a new era of meeting the linguistic and cultural needs of the growing Hispanic populations in Milwaukee and surrounding area.

CUANDO USTED NECESITA LA MEJOR ATENCIÓN PARA EL CÁNCER, NOSOTROS HABLAMOS EN SU IDIOMA.

La Clínica Hispana para la Atención al Cáncer de Aurora es la primera y única clínica totalmente bilingüe, para la atención al cáncer en Wisconsin. Nuestro médico y su personal proporcionan atencion especializada para el manejo del cáncer y otras enfermedades hematológicas graves, a la vez que satisfacen las necesidades lingüísticas y culturales de pacientes y sus familias.

El impacto de un diagnóstico de cáncer es similar en todas las culturas y con frecuencia representa un cambio de vida. Pacientes pueden sentirse abrumado(a) al principio, y tener muchas preguntas. En Aurora Health Care, sabemos lo importante que es tener una comunicación eficaz con el equipo de atención médica. Porque mientras mas entienda su enfermedad, menos ansiedad sentirá al tratarla.

El Dr. Federico Sánchez es el líder visionario detrás de la Clínica Hispana para la Atención al Cáncer de Aurora (Aurora Cancer Care Spanish Clinic). Como director medico de esta innovadora clínica, él encabeza los cambios hacia una nueva era en la atención medica enfocandose en las necesidades lingüísticas y culturales de las crecientes poblaciones hispanas en Milwaukee y sus alrededores.

Survivorship

For every newly diagnosed cancer case, there are approximately eight survivors living with a history of the disease. After treatment, survivors are excited about the idea of returning to a “normal” life, but cancer survivors often experience physical, social, emotional, financial, and spiritual changes as a direct result of their cancer diagnosis and treatment. Survivorship care is gaining prominence as a specialized field, with increased attention and recognition that care does not end with the completion of treatment but must be extended to include the survivors' long-term health needs.

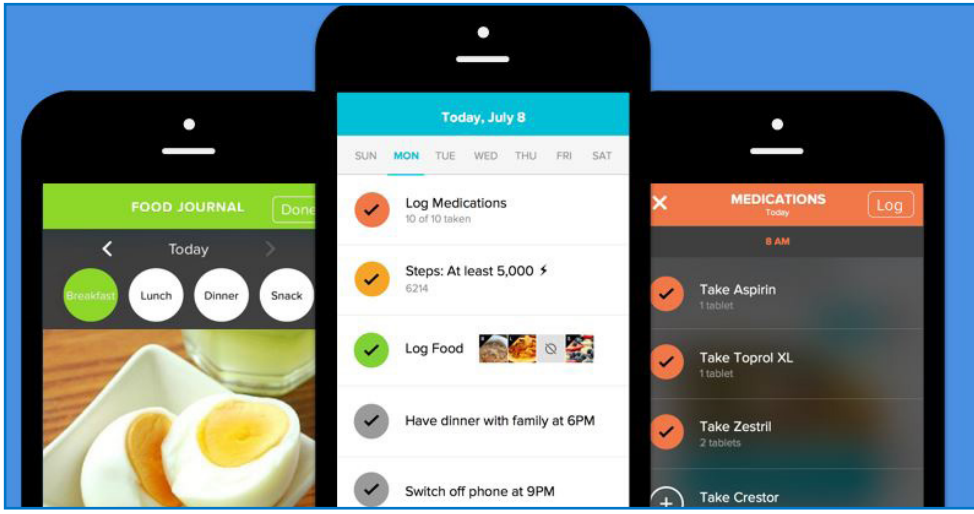
As part of our comprehensive cancer program, Aurora Cancer Care is utilizing its many resources to develop comprehensive survivorship care. A survivorship care plan includes a treatment summary as well as a guide to recommended follow-up care and important information about possible signs of cancer recurrence. We also partner with survivors to design a personalized wellness plan to help them feel better and to stay as healthy as possible. Survivorship care can also improve coordination between the cancer care team and a patient’s primary care provider. As appropriate, we can also provide information on integrative medicine strategies to improve wellbeing and genetic counseling to help identify high-risk individuals and families who could benefit from more comprehensive cancer surveillance.

Survivorship care at Aurora is led by our oncology advanced practice providers and is in alignment with the Commission on Cancer’s accreditation standards. The program continues to grow; in 2015, when the program was launched, over 600 care plans were distributed. In 2016, 1,100 care plans were created and/or given to patients and in 2017, 1,252 care plans were completed and delivered to patients.

Aurora Health Care® **RESEARCH** HIGHLIGHT

WELLNESS COACHING APP

Thanks to a $25,000 Aurora Cancer Care Research Award, Jamie Cairo, DNP, is studying the immediate and long-term benefits of a wellness coaching app used by survivors of breast cancer. Researchers will follow participating survivors for six months to determine whether wellness coaching provided through the app improved their outcomes. The goals are to reduce the late and long term side effects of cancer and its treatment, improve overall quality of life and encourage the adoption of healthy lifestyle behaviors. The Vida Wellness App study is being conducted by a group of Oncology Advanced Practice Providers at Aurora Cancer Care. The primary goal is to examine if use of the Vida Wellness Coach App by breast cancer survivors is more effective than a self-guided toolkit in improving adherence to a plant based diet, increasing daily/weekly physical activity, assisting with a reduction in BMI, reducing elevated baseline post treatment depression and fatigue scores, and leading to sustained adherence to lifestyle and wellness plan.



TEAM PHOENIX SURVIVORSHIP TRIATHLON TRAINING TEAM

Each year, 20-60 women, cancer survivors, some of whom were and are still going through cancer treatment decide to do a sprint distance triathlon by joining Team Phoenix.

Team Phoenix is Aurora Health Care's cancer survivor triathlon training team designed to empower women to take control of their health and redefine their survivorship by regaining physical fitness, endurance, strength and flexibility through training for a sprint distance triathlon. Swimming, biking, running, and, in some cases, fitness in general were brand new to many of these women.

The Team Phoenix program teaches athletes the endurance, technical skills and knowledge needed to complete a triathlon. However, the impact of the program is really found in the change they discover in themselves. They become athletes, they become stronger, they are proud, they are alive, and they know that they have redefined themselves and their survivorship.

As one 2017 athlete puts it; "I never thought I could overcome what a disease had taken from me — my youth, my vitality, my womanhood…This journey — learning to swim, remembering to run, getting on a bike again… all small steps that opened the flood gates and let my grief out…I never thought I would be whole again…and here I am. I am whole…I am back."

Since 2011, over 200 athletes have participated in Team Phoenix and most of those athletes continue to meet or exceed the American Cancer Society's Activity Guidelines for regular fitness activities of 150 minutes per week.

Marija Bjegovich-Weidman Excellence Award in Oncology

Cancer care requires a team effort. In addition to the multidisciplinary approach cancer caregivers provide, Aurora Cancer Care works with various departments throughout the organization to continue to improve timeliness of care, quality of care, and provide the best in patient-centered care.

To highlight these collaborations the annual Marija Bjegovich-Weidman Excellence Awards in Oncology were created in 2017 by James L. Weese, MD to recognize caregivers for their outstanding service and contributions. Multidisciplinary group project nominations are encouraged to include collaborations between cancer services and other departments within Aurora Health Care.

The awards were named the Marija Bjegovich-Weidman Awards for Excellence in Oncology in honor of Marija who served as Senior Director of Aurora Cancer Care. Marija has been with Aurora Health Care for over 35 years and has been a driving force behind Aurora Cancer Care's success.

THE 2017 WINNERS INCLUDE:

PERFORMANCE IMPROVEMENT PROJECT AWARD

Anne Weers; Dorry Mitchell; Zarina Dwoodbhai; Rita Wilbert and Kevin Clement for their work on Improving Referral Capture and Tracking Outcomes of Lung CT Program

PATIENT OR CAREGIVER SAFETY INITIATIVE AWARD

Brenda Mauer; Kerry Twite, Service Line CNS; Peter Stuessy, Service Line Pharmacist for their work on Rate/Time Infusion Process Change for Oxaliplatin

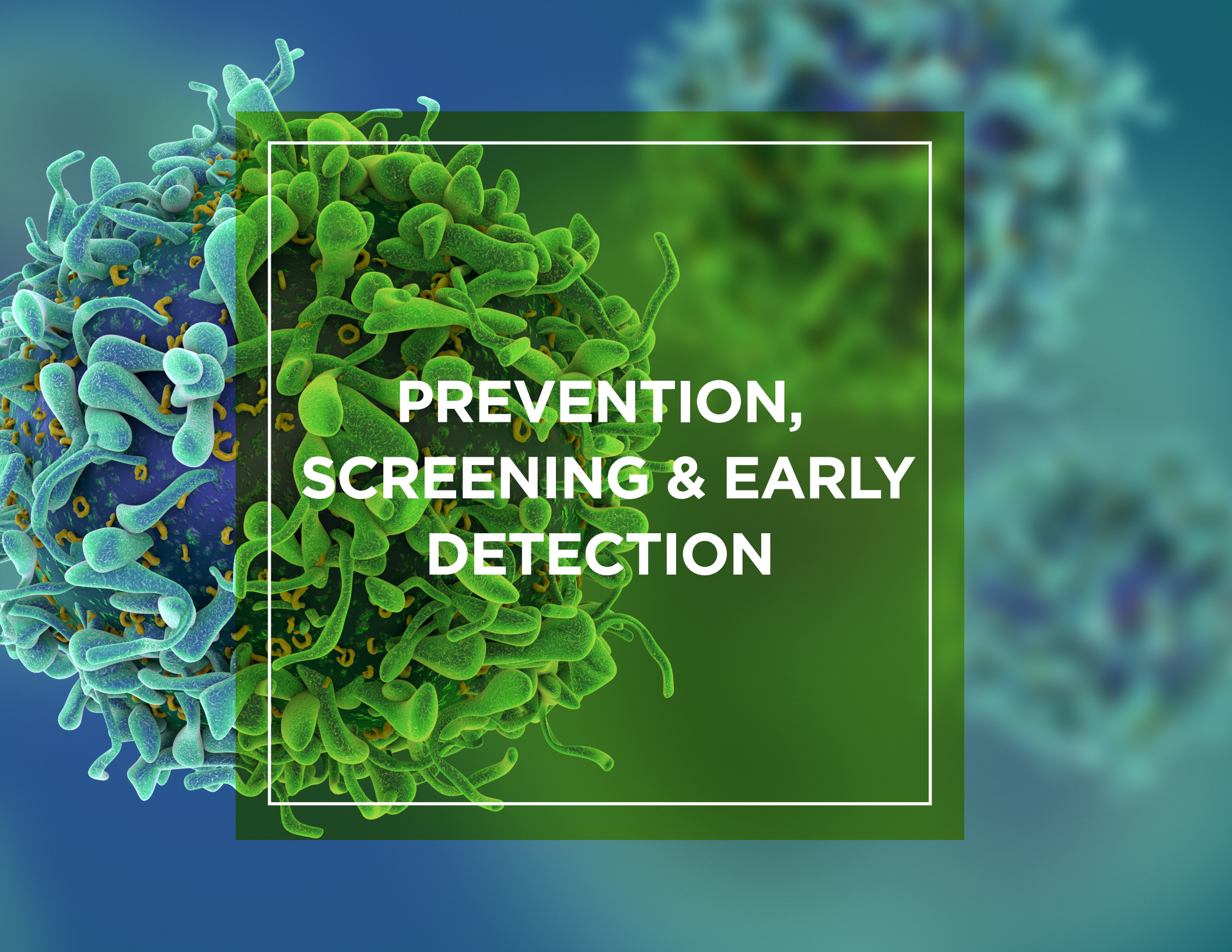
PATIENT-CENTERED PROGRAM OR SERVICE AWARD

Ana Farnsworth, RN, BSN, OCN; Angie Paradowski, CTR; Traci Batcher; Jennifer Wiesmueller, RN for the work on The Development of the Sarcoma Multidisciplinary Clinic

INDIVIDUAL LEADERSHIP AWARD

Kerry Twite, CNS for her work in Oncology Nursing Education

The winners, as well as all nominees, were recognized by Dr. Weese, Vice President of Cancer Services and Dr. Nick Turkal, President and CEO of Aurora Health Care during the Annual All Oncology Meeting on Monday, September 18, 2017.


PREVENTION,
SCREENING & EARLY
DETECTION

Reaching Out to the Community

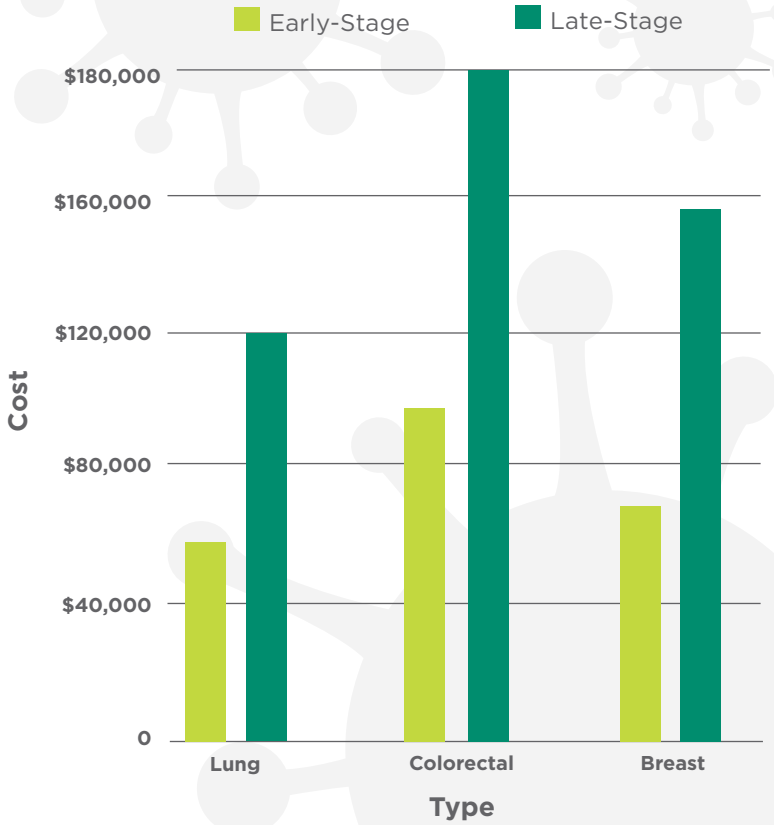
Aurora Cancer Care is dedicated to bringing cancer care to diverse communities. By offering and promoting cancer education about prevention and screenings, we provide the community the opportunity to prevent or treat cancer through early detection. With our resources, we also give community members evidence based reasons to become a health advocate for themselves and their loved ones. Additionally, by being present in diverse community events and outlets, Aurora Cancer Care has fostered the visibility as a consistent resource for education and care.

Creating awareness about the importance of screening for at-risk diseases is the first step in early detection. Our cancer experts partner with community organizations such as American Cancer Society, Milwaukee Public Schools, and the Wisconsin Ovarian Cancer Alliance, Wisconsin Breast Cancer Coalition, Milwaukee Consortium for Hmong Health, Wisconsin LGBT Chamber of Commerce. Together we conduct community outreach through various community events to provide education, conduct presentations and discussions, distribute brochures and materials, and provide cancer screenings to participants in these events and health fairs. Additionally, our cancer experts also serve as volunteers on various boards of directors for community based organizations.

Early detection of cancer has immeasurable benefits to the patient and their families. Many times, detection of cancer in the early stages, as opposed to a late stage, means better prognosis, higher cure rates, lower costs of treatment and health care, less impact on quality of life, and less time away from work.

BY THE NUMBERS

Early vs. Late-Stage Cancer Treatment Costs



Source: Milliman, Inc. et al, Comparing Episode of Cancer Care Costs in Different settings: An Actuarial Analysis of Patients Receiving Chemotherapy, Aug 29, 2013

PROGRAMS FOR EMPLOYERS AND EMPLOYEES

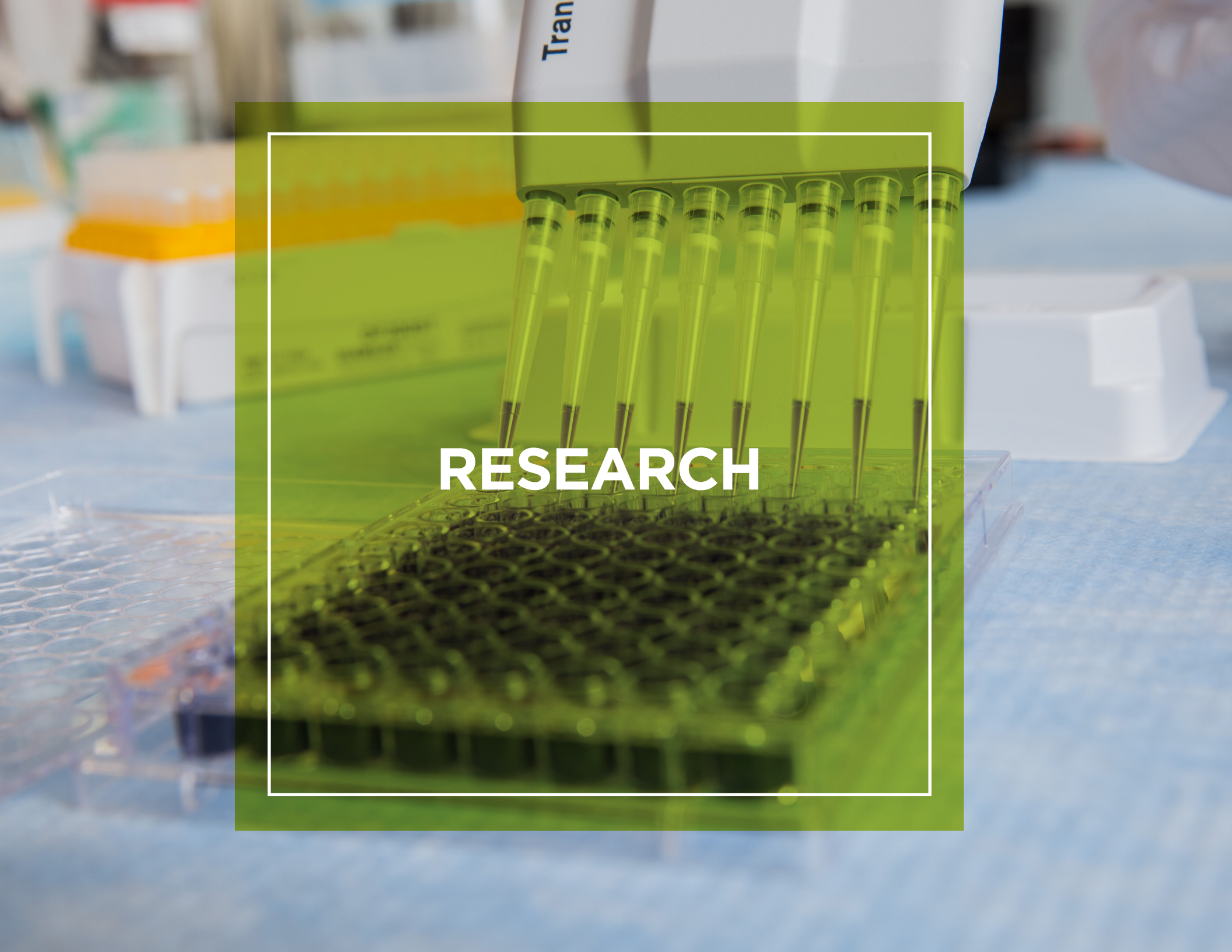
ON-SITE SCREENING

Our experts come to your place of work to conduct several types of screenings.

- Breast and oral screenings: conducted in private and include education about ongoing self-exams, as well as risk factors and signs and symptoms to watch out for.
- Colorectal screenings: employees collect a sample from the comfort of their own homes, return as instructed and are then contacted with results and next steps.
- Skin screenings: conducted in private to examine skin lesions and include education about ongoing self-exams, as well as risk factors and signs and symptoms to watch out for.

EDUCATIONAL PRESENTATIONS AND MATERIALS

Creating awareness about the importance of screening for at-risk diseases is the first step in early detection. Our cancer experts come on-site to provide education, conduct presentations through the Aurora Cancer Care Speaker's Bureau, and distribute brochures and other materials to increase awareness.


RESEARCH

BY THE NUMBERS

In August 2014, the National Cancer Institute (NCI) chose Aurora Health Care as a community site for its newly instituted NCI Community Oncology Research Program, or NCORP. Aurora is projected to receive more than $4.4 million by the time its five-year NCORP grant cycle ends in 2019. Thomas Saphner, MD, and Michael Thompson, MD, PhD, serve as principal investigators for Aurora NCORP. Along with their team members, the principal investigators authored a paper in the Wisconsin Medical Journal about establishing a new NCORP site.

Aurora is one of 34 sites in the country to be awarded one of the highly competitive NCORP grants, which help bring clinical cancer trials to people in their own communities. This expanded access to clinical trials, in turn, generates more broadly applicable evidence that contributes to improved patient outcomes and a reduction in cancer disparities. The NCORP grant stimulates interactions with in the oncology community including, medical, surgical, gynecologic, and radiation oncology. Interactions between the oncology community and several other specialties are enhanced including, cardiology, behavioral health, complementary medicine, geriatric medicine, diagnostic radiology, and medical genetics.

Currently, Aurora NCORP has NCI clinical trials open to recruitment for multiple cancer types, including brain, breast, lung, and prostate cancers, as well as leukemia, lymphoma, and melanoma. These clinical trials are available at all 19 Aurora cancer clinics.

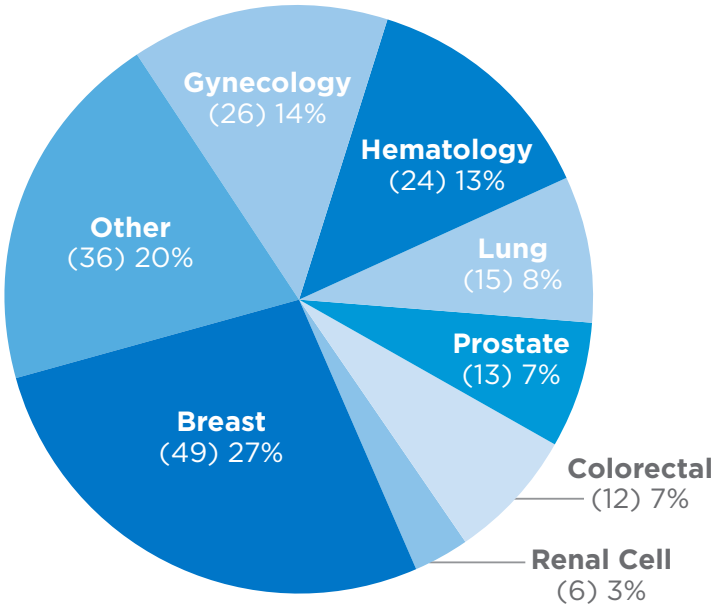
The NCI chose Aurora to serve as a community site because we are the largest cancer provider in Wisconsin — diagnosing and treating more adult cancer than any other health care system in the state.

Beyond that, Aurora's work in a variety of clinical research areas, including multidisciplinary studies in neuro- and cardio-oncology, makes us especially attractive as a community site. NCORP includes a range of cancer prevention, screening, control and treatment clinical trials.

NCI Community Oncology Research Program

A program of the National Cancer Institute of the National Institutes of Health

181 oncology clinical trials open to accrual and follow-up as of **Dec. 31, 2016**



NCORP PHYSICIAN ACCRUAL AWARD WINNERS AUGUST 2014 - JUNE 2017

At the National Cancer Institute NCORP meeting in August of 2017, the NCI recognized investigating physicians for excellence in accrual of patients to clinical trials. Total accrual to NCI sponsored trials was totaled for the first three years of the NCORP grant and investigators with more than 11 accruals were recognized.

Only about 10% of all investigating physicians in all NCORP sites were recognized. Aurora was honored to have 13 investigating physicians recognized.

PLATINUM AWARD WINNER: **Dr. Shamsuddin Virani (>50)**

GOLD AWARD WINNER: **Dr. Michael Mullane (40)**

APPRECIATION AWARDS: **(11-19)**

- **Dr. Corey Shamah (19)**
- **Dr. Judy Tjoe (17)**
- **Dr. George Bobustuc (16)**
- **Dr. Rubina Qamar (16)**
- **Dr. Dhimant Patel (15)**
- **Dr. Gilberto Rodrigues (15)**
- **Dr. John Maul (13)**
- **Dr. Ubaid Nawaz (12)**
- **Dr. Osama Halaweh (12)**
- **Dr. Cheruppolil Santosh-Kumar (12)**
- **Dr. Thomas Saphner (12)**

Two research organizations recently recognized Aurora for its exemplary work enrolling patients in clinical trials.

- **NRG Oncology recognized Aurora as a top five accruing NCORP site**
- **The Alliance for Clinical Trials in Oncology recognized Aurora as one of its top 50 highest**

Aurora Health Care®

RESEARCH HIGHLIGHT

EARLY PHASE CANCER RESEARCH PROGRAM

Early phase (Phase I, I/II, II) clinical trials lay the foundation for later trials powered with more participants to determine whether a drug is safe and effective. Michael Thompson, MD, PhD, director of the Early Phase Cancer Research Program at Aurora Research Institute, believes early phase trials play an even more critical role in cancer care.

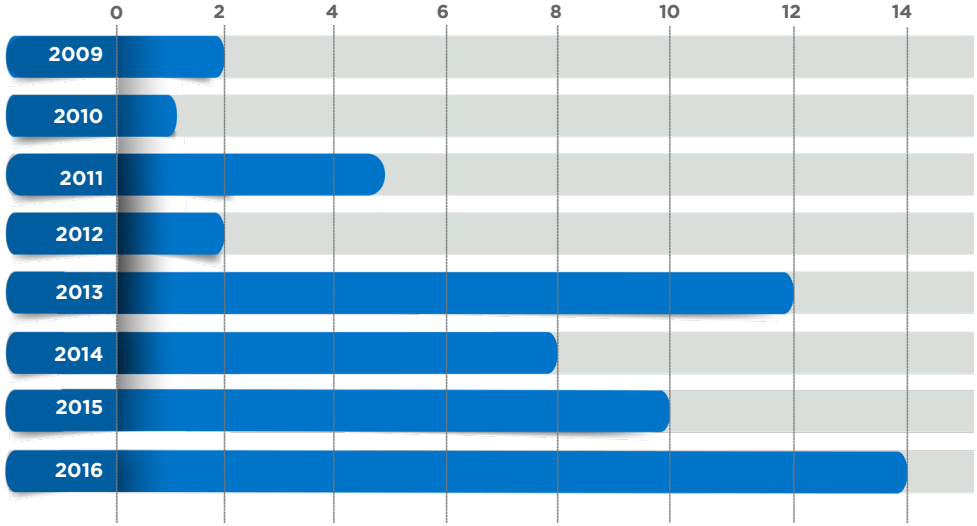
According to a statement from the American Society of Clinical Oncology (ASCO) co-authored by Dr. Thompson in January 2015, new targeted molecular therapies and immunotherapies have provided promising results in early stage trials. Also, innovative early phase trial designs that match participants with treatments based on genetic biomarkers have allowed researchers to better identify populations that may benefit from these newer drugs.

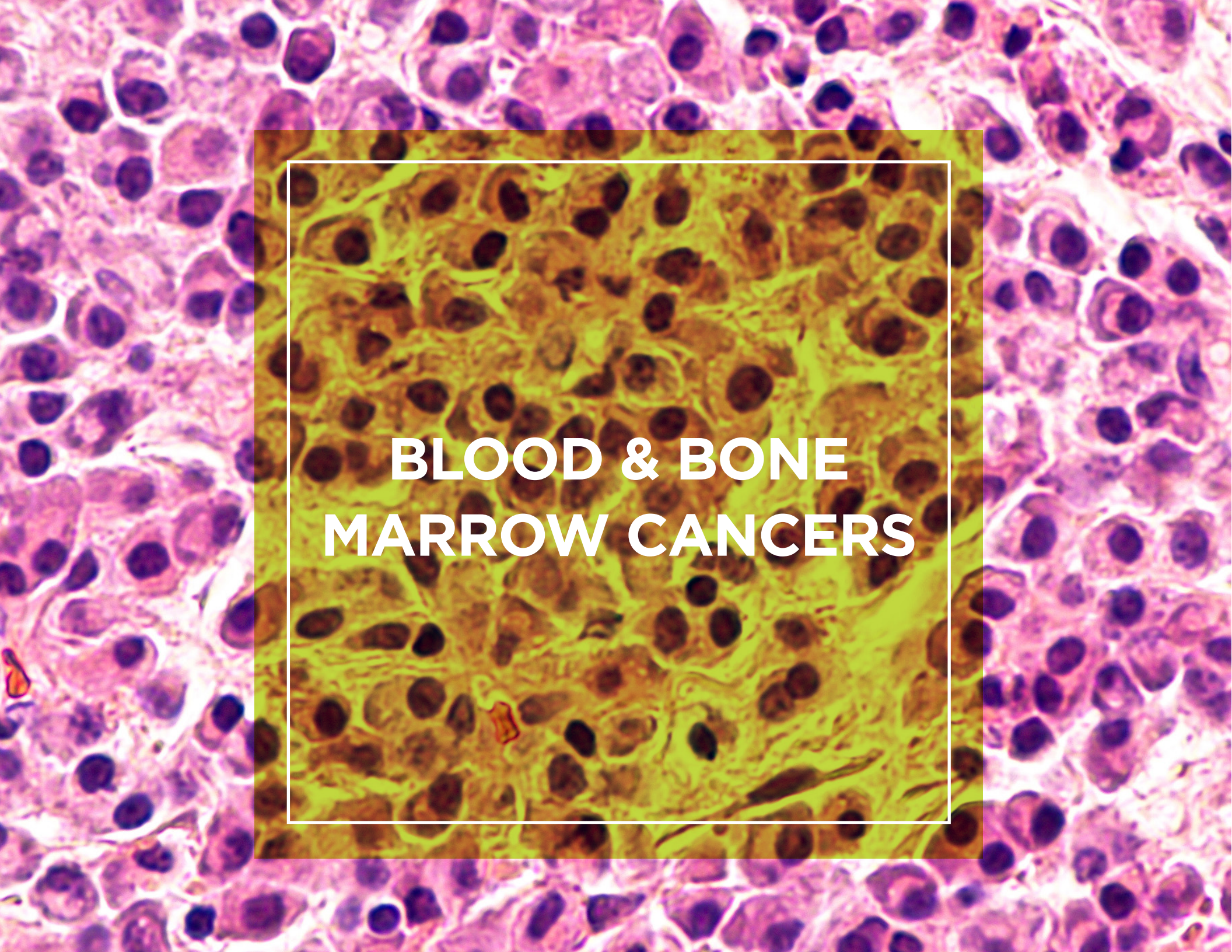
Most early phase studies are designed with therapeutic intent. Phase I trials are statistically powered to evaluate safety while Phase II trials assess how well investigational treatments work (efficacy) before they can be tested against the current standard of care (Phase III trials). Because of the concerted effort at Aurora Health Care to offer more early phase clinical trials, more participants are receiving the latest options in the fight against cancer.

The program launched in 2013, and in 2016, Aurora's Early Phase Cancer Research Program reached a milestone with 14 early phase cancer clinical trials available, the most Aurora has offered.

No. of Early Phase Clinical Trials

2009 - 2016




BLOOD & BONE
MARROW CANCERS

BY THE NUMBERS

Cells in blood develop from the bone marrow, the spongy material in the center of the bones. Stem cells divide and turn into different kinds of cells — white blood cells, red blood cells, platelets, etc. These cells have a finite lifespan and new cells take the place of dying cells. The bone marrow is constantly regenerating. However, there are times when this process goes wrong and cells do not grow or divide normally and develop into cancers. Cancer of these cells include leukemia, multiple myeloma, and lymphoma.

LEUKEMIA

In a person with leukemia, the white cells are generated in large numbers and overcrowd the other normal white blood cells, red blood cells and platelet cells, inhibiting these cells from doing their normal work. Leukemia can be described as fast growing (acute) or slow growing (chronic) and is further classified by type of blood cell affected (lymphoid or myeloid). There are multiple types of acute leukemia whereas chronic leukemia belongs mostly to two different types, myeloid and lymphatic.

MULTIPLE MYELOMA

Multiple myeloma is the overproduction of plasma cells, a type of lymphoid cell in the bone marrow. These abnormal plasma cells can coalesce and form tumors.

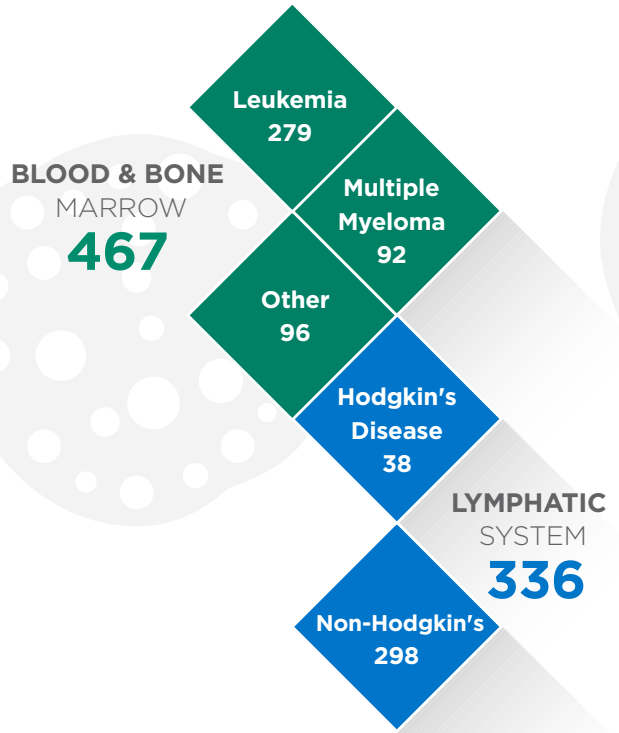
LYMPHOMA

Lymphoma is cancer in the lymphatic system of the body. Lymphocytes are a subset of white blood cells used to protect our bodies from germs. They are intimately involved in immune function. Hodgkin's and Non-Hodgkin's lymphoma are the two most common types of lymphomas.

.

Patients Diagnosed at Aurora

2016



Aurora Cancer Care has been accredited by the Foundation for the Accreditation of Cellular Therapies for over 20 years and counting.

Our Aurora Health Care Autologous Stem Cell Transplant Program has been re-accredited by the Foundation for the Accreditation of Cellular Therapy (FACT). This accreditation applies to all services and facilities that are inspected by FACT, specifically adult autologous hematopoietic progenitor cell transplantation, peripheral blood cellular therapy product collection, and cellular therapy product processing with minimal manipulation.

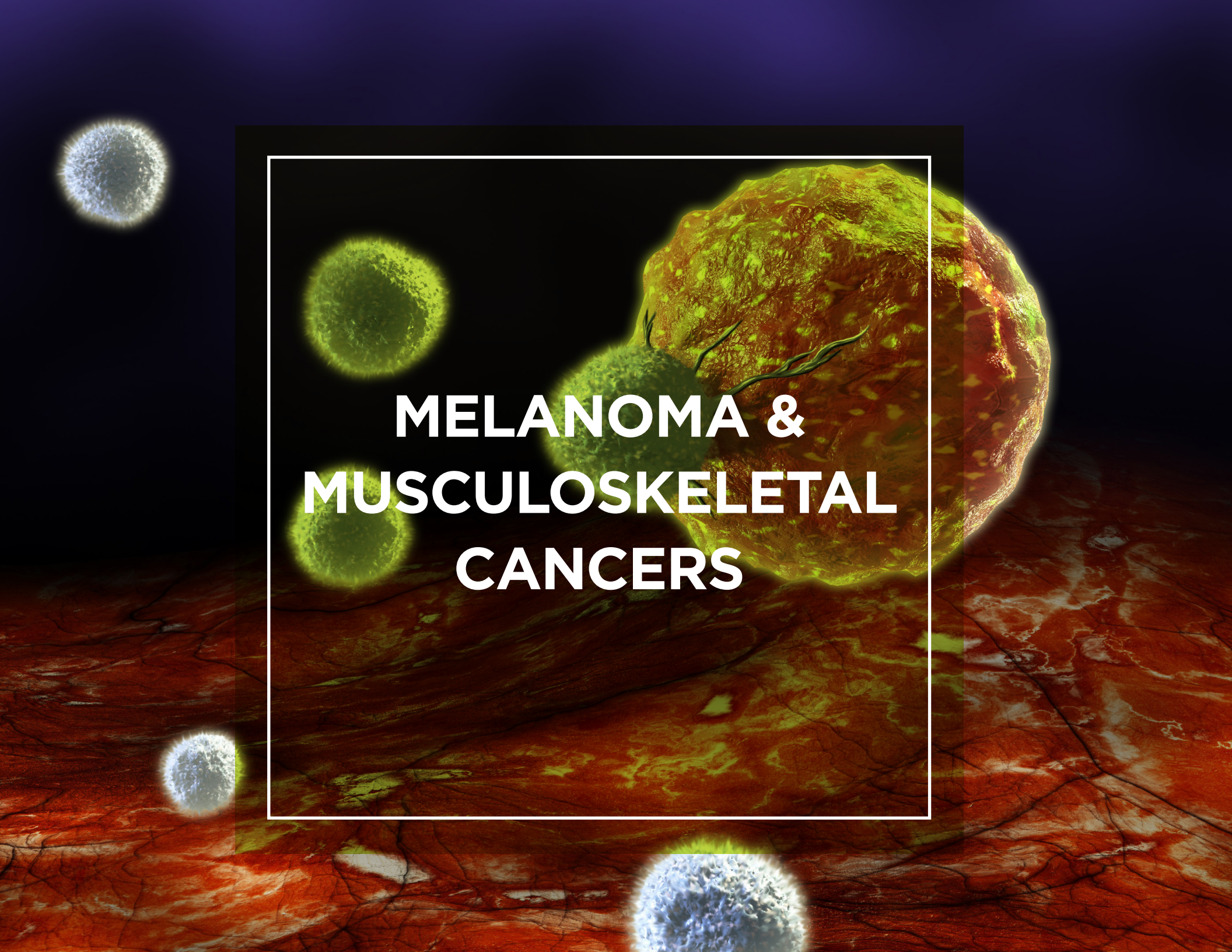
The clinical, peripheral blood collection and processing facilities located at Aurora St. Luke's Medical Center in Milwaukee were also part of the inspection and successful re-accreditation process. Achieving FACT re-accreditation reflects our ongoing commitment to exceeding standards in patient care and laboratory practices for patients receiving cellular therapy.

Our program has a long history of commitment to excellent patient care and outcomes. Our program was launched in 1991 and has transplanted 724 patients as of the third quarter of 2017.

Treatment for blood and bone marrow cancers includes chemotherapy, immunotherapy, radiation therapy, and stem cell transplantation. Chemotherapy is the use of potent drugs or chemicals that are used to kill and/or damage the cancer cells. Chemotherapy is usually given in cycles and with some treatments may need to be given in a hospital. There are multiple targeted therapies and immune therapies used in treatment of leukemia, lymphomas, and myelomas.

The Malignant Hematology Case Conference to discuss patient care started late September 2017 and takes place twice a month. In the first three conferences held, 15 cases have been discussed.


Federico
Sanchez MD
Physician
Oncology / Hematology
Aurora Health Care
MD
RN


MELANOMA &
MUSCULOSKELETAL
CANCERS

BY THE **NUMBERS**

Musculoskeletal cancer is any cancer that develops in bone or soft tissue, such as muscle. This can include bone cancer (bone sarcoma), soft tissue sarcoma and bone cancer that has spread from other parts of the body (metastatic carcinoma).

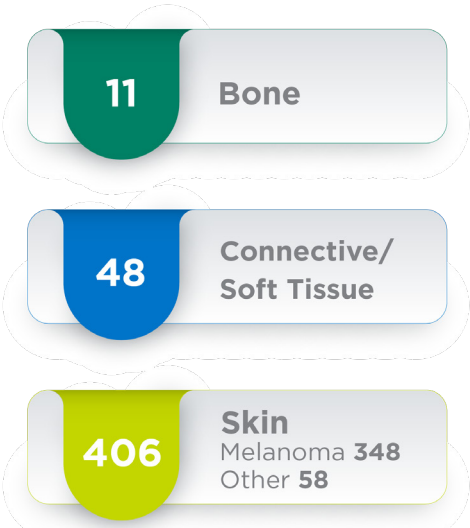
Skin cancer (also referred to as melanoma) is a tumor or growth of abnormal cells on the skin, the body's largest organ. These skin tumors can be benign (noncancerous) or malignant (cancerous). There are three types of skin cancer:

- Basal cell carcinoma is the most common type. It typically occurs on the surface layer of skin.
- Squamous cell carcinoma is the second most common type and it also develops on the outer layers of skin.
- Malignant melanoma is the most serious type, since it's more likely to spread beneath the skin. It can be life threatening: 10,000 people will die this year from melanoma.

Although skin cancer is the most common form of cancer, skin has an incredible capacity to heal and regenerate. Skin cancer is often treatable, especially if caught early.

Patients Diagnosed at Aurora

2016

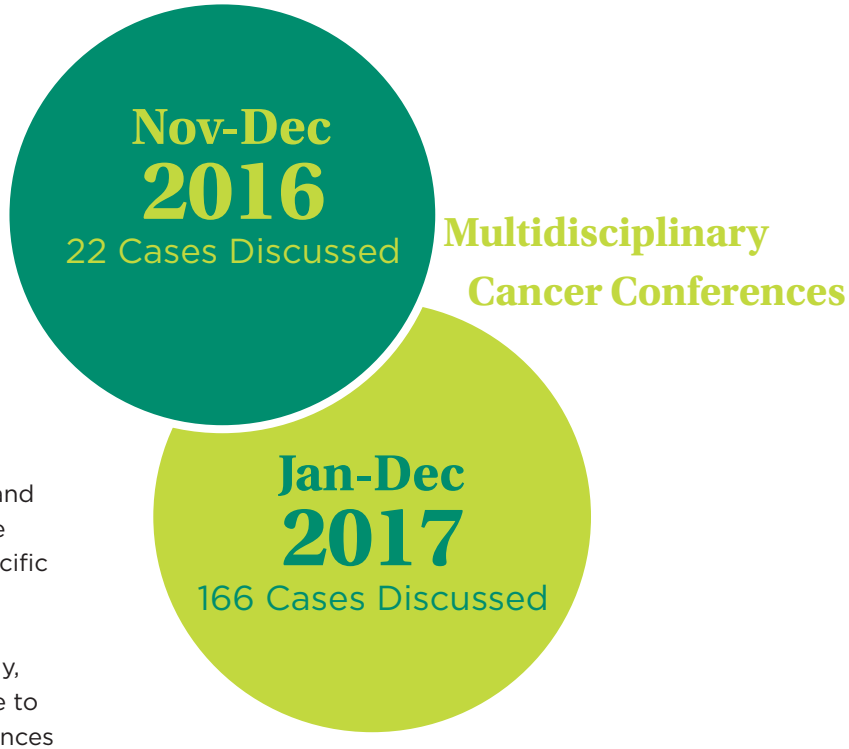


sarcoma alliance

Aurora Cancer Care's Multidisciplinary Sarcoma Clinic is named to the nationally-recognized Sarcoma Alliance

Aurora Cancer Care has been recognized as a national resource for patients and their families by the Sarcoma Alliance, an organization dedicated to guidance, education, and support for people with the rare condition. It is important to find physicians who have experience with the disease and the Sarcoma Alliance requires providers to meet specific criteria to qualify as a recognized clinic.

Nicholas Webber, MD, Medical Director of Sarcoma Services and Orthopedic Oncology, and the entire sarcoma team work tirelessly to provide the best care options available to patients across the country. The multidisciplinary team participates in weekly conferences to discuss cases with other sarcoma experts from around the globe.



Aurora Health Care®

RESEARCH HIGHLIGHT

EXPLORING IMMUNOTHERAPIES FOR ADVANCED MELANOMA

Monoclonal antibodies that trigger the immune system, such as ipilimumab and nivolumab, may stimulate white blood cells to kill the tumor cells.
Manish Pant, MD is the local principal investigator of a Phase II/III clinical trial exploring whether nivolumab and ipilimumab are more effective with sargramostim, which stimulates white blood cell production, in the treatment of patients with Stage 3 or 4 melanoma that cannot be removed by surgery (clinicaltrials.gov identifier: NCT02339571). The study is sponsored by ECOG-ACRIN in collaboration with National Cancer Institute.

Global Multidisciplinary Sarcoma Video Conference


GYNECOLOGIC
CANCERS

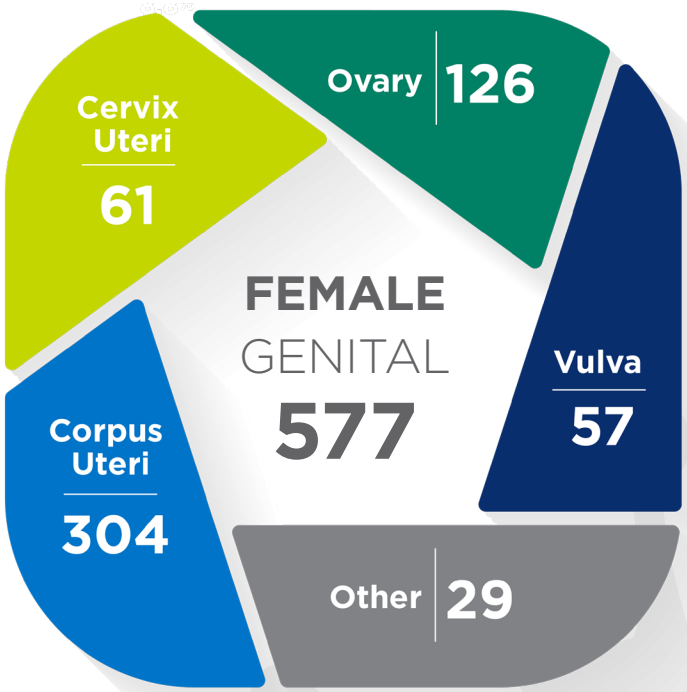
BY THE NUMBERS

Aurora Health Care strives to see each woman who has been diagnosed with gynecologic cancer not as her disease, but as the person she was before diagnosis. We work to treat the whole person, not just the cancer.

Gynecologic cancers involve the female reproductive organs, which include the uterus, ovaries, cervix, fallopian tubes, vagina, and vulva. The American cancer society predicted that in 2017 over 107,000 new cases of female gynecologic cancers will have been diagnosed, and over 31,000 women will have died of these diseases. Any female is unfortunately at risk of developing one of these cancers. Regular physical exams, as well as diet, exercise, and lifestyle choices, play a role in not only the prevention of these cancers, but also in detecting them early. Education as to the signs and symptoms of each of these cancers is vital for women to understand when they should go the doctor to be evaluated.

Patients Diagnosed at Aurora

2016



Endometrial cancer, or uterine cancer, is the most common gynecologic cancer, and the fourth most common cause of cancer in women. Endometrial cancer is sadly one of the cancers that is actually increasing in incidence in the country, rather than decreasing. The reason for this is that many uterine cancers are linked to obesity, and the obesity epidemic is on the rise. Uterine cancer, however, does have a very significant symptom: post-menopausal bleeding. Any bleeding after menopause should be evaluated by a primary physician or a gynecologist.

Ovarian cancer (including primary peritoneal and fallopian tube cancers), while less frequent than uterine cancer, is deadlier. It is the fifth most common cause of cancer death in women, over 14,000 women will die of ovarian cancer in 2017. The main reason that it is so deadly is that unlike uterine cancer, which can be caught very early, ovarian cancer is typically not caught until later stages of disease. The reason is there is no approved screening tool for ovarian cancer, and the symptoms are very similar to concerns women have commonly (bloating, fatigue, bowel and bladder changes, weight changes). While we still search for a screening tool, it is important for women to listen to their bodies and go see their physician if they are having changes in symptoms or any concerning signs.

Cervical cancer is the one gynecologic cancer that has a known and effective screening tool: the Pap smear, and more recently, HPV testing. The majority of cervix cancer is caused by HPV, which changes cells and causes them to grow without regulation, which in turn become cancer. Screening guidelines have changed over the years, so it is good to talk with your physician about when to have a Pap smear and HPV screening test. HPV vaccination is also becoming more and more mainstream and could potentially decrease cervical cancer rates dramatically by stopping the major cause of cervical cancer.

Vulvar and vaginal carcinoma are less frequent, but still extremely important to be aware of. Many of these cancers are caused by HPV as well. As women get older, these cancers are more common, and many women are unaware of what to look for (itching, burning, redness, sores or ulcers). Many of these symptoms are very similar to having other concerns (urinary tract infections, vulvar skin conditions such as lichen sclerosis), but it is very important that if any of the symptoms change, women have an exam. It is also harder to look “down there” as we get older, and having your physician look in the genital area once a year will help to catch any concerning condition early.

COMMUNITY PARTNERS

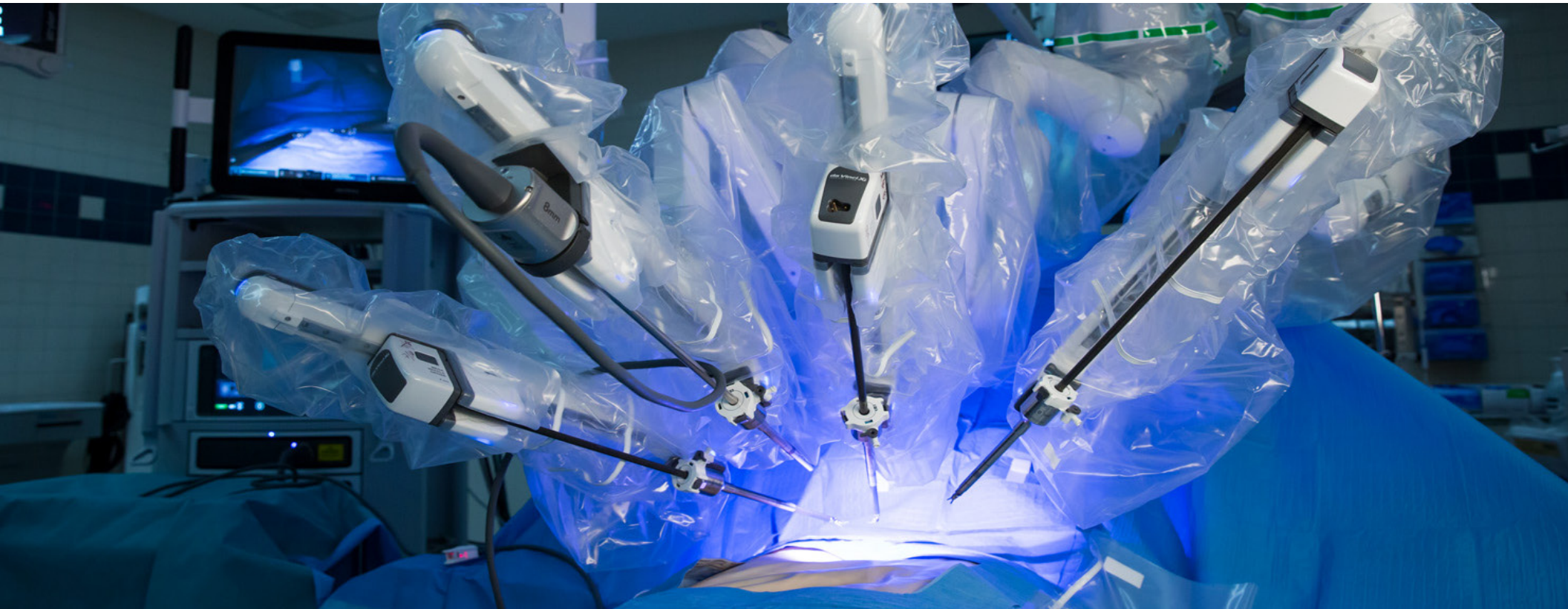
In 2017, Wisconsin Ovarian Cancer Alliance (WOCA) in partnership with Aurora Health Care, was awarded a grant from the Ovarian Cancer Research Fund Alliance (OCRFA) for the Woman to Woman program. This unique program pairs newly diagnosed gynecologic cancer patients with survivor volunteers to provide one on one emotional support and mentoring; essentially a “buddy” system.

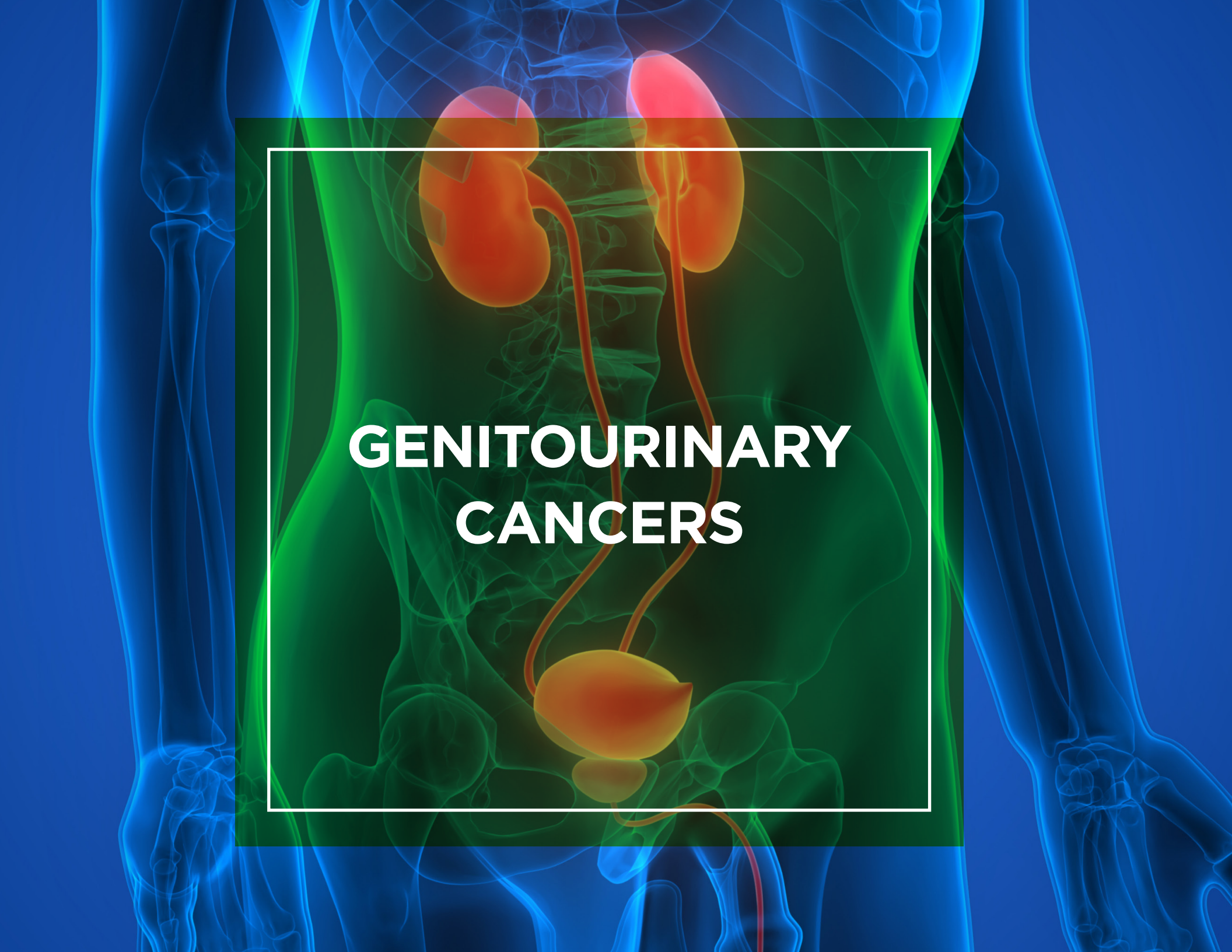
LEADER IN INNOVATIVE TREATMENT IN WISCONSIN

Aurora hospitals have the leading robotics program in the state for women receiving robotics surgery since 2007. The robotics programs not only provide the most robotics surgery for women in the state of Wisconsin, but also allow patients to receive their robotics staging surgery for cancer and go home the very same day.

This innovation has revolutionized the surgery for uterine cancer staging, changing the operation from having a large incision and staying days to weeks in the hospital, to having five tiny incisions, and going home the same day or the next day. Quicker recovery allows patients to move on to the next phase of their cancer treatment that much faster.

Minimally invasive surgery has transformed patients' surgical experience, allowing them to have surgery for their cancer with minimal discomfort, shorter hospital stays, and fewer complications. Especially for endometrial cancers, minimally invasive and robotics surgery has become the forefront of standard of care for surgical staging.




GENITOURINARY
CANCERS

BY THE NUMBERS

BLADDER CANCER

Bladder cancer is the most common form of urinary tract cancer. Symptoms may include blood in the urine (urine may be orange, pink or red), changes in urination frequency, pain or burning during urination, and back or abdominal pain. Early detection and treatment often yield positive long-term results.

PROSTATE CANCER

Cancer of the prostate occurs very commonly in men with over 220,000 new cases in the United States every year. About 30,000 men in the United States die of prostate cancer every year. Some prostate cancers are slow-growing and do not cause harm, but other forms of prostate cancer can be aggressive and cause death.

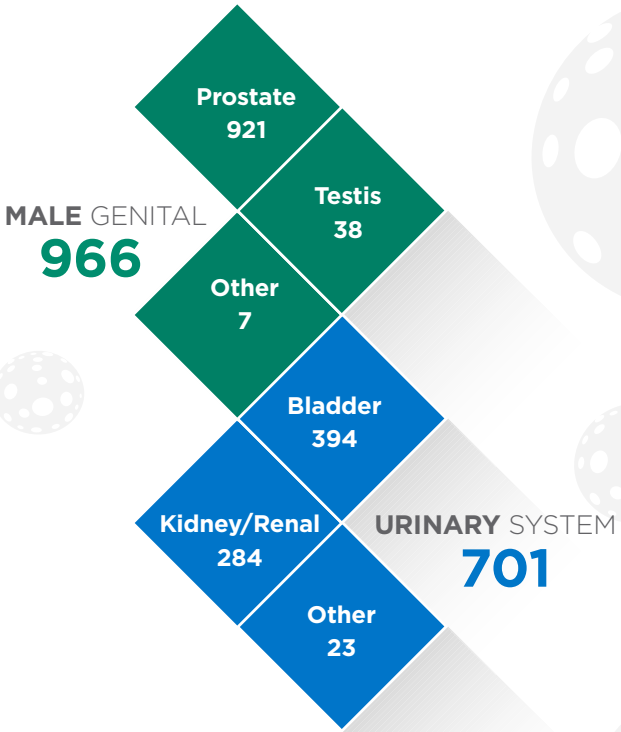
For men aged 55 to 69 years, the decision to undergo periodic prostate-specific antigen (PSA)–based screening for prostate cancer should be an individual one. Before deciding whether to be screened, men should have an opportunity to discuss the potential benefits and harms of screening with their clinician and to incorporate their values and preferences in the decision. Shared decision making is the best approach in determining appropriate PSA based screening for prostate cancer.

TESTICULAR CANCER

Testicular cancer is not common; according to the American Cancer Society, about one of every 263 males will develop testicular cancer at some point during their lifetime. The average age at the time of diagnosis of testicular cancer is about 33. This is largely a disease of young and middle-aged men, but about 7% of cases occur in children and teens, and about 7% occur in men over the age of 55. Because testicular cancer usually can be treated successfully, a man's lifetime risk of dying from this cancer is very low: about one in 5,000.

Patients Diagnosed at Aurora

2016



KIDNEY CANCER

Kidney cancer is one of the top ten most common cancers in men and women. Each year, more than 60,000 Americans are diagnosed with kidney cancer. It's more common in men, especially those in their 50s to 70s who are or were smokers.

There are four different types of kidney cancer:

- Renal cell carcinoma (RCC): This is the most common form of adult kidney cancer (about 85% of cases). RCC usually starts as a single tumor in one kidney, but it can affect both your kidneys and spread (metastasize) to other organs. It begins in the cells that line the small tubes that are part of the nephrons within your kidneys.
- Transitional cell carcinoma: This form of kidney cancer usually begins in the area where a ureter connects to the main part of a kidney (called the renal pelvis). This cancer represents 6% to 7% of all kidney cancers and can also grow in your ureters or bladder.
- Renal sarcoma: The least common form of kidney cancer (1% of cases), renal sarcoma begins in the connective tissues of your kidney. If left untreated, it can spread to nearby organs and bones.
- Wilms' tumor: The most common type of kidney cancer in children, it accounts for approximately 5% of total patients with kidney cancer.

MINIMALLY-INVASIVE TECHNIQUES

Many genitourinary cancers can now be treated through various minimally-invasive techniques.

Laparoscopic Partial Nephrectomy provides patients with a safe and effective way to remove a small renal tumor, while preserving the remainder of the kidney. This is a minimally invasive technique, which provides patients with less discomfort and equivalent results when compared to the traditional open surgery.

Greater than 95% of patients who are treated by the Aurora Cancer Care Urology team receive a partial nephrectomy for those kidney tumors </= 4cm in size.

For years, surgeons removed cancerous cysts in the bladder with an open surgical procedure called a cystectomy. In some cases, this type of procedure led to post-operative complications. Today, minimally invasive surgical options like robotic-assisted cystectomy offer less pain, shorter recovery times, and better outcomes.

The main type of surgery for prostate cancer is a radical prostatectomy. Robotic assisted prostatectomy is commonly used and is one way of doing this surgery for prostate cancer. It's a minimally invasive surgical procedure and has advantages over the open approach in terms of less pain, blood loss and recovery time.

Aurora Health Care®

RESEARCH HIGHLIGHT

STUDY EXPLORES RECURRENCE-FREE SURVIVAL FOLLOWING ROBOTIC PROSTATECTOMY

Decisions regarding prostate cancer treatment options can be difficult for the person facing that diagnosis. For men who have considered undergoing robotic-assisted laparoscopic radical prostatectomy (RALP), they can be assured that the biochemical recurrence-free survival (BRFS) outcome they would achieve at Aurora Health Care is better than many recurrence and disease-free survival rates published by other leading institutions across the United States.

As part of an Aurora Cancer Care quality project, the Aurora Cancer Registry sponsored a study to determine prostate cancer BRFS rates following RALP. Post-operative prostate-specific antigen (PSA) values were obtained, and biochemical recurrence was defined as PSA > 0.2 ng/mL after 12 months. Danielle Greer, PhD, Aurora biostatistician, reviewed all analytical prostate cancer cases diagnosed during 2009 to 2011 and treated with RALP at any of the five Aurora hospitals then equipped to perform robotic procedures. She computed BRFS rates for up to three years following cancer diagnosis and used statistical models to examine variation in the rates, based on well-known prognostic indicators.

Out of the total 500 Aurora patients who underwent RALP, the overall BRFS rate at three years was 95.7%. Some groups of patients experienced different levels of recurrence risk. For instance, AJCC stage of disease, Gleason score and D'Amico risk level all significantly impacted the relative risk of recurrence and, consequently, led to variable rates of BRFS. However, overall BRFS rates were exceedingly high, providing evidence of Aurora's success in robotic surgery.

Why are our results excellent? Because Aurora Health Care evaluates each patient with weekly multidisciplinary input by high-volume surgeons, radiation oncologists, medical oncologists, pathologists, genetic counselors, and clinical coordinators, and treatment is provided in accordance with evidence-based guidelines. This methodology is also in conjunction with our Commission on Cancer accreditation commitment — to provide outstanding high quality patient-centered care to each and every person seen.

The genitourinary multidisciplinary clinics (MDC) began in November **2016.** In that short time, **13 patients** were seen by their care team in the MDC.


GASTROINTESTINAL
CANCERS

Aurora Health Care has continued to see more cancer cases than any other health care system in Wisconsin. We continue to see 20% of all new GI cancers diagnosed in Wisconsin and have developed several new programs to meet the needs of our patients. A new gastrointestinal cancer tumor board was instituted, and, through presentation and multidisciplinary discussion, we have helped or will help over 700 patients obtain the proper treatment. This meeting which is open to all Aurora caregivers, meets weekly, and allows for expert consultation for both common and esoteric GI cancers. Our GI quality committee continues to review best practices and has made substantial improvements in the time it takes for patients to receive treatment after diagnosis. We are also monitoring several quality indicators which reflect the highest quality of care delivered through our system.

MULTIDISCIPLINARY CANCER CARE

Several cancer physicians throughout the Aurora Health Care system met during 2016 and 2017 to determine the best practices for patients with **colorectal, anal, pancreas, stomach, esophagus, liver, gall bladder** and **bile duct cancers**. During these meetings, participants from all of the disciplines treating these complex cancers came together to agree on the proper course and sequence of treatments that should be recommended. These guidelines are disseminated throughout the system to serve as a guide for the care of complex GI malignancies and to serve as the benchmark for outstanding cancer care.

Multidisciplinary Clinic Visits

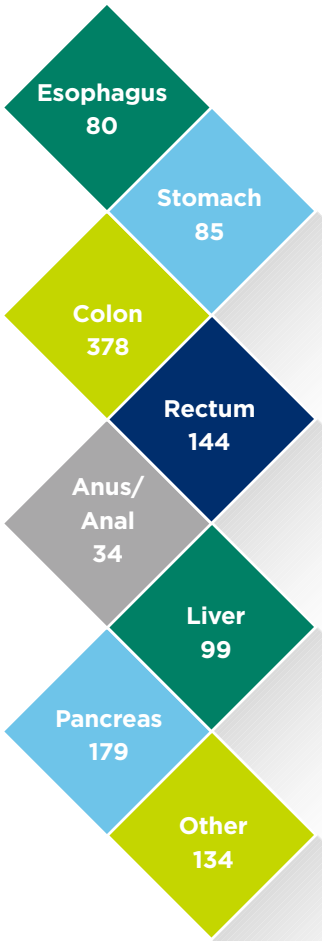
Jan-Dec 2016
177 Visits

Jan-Dec 2017
133 Visits

BY THE NUMBERS

Patients Diagnosed at Aurora

2016



DIGESTIVE SYSTEM
TOTAL
1,133

NEW INNOVATIVE TREATMENT TECHNOLOGY—HIPEC AND NANOKNIFE®

HIPEC, or Hyperthermic Intraperitoneal Chemotherapy instillation, is a treatment for peritoneal based cancers, and for cancers that recur in the peritoneal cavity. This technique is used for cancers of the appendix, peritoneum, colon, stomach and gynecologic organs. During this procedure surgeons remove or debulk the majority of the tumors, and then instill chemotherapy heated to 42°C for 90 minutes. Since the inception of this program, we have treated 12 patients and have embarked on a research study with Concordia University to determine the absorption of the chemotherapy both into tissue and systemically.

NANOKNIFE IRREVERSIBLE ELECTROPORATION (IRE) SYSTEM

The NanoKnife Irreversible Electroporation (IRE) System allows us to treat locally advanced and unresectable tumors, predominately in the pancreas and liver. Aurora is the first and only site in Wisconsin to have this technology, which allows us to treat these traditionally unresectable tumors in situ with preservation of the vital structures which cannot be removed. By running DC electrical current through the tumors, small holes or pores are created which allow these cancer cells to die and be absorbed by the body while preserving the normal architecture which surrounds the cancers. In published studies, patients with unresectable pancreatic cancers have a survival which is doubled after NanoKnife IRE treatment. Three patients (two with pancreas cancer and one with liver cancer) have been treated thus far.

The Vince Lombardi Cancer Foundation (VLCF) funded the NanoKnife technology at Aurora St. Luke's Medical Center and we are, as of yet, the only health system in Wisconsin that can provide this treatment option. The VLCF has provided additional funding to strengthen the NanoKnife program which we hope to use to expand the program to involve our interventional radiologists and increase access to the technique.

We are the
only site in Wisconsin
to use NanoKnife, and it can be used for any tumor that is surgically unresectable because of involvement of a blood vessel.

Aaron Chevinsky, MD led a team at Aurora St. Luke's Medical Center that became the **first in the state** to use NanoKnife technology on patients with otherwise inoperable pancreatic and liver cancers.

Aurora Health Care®

RESEARCH HIGHLIGHT

CANCER CARE DELIVERY RESEARCH (CCDR)

CCDR is a new initiative within NCORP. It examines how systems, such as financial structures and survivorship support, affect cancer care delivery. NCI, along with research bases that are responsible for developing NCORP trials, are working together now to create CCDR studies.

In late 2017, our first accrual to a CCDR trial, S1417 CD Financial Impact Assessment Tool in Patients with Metastatic Colorectal Cancer, was made by Fred Sanchez, MD. This trial looks at the financial implications of diagnosis of metastatic colon cancer to a newly diagnosed patient.

DESIGNATED PANCREATIC CANCER TREATMENT CENTER

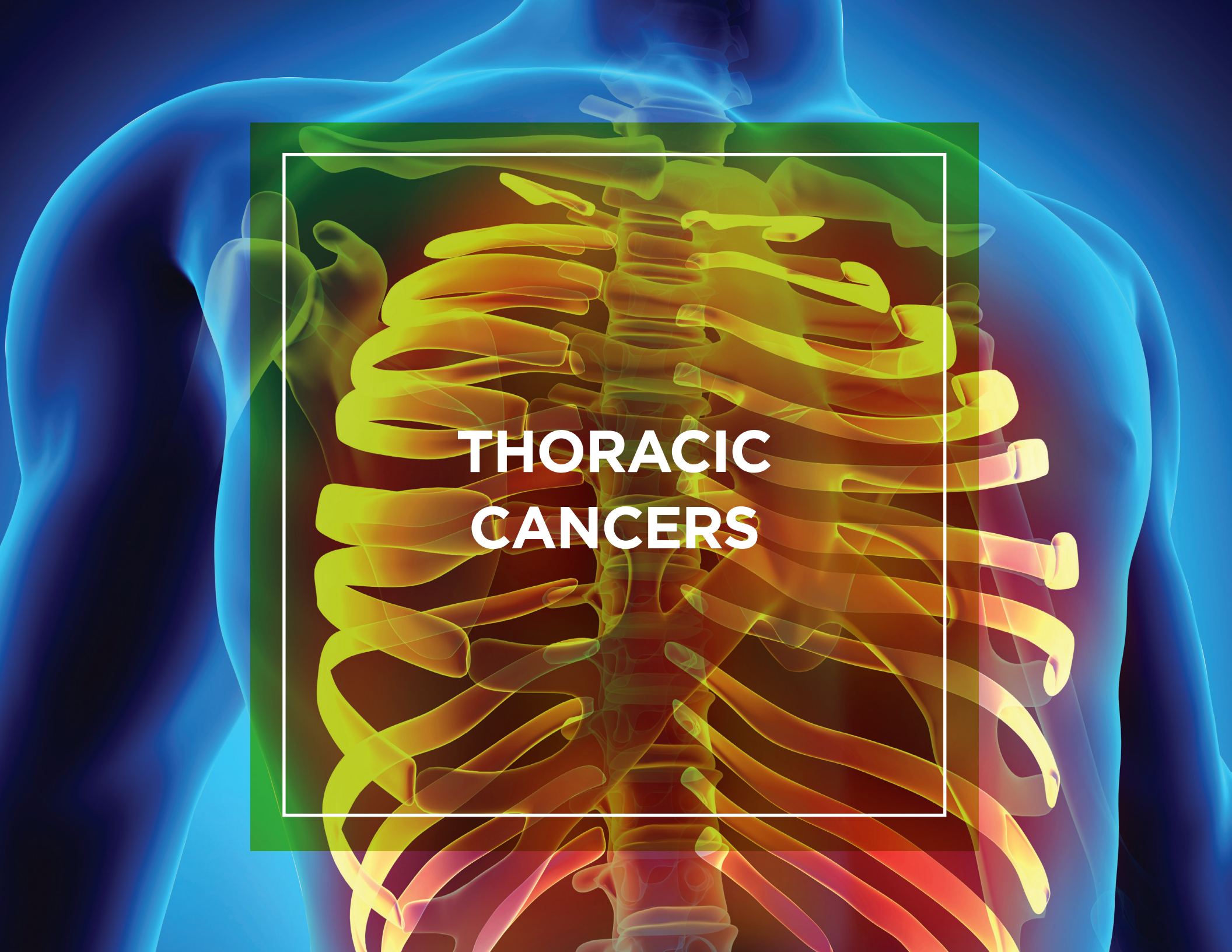
Aurora Health Care was named a designated Pancreatic Cancer Treatment Center by the National Pancreas Foundation, the first and only one in the state of Wisconsin. This designation highlights our commitment to clinical excellence, research, and our multidisciplinary approach to cancer care. All of our patients are treated by a team dedicated to their physical, emotional and spiritual well-being. Our Cancer Nurse Navigator program allows for the seamless transition between medical services and serves to meet our patients continuing needs before, during, and after treatment.

The National Pancreas Foundation

AMERICAN SOCIETY OF CLINICAL ONCOLOGY

Among multiple presentations this year given by Aurora clinicians, a presentation was given at the ASCO GI meeting in San Francisco demonstrating the outstanding care we have provided for patients with pancreatic cancer. We are continuing to expand research into gastrointestinal cancers and will strive to improve the options for our patients. We are also active in providing continuing medical education through our various conferences and meetings, and are planning a CME meeting dedicated to the treatment of pancreatic cancer in 2018.

The future looks promising as we strive to improve our cancer treatments and incorporate the latest developments in research and precision medicine into our treatment programs.


THORACIC
CANCERS

Patients Diagnosed at Aurora

2016

80 Esophagus

877 Lung/ Bronchus

Aurora Health Care treats one out of every four lung cancer patients in Wisconsin .

Aurora Health Care treats one out of every four lung cancer patients in Wisconsin. Our multidisciplinary team brings together a group of dedicated lung cancer specialists; including thoracic surgeons who specialize in lung cancer surgery, pulmonologists, medical oncologists, radiation oncologists, cancer care coordinators, dietitians, cancer rehabilitation specialists, and Cancer Nurse Navigators to provide personalized care using the latest treatments and technologies. Our comprehensive program offers cutting-edge techniques and screenings for patients from all fifty states. For example, in 2016, Aurora Grafton, Aurora St. Luke's, and Aurora Summit medical centers performed **1,029 thoracic surgical procedures.**

Multidisciplinary Cancer Conferences

Jan-Dec 2017 561 Cases Discussed

Jan-Dec 2016 400 Cases Discussed

Multidisciplinary Clinic Visits

Jan-Dec 2017 69 Visits

Jan-Dec 2016 52 Visits

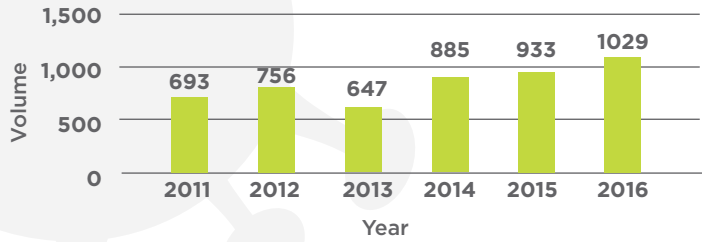
MULTIDISCIPLINARY CANCER CARE

Multidisciplinary Cancer Conferences and Multidisciplinary Clinic visits are available weekly for patients with thoracic cancers.

BY THE NUMBERS

General Thoracic Surgery Volume

2011 - 2016

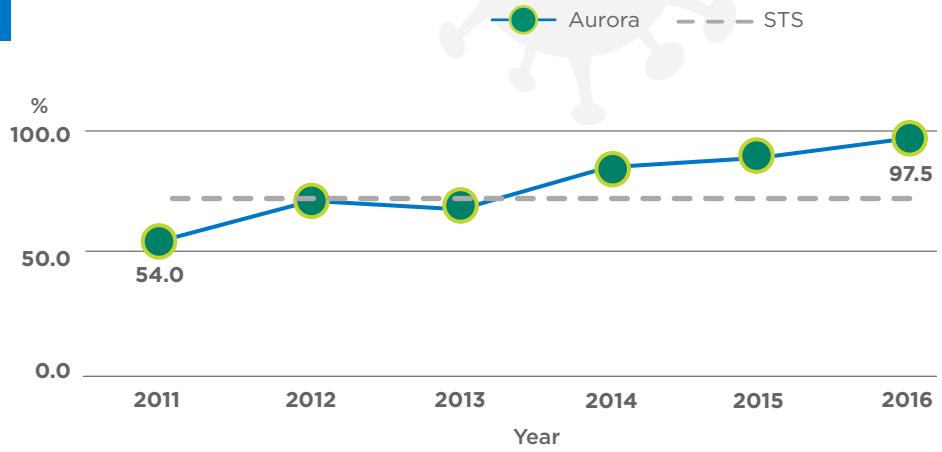


The majority of lung cancer surgery **(97.5%)** performed at Aurora Grafton, Aurora Summit, and Aurora St. Luke's in 2016 were Video-Assisted Procedures (VATS), a minimally invasive technique that is used when appropriate to yield the best possible outcome for each patient.

VATS may also be used with a robotic technique. Minimally invasive surgery has been shown to decrease length of stay as well as postoperative complication rates. Aurora Health Care is able to accommodate the many patients who desire a minimally invasive approach.

Video-Assisted (VATS) Lobectomies

2011 - 2016

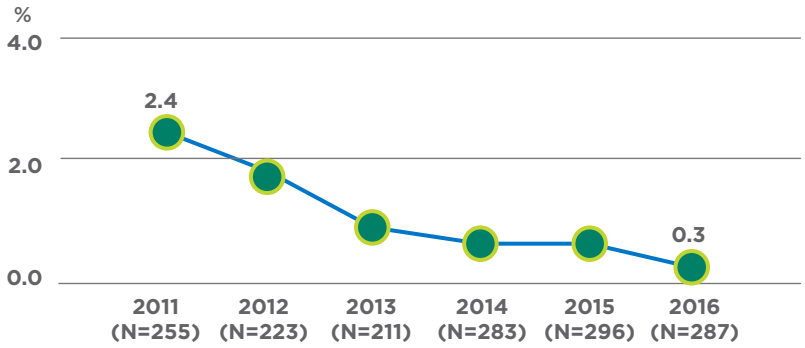


According to *US News* and *World Report*, Aurora received the 'best' ranking for survival thirty days after thoracic surgery as well as the 'best' ranking for preventing prolonged hospitalizations.

Aurora Health Care is proud to provide a highly qualified and effective treatment team for our lung cancer patients. For example, Aurora Health Care's William Tisol, MD, leads one of the busiest robotic-assisted thoracic surgery practices in the world. Aurora Medical Center in Grafton serves as a case observation center for the state of the art Intuitive Surgical da Vinci XI® surgical system. Surgeons and their teams come from all over the country to observe robotic assisted thoracic surgery. Aurora Medical Center at Grafton is one of ten approved thoracic robotic surgery mentor sites in North America and one of two in the Midwest hosting over fifty guests per year. Joining our lung cancer treatment team and our nationally recognized robotic-assisted thoracic surgery program is. David Demos, MD, from Stanford University Hospital.

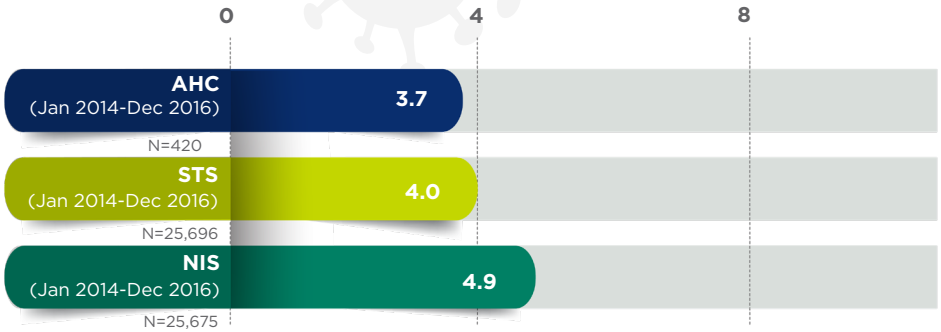
Pulmonary Resection Mortality

2011 - 2016



Lobectomy Postoperative Length of Stay

2014 - 2016



Abbreviations:

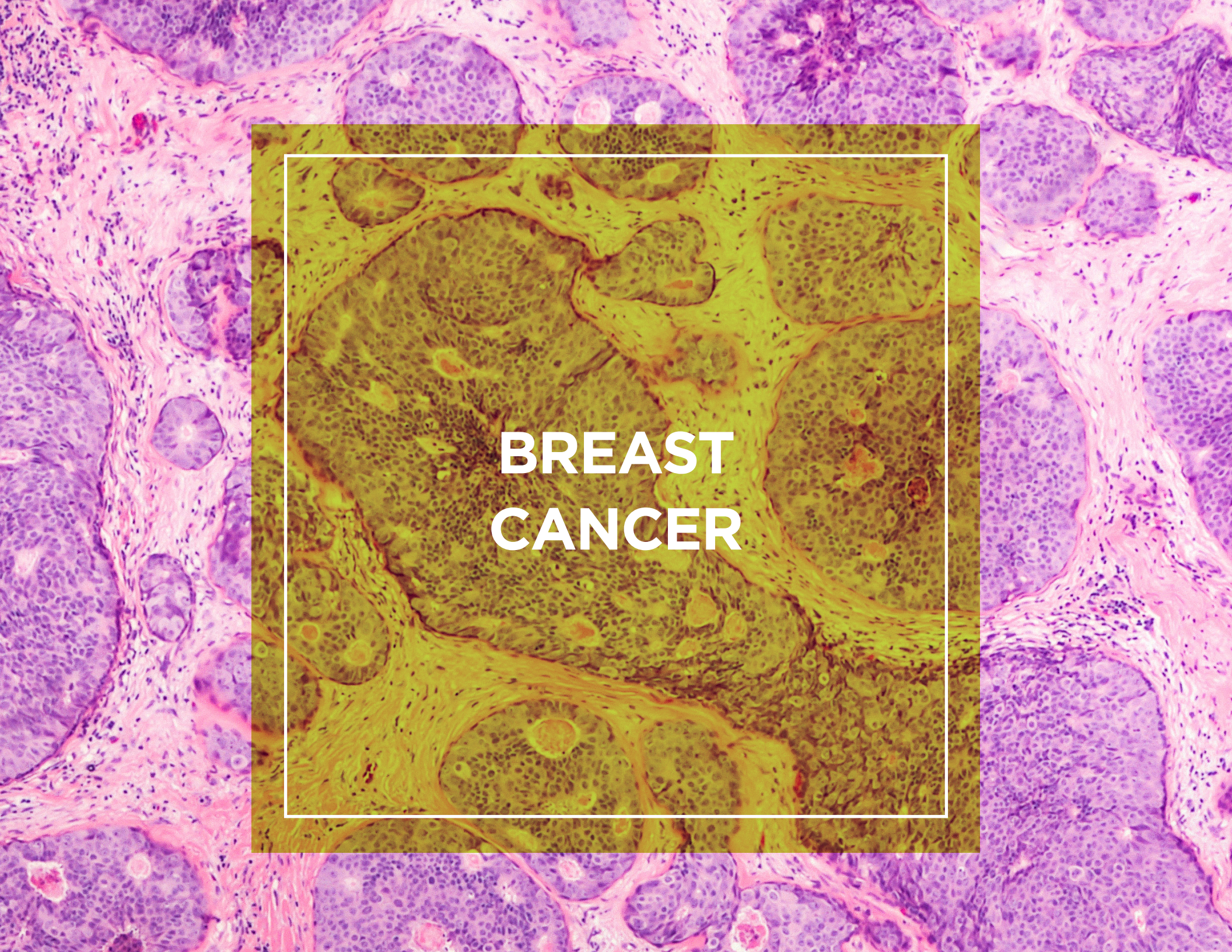
- *AHC — Aurora Health Care*
- *STS — Society of Thoracic Surgery*
- *NIS — Nationwide Inpatient Sample — largest all-player inpatient care database in USA*

Aurora Health Care®

RESEARCH HIGHLIGHT

BLOCKING EFFECT OF A MUTATION IN NON-SMALL CELL LUNG CANCER

In some patients with non-small cell lung cancer the tumor cells have a certain mutation referred to as Epidermal Growth Factor Receptor (EGFR). The EGFR is a receptor molecule on the surface of some lung cancer cells. The approved chemotherapy drug afatinib is the first-line treatment for patients with EGFR-positive non-small cell lung cancer. Afatinib may stop the growth of tumor cells by blocking some of the enzymes needed for cell growth. In a Phase II/III clinical trial led by Dhimant Patel, MD, researchers are studying whether afatinib plus cetuximab, a monoclonal antibody that triggers the immune system, may be more effective in blocking tumor growth versus afatinib alone in this population (clinicaltrials.gov identifier: NCT02438722). The study is sponsored by SWOG in collaboration with National Cancer Institute.


BREAST
CANCER

PREVENTIVE CARE

The best time to fight breast cancer is before it even begins. Aurora uses genetic testing, mammograms, breast imaging, and breast MRI to help low and high-risk individuals harness the power of preventive care. Because the best fight against breast cancer is the one that never has a chance to get started.

PERSONALIZED CARE

When a patient receives a breast cancer diagnosis, they are never alone. We make sure the answers and support needed is met with a personal cancer nurse navigator — a specially trained registered nurse who provides support, coordinates care, and answers all questions and concerns.

ACCREDITED CARE

Many of our breast care centers are accredited by the National Accreditation Program of Breast Centers (NAPBC). This means our centers have met or exceeded quality standards established by the NAPBC, an organization committed to the highest measure of care for patients throughout all breast cancer stages.

NAPBC

NATIONAL ACCREDITATION PROGRAM FOR BREAST CENTERS

BREAST CANCER QUALITY SUBCOMMITTEE

Aurora Cancer Care has formed a system-wide Breast Cancer Quality Subcommittee — comprising 31 clinicians in primary care, oncology, radiology, and breast surgery — to establish uniform guidelines across the system for breast cancer screening and treatment using evidence-based, national guidelines.

In 2016, **1,301** Aurora patients were diagnosed with breast cancer

"Different guidelines have been put forth by different organizations and physician societies," explained William Owens, MD, a breast surgeon at Aurora BayCare Medical Center and the subcommittee's chair. "We want to make sure clinicians are aware that breast health specialists have considered the guidelines and it is our recommendation that they use the American Cancer Society guidelines."

The subcommittee has developed:

- Screening strategies for average, intermediate, and high risk patients
- Criteria to refer patients for genetic evaluation
- Guidelines for standardizing care for sentinel lymph node resection
- Post-Lumpectomy Screening guidelines

MULTIDISCIPLINARY CANCER CONFERENCE

All breast cancer patients newly diagnosed with breast cancer are presented at a multidisciplinary conference. While these meetings will be held regionally, all Aurora sites that care for breast cancer patients will be able to participate by video conferencing. Various Aurora Cancer Care locations will be partnered with one of these conferences based on the site's volume, patient flow, and meeting times.

These conferences give providers the opportunity to discuss the patient diagnosis, medical management, and discuss evidence-based practices to provide care with the best outcomes for patients.

Effective Radiation in Fewer Treatments

RADIATION TREATMENT

As the cost of health care delivery continues to increase, it is prudent to deliver the best evidence-based care at the lowest-possible cost. Breast cancer — the most frequently diagnosed cancer globally and leading cause of cancer death in women — has seen a great evolution in care over the last 40 years. For those patients diagnosed with an early stage breast cancer, breast-conserving therapy is a common treatment recommendation, which pairs a partial mastectomy with adjuvant radiation therapy. In multiple randomized trials, adjuvant radiation therapy has been proven to decrease local recurrences and improve overall survival. Traditionally, conventionally-fractionated dose schedules have been employed to deliver therapy daily over a period of five to six-and-a-half weeks, whereas hypofractionated therapy can be delivered over a period of three to four weeks. Recent data has demonstrated equivalent tumor control and cosmetic outcome in specific populations with shorter courses of radiation therapy, which is delivered in a hypofractionated manner over approximately four weeks. Hypofractionated regimens deliver more radiation therapy per dose, enabling fewer total treatment fractions per course.

In 2011, a white paper was published in the *International Journal of Radiation Oncology, Biology, Physics* entitled "Fractionation for Whole Breast Irradiation: An American Society for Radiation Oncology (ASTRO) Evidence-Based Guideline." A systematic review of the literature was conducted, analyzing nine randomized trials comparing hypofractionated RT to conventionally fractionated RT or partial breast irradiation. In addition, 34 nonrandomized clinical studies were analyzed. Evidence from these trials demonstrated that hypofractionated radiation and conventionally fractionated radiation therapy were equally effective in terms of breast tumor control. Additionally, cosmesis and long-term toxicities were similar regardless of fractionation schedule.

ASTRO defines the following criteria for those thought to be appropriate for hypofractionated technique:

Patient is 50 years or older at diagnosis.
Patient has pathologic stage T1/2 N0 and underwent breast-conserving therapy.
Patient did not receive systemic chemotherapy.

ASTRO notes, however, that women with larger breasts may not be eligible for hypofractionation.

At Aurora Cancer Care, we evaluated the patients deemed eligible for hypofractionated radiation therapy to determine whether they were offered this option and, if offered, whether treatment was delivered in this fashion. Individual radiation oncologist data were reviewed and discussed with each on a one-on-one basis. The resulting outcome of practice reflects an increase in discussion and implementation of a hypofractionated treatment plan for eligible women with breast cancer.

As we move toward value-based care, it is encouraging to see that evidence-based information was used to reduce the number of treatments given to appropriately selected patients, which can improve patient satisfaction and reduce cost in the process.

Aurora Health Care®

RESEARCH HIGHLIGHT

TORQUE Transitional Oncology Research: Quest for Understanding & Exploration

According to the American Cancer Society, there are more than 3.1 million breast cancer survivors in the United States, including women still being treated and those who have completed treatment.

Surgeon Judy A. Tjoe, MD, FACS, aims to change the face of breast cancer care and survivorship through Aurora Research Institute's breast cancer research program, Translational Oncology Research: Quest for Understanding & Exploration, or TORQUE. Serving as medical research director of TORQUE, Dr. Tjoe leads clinical- and lab-based research, including studies of the effects of exercise after cancer treatment through the Team Phoenix cancer survivorship group.

CLINICAL RESEARCH

Studies have found that women who are overweight or obese when their breast cancers are diagnosed have a greater risk of having their cancers recur compared to women who were of a healthier weight. Through a Phase III multicenter trial sponsored by Alliance for Clinical Trials in Oncology, researchers seek to determine the effect of a supervised weight loss program plus education materials versus education materials alone on preventing invasive breast cancer from coming back (clinicaltrials.gov identifier: NCT02750826). They will test whether overweight or obese women who take part in this supervised weight loss program after being diagnosed with breast cancer have a lower rate of cancer recurrence than women who do not participate in the program.

In another trial, Aurora Health Care researchers are studying whether magnetic resonance imaging (MRI) and genetic testing may help determine if removal of the breast containing the precancerous lesion is necessary for patients with ductal carcinoma in situ. The National Cancer Institute Phase II clinical trial sponsored by ECOG-ACRIN Cancer Research Group will track candidates deemed eligible for breast conservation, based on standard imaging and physical exam, who undergo mastectomy after MRI (clinicaltrials.gov identifier: NCT02352883). Tissue from consenting subjects who have surgery will be analyzed for genetic characteristics to guide therapy.

LABORATORY RESEARCH

Employing a bedside-to-bench approach, TORQUE scientists leverage clinical questions and patient data in the electronic health record against tissue and blood samples stored in Aurora's Biorepository and Specimen Resource Center to conduct longitudinal studies in search of indicators for breast cancer.

Based at Aurora Sinai Medical Center, Dr. Tjoe collaborates internally with researchers in Discovery Laboratory. Senior research scientist John Richards, PhD, has focused some of his efforts on understanding the immune response using breast cancer cell lines. One study focused on using the chemotherapy drug tamoxifen to increase expression of human epidermal growth factor (HER2), making it more susceptible to the chemotherapy drug trastuzumab. This led to enhanced immunity to more effectively kill tumor cells. However, in already functioning HER2 breast cancer cells, tamoxifen further activated HER2, but failed to enhance immune function, which did not make them more susceptible to trastuzumab. This suggested that although the immune system responds to HER2 activated cells, there would be little benefit to increasing this activation in patients whose HER2 cells are currently functioning.

The results of this study were published in August 2016 in Cancer Immunology and Immunotherapy. The study was funded in part by an Aurora Cancer Care Research Award, available because of donations from the Vince Lombardi Cancer Foundation.


HEAD & NECK
CANCERS

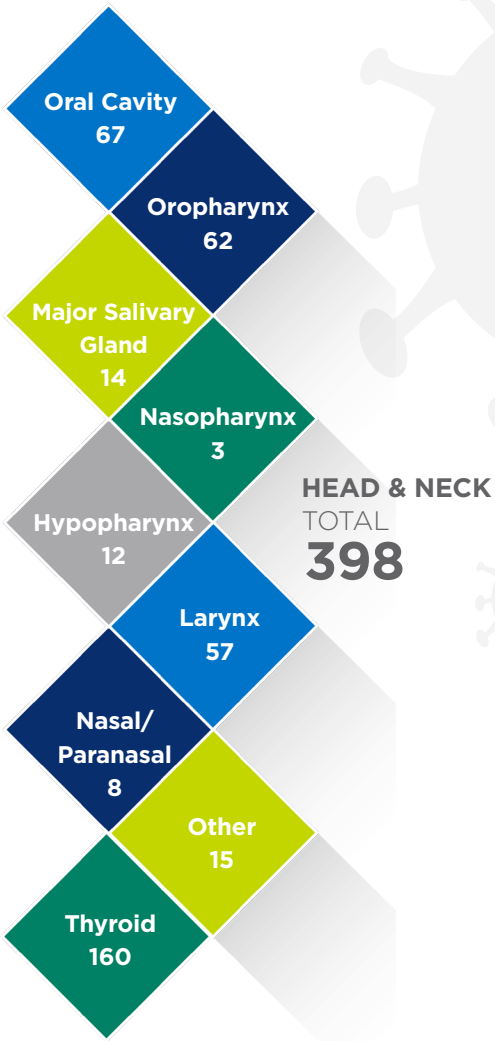
BY THE NUMBERS

Head and neck cancer (HNC) refers to any cancer that develops in the throat, nose, mouth, lips, voice box, sinuses, or salivary glands. Approximately **90%** of HNC cancers are squamous cell carcinomas. In general, these cancers have been linked to use of tobacco and alcohol, and these remain significant risk factors for the development of HNC cancer.

In recent years, Human Papillomavirus (HPV)-related oropharyngeal cancers (cancers of the tonsils and tongue base) have become increasingly common. It is now the most common type of HNC. HPV-related oropharyngeal cancer is most frequently seen in younger adults who are otherwise healthy and commonly are non-smokers and non-drinkers.

Patients Diagnosed at Aurora

2016



HEAD & NECK
TOTAL
398

MULTIDISCIPLINARY CARE DRIVES BETTER OUTCOMES

Regardless of cause, due to the complex anatomy of the head and neck and the potential for life-altering effects from the cancer or its treatment, the treatment of these cancers is multifaceted and relies on the expertise of many uniquely qualified clinicians. In 2014, Aurora Health Care launched a multidisciplinary effort to facilitate high-quality care for those with head and neck cancers. As part of an integrated health system spanning 15 hospitals and 150 clinics, this coordinated effort allows every patient in the system to receive expert input regarding best practice treatment based on type, location, and stage of cancer in order to develop an individualized plan based on their specific needs.

Weekly dedicated HNC conferences are structured to allow for caregivers across the Aurora Health Care system to participate in a multidisciplinary discussion of each case. This forum allows for alignment with national guidelines of best practice, education of all toward new treatment strategies and upcoming clinical trials, coordination of supportive services, and problem solving toward barriers to timely and integrated care. All of this with the focus of identifying and ensuring the highest quality and care for each individual patient.

In addition, our Head and Neck Cancer Multidisciplinary Clinic (MDC) allows those with HNC to receive a comprehensive evaluation and consensus opinion from several disciplines in a single appointment. This approach allows patient discussion with the entire team about management of their specific diagnosis and the opportunity to explore the pros and cons of their options. This format allows for the early identification and integration of care strategies and has been proven to reduce delays in care. We see our HNC patients throughout their journey from diagnosis, through treatment, after treatment, and into survivorship. This MDC clinic team of dedicated HNC specialists is comprised of HN Surgical Oncologists: Steven Dankle, MD and Michael Nordstrom, MD; Medical Oncologist: Robert Taylor, MD; Radiation Oncologists: Perry Gould, MD and Jeffrey Kittel, MD; Physicians Assistants: Kate Rabe, PA-C and Sara Bjorklund, PA-C; Registered Dietitian: Jane Collins, RD; Speech Therapist: Tanya Zinski-Loomer, MD, SLP; Cancer Nurse Navigator: Valerie Werner, RN BSN OCN.

Multidisciplinary Clinic Visits

Aurora Health Care®

RESEARCH HIGHLIGHT

Cancer Nurse Navigators and Multidisciplinary Video Conferences for Head & Neck Cancer — Poster Session at American Society of Clinical Oncology (ASCO) National Oncology Forum Meeting

A poster entitled "Cancer Nurse Navigators increase physician engagement in multidisciplinary discussions prior to head and neck cancer treatment" was published by the American Society of Clinical Oncology (ASCO) which validated the benefits of our multidisciplinary approach. The poster, authored by Valerie Werner, RN, BSN, Anne Barry-Weers, RN, MS, James Weese, MD, FACS, and Martin Corsten, MD, FACS, presented the findings that Cancer Nurse Navigators and system wide high-definition video conferencing facilitate multidisciplinary collaboration in treatment of head and neck cancers. This increased engagement, changed practice patterns, aligned the institution with best practice guidelines, and aided in therapy selection for the best possible patient outcomes.

Multidisciplinary Cancer Conferences

PARTNERSHIP WITH NEUROSURGERY MINIMIZES TREATMENT IMPACT: EXPAND ENDONASAL APPROACH (EEA)

Revolutionizing the way brain surgeons access the skull base and upper cervical spine in a less invasive way.

During endoscopic endonasal surgery, a neurosurgeon and an otolaryngologist work together to enter the skull base through the nose. This minimally invasive technique eliminates the need for external incisions and brain retraction. By removing the back half of the nasal septum and the bone in front of the sphenoid sinus, surgeons can reach the skull base.

Tumors are then removed with the help of high-definition optics and an endoscope. Finally, the skull base is reconstructed using a flap of the septal membrane — which seals off the brain from the nose — helping prevent complications.

The Expanded Endonasal Approach (EEA) allows access to skull base tumors minimizing the complications that can be seen with open skull base surgery, which include infections associated with large scalp incisions and the side effects seen with brain retraction.

Many patients undergoing EEA spend only one to two days in the hospital, and recovery time at home can be much shorter than for open skull base surgery. In addition, there are many scenarios in which EEA causes less disruption of critical nerves during skull base surgery.

The EEA is used to perform minimally invasive surgery for cancers of the head and neck such as:

- Brain tumors
- Cancers of the sinus (squamous cell, sphenoid sinus carcinomas, adeno-cystic, and metastatic)
- Meningiomas of the skull base
- Pituitary tumors (including pituitary adenomas, acromegaly, prolactinomas, and pituitary apoplexy)
- Olfactory neuroblastomas
- Rathke's cleft cysts
- Skull base tumors and cysts
- Chordomas and chondrosarcomas
- Orbital tumors and Graves' disease


NEURO-ONCOLOGY

BY THE NUMBERS

With 480 new primary tumors and another 1,200 cases of metastatic brain cancer expected in the state of Wisconsin every year — including 926 new deaths from the disease — Aurora Health Care has made a commitment to the early diagnosis and innovative treatment strategies of primary and metastatic brain tumors of all kinds.

Based on American Cancer Society registry data, 7.4 people out of every 100,000 will be diagnosed with brain cancer next year in Wisconsin, which is more than the 6.6 expected across the United States.

A distinctive feature of the Aurora Neuroscience Innovation Institute (ANII) is the multidisciplinary approach to brain tumor management used at every stage of treatment and diagnosis. Our specialized team of neurosurgeons, neuroradiologists, neuro-oncologists, and radiation oncologists work collaboratively with the added expertise of neuropsychology, head and neck oncology, neurology, pathology, and many others, including cancer nurse navigators, neuroscience advanced practices nurses and physician assistants. We treat our patients as members of the care team, keeping them actively involved in all decision-making to ensure all questions and concerns are evaluated and taken into account. The patient is the most important shareholder in the decision-making treatment process.

Multidisciplinary cancer conferences and multidisciplinary clinic visits are available weekly for patients with neuro cancers.

Multidisciplinary Clinic Visits

Patients Diagnosed at Aurora

2016

BRAIN & CNS
TOTAL
506

WHY MOLECULAR PROFILE PROTOCOLS ARE IMPORTANT

Nearly 80% of primary malignant brain tumors are gliomas, a majority of these fall into the category of glioblastomas (GBM's), the most aggressive form. To facilitate the initial diagnosis and timely treatment of GBM's the neuro oncology team has committed to the development of molecular profiling protocols. The molecular profiling protocols or tumor markers are automatically ordered by the Pathology Department for every surgical specimen with a diagnosis of glioma.

Molecular profiling is a method of testing that looks at each person's cancer tumor and studies the genetic characteristics as well as any unique biomarkers. The information gathered is used to identify and create targeted therapies that are designed to work better for a specific cancer tumor. Targeted therapies can be more effective, with fewer side effects and a better chance of curing the cancer and/or controlling the tumor growth. As Aurora Health Care researchers learn more about genetic and molecular differences of cancer, additional targeted therapies will be developed and continue to provide the neuro-oncologist the information needed to help determine which patients will benefit from a specific treatment as well as help in the determination of survival.

USE OF CLINICAL PATHWAYS TO FACILITATE MULTIDISCIPLINARY CARE

In addition, several clinical pathways have been developed for the management of patients with malignant brain tumors. These pathways have been embedded into the Electronic Medical Record (EMR) and designed to provide a structured, multidisciplinary plan of care that is evidence-based for a specific group of patients with a predictable clinical course. The pathways require input and interventions from multiple professionals working together as a team providing patients the best care while optimizing clinical quality and outcomes.

BRAIN MAPPING

Advanced brain mapping technology lets our team of experts see the precise location of individual brain functions — speech, memory, and movement — in order to help determine the most appropriate treatment.

Brain mapping is a critical tool used by neuroscientists to plan surgeries for brain tumors. If surgery is needed, brain imaging technology may be used before and during a procedure to differentiate healthy brain matter from diseased tissue. It can also be used to define a surgical or navigational strategy to help avoid injury to portions of the brain needed for critical functions.

Diffusion tensor imaging with white matter tractography is one type of brain mapping. It uses state-of-the-art technology to create a 3D map of the brain, which shows the location of nerve fibers that control speech, memory, cognition, and thought — all of the things that make you...you!

Brain mapping is a fundamental element of our minimally invasive methodology for treating subcortical tumors and cysts that were often considered otherwise inaccessible. It provides advanced assistance with determining the best surgical approach to remove a tumor.

Aurora has performed more optical robotic brain surgeries than anyone in the world to date, **and Aurora Neuroscience Innovation Institute was the** first in the world to deploy a unique 3-D brain mapping platform for **patient care.**

NOVEL TREATMENT OPTIONS FOR PATIENTS WITH GBM

Optune is a wearable, portable, FDA-approved device treatment placed on the scalp for adult patients (22 years of age or older) with a new diagnosis of GBM (used with a chemotherapy called Temozolomide) or if a tumor has come back, it can be used alone as an alternative to standard medical therapy that is as effective as chemotherapy with fewer side effects. When Optune is turned on, it creates low-intensity electric fields, called Tumor Treating Fields, or TTFields. TTFields help slow or stop glioblastoma cancer cells from dividing and may also cause some of them to die. Optune uses four adhesive patches, called transducer arrays, to deliver therapy. These transducer arrays are applied to the scalp and are connected to the device and battery. The transducer array placement is determined based on each patient's MRI results to help maximize the effect that TTFields have on the tumor. TTFields work when cancer cells are dividing and do not disrupt healthy resting cells. Because TTFields do not enter the bloodstream, like a drug, they have not been shown to affect cells in other parts of the body. The most common (≥10%) adverse events seen when using Optune alone were scalp irritation from device use and headache.

PHYSICAL & EMOTIONAL NEEDS

Cancer Rehabilitation

Cancer rehabilitation addresses the musculoskeletal, cardiopulmonary, and functional impairments expected with cancer treatment, survivorship, advanced disease, and end of life. The most common of these problems include fatigue, pain, weakness, stiffness, fibrosis and scarring, difficulty walking, and the overall inability to function normally. Depending on the type of cancer, additional problems can occur including poor balance, swelling, lymphedema, incontinence, weight loss or weight gain, problems swallowing, cognitive issues, and sexual health issues.

Rehabilitation and Cancer Surgery
Rehabilitation therapists intervene with treatment before and/or after surgery to restore pain free movement, physical strength, scar mobility, and function. With rare exception, post-operative cancer rehabilitation should return people to their full pain free pre-operative level of function.

Rehabilitation and Chemotherapy
Research has shown that rehabilitation during chemotherapy is not only safe, but also effective in treating many chemotherapy related problems, helping patients stay stronger and suffer less physical loss. It works to reduce fatigue, muscle and physical weakness, minimize the effects of neuropathy, maintain good balance, and get to or maintain a healthy body weight.

Rehabilitation and Radiation
The best way to minimize fatigue and weakness during radiation is through a strengthening and aerobic exercise program. Rehab therapists can also help prepare the patient's body for the radiation position. Long term home stretching programs will also be developed to combat the tightness and fibrosis common months or years later.

Rehabilitation and Survivorship
Rehabilitation in cancer survivorship helps patients deal with the late and long-term effects of cancer treatment and helps them get back to being as healthy as possible, as fast as possible. Rehab treatment plans can help reduce, eliminate, and prevent problems such as fatigue, heart damage from chemotherapy, neuropathy, aching muscles and joints, scar tissue, fibrosis, and change in body weight. Rehab therapists will also develop plans to help cancer survivors meet the American Cancer Society's activity recommendation of 150 minutes per week of exercise.

Rehabilitation and End of Life
Exercise has been shown to be both safe and effective for people with advanced cancer. Treatment plans and goals aim to keep the person as independent, strong, and mobile as possible, and will be centered on pain reduction, safe mobility instruction for the patient and family, maximizing quality of life, and reducing the risk of falls and hospital stays.

REHABILITATION AND INSURANCE COVERAGE

- Cancer rehabilitation evaluations are covered by all insurance plans
- Prior authorizations are performed for all patients
- Insurance coverage is discussed by the therapist and patient
- Rehabilitation therapist develops treatment plans within the guidelines of insurance coverage and patient wishes

The National Accreditation Program for Breast Centers (NAPBC), the Commission on Cancer (CoC), and the National Comprehensive Cancer Network (NCCN) recognize the importance and benefits of cancer rehabilitation and recommend it begin at cancer diagnosis.

Integrative Medicine

Integrative Therapies
Aurora Health Care is a leader in the field of integrative medicine, offering a healing-oriented approach for the whole person. In patients with cancer, palliating symptoms associated with cancer or its treatment are a major priority. Aurora has found that integrative approaches add benefit beyond maximal medical therapy in reducing symptoms, improving quality of life, and potentially facilitating continued cancer treatment. Acupuncture, aromatherapy, massage, and Reiki are integrative therapies offered to reduce symptoms of pain, neuropathy, nausea, and stress related to treatment. Patients want their providers to know they are getting integrative therapies and feel it is important for the care team to have this information about them. Aurora's integrated care model makes this possible. Access to integrative therapies is made possible through the Aurora Health Care Foundation, and by generous philanthropic donations which support low cost and free access to integrative therapies.

Integrative Medicine Providers
Fellowship trained integrative medicine physicians and advanced practitioners are trained to provide a combination of modern and conventional medicine with holistic medicine. Our fellowship trained providers partner with patients and their oncology specialist to offer the following as needed:

- Integrative treatment plans during or after cancer treatment which incorporate
  - dietary strategies
  - mind-body therapies
  - integrative therapies
- Advise patients regarding the risks of alternative cancer treatments
- Advise patients about nutritional and other lifestyle strategies for reducing risks of re-occurrence
- Teach those at risk for cancer about lifestyle strategies for reducing those risks

Acupuncture
Acupuncture is a traditional Chinese medicine system of natural healing that has been practiced for more than 4,000 years. This ancient healing art does not use drugs or surgery to treat the body. Rather, fine sterile needles are inserted into specific points on the body to promote healing and reduce emotional stress. There is generally no pain associated with the insertion of these very fine needles. Several studies have demonstrated that acupuncture activates the pathways between the nervous and endocrine systems.

At Aurora Health Care, our acupuncturists work closely with Aurora's oncology specialists to provide competency-driven individualized care to meet each patient's specific needs.

Massage Therapy
Massage therapy is defined as the use of one's hands to apply pressure and motion on another person's skin and underlying muscle for the purpose of physical and psychological relaxation, improvement in circulation, relief of muscle tension, and other therapeutic benefits. Research studies have found that individuals with cancer who use regular massage report less anxiety, pain, and fatigue.

Reiki Therapy
Reiki ("ray-key") is a Japanese word for universal life-force energy and a simple yet powerful Eastern medicine healing technique. A trained Reiki practitioner helps to guide the flow of energy through a person's body. This energy flow, or connection, enhances the body's power to heal. It also quickens relaxation and reduces stress.

Within many of our Aurora Cancer Care clinics, Reiki treatments are offered to patients receiving chemotherapy while seated in comfortable recliners, fully clothed. Aurora's volunteer Reiki practitioners provide patients a gentle touch with specific hand positions on or above the body to guide the flow of healing energy. There are approximately 30 Aurora volunteers who are Reiki certified providing complimentary Reiki in the chemotherapy infusion bays across 11 of the 19 cancer centers. Our volunteers are actively collecting outcomes from their sessions, thus allowing us to provide data to the cancer centers about this service. In addition, all of our massage therapists are trained in at least Reiki Level One, and some of them offer Reiki sessions for payment at various clinics around the area.

BY THE **NUMBERS**

Outcome data for the use of massage and acupuncture at Aurora Cancer Care clinics reveals the following post-treatment responses:

Acupuncture Post-Treatment Responses

90% of patients report a reduction in pain

89% of patients report a reduction in neuropathy

91% of patients report a reduction in nausea

92% of patients report a reduction in stress

Massage Post-Treatment Responses

86% of patients report a reduction in pain

76% of patients report a reduction in neuropathy

65% of patients report a reduction in nausea

92% of patients report a reduction in stress

Aromatherapy

Aromatherapy is the art and science of using pure essential oils extracted from natural plants and flowers. Essential oils are used to calm, balance, and give energy to the body, mind and spirit. At Aurora Health Care, we use specific essential oils for patients with cancer to enhance well-being. Nurses and massage therapists working within Aurora Cancer Centers are trained to provide patients with safe and effective use of essential oils. We also provide information on how they can be used in daily life. Some of the oils that can help cancer survivors are listed below. For more information, patients can speak to their cancer care team or contact Aurora Integrative Medicine.

Lavender is known to relieve insomnia and reduce anxiety and is the perfect choice to soothe the soul. It also works to eliminate airborne bacteria and viruses, helping people stay healthy and well.

Mandarin is one of the gentlest and safest essential oils. Its calming influence promotes sleep, reduces irritability and lifts moods. It is also used to soothe digestion and reduce nausea.

Peppermint is a refreshing and mentally stimulating essential oil. Its minty fresh scent is easy to recognize and can also help with sinus congestion, nausea, vomiting, and headaches.

Palliative Care

Living with a chronic or complex illness requires unique support. Conditions like cancer require care that addresses both medical and emotional issues. Our Palliative Care Program helps you manage your symptoms for increased comfort and quality of life.

Palliative care is a special kind of care for people who have a serious medical issue. It focuses on relieving pain and other symptoms while addressing the psychological, emotional, and spiritual needs of patients, their family members, and caregivers.

The goal of palliative care is to provide the best quality of life for individuals by ensuring comfort and dignity. It is not disease- or age-specific. Palliative care benefits any individual with an advanced disease or life-changing condition and is appropriate for patients of all ages, from infant to elderly.

Benefits of palliative care:

- Better understanding of the patient's condition and their choices for medical care
- Emotional support for patients and their family
- Relief from distressing symptoms such as pain, shortness of breath, fatigue, constipation, nausea, loss of appetite, and troubled sleep
- Ensure medical care is in line with patient's wishes
- Anticipate future problems and needs
- Improved ability to carry on with daily life

A typical palliative care team includes a physician, nurse practitioner, social worker, spiritual counselor, pharmacist, nurses, and specialists. If needed, a therapist, dietitian or home health aide may be added to the team as well.

Emotional/Spiritual Support

EMOTIONAL/SPIRITUAL SUPPORT

Supportive Counseling Services
A diagnosis of cancer greatly impacts a person's life. It can change how a patient feels, affect relationships with family and friends, and disrupt plans for the future. Many people find that in this difficult time, anxieties can be eased through caring, sensitive support from counseling professionals. Aurora Cancer Care supportive counselors understand that the medical aspect of cancer is only part of the disease's impact. While medical expertise is essential, our counselors realize that professional support to help cope with the emotional aspect is invaluable as well. To help patients and their family face the disease and fight it, we offer a wide variety of comprehensive counseling services, including individual, family, and group counseling, and assistance with fatigue, pain, insomnia, appetite disturbances, anxiety and depression.

Social Services
A cancer diagnosis can result in concerns related to work, finances, insurance coverage, advanced care planning, and the need to identify and link with community resources. The Aurora Cancer Care team includes social workers who understand these challenges and are available to provide support — including help with financial counseling — when needed.

Spiritual Care
In times of crisis and uncertainty, spirituality can be an important strength. We have chaplains who are available to provide a supportive presence to patients, their family, and friends. They offer consultation and counsel regarding spiritual, emotional, and ethical matters, as well as provide respectful spiritual support and care to people of all faiths and beliefs.

Fertility

Preserving Fertility Before Cancer Treatment
Cancer and its treatment may affect the body, including the reproductive system, in many ways. Because the medicines and treatments that work to kill cancer cells can also affect other cells and organs in the body, these treatment options may interfere with future fertility by damaging sperm, eggs, or other reproductive organs. Factors such as the type of cancer diagnosed, chemotherapy, radiation therapy, and cancer surgery can all lead to potential reproductive problems.

Cancer diagnosis: Having cancer can lead to infertility. For example, testicular cancer and Hodgkin's lymphoma can lead to low sperm counts in some men even prior to starting cancer treatment.

Chemotherapy: Can be damaging to both sperm and eggs. Use of alkylating agents, platinum-based agents, and some other chemotherapy drugs can have a detrimental effect on fertility. Individual factors such as age at the time of cancer treatment, type of chemotherapy drugs used, and the total dose of these drugs will determine the degree of damage to the sperm or eggs.

Radiation therapy: Radiation therapy can also damage the reproductive system. Radiation aimed at the pelvis can have a direct effect on the ovaries or testicles which can lead to infertility. Radiation to the brain can affect hormone production and also result in infertility.

Cancer surgery: Surgery for cancer involving the testicles, ovaries, uterus, cervix, or surrounding structures in the abdomen or pelvis can also cause permanent infertility.

Fertility Preservation for Men
Sperm banking involves collecting a sample of semen and freezing it. Sperm must be banked before any chemotherapy or pelvic radiation therapy begins in order to avoid storing damaged sperm. Sperm can be collected daily or every other day within a seven-day time frame for adequate collection.

Sperm banking may be worthwhile even if the sperm count is low or when only one sample can be stored. This sperm can remain frozen indefinitely and can be thawed later and used for intrauterine insemination or in vitro fertilization.

Fertility Preservation for Women
There are several ways to attempt to preserve fertility in women prior to their cancer treatment, but most remain experimental with unknown success rates. Proven methods of fertility preservation include embryo freezing and egg freezing.

Embryo freezing is a proven successful method for preserving fertility. Because it requires sperm, this option is best for women who are married or those who have a committed partner. Embryo freezing is also an option for women willing to use donor sperm to fertilize their eggs. Egg freezing is a newer option for those women who prefer to freeze unfertilized eggs. These eggs would then be available for future fertilization using a partner's or donor sperm. The process of embryo or egg freezing can take a maximum of two to four weeks.

Testing Fertility After Cancer Treatment
A semen analysis is a simple test that can be performed in men after cancer treatment to check for sperm production. It can be uncertain when fertility will return in men, and it may take years for sperm production to restart after cancer treatment.

For women, the return of menstruation may or may not predict future fertility. A reproductive specialist can check blood tests for hormone levels and perform an ultrasound to estimate the quality and number of eggs remaining in the ovaries.


ADVANCES IN
CANCER CARE

Precision Medicine

ONCOLOGY PRECISION MEDICINE

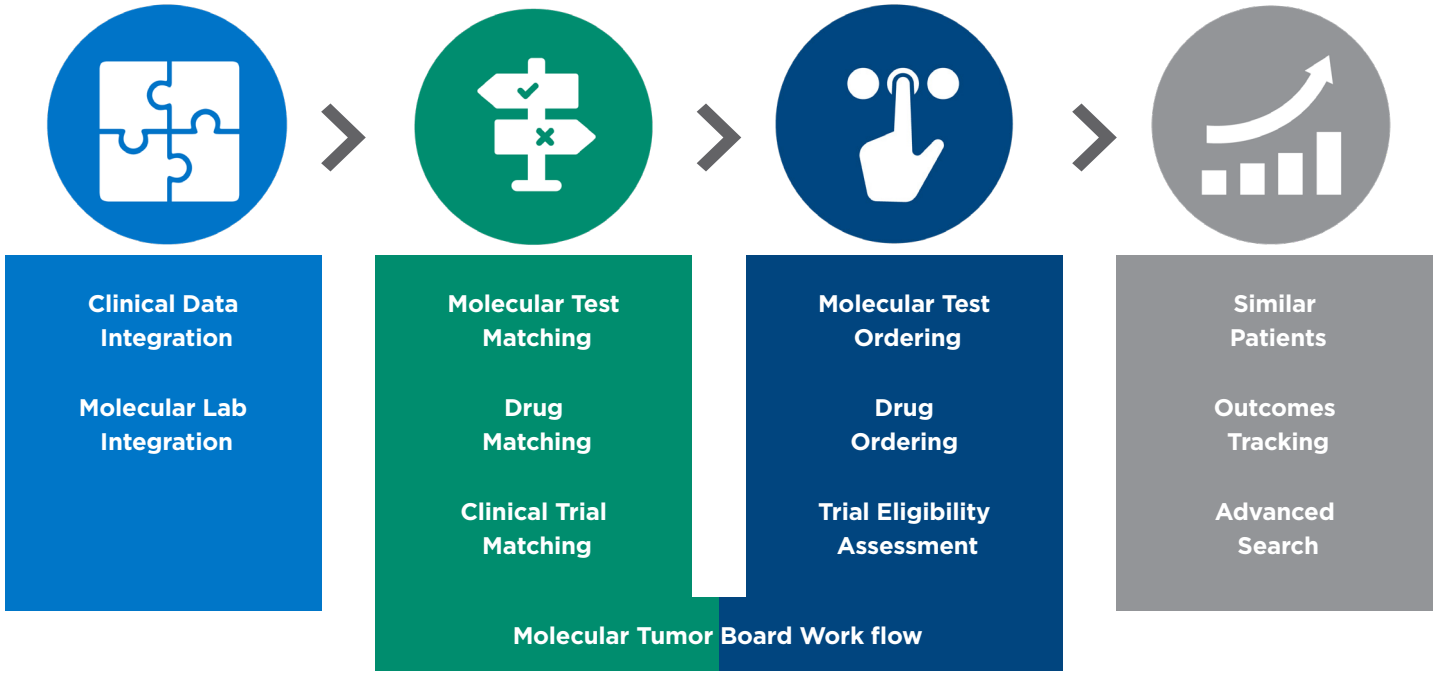
The Aurora Cancer Care Oncology Precision Medicine Clinic provides a multidisciplinary approach to treating cancer, especially cancers that are resistant to standard treatments. Our clinic is a collaboration with medical oncologists, pharmacy, pathology, research, radiology, and genetic counselors to provide patients with treatment options beyond radiation or chemotherapy. This approach is giving additional treatment options to health care providers and some cancer patients.

Aurora Cancer Care Oncology Precision Medicine Clinic is the first clinic in Wisconsin with access to Syapse, a precision medicine platform that offers physicians access to clinical and molecular data aggregated in a central data site.

Precision medicine broadly defined can take individual variability into consideration for prevention, diagnosis, and treatment. In the Oncology Precision Medicine program cancer molecular profiling explores the molecular makeup of a person's cancer tumor. If a patient has a tumor with an actionable molecular change, then treatments can be offered that target that persons molecular cancer signature.

Targeted precision medicine therapies are the standard of care in some cancers — e.g. anti-Her2 therapy in breast cancer and BRAF inhibitors in melanoma. In other cancers, there may be clinical data or a strong rationale for using targeted therapy. Outcome data are being collected on the molecular changes found in our cancer patients and the clinical responses. Patients can discuss with their health care teams if precision medicine is right for them.

SYAPSE PRECISION MEDICAL FORM℠



To ensure Aurora Cancer Care remains at the forefront of precision medicine, we have adopted use of the Syapse platform which will share our de-identified data with other health care systems so that we can see the treatment results of genetically similar tumors in patients across the country.

Syapse offers the physicians at Aurora Cancer Care the opportunity to share information, in real time, that they gather about different molecular genetic characteristics of cancers and information about the targeted therapies and patient results while preserving patient privacy.

To expand the reach and effectiveness of our precision medicine efforts, Aurora has joined the Oncology Precision Network (OPeN). It's a leading data-sharing network created specifically for not-for-profit health care systems such as Aurora.

The information shared on OPeN becomes part of a database that's available to a national network of health care systems and hospitals. Through OPeN, hundreds of cancer experts will be able to share results of the precision medicine treatments of thousands of patients. The privacy and security of patients is a priority, so personally identifiable patient information is not available on the network.

The information that is shared by the network can benefit other patients who may have genetically similar tumors to those already successfully treated elsewhere. This can save valuable time in getting patients effective treatment sooner. Currently this information can take years waiting for publication or never be published, particularly if there was no response seen. Participation in Syapse provides us with data about similar patient responses so we can more effectively advise our patients based on current effects of a given drug.

Aurora Health Care®

RESEARCH HIGHLIGHT

MATCHING CANCER THERAPIES TO GENETIC ABNORMALITIES

Although the dawn of targeted cancer therapies began in the early 1960s, more recent understanding of cancer cell biology has driven new treatments that have positively affected outcomes in many types of cancer. Building on this understanding, the 2016 Precision Medicine Initiative allocated $70 million to the National Cancer Institute (NCI) to help identify genetic causes of cancer and develop more effective cancer therapies. As part of the initiative, NCI sponsored the Molecular Analysis for Therapy Choice, or NCI-MATCH (clinicaltrials.gov identifier: NCT02465060).

For this multicenter, Phase II clinical trial, Aurora Health Care Cancer Centers are actively recruiting subjects who are 18 years and older with advanced solid tumors, lymphomas, and myelomas that are no longer responding or never responded to standard therapy. Participant tumor samples are screened for genetic abnormalities, such as mutations, amplifications, or translocations. “Genetic tests look at the unique genetic material of patients’ tumor cells,” said Rubina Qamar, MD, local principal investigator for Aurora. “Patients with genetic abnormalities may benefit more from treatment that targets their tumor’s particular genetic abnormality. Identifying these genetic abnormalities first may help doctors plan better treatment for patients with solid tumors, lymphomas, or multiple myeloma.”

Targeted treatments are based on the molecular makeup of the tumor rather than on the tumor type. Researchers will match the subjects with a drug intended to target the specific gene abnormality. “This trial is a type of basket trial designed with the flexibility to open and close arms for different study drugs,” Dr. Qamar said. “The trial has included many more drugs for testing than most other clinical trials and is including even more drugs as additional arms are added.” Dr. Qamar stressed the importance of genetic screening in patients with cancer. “Since the first validation of oncogene-targeted therapy in chronic myelogenous leukemia, it has been appreciated that treating the principal driver oncogene has a powerful impact,” Dr. Qamar said. “However, for subsequent successful applications of molecular targeted therapy, the presence of the target oncogene requires genomic prescreening of a patient’s tumor.”

VIA PATHWAYS

VIA Oncology provides physicians with evidence-based pathways for the treatment of cancer through collaboration with University of Pittsburgh Medical Center, Dana Farber Cancer Institute at Harvard, Indiana University, University of Chicago, and the University of Oregon, among others.

It allows us to see what treatment protocols are most used for a given population and ensures consistency of evidence-based care among physicians in an increasingly complex field.

Aurora Cancer Care’s results with VIA implementation were published in an abstract accepted at the 2016 Annual American Society of Clinical Oncology (ASCO) Meeting.

James Weese, MD, et al. explain, “VIA’s decision support algorithms are evidence based, and updated quarterly by both academic and community oncologists. Regimens are based on efficacy, then toxicity, and finally cost. When available, a clinical trial is the first recommended option.”

The goal of Aurora Cancer Care in implementing VIA pathways is to develop value-based models of care. This is accomplished by using the tool to provide the best, most effective treatment plans and increase clinical trial enrollment.

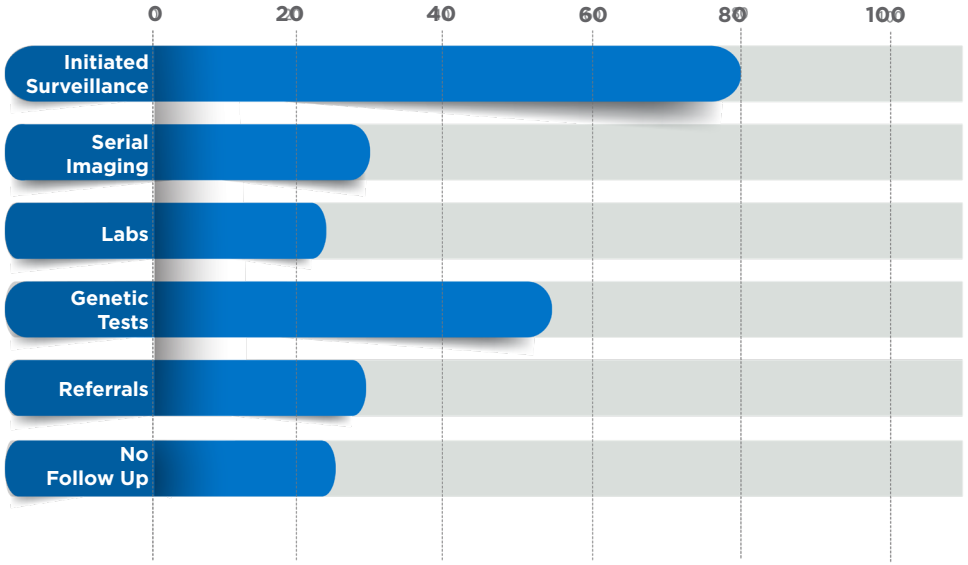
Hereditary Cancer Prevention & Management

The Aurora Hereditary Cancer Prevention and Management Center (HCPMC) was established in May 2015. The concept of the clinic is to provide continuity of care for individuals and families with complex or difficult hereditary cancer conditions. Michael Mullane, MD, and the Aurora Genomic Medicine Department have collaborated to establish this program, aimed at providing preventive care to the highest risk individuals. At the Aurora HCPMC, patients and at-risk relatives undergo an evaluation, discuss management and prevention recommendations, and participate in outcomes research. This clinic is the first of its kind in the Midwest and continues to be the model for health care organizations looking to establish hereditary cancer management clinics around the country.

Since its inception, Aurora has gone from a twice a month clinic to a weekly clinic. It is now available at Aurora St. Luke's Medical Center and Aurora BayCare Medical Center. In the first two years, 186 patients were seen in the clinic. Fifty-five of these patients were family members of the initial patient found to have the disease/gene mutation. Medical management and surveillance plans were initiated for appropriate patients. These plans were tailored to the individual and family according to their cancer risks associated with their particular gene mutation. Many patients required ongoing surveillance, including serial imaging studies, laboratory tests, referrals to other specialists, and some further genetic testing.

Medical Management For All Patients

May 2015 - May 2017



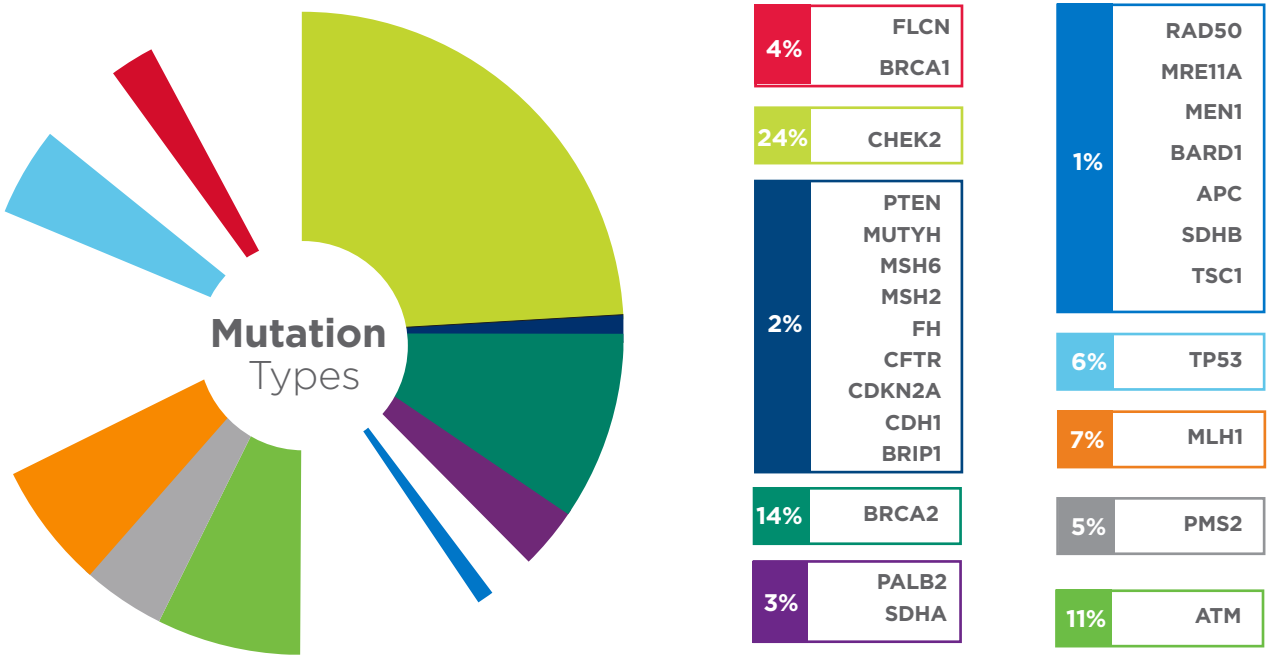
The clinic is designed specifically to address the needs of patients with rare and complicated cancer risks. Patients with a single gene mutation tend to have multi-organ system risks. Additionally, in the first two years, patients with risks associated with 25 different genes were seen and evaluated.

Although the HCPMC is a relatively new clinic, the medical management plans implemented have already yielded some important outcomes. Four cases are described here.

- Thirty-three year old unaffected male reluctantly came to HCPMC after his mother was found to have a CDH1 mutation. He tested positive for the familial mutation. We referred him to GI surgical oncology for prophylactic gastrectomy. He was found to have Stage I diffuse gastric cancer, and required no further treatment.
- Thirty-seven year old unaffected female came to HCPMC after testing positive for a familial SDHB mutation. Screening was initiated including whole body MRI, which revealed a 2.5cm carotid body paraganglioma. Surgery pending.
- Forty-four year old found to have a PTEN mutation after a breast cancer diagnosis and treatment. She came to the HCPMC after a colonoscopy revealed harmartomatous polyposis and GI recommended colectomy. We found a GI willing to do serial colonoscopy. We initiated high-risk breast screening. A second primary breast cancer was found.
- Forty-three year old came to the HCPMC after she was identified to have two different TP53 mutations, detected at low allele frequencies. She had been given a diagnosis of Li Fraumeni prior to coming to our clinic. We initiated a confirmatory algorithm including cascade testing of children, single site testing in skin fibroblasts, normal breast tissue, and cancerous breast tissue. Both mutations were found only in tumor specimen. Thus, the diagnosis of Li Fraumeni was disproven.

Percent of Patients by Gene Mutation

2016



Cardio-Oncology

THE KAREN YONTZ CENTER FOR CARDIO-ONCOLOGY

Over the past two decades, there have been tremendous advancements in the care of people with cancer. This has resulted in more people being survivors of their cancer and living longer with their disease than in the past. Over the same time, there have been great advancements in cardiology, resulting in improved diagnostics and improved care. The confluence of the advancements in these two areas has resulted in more patients with cardiovascular diseases and coexisting cancers, and more patients with cancer developing cardiovascular disease both as a consequence of their cancer treatment and unrelated to their cancer treatment. This has created new challenges and opportunities in the care of these patients.

At Aurora Health Care, this was recognized several years ago and has catalyzed the development of a true collaborative effort between Cardiovascular and Cancer Service Lines through the launch of the Karen Yontz Center for Cardio-Oncology. The program's development is thanks to the support of our donors, Mr. Ken Yontz, the Aurora Health Care administration, the Vince Lombardi Cancer Foundation, and our many colleagues from across the health care spectrum, including: pharmacy, nursing, and information technology.

The Karen Yontz Women's Cardiac Awareness Center, located inside Aurora St. Luke's Medical Center, has been educating women about heart disease for more than a decade. The new Karen Yontz Center for Cardio-Oncology at Aurora Health Care is an Aurora system-wide program, and the first of its kind, with the unique collaboration between the cardiology and cancer service lines. This multidisciplinary program monitors patients who have received or are receiving cancer treatments that could potentially impact the cardiovascular system. This permits the patient to receive treatment that could prevent or reduce the side effects resulting from cancer treatments and allows the treatment team to modify treatment plans as appropriate. It will also explore innovative ways to better identify patients at greatest risk to develop cardiovascular toxicity and develop methods to reduce or prevent these ill effects.

Patients entering this program will undergo a standardized risk assessment that includes laboratory biomarkers, imaging, and clinical care throughout cancer treatment for the purpose of detecting and avoiding cardiotoxicity. "Cardiologists within the cardio-oncology program work with oncologists throughout the Aurora network from the time of cancer diagnosis if the risk of cardiotoxicity is present," explained Vinay Thohan, MD, who directs the program with Bijoy K. Khandheria, MD. A baseline evaluation is performed to assess patient factors such as high blood pressure, diabetes, or stroke, and family and social history are analyzed to determine the patient's risk of developing cardiovascular toxicity during cancer treatment. Since opening in the Fall of 2016, the center has helped over 200 patients before, during and after cancer treatment to treat, minimize, or prevent cardiovascular effects. "The most important goal is for patients to complete lifesaving cancer treatments while maintaining good heart health," says Dr. Thohan.

The collaboration helps oncologists and cardiologists refine their treatment plans. The center uses risk models, 3D/4D/strain echocardiography, and biomarkers to find those patients who are at the greatest risk of developing cardiac toxicity so their physicians can individually tailor drug dosing and cardiac monitoring when using those specific drugs. "Being aware that a patient is at high risk for cardiac dysfunction during or after cancer treatment allows us to take a more aggressive approach to surveillance and treatment at the earliest stages," Dr. Thohan said. Medical Oncologists Charles Bomzer, MD and Rubina Qamar, MD along with their colleagues have collaborated with Drs. Thohan and Khandheria to develop this innovative collaborative care model. Dr. Qamar is also conducting a study to determine if there are easily measurable parameters to predict the development of some of these side effects and more effectively prevent them. In addition, Dr. Thohan has been awarded a grant from the Greater Milwaukee Foundation to investigate the genetic causes of heart disease among patients who receive cancer treatments.

Aurora Health Care®

RESEARCH HIGHLIGHT

PREVENTING ANTHRACYCLINE CARDIOTOXICITY WITH STATINS

Some chemotherapy drugs, such as anthracyclines, may result in irreversible heart failure. Statins, a class of drugs used to treat high cholesterol, may be helpful in preventing congestive heart failure. The Preventing Anthracycline Cardiovascular Toxicity With Statins (PREVENT) clinical trial aims to discern whether the statin atorvastatin decreases the chance of developing heart problems in women receiving anthracycline-based chemotherapy for breast cancer (clinicaltrials.gov identifier: NCT01988571).

This trial is important for two reasons, the first is that it attempts to prevent heart failure with a statin, and the second is the trial uses Cardiac Magnetic Resonance Imaging (MRI) to determine the amount of damage to the heart which is a much more sophisticated way of monitoring the heart. **Aurora is one of only a few sites that have the sophisticated cardiac MRI equipment to do this trial.**

Aurora offers the only sites in the state of Wisconsin for this trial. Sponsored by Wake Forest University Health Sciences, in collaboration with National Cancer Institute, the trial is being led locally by Thomas Saphner, MD.

Oncology Committees

Cancer Leadership Council

Stuart Arnett
Kenneth T. Bastin, MD
Marija Bjegovich-Weidman, RN, MSN
Amy Bock, MBA, RN
Thomas Brand, MD
Aaron H. Chevinsky, MD
Erin E. Hareng
Satchi Hiremath, MD
Lisa Just
Jessica R. Kallio
Jeffrey A. Kittel, MD
Helga Kowalski
Randall Lambrecht, Ph.D.
Mary Ann Muzi, NP
Gary F. Neitzel
William Owens, MD
Maria Pascente, MBA
Dhimant Patel, MD
Federico Sanchez, MD
Corey Shamah, MD
Michael Thompson, MD
William B. Tisol, MD
Mark Waples, MD
Nicholas Webber, MD
James Weese, MD
Anne Weers, RN, MS

Oncology Research Steering Committee

Jane Bubik, PharmD
Aaron Chevinsky, MD
Jan DeBartolo, MSN
Elizabeth Dickson-Michelson, MD
Carla Fuentes
Neha Glandt
Sebouh Gueyikian, MD
Jennifer Lester, PharmD
Jennifer Mathieu
Manish Pant, MD
Dhimant Patel, MD
Sara Planton, BSN
Rubina Qamar, MD (chair)
Antony Ruggeri, MD
Thomas Saphner, MD
Corey Shamah, MD
Michael Thompson, MD, PhD

Breast Quality Subcommittee

Chair: William Owens, MD

GI Quality Subcommittee

Chair: Aaron H. Chevinsky, MD

Thoracic Quality Subcommittee

Chair: William B. Tisol, MD

GU Quality Subcommittee

Chair: Mark Waples, MD

Neuro Quality Subcommittee

Chair: George Bobustuc, MD

Head & Neck Quality Subcommittee

Chair: Jeffrey Kittle, MD

Gynecologic Quality Subcommittee

Chair: Scott Kamelle, MD

Oncology Volumes — New Cases (Systemwide)

VOLUMES (SYSTEMWIDE NEW CASES)

Source: Cancer Registry

PRIMARY SITE OF DISEASE	2015	2016	2017*
Breast	1,283	1,314	1,342
Prostate gland	867	937	954
Bronchus and lung	886	890	939
Melanoma and skin (T2+)	437	407	524
Blood and bone marrow	516	487	326
Colon	418	482	425
Urinary bladder	331	408	372
Meninges	373	390	345
Lymph nodes/lymphoma	331	330	301
Endometrium	287	310	350
Kidney, renal pelvis, ureter	294	312	297
Pancreas	209	202	201
Brain CNS	166	142	168
Thyroid gland	159	160	146
Liver and bile ducts	132	153	173
Rectum	137	120	141
Ovary	115	128	117
Unknown primary	72	70	127
Esophagus	86	83	96
Stomach	85	83	86
Adrenal and other endocrine	90	79	51
Vulva	61	63	86
Oropharynx	75	61	56

PRIMARY SITE OF DISEASE	2015	2016	2017*
Oral cavity	67	69	53
Cervix uteri	56	61	68
Larynx	46	57	49
Testis	51	42	43
Anus	31	35	32
Major salivary	24	15	29
Retroperitoneum	13	20	25
Musculoskelatal	57	67	81
Heart mediastinum	16	15	22
Other female genital organ	8	18	25
Head and neck undefined	13	14	20
Vagina	5	13	15
Nasal cavity and sinuses	11	8	11
Hypopharynx	5	12	12
Penis	7	5	13
Orbit	5	6	9
Nasopharynx	5	3	9
Other oral cavity	2	4	3
Peripheral nerves	0	1	3
Trachea	0	1	2
Totals	**7,832**	**8,077**	**8,147**

**estimated; complete data not available at time of publication*

Oncology Publications

2016 Aurora-Authored, Peer-Reviewed

Journal Articles/Book Chapters

Alemu A, Richards JO, Oaks MK, Thompson MA. Vaccination in multiple myeloma: review of current literature. Clin Lymphoma Myeloma Leuk 2016;16:495-502.

Al-Niaimi A, Dickson EL, Albertin C, Karnowski J, Niemi C, Spencer R, Shahzad MM, Uppal S, Saha S, Rice L, Nally AM. The impact of perioperative β blocker use on patient outcomes after primary cytoreductive surgery in high-grade epithelial ovarian carcinoma. Gynecol Oncol 2016;143:521-5.

Attai DJ, Sedrak MS, Katz MS, Thompson MA, Anderson PF, Kesselheim JC, Fisch MJ, Graham DL, Utengen A, Johnston C, Miller RS, Dizon DS; Collaboration for Outcomes on Social Media in Oncology (COSMO). Social media in cancer care: highlights, challenges & opportunities. Future Oncol 2016;12:1549-52.

Bekaii-Saab T, Goel S, Dickerson A, Von Roenn J, Thompson MA, Tsao AS. Competitive funding strategies for the Conquer Cancer Foundation of ASCO. J Oncol Pract 2017;13:e62-7 [Epub 2016 Nov 22].

Borno H, Siegel A, Ryan C. The problem of representativeness of clinical trial participants: understanding the role of hidden costs. J Health Serv Res Policy 2016;21:145-6.

Chen Q, Huibregtse C, Santhosh-Kumar CR. Bell's palsy as the initial presentation of multiple myeloma: a case report. Am J Med Case Rep 2016;4:261-2.

Cox Bauer CM, Greer DM, Kram JJ, Kamelle SA. Tumor diameter as a predictor of lymphatic dissemination in endometrioid endometrial cancer. Gynecol Oncol 2016;141:199-205.

Friske JE, Sharma V, Kolpin SA, Webber NP. Extradigital glomus tumor: a rare etiology for wrist soft tissue mass. Radiol Case Rep 2016;11:195-200.

Haid M, Chesna E, Theodoroff M, Spaeth DK, Santhosh-Kumar CR, Dar ZN. A pilot study of circulating tumor cells in stage IV non-small cell lung carcinoma. J Patient Cent Res Rev 2016;3:136-41.

Jawa Z, Perez RM, Garlie L, Singh M, Qamar R, Khandheria BK, Jahangir A, Shi Y. Risk factors of trastuzumab-induced cardiotoxicity in breast cancer: a meta-analysis. Medicine (Baltimore) 2016;95:e5195.

Kumar S. Metastatic recurrent hepatocellular carcinoma post liver transplant with marked pretransplant elevation of alpha fetoprotein and no evidence of primary neoplasm. Exp Clin Transplant 2016 Jan 20 [Epub ahead of print].

Landercasper J, Bailey L, Berry TS, Buras RR, Degnim AC, Fayanju OM, Froman J, Gass J, Greenberg C, Mautner SK, Krontiras H, Rao R, Sowden M, Tjoe JA, Wexelman B, Wilke L, Chen SL. Measures of appropriateness and value for breast surgeons and their patients: The American Society of Breast Surgeons Choosing Wisely® initiative. Ann Surg Oncol 2016;23:3112-8.

Mohindra P, Urban E, Pagan JD, Geye HM, Patel VB, Bayliss RA, Bender ET, Harari PM. Selective omission of level V nodal coverage for patients with oropharyngeal cancer: clinical validation of intensity-modulated radiotherapy experience and dosimetric significance. Head Neck 2016;38:499-505.

Ng AV, Cybulski AN, Engel AA, Papanek PE, Sheffer MA, Waltke LJ, Tjoe JA. Triathlon training for women breast cancer survivors: feasibility and initial efficacy. Support Care Cancer 2017;25:1465-73 [Epub 2016 Dec 24].

Paranjpe A, Bailey NI, Konduri S, Bobustuc GC, Ali-Osman F, Yusuf MA, Punganuru SR, Madala HR, Basak D, Mostofa A, Srivenugopal KS. New insights into estrogenic regulation of O6-methylguanine DNA-methyltransferase (MGMT) in human breast cancer cells: co-degradation of ER-β and MGMT proteins by fulvestrant or O6-benzylguanine indicates fresh avenues for therapy. J Biomed Res 2016;30:393-410.

Pemmaraju N, Utengen A, Gupta V, Kiladjian JJ, Mesa R, Thompson MA. Social media and myeloproliferative neoplasms (MPN): analysis of advanced metrics from the first year of a new Twitter community: #MPNSM. Curr Hematol Malig Rep 2016;11:456-61.

Pemmaraju N, Gupta V, Thompson MA, Lane AA. Social media and Internet resources for patients with blastic plasmacytoid dendritic cell neoplasm (BPDCN). Curr Hematol Malig Rep 2016;11:462-7.

Richards JO, Albers AJ, Smith TS, Tjoe JA. NK cell-mediated antibody-dependent cellular cytotoxicity is enhanced by tamoxifen in HER2/neu non-amplified, but not HER2/neu-amplified, breast cancer cells. Cancer Immunol Immunother 2016;65:1325-35.

Robinson KM, Piacentine LB, Waltke LJ, Ng AV, Tjoe JA. Survivors speak: a qualitative analysis of motivational factors influencing breast cancer survivors' participation in a sprint distance triathlon. J Clin Nurs 2016;25:247-56.

Saphner T, Thompson MA, Planton S, Singh M, Glandt N, Robinson L, DeBartolo J. Insights from building a new National Cancer Institute Community Oncology Research Network Program site. WMJ. 2016;115(4):191-5.

Sparano JA, Zhao F, Martino S, Ligibel JA, Perez EA, Saphner T, Wolff AC, Sledge GW Jr, Wood WC, Davidson NE. Long-term follow-up of the E1199 phase III trial evaluating the role of taxane and schedule in operable breast cancer. J Clin Oncol 2015;33:2353-60.

Steensma DP, Abedi M, Bejar R, Cogle CR, Foucar K, Garcia-Manero G, George TI, Grinblatt D, Komrokji R, Ma X, Maciejewski J, Pollyea DA, Savona MR, Scott B; Sekeres MA, Thompson MA, Swern AS, Nifenecker M, Sugrue MM, Erba H. Connect MDS/AML: Design of the myelodysplastic syndromes and acute myeloid leukemia disease registry, a prospective observational cohort study. BMC Cancer 2016;16:652.

Thompson MA. 'Everyone is an individual': providing individualized treatment in oncology. Int J Hematol Oncol 2015;4:87-91.

Thompson MA, Hurley PA, Faller B, Longinette J, Richter K, Stewart TL, Robert N. Challenges with research contract negotiations in community-based cancer research. J Oncol Pract 2016;12:e626-32.

Vose JM, Levit LA, Hurley P, Lee C, Thompson MA, Stewart T, Hofacker J, Bruinooge SS, Hayes DF. Addressing administrative and regulatory burden in cancer clinical trials: summary of a stakeholder survey and workshop hosted by the American Society of Clinical Oncology and the Association of American Cancer Institutes. J Clin Oncol 2016 Sep 6 [Epub ahead of print].

Webber NP. Metastatic bone disease: femur–tibia. In: Randall RL (ed). Metastatic Bone Disease. New York, NY: Springer Science+Business Media, 2016, pp. 289-96.

Weber JS, Levit LA, Adamson PC, Bruinooge SS, Burris HA, Carducci MA, Dicker AP, Gönen M, Keefe SM, Postow MA, Thompson MA, Waterhouse DM, Weiner SL, Schuchter LM. Reaffirming and clarifying the American Society of Clinical Oncology's policy statement on the critical role of phase I trials in cancer research and treatment. J Clin Oncol 2017;35:139-40 [Epub 2016 Nov 28].

Wisinski KB, Xu W, Tevaarwerk AJ, Saha S, Kim K, Traynor A, Dietrich L, Hegeman R, Patel D, Blank J, Harter J, Burkard ME. Targeting estrogen receptor beta in a phase 2 study of high-dose estradiol in metastatic triple-negative breast cancer: a Wisconsin Oncology Network study. Clin Breast Cancer 2016;16:256-61.

Abstracts

Barry-Weers A, Huibregtse C, Bjegovich-Weidman M, Weese JL. Engaging managing physicians in clinical staging prior to the initiation of cancer treatment. J Clin Oncol 2016;34(suppl 7S):#143.

Cairo J, Huibregtse C, Ferry A, Weese JL. Implementing survivorship care planning in a large integrated cancer program. J Clin Oncol 2016;34(3S):#69.

Bobustuc GC, Donohoe D, Holmuhamedov A, Kalkunte S, Konduri SD. Abstract 285: Disulfiram, a dual MGMT and aldehyde dehydrogenase inhibitor, sensitizes ER-positive breast cancer cells to temozolomide and cyclophosphamide. Cancer Res 2016;76(14 Suppl):#285.

Ellis PG, Aurora Health Care, et al. Actionable biomarkers in a non-small cell lung cancer (NSCLC) clinical pathway (CP). J Clin Oncol 2016;34(suppl):e18171.

Ellis PG, Aurora Health Care, et al. Actionable biomarkers in a non-small cell lung cancer (NSCLC) clinical pathway (CP). J Clin Oncol 2016;34(suppl 7S):#155.

Ellis PG, Aurora Health Care, et al. Clinical pathways as a platform to support clinical research. Cancer Res 2016;76(14 Suppl):#2594.

George TI, Erba HP, Steensma DP, Pollyea DA, Abedi M, Bejar R, Cogle CR, Garcia-Manero G, Grinblatt DL, Komrokji RS, Maciejewski JP, Revicki D, Roboz GJ, Savona MR, Scott BL, Sekeres MA, Thompson MA, Fliss A, Swern AS, Nifenecker M, Kiselev P, Sugrue MM, Foucar K. Current diagnosis patterns for acute myeloid leukemia (AML) in clinical practice compared with World Health Organization (WHO) 2008 recommendations: outcomes from the CONNECT® Myelodysplastic Syndromes (MDS) and AML Disease Registry. Blood 2016;128(22):3548.

Ghojallu S, Rappelt M, Chen HY, Perez R, Garlie L, Riddell G, Gu Y, Jun Zhang J, Qamar R, Khandheria BK, Jahangir A, Shi Y. Determining the incidence and factors of cardiotoxicity in breast cancer patients treated with anthracycline and/or trastuzumab-containing regimen at Aurora Health Care. (abstr.) J Patient Cent Res Rev 2016;3:244.

Rifkin RM, Davies FE, Palumbo A, Zonder J, Girnius SK, Costello CL, Usmani SZ, Berdeja JG, Omel J, Thompson MA, Shah J, Sanford Schwartz J, Hajek R, Terpos E, Hungria V, Mateos MV, Cook G, Leleu X, Spencer A, Goldschmidt H, Seal B, Pashos CL, Stull DM, Romanus D, Cacioppo R, Bell JA, Yu S, Luptakova K, Niculescu L, Noga SJ, Skacel T, Chari A. Global, prospective, non-interventional, observational study of presentation, treatment patterns, and outcomes in multiple myeloma patients: the Insight-MM Study. Blood 2016;128(22):5681.

Santhosh-Kumar CR, Gray D, Struve S, Huibregtse C, Chen Q. New primary palliative care (PC) model for community cancer clinics (CCC). J Clin Oncol 2016;34(suppl 26S):#159.

Schneider B, Miller KD, Badve S, O'Neil B, Helft P, Chitambar C, Falkson C, Nanda R, McCormick M, Danso M, Blaya M, Langdon R, Lippman M,

Paplomata E, Walling R, Thompson M, Robin E, Aggarwal L, Shalaby I, Canfield V, Adesunloye B, Lee T, Daily K, Ma C, Erban J, Radhakrishnan N, Bruetman D, Graham M, Reddy NA, Lynce FC, Radovich M. BRE12-158: A phase II randomized controlled trial of genomically directed therapy after preoperative chemotherapy in patients with triple negative breast cancer (TNBC). Cancer Res 2017;77(4 Suppl):abstract nr OT3-04-01 [Epub 2016 Dec 10].

Shamah CJ, Saphner TJ. Effect on clinical trial participation by integration of a clinical pathway program into an electronic health record (EHR). J Clin Oncol 2016;34(suppl 7S):#167.

Shamah CJ, Saphner TJ, Frick JC, Huibregtse C, Stiemke GS. Integration of a clinical pathways software into an EHR in a large, multisite, hospital-affiliated community oncology setting. J Clin Oncol 2016;34(suppl 7S):#129.

Sikov WM, Berry DA, Perou CM, Singh B, Cirrincione CT, Tolaney SM, Somlo G, Port ER, Qamar R, Sturtz K, Mamounas E, Golshan M, Bellon JR, Collyar D, Hahn OM, Carey LA, Hudis CA, Winer EP. Event-free and overall survival following neoadjuvant weekly paclitaxel and dose-dense AC +/- carboplatin and/or bevacizumab in triple-negative breast cancer: outcomes from CALGB 40603 (Alliance). Cancer Res 2016;76(4 Suppl):#S2-05.

Smith RY, Hurley PA, Thompson MA, Kurbegov D, Robert NJ. An online tool to assess the quality of research programs. J Clin Oncol 2016;34(suppl):e18153.

Thompson MA, Oaks MK, Richards JO, Singh M, Smith TS, Michel KM, Alemu AW, Mullane MP, Tarawneh HS, Kraut AM, Hamm KJ, Fuentes C. Multiple myeloma vaccination sequential immune response pilot study. Blood;128(22):5607.

Tjoe J, Dalmar A, Greer D. The role of surgical primary tumor extirpation in de novo stage IV breast cancer in the era of targeted treatment. Ann Surg Oncol 2016;23(3 Suppl):21-3.

Tjoe JA, Piacentine LB, Robinson KM, Ng AV, Waltke LJ, Sinner AA. Underserved community-based walking program for breast cancer survivors. J Clin Oncol 2016;34(3_suppl):e288.

Weese JL, Citrin L, Shamah CJ, Bjegovich-Weidman M. Implementation of treatment pathways in a large integrated health care system. J Clin Oncol 2016;34(suppl):#6613.

Wiley J, Blaza JJ, Lehmann W, Simpson D, Stearns JA, Pischke SL, Greiten TL. Identifying disparities in colorectal cancer screening rates in Milwaukee-based academic and nonacademic clinics. (abstr.) J Patient Cent Res Rev 2016;3:240-1.

2017 Aurora-Authored, Peer-Reviewed

Article Citations

Alemu A, Singh M, Blumberg C, Richards JO, Oaks MK, Thompson MA. Multiple myeloma vaccination patterns in a large health system: a pilot study. J Patient Cent Res Rev 2017;4:53-9.

Argenta PA, Dickson EL. In reply [to commentary on "Enhanced Recovery Program and Length of Stay After Laparotomy on a Gynecologic Oncology Service: A Randomized Controlled Trial. Obstet Gynecol 2017;129:355-62."]. Obstet Gynecol 2017;129:1139-40.

Arnold SM, Chansky K, Leggas, M, Thompson MA, Villano JL, Hamm J, Sanborn RE, Weiss GJ, Chatta G, Baggstrom MQ. Phase 1b trial of proteasome inhibitor carfilzomib with irinotecan in lung cancer and other irinotecan-sensitive malignancies that have progressed on prior therapy (Onyx IST reference number: CAR-IST-553). Invest New Drugs 2017;35:608-15.

Attai DJ, Anderson PF, Fisch MJ, Graham DL, Katz MS, Kesselheim J, Markham MJ, Pennell NA, Sedrak MS, Thompson MA, Utengen A, Dizon DS; for the Collaboration for Outcomes on Social Media in Oncology (COSMO). Risks and benefits of Twitter use by hematologists / oncologists in the era of digital medicine. Semin Hematol 2017;54:198-204.

Burkard ME, Deming DA, Parsons BM, Kenny PA, Schuh MR, Leal T, Uboha N, Lang JM, Thompson MA, Warren R, Bauman J, Mably MS, Laffin J, Paschal CR, Lager AM, Lee K, Matkowskyj KA, Buehler DG, Rehrauer WM, Kolesar J. Implementation and clinical utility of an integrated academic-community regional molecular tumor board. JCO Precis Oncol [Epub 2017 Jul 5].

Cairo J, Muzi MA, Ficke D, Ford-Pierce S, Goetzke K, Stumvoll D, Williams L, Sanchez FA. Practice model for advanced practice providers in oncology. Am Soc Clin Oncol Educ Book 2017;37:40-3.

Cox Bauer CM, Greer DM, Kram JJ, Kamelle SA. Corrigendum to 'Tumor diameter as a predictor of lymphatic dissemination in endometrioid endometrial cancer' [Gynecol. Oncol. 141 (2016) 199-205]. Gynecol Oncol 2017;144:649.

Dickson EL, Stockwell E, Geller MA, Vogel RI, Mullany SA, Ghebre R, Witherhoff BJ, Downs LS Jr, Carson LF, Teoh D, Glasgow M, Gerber M, Rivard C, Erickson BK, Hutchins J, Argenta PA. Enhanced recovery program and length of stay after laparotomy on a gynecologic oncology service: a randomized controlled trial. Obstet Gynecol 2017;129:355-62.

Else T, Lerario AM, Everett J, Haymon L, Wham D, Mullane M, Wilson TL, Rainville I, Rana H, Worth AJ, Snyder NW, Blair IA, McKay R, Kilbridge K, Hammer G, Barletta J, Vaidya A. Adrenocortical carcinoma and succinate dehydrogenase gene mutations: an observational case series. Eur J Endocrinol 2017;177:439-44.

Jones CG, Pechauer SM, Curtis BR, Bougie DW, Irani MS, Dhakal B, Pierce B, Aster RH, Padmanabhan A. A platelet factor 4-dependent platelet activation assay facilitates early detection of pathogenic heparin-induced thrombocytopenia antibodies. Chest 2017;152:e77-80.

Landercasper J, Bailey L, Buras R, Clifford E, Degnim AC, Thanasoulis L, Fayanju OM, Tjoe JA, Rao R. The American Society of Breast Surgeons and Quality Payment Programs: ranking, defining, and benchmarking more than 1 million patient quality measure encounters. Ann Surg Oncol 2017;24:3093-106.

Lichtman SM, Harvey RD, Damiette Smit MA, Rahman A, Thompson MA, Roach N, Schenkel C, Bruinooge SS, Cortazar P, Walker D, Fehrenbacher L. Modernizing clinical trial eligibility criteria: recommendations of the American Society of Clinical Oncology-Friends of Cancer Research Organ Dysfunction, Prior or Concurrent Malignancy, and Comorbidities Working Group. J Clin Oncol 2017;35:3753-9.

Nekhlyudov L, Lacchetti C, Davis NB, Garvey TQ, Goldstein DP, Nunnink JC, Ninfea JIR, Salner AL, Salz T, Siu LL. Head and Neck Cancer Survivorship Care Guideline: American Society of Clinical Oncology Clinical Practice Guideline Endorsement of the American Cancer Society Guideline. J Clin Oncol 2017;35:1606-21.

Pemmaraju N, Mesa RA, Majhail NS, Thompson MA. The use and impact of Twitter at medical conferences: best practices and Twitter etiquette. Semin Hematol 2017;54:184-8.

Pemmaraju N, Thompson MA, Mesa RA, Desai T. Analysis of the use and impact of Twitter during American Society of Clinical Oncology annual meetings from 2011 to 2016: focus on advanced metrics and user trends. J Oncol Pract 2017;13:e623-31.

Pemmaraju N, Thompson MA, Qazilbash M. Disease-specific hashtags and the creation of Twitter medical communities in hematology and oncology. Semin Hematol 2017;54:189-92.

Pemmaraju N, Utengen A, Gupta V, Kiladjian JJ, Mesa R, Thompson MA. Rare cancers and social media: analysis of Twitter metrics in the first 2 years of a rare-disease community for myeloproliferative neoplasms on social media - #MPNSM. Curr Hematol Malig Rep 2017;12:598-604.

Pemmaraju N, Utengen A, Gupta V, Thompson, MA, Lane AA. Analysis of first-year Twitter metrics of a rare disease community for blastic plasmacytoid dendritic cell neoplasm (BPDCN) on social media: #BPDCN. Curr Hematol Malign Rep 2017;12:592-7.

Ravvaz K, Walz ME, Weissert JA, Downs TM. Predicting nonmuscle invasive bladder cancer recurrence and progression in a United States population. J Urol 2017;198:824-31.

Sanchez FA. Best practices and practical nuances in the treatment of gastric cancer in high-risk global areas. Am Soc Clin Oncol Educ Book 2017;37:258-60.

Sedrak MS, Dizon DS, Anderson PF, Fisch MJ, Graham DL, Katz MS, Kesselheim JC, Miller RS, Thompson MA, Utengen A, Attai DJ; Collaboration for Outcomes on Social Media in Oncology (COSMO). The emerging role of professional social media use in oncology. Future Oncol 2017;13:1281-5.

Shell J, Gregory WD. Efficient cancer detection using multiple neural networks. IEEE J Transl Eng Health Med 2017;5:2800607.

Thompson MA, Ahlstrom J, Dizon DS, Gad Y, Matthews G, Luks HJ, Schorr A. Twitter 101 & beyond: introduction to social media platforms available to practicing hematologist/oncologists. Semin Hematol 2017;54:177-83.

Thompson MA, Godden JJ, Weissman SM, Wham D, Wilson A, Ruggeri A, Mullane MP, Weese JL. Implementing an oncology precision medicine clinic in a large community health system. Am J Manag Care 2017;23(10 Spec No.):SP425-7.

Thompson MA, Oaks MK, Singh M, Michel KM, Mullane MP, Tarawneh HS, Kraut A, Hamm KJ. Multiple myeloma baseline immunoglobulin G level and pneumococcal vaccination antibody response. J Patient Cent Res Rev 2017;4:131-5.

Weese JL, Citrin LY, Shamah CJ, Bjegovich-Weidman M, Twite KA, Sanchez FA. Preparing for value-based cancer care in a multisite, integrated health care system. Oncology Issues 2017;Nov-Dec:44-50.

Weissman SM, Zellmer K, Gill N, Wham D. Implementing a virtual health telemedicine program in a community setting. J Genet Couns 2017 Dec 4 [Epub ahead of print].

Xing D, Jenson EG, Zwick CA, Rodriguez FJ, Kurman RJ. Atypical proliferative (borderline) serous tumor in the brain: a case report. Int J Gynecol Pathol 2018;37:52-6.

Acknowledgements

At Aurora, our caregivers continue to strive for excellence as they touch the lives of those they serve. With their dedication and insight, Aurora is able to lead in clinical excellence, innovation, research and education.

Marija Bjegovich-Weidman, RN, MSN
George Bobustuc, MD
Amy Bock, RN, MBA
Charles Bomzer, MD
Jamie Cairo, NP
Aaron Chevinsky, MD
Nancy Conway, MS
Elizabeth Dickson-Michelson, MD
Becky Dienberg, NP
Jennifer Godden, PharmD
Erin Heissel
Carol Huibregtse, RN, MSN
Jennifer Jarvey Balistreri, MS
Jeffrey Kittle, MD
Katie Klein
Randall Lambrecht, PhD
Michael Mullane, MD
William Owens, MD
Manish Pant, MD
Federico Sanchez, MD
Thomas Saphner, MD
Corey Shamah, MD
Angela Sinner, MBA
Vinay Thohan, MD
Michael Thompson, MD, PhD
William Tisol, MD
Rachael Wade
Leslie Waltke, DPT
Nicholas Webber, MD
Anne Weers, RN, MS
James Weese, MD
Deborah Wham, MS


Aurora Health Care®


Laura McGartland, M.D.
Aurora Cancer Care
Brittany Groff, NP
Aurora Cancer Care
Brittany
Groff
Nurse Practitioner
Aurora Health Care
NP

Aurora Health Care®

Cancer Care Service Line

aurora.org/cancer