

THE UNIVERSITY OF KANSAS

CANCER CENTER

2017 Cancer Program Annual Report

Incorporating the 2016 Cancer
Registry statistical review



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Chairman's report

Joshua M.V. Mammen, MD, PhD, FACS



I am pleased to share our 2017 Cancer Center Annual Report. The American College of Surgeons Commission on Cancer (CoC), which was established in 1922, has more than 1,500 participating hospitals in the United States and Puerto Rico. This represents only 30 percent of all healthcare institutions but more than 70 percent of all new cancer patients. The CoC provides important metrics and tools for cancer centers to improve quality and personalize cancer care.

CoC accreditation signals to patients access to the full scope of subspecialty care and services. For patients and their families, accreditation is an important measure of quality care and a commitment by The University of Kansas Cancer Center to continually improve the care provided to cancer patients. The CoC performed its survey of our facility last year and we were reaccredited for three years with commendation. The U.S. News & World Report rankings once again listed The University of Kansas Cancer Center as one of the nation's best cancer programs for the sixth year in a row. Additionally, The University of Kansas Health System achieved accreditation by the National Accreditation Program for Breast Centers. Lastly, we received renewal of our National Cancer Institute designation for five years and an overall score of outstanding. Our cancer center is one of 69 NCI-designated cancer centers in the country.

As the number of patients we care for continues to increase, the need for additional facilities grows. The University of Kansas Health System's new Cambridge Tower A opened in November and is functioning at full steam. The new tower contains the latest surgical, interventional and diagnostic facilities to enable our physicians to continue to provide the most advanced care for our cancer patients. New facilities will open at The University of Kansas Hospital's Overland Park location in 2018 that will expand access to cancer care to patients residing in Johnson County.

The University of Kansas Cancer Center is dedicated to the eradication of cancer. We continue to offer our patients many new options for cancer treatment and prevention. As we pursue this goal together, we will conduct new research, translate our findings into innovative therapies and investigate new ways to prevent and diagnose cancer. Together, we will continue to ensure that the patients and families we serve receive the highest level of care from diagnosis through treatment and survivorship.

Joshua M.V. Mammen, MD, PhD, FACS

The University of Kansas Cancer Center
Cancer Committee Chair



Cancer Registry Report

The University of Kansas Cancer Registry operates under the direction and guidance of the Cancer Committee and is located within Health Information Management. The Cancer Registry at our facility became accredited by the American College of Surgeons in 1934, and has maintained accreditation since. The reference date for the organization is 2004; however, the current electronic database contains data pertaining to patient demographics, cancer diagnoses, treatment information, staging and outcomes that go back to 1947. More than 100,927 cases have been added to the electronic registry for the accession years of 1947 through 2016. The registry participates in the American College of Surgeons Commission on Cancer Approvals Program. The Commission on Cancer, or CoC, provides standards and program review of healthcare facilities participating in its program.

The Cancer Registry has a staff of 19 certified tumor registrars (CTRs). Cancer registrars collect and analyze all reportable and supplemental data; document Cancer Committee attendance and provide a cancer registry report for each meeting; document tumor conference information; supply reports of database information to medical and administrative staff; and report all cases to the Kansas Cancer Registry. Missouri cases are sent to the Missouri Cancer Registry. The registry also follows patients annually to determine health changes and provide information for survival and outcomes data.

The registrars collectively are members of the National Cancer Registrars Association (NCRA), the Kansas Cancer Registrars Association (KCRA) and the Missouri State Tumor Registrars Association (MOSTRA). All participate in educational events annually to maintain certification status, and the CTRs also attend a regional or national cancer conference at least every three years.

In 2016, 6,542 new cases were added to the registry and 5,831 were analytic (cases diagnosed and/or treated by one of the facilities of The University of Kansas Cancer Center for the patient's first course of treatment).

Cancer Registry data is available for multiple uses, including reporting results and evaluating quality care, as well as for research and educational purposes. Periodic follow-up is an important function of the registry. It increases the likelihood that patients will receive appropriate medical care for early detection and treatment of recurrent or new cancers. Early detection can potentially improve survival. Information obtained through follow-up provides researchers and clinicians with a means to study the disease process and efficacy of treatment modalities.

The follow-up rate for all analytic patients from the Cancer Registry reference date of 2004 is 86.17 percent. The CoC requires this rate to be at least 80 percent. The follow-up rate for analytic patients diagnosed within the last five years is 90.71 percent, which also meets CoC requirements for the five-year rate.

The Cancer Registry assists in the collection of the cancer conference data. Tumor conferences were presented on a weekly, bimonthly or monthly basis by an interdisciplinary team consisting of physician representatives from many different departments. The University of Kansas Cancer Center had 13 different cancer conferences in 2016. These events were tracked to provide consultative services to patients and help educate the medical staff and other healthcare professionals. National treatment guidelines, staging, prognostic indicators and clinical trial options are also discussed at these conferences. There were 375 tumor conferences held in 2016, which included multidisciplinary, breast, GI, lymphoma and myeloma, head and neck, thoracic, bone marrow, thyroid, neuro-oncology, genitourinary (GU), melanoma, sarcoma and gynecologic oncology, which was added to tumor conferences in 2016. A total of 1,750 cases was presented at these various conferences.

The Cancer Registry is staffed by the following Health Information Management personnel:

Management

Theresa Jackson, RHIA – HIM director
Tim Metcalf, BS, CTR – manager
Ashley Wagner, CTR – lead registrar

Registrars

Kerry Barkman, RHIT, CTR
Christine Bartlett, RHIT, CTR
Elaine Casper, RHIT, CTR
Cari Dobosz, RHIT, CTR
Ian Duff, BS, RHIA, CTR
Kathrine Greene, RHIT, CTR
Sandra Haenchen, RHIT, CTR
Marsha Klein, BS, RHIT, CTR
Joyce Knapp, RHIT, CTR
Julie Mammen, CTR
Garrett Neiss, RT, CTR
Mary Beth Piranio, BA, RHIT, CTR
Andrea Reynolds, RHIT, CTR
Marcelo Saculles, RHIT, CTR
Terry Sigmund, CTR
Marji Smith, RHIT, CTR
Danielle Steele, RHIT, CTR

CP3R – Cancer Program Practice Profile Reports and RQRS – Rapid Quality Reporting System

Annually, Commission on Cancer CP3R Standards 4.4 and 4.5, plus monthly RQRS Standard 5.2, require The University of Kansas Health System performance rates for the measures listed below (Table 1), which reflect our benchmark compliance rates. This offers the opportunity to review data to ensure our performance rates reflect the quality care that we provide. The Cancer Committee reviews and has the opportunity to modify treatment strategies to benchmark our alignment with national quality guidelines and recommended best practices, which will allow us to ensure optimal patient outcomes.

Below are the retrospective measures we have reviewed through 2014. Measure types indicated as “surveillance treatment” are not yet a requirement for full assessment, but rather a vehicle to observe and assess patient care and outcomes. We have met and exceeded all accountability and quality improvement goals. RQRS monthly reviewed cases are indicated below by a single *. RQRS represents cases in certain measures for which we concurrently observe and submit patterns and trends of care.

Table 1

Bladder	Measure type	CoC std/ goal	2012	2013	2014
At least 2 lymph nodes are removed in patients under the age of 80 undergoing partial or radical cystectomy.	Surveillance	Not applicable	100.00	100.00	100.00
Radical or partial cystectomy or trimodality therapy (local tumor destruction/excision with chemotherapy and radiation) for clinical T234N0M0 patients with urothelial carcinoma of the bladder, first treatment within 90 days of diagnosis.	Surveillance	Not applicable	75.00	89.30	83.30
Neoadjuvant or adjuvant chemotherapy recommended or administered for patients with muscle invasive cancer undergoing radical cystectomy.	Surveillance	Not applicable	85.00	73.90	65.20
Breast					
Breast conservation surgery rate for women with AJCC clinical stage 0, 1 or 2 breast cancer.	Surveillance	Not applicable	45.90	44.00	41.70
Combination chemotherapy is recommended or administered within 4 months (120 days) of diagnosis for women under the age of 70 with AJCC T1cN0 or stage 1B-3 hormone-receptor-negative breast cancer. *Only monitored in RQRS – not officially held to a standard percent.	Surveillance	Not applicable	96.10	97.90	91.70
Image- or palpation-guided needle biopsy to the primary site is performed to establish diagnosis of breast cancer.	Quality improvement	4.5/ 80%	96.10	99.10	99.00
Radiation is administered within 1 year (365 days) of diagnosis for women under the age of 70 receiving breast conservation surgery for breast cancer. *RQRS	Accountability	4.4 & 5.2/ 90%	98.10	94.50	98.00
Radiation therapy is recommended or administered following any mastectomy within 1 year (365 days) of diagnosis of breast cancer for women with >= 4 positive regional lymph nodes. *RQRS	Accountability	4.4 & 5.2/ 90%	95.70	94.20	92.00
Tamoxifen or third-generation aromatase inhibitor is recommended or administered within 1 year (365 days) of diagnosis for women with AJCC T1c or stage 1B-3 hormone-receptor-positive breast cancer. *RQRS	Accountability	4.4 & 5.2/ 90%	96.20	95.10	98.90

Cervix	Measure type	CoC std/ goal	2012	2013	2014
Radiation therapy completed within 60 days of initiation of radiation among women diagnosed with any stage of cervical cancer.	Surveillance	Not applicable	100.00	100.00	91.70
Colon					
Adjuvant chemotherapy is recommended or administered within 4 months (120 days) of diagnosis for patients under the age of 80 with AJCC stage 3 (lymph-node-positive) colon cancer. *Only monitored in RQRS – not officially held to a standard percent.	Surveillance	Not applicable	93.80	90.00	97.30
At least 12 regional lymph nodes are removed and pathologically examined for resected colon cancer. *RQRS	Quality improvement	4.5 & 5.2/ 85%	100.00	93.00	97.20
Endometrium					
Chemotherapy and/or radiation administered to patients with stage 3C or 4 endometrial cancer.	Surveillance	Not applicable	80.00	80.80	100.00
Endoscopic, laparoscopic or robotic surgery performed for all endometrial cancer (excluding sarcoma and lymphoma) for all stages, except stage 4.	Surveillance	Not applicable	68.30	67.50	67.30
Gastric					
At least 15 regional lymph nodes are removed and pathologically examined for resected gastric cancer.	Quality improvement	4.5/ 80%	25.00	87.50	90.00
Kidney					
At least 1 regional lymph node is removed and pathologically examined for primarily resected unilateral nephroblastoma.	Surveillance	Not applicable	No data existed	100.00	100.00
Lung					
Systemic chemotherapy is administered within 4 months to the day preoperatively or day of surgery, to 6 months postoperatively, or it is recommended for surgically resected cases with pathologic lymph-node-positive (pN1) and (pN2) NSCLC.	Quality improvement	4.5/ 85%	100.00	100.00	90.90
Surgery is not the first course of treatment for cN2, M0 lung cases.	Quality improvement	4.5/ 85%	93.30	96.30	88.10
At least 10 regional lymph nodes are removed and pathologically examined for AJCC stage 1A, 1B, 2A and 2B resected NSCLC.	Surveillance	Not applicable	23.30	33.30	25.00
Ovary					
Salpingo-oophorectomy with omentectomy, debulking/cytoreductive surgery or pelvic exenteration in stages 1-3C ovarian cancer.	Surveillance	Not applicable	84.40	89.60	80.50
Rectum					
Preoperative chemotherapy and radiation are administered for clinical AJCC T3N0, T4N0 or stage 3; or postoperative chemotherapy and radiation are administered within 180 days of diagnosis for clinical AJCC T1-2N0 with pathologic AJCC T3N0, T4N0 or stage 3; or treatment is recommended for patients under the age of 80 receiving resection for rectal cancer.	Quality improvement	4.5/ 85%	89.20	93.50	84.40

2016 research roundtables

The University of Kansas Cancer Center and the Kansas Masonic Cancer Research Institute conduct a variety of educational activities. These include research roundtables, tumor conferences, symposia and interdisciplinary conferences. In addition to providing supplemental education to our students, physicians and researchers, the purpose of these activities is to achieve a greater level of collaborative research and multidisciplinary interaction.

February 27

Priyanka Sharma, MD
Debu Tripathy, MD
Joshua Mammen, MD, PhD
Jennifer Klemp, PhD

Panel

Qamar Khan, MD
Debu Tripathy, MD
Pavan Reddy, MD
Joshua Mammen, MD, PhD
Jamie Wagner, DO
Priyanka Sharma, MD
“San Antonio Breast Cancer
Symposium 2016”

February 29

Sonali Smith, MD
“New Opportunities to Enhance the Clinical
Outcomes of Patients with Follicular
Lymphoma: A Visiting Professor Lecture
Series for Hematology/Oncology Fellows”

April 2

Chao Huang, MD
Justin Gainor, MD
Rashna Madan, MD
Nirmal Veeramachaneni, MD
Xinglei Shen, MD
Tanguy Seiwert, MD
David Beahm, MD
S. Kamal Fetouh, MD
“Lung and Head and Neck Cancer
Symposium”

April 16

Joseph McGuirk, DO
David Avigan, MD
Helen Heslop, MD
Carl June, MD
Stephanie Lee, MD
Siddhartha Ganguly, MD
Zahra Mahmoudjafari, PharmD
Leyla Shune, MD
Ali Coats, APRN
Liza Rodriguez, APRN
Sunil Abhyankar, MD
“Advances in Blood and Marrow
Transplantation”

April 25

Jeffrey Conrad Laurence, MD
“Disease-Understanding aHUS:
A Differential Diagnosis of TMAs”

June 10

Juliano Cé Coelho
“ASCO Guest Speaker: Challenges in the
Management of Lung Cancer in Brazil”

July 27

Roy Jensen, MD
“The University of Kansas Cancer Center –
the Drive to Comprehensive Status”

August 15

Raed Al-Rajabi, MD
“Hematology Pathway Regimen Review”

September 24

Raed Al-Rajabi, MD

“New Paradigm in the Treatment of
Gastrointestinal Tract Malignancies”

Prakash Neupane, MD

“New Developments in the Management
of Head and Neck Cancer”

Qamar Khan, MD

“Therapeutic Advances in the Management
of Breast Cancer”

Hossein Borghaei, DO

“Updates in Thoracic Oncology”

Peter Van Veldhuizen, MD

“New Breakthroughs in GU Cancer”

Gary Doolittle, MD

“Updates in the Treatment and
Management of Melanoma”

Siddhartha Ganguly, MD

“Cure for Myeloma: Are We There Yet?”
“ASCO Review 2016”

October 12

Priyanka Sharma, MD

“Novel Treatment Strategies for
Triple Negative Breast Cancer”

October 24

Casey O’Connell, MD

Assistant Professor of Clinical Medicine

USC Keck School of Medicine

Los Angeles, CA

“Underdiagnosed and Undertreated:
Vera (PV) and Myelofibrosis (MF)”

November 14

Carol Ann Huff, MD

Myeloma Program

Associate Professor of Oncology

Johns Hopkins Sidney Kimmel Comprehensive
Cancer Center

“Understanding Recent Progress in MM:
Clinical Implications and Perspectives”

November 16

Al-Ola Abdallah, MD

“Updates in Myeloma”

November 17

James Armitage, MD

“Targeting B-Cell Lymphomas: The Latest
Updates in Therapies, Practice Strategies
and Clinical Research”

November 18

“KUCC Research Symposium”

November 19

Melanoma

Gary Doolittle, MD

Christopher Lominska, MD

Joshua Mammen, MD, PhD

Keynote Speaker

Paul Lieberman, PhD

Colon Cancer

Raed Al-Rajabi, MD

Joseph Valentino, MD

Andrew Hoover, MD

Breast Cancer

Qamar Khan, MD

Melissa Mitchell, MD

Jamie Wagner, DO

“Multidisciplinary Symposium”

December 9

Kathy Newell, MD

“The New WHO Criteria for Brain Tumors”

December 16

Wadih Arap, MD, PhD

Renata Pasqualini, PhD

“Ligand-directed Targeting and Molecular
Imaging in Translational Medicine”

2016 tumor conferences

Type of conference	Interval	Number of conferences	Number of analytic cases presented
Departmental: ENT	Weekly	32	282
Departmental: Genitourinary (GU)	Bimonthly	21	58
Departmental: Gynecologic (GYN)	Weekly	15	74
Departmental: Sarcoma	Monthly	21	92
Departmental: Thoracic	Weekly	46	314
Multidisciplinary	Weekly	31	58
Site-focused: Bone marrow/BMT	Weekly	42	233
Site-focused: Breast	Weekly	40	127
Site-focused: Gastrointestinal (GI)	Weekly	47	211
Site-focused: Hemepath	Weekly	29	89
Site-focused: Melanoma	Monthly	20	58
Site-focused: Neuro-oncology	Bimonthly	20	75
Site-focused: Thyroid	Monthly	10	79
Totals		374	1,750*

*All cases prospective, except for one retrospective multidisciplinary conference case

2016 county distribution

Kansas by place of residence at diagnosis	Missouri by place of residence at diagnosis
Johnson: 18.39%	Jackson: 20.19%
Wyandotte: 7.73%	Clay: 9.10%
Leavenworth: 3.31%	Platte: 4.28%
Shawnee: 2.89%	Cass: 2.83%
Douglas: 2.40%	Buchanan: 1.46%
Sedgwick: 1.68%	Other Missouri: 8.04%
Other Kansas: 15.69%	Total Missouri: 45.90%
Total Kansas: 52.09%	

All other states: 1.72%
Unknown county or state: 0.19%
Foreign residents: 0.1%

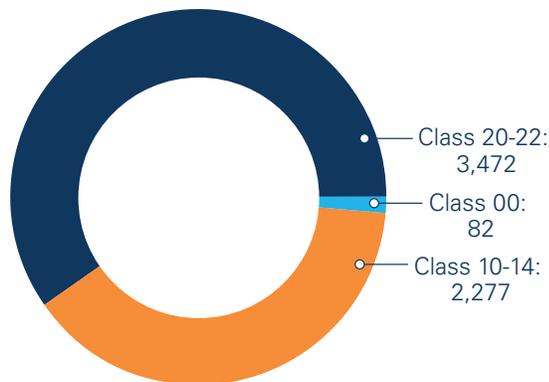
2016 primary site table

Primary site	Analytic	Nonanalytic	Total
Oral cavity	260	22	282
Lip	7	1	8
Tongue	106	9	115
Oropharynx	6	1	7
Hypopharynx	3	0	3
Other	138	11	149
Digestive system	929	105	1,034
Esophagus	67	5	72
Stomach	66	7	73
Colon	182	36	218
Rectum	127	10	137
Anus/anal canal	20	6	26
Liver	226	14	240
Pancreas	166	15	181
Other	75	12	87
Respiratory system	632	51	683
Nasal/sinus	14	0	14
Larynx	55	5	60
Other	8	0	8
Lung/bronc-small cell	98	4	102
Lung/bronc-nonsmall cell	429	40	469
Other bronchus/lung	28	2	30
Blood & bone marrow	438	87	525
Leukemia	241	48	289
Multiple myeloma	122	17	139
Other	75	22	97
Bone	35	1	36
Connect/soft tissue	110	11	121
Skin	321	43	364
Melanoma	296	39	335
Other	25	4	29
Breast	1,198	77	1,275
Female genital	300	21	321
Cervix uteri	29	7	36
Corpus uteri	164	8	172
Ovary	73	3	76
Vulva	22	2	24
Other	12	1	13
Male genital	369	93	462
Prostate	327	86	413
Testis	30	7	37
Other	12	0	12
Urinary system	408	76	484
Bladder	163	45	208
Kidney/renal	231	29	260
Other	14	2	16
Brain & CNS	258	31	289
Brain (benign)	8	2	10
Brain (malignant)	116	15	131
Other	134	14	148
Endocrine	161	21	182
Thyroid	101	14	115
Other	60	7	67
Lymphatic system	310	49	359
Hodgkin's disease	41	8	49
Non-Hodgkin	269	41	310
Unknown primary	59	6	65
Other/ill-defined	32	28	60
All sites	5,820	722	6,542

*Includes malignant and reportable benign cases.

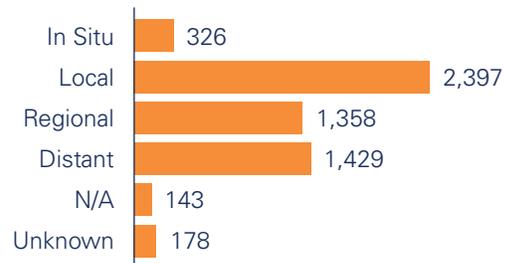
2016 statistical graphs – analytic cases

Class distribution

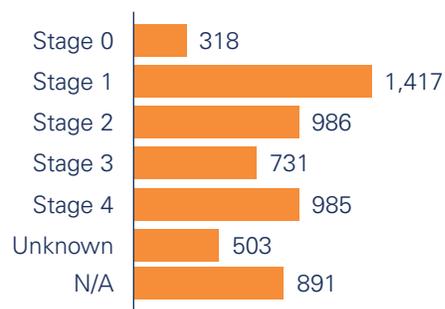


Class 00: Diagnosed here, all treatment elsewhere.
 Class 10-14: Diagnosed here, all or part of first-course treatment here.
 Class 20-22: Diagnosed elsewhere, all or part of first-course treatment here.

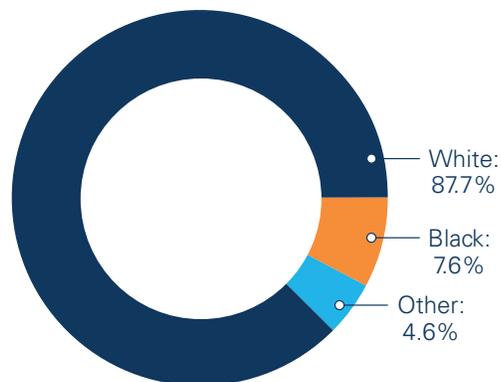
SEER summary stage at diagnosis (n=5,831)



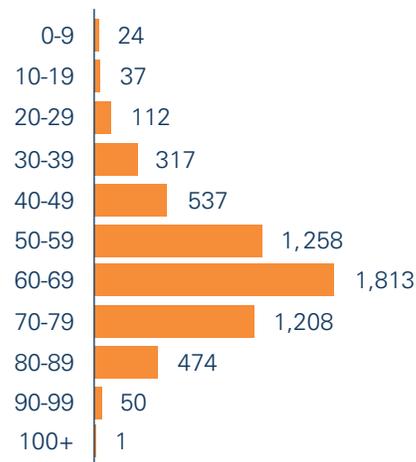
AJCC stage group at diagnosis (n=5,831)



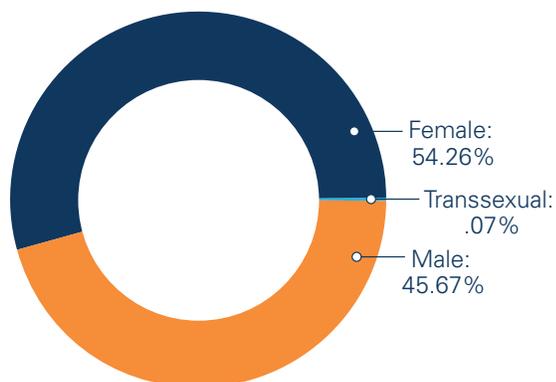
Race distribution



Age at diagnosis (n=5,831)

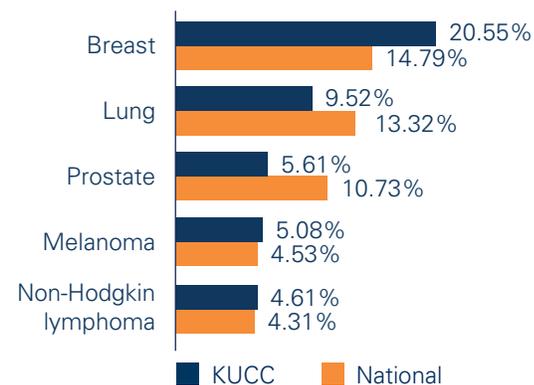


Sex distribution



Top five primary sites

American Cancer Society statistics



Ensuring quality of life through palliative care essential to personalized cancer treatment

Christian Sinclair, MD, FAAHPM

Assistant Professor, Internal Medicine
Palliative Medicine Division
Department of Internal Medicine, University of Kansas Medical Center

When people come to the University of Kansas Cancer Center, they expect innovative treatments, access to leading-edge clinical trials and the comprehensive care that can only be found at a National Cancer Institute-designated cancer center such as ours.

Another aspect of care that is vital to patients and families living with serious illness is ensuring quality of life. At our cancer center, the Allen J. Block Outpatient Palliative Care Program has been supporting such efforts since 2012.

Making time for what matters

We have been a national leader in palliative care for the last two decades, but it is still a new experience for many patients and their families. Palliative care, and the medical subspecialty of palliative medicine, is specialized medical care for people living with serious or chronic illness. Its aim is to provide relief from the symptoms and stress of the illness, while improving quality of life for both the patient and the family.

Providing palliative care is another way that our cancer center delivers personalized medicine. It involves understanding the unique goals, hopes and concerns of individuals treated at

our cancer center. We purposefully schedule new and follow-up palliative care visits for longer blocks of time. This allows us to spend more time engaging with the patient and their family about what matters most to them.

During these visits, we perform a complex medication review and talk about serious illness, advance care planning, education, counseling and comprehensive assessments of pain, nausea, shortness of breath, fatigue, depression and other symptoms. Patients and family members frequently say after their first visit that they feel better having sat down to review and talk about these issues.

Partners in care

Key to success is a strong partnership with the oncology, hematology and blood and marrow transplant teams, that includes frequent communication to manage patient care together. Cancer center physicians have embraced early access to palliative care, which allows us time to follow the patient throughout their treatments instead of waiting for a crisis to occur. Aggressive symptom control helps patients feel well enough to continue treatments and not be limited by pain, nausea and fatigue.

Not all treatment plans work out the way we hope. At those times, we come together to discuss our options with patients, families and the cancer teams. Conversations can be difficult when goals need to change, but the discussions must take place. Yet, we also get to celebrate when therapy makes a positive difference. We work closely with our growing survivorship programs to ensure that quality of life after cancer gets the attention it deserves.

Five years and growing

The outpatient palliative care clinic is staffed by three nurses and five physicians. I serve as the chief outpatient physician.

For most cancer patients, their visit with a palliative care clinician takes place in the same clinic where they see their oncologist. The palliative care team also sees patients who are hospitalized.

At The University of Kansas Hospital, the inpatient palliative care team of physicians, nurses and social workers assists with symptom management, decision-making, care coordination and emotional or spiritual support.

The clinical also provides educational opportunities for medical students, residents and fellows, nursing students, psychology trainees and others, to learn how outpatient palliative care can benefit patients and families.

As we celebrate our fifth year, we added six half-day clinics in 2017 for a total of 11 half-day clinics at cancer center locations in Westwood; North Kansas City; Kansas City, Missouri; Kansas City, Kansas; and Overland Park.

We conducted more than 1,500 visits in 2017, a growth of nearly 50 percent over 2016. As we look to 2018, we will continue to expand clinical access and launch research efforts. This includes providing telehealth for lung cancer patients with support from a Patient-Centered Outcomes Research Institute grant. Additional research projects focused on patient-reported outcomes, prognostication and interviews with patients and families about their palliative care experience are also planned.



**Christian Sinclair,
MD, FAAHPM**

Dr. Sinclair was recently recognized as one of the 30 most influential leaders in hospice and palliative medicine by the American Academy of Hospice and Palliative Medicine. In his role, he is responsible for collaboration with cancer center leadership.

Monitoring compliance with evidence-based guidelines, prostate review, 2016 case analyses

Prostate cancer cases that received radiation therapy

Xinglei Shen, MD

Assistant Professor, Radiation Oncology
Department of Radiation Oncology, University of Kansas Medical Center

In 2016, there were an estimated 180,890 new cases of prostate cancer in the United States (per American Cancer Society 2016 facts and figures). Prostate cancer is the most common cancer in men after skin cancer, and makes up 21 percent of all cancer in men in the United States. Prostate cancer is the second leading cause of cancer deaths in men at an estimated 26,120 deaths in 2016.

Symptoms at presentation

Early prostate cancer has no symptoms, but advanced disease can present with frequent urination, interrupted urine flow and even blood in the urine. A more common site for advanced disease metastasis is bone. Bony involvement is often painful, hampering mobility and overall quality of life.

Risk factors

Advanced age, African ancestry, family history and other genetic predispositions are the primary risk factors for the disease. An estimated 5 to 10 percent of prostate cancer cases can be attributed to familial predisposition. Lynch syndrome and BRCA1/BRCA2 gene mutations also are directly tied to prostate cancer. Obesity and smoking are not noted as causative factors, but some studies suggest they may increase the likelihood of a more aggressive and fatal disease.

Early detection

As previously stated, early disease is generally asymptomatic. The American Cancer Society recommends that men age 50 with average risk consult with their physician regarding screening with prostate specific antigen (PSA) testing. In May 2017, the U.S. Preventive Services Task Force recommended clinicians inform men age 55-69 years about the potential benefits and drawbacks of PSA-based screening. Men with higher risk factors, such as an increased incidence of familial prostate cancer, familial prostate cancer before age 65, genetic predisposition and men of African descent, should consult with their physician at age 40-45, depending on risk factors.

National guidelines for treatment

The University of Kansas Cancer Center follows evidence-based national treatment guidelines for determining treatment based on stage of disease as found in the National Comprehensive Cancer Network (NCCN). These guidelines are site-specific and based on a number of presenting factors and stage of cancer at presentation and recurrence.

For patients with prostate cancer, treatment options depend on stage, patient preferences and life expectancy.

In general, treatment options by stage include:

Stage 1: Active surveillance, observation, radical prostatectomy and radiation therapy

Stage 2A: Observation, radical prostatectomy and radiation therapy +/- hormonal therapy

Stage 2B: Radical prostatectomy, radiation therapy and hormonal therapy

Stage 3: Radical prostatectomy, radiation therapy and hormonal therapy

Stage 4: Systemic therapy +/- radiation therapy in select patients

For patients who have high risk factors after surgery, including extra-capsular invasion, seminal vesicle invasion, positive margins or rising PSA, the addition of pelvic radiation to the prostate bed improves survival.

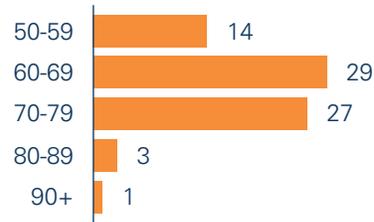
For patients who elect radiation therapy, the addition of hormonal therapy reduces rate of recurrence and improves survival in patients with stages 2-3 cancer.

The University of Kansas Cancer Center prostate patient population

In 2016, we had 329 analytic prostate cancer cases. To conduct a more focused study, and to align with Commission on Cancer Standard 4.6, we examined the 74 patients who had radiation therapy as part of their first course of cancer-directed treatment. This examination helps determine appropriateness of this form of treatment in those patients.

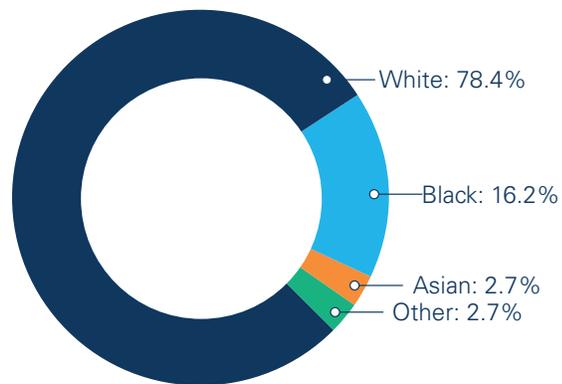
Not surprisingly, each of these radiation patients in our subpopulation had the most commonly occurring histology for this cancer type, which is adenocarcinoma, not otherwise specified. In reviewing this segment of our population, we had the following distributions, which are consistent with nationally published numbers:

Age at diagnosis (n=74)

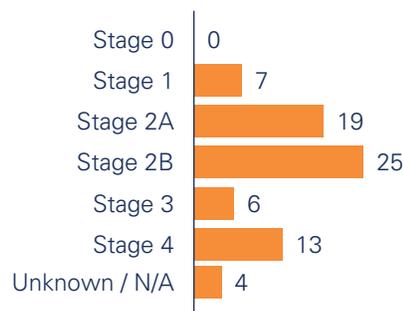


As expected, we see a somewhat bell-shaped curve, with no patients under age 50, and the highest number of patients in their 60s and 70s.

Race distribution



AJCC clinical stage group at diagnosis



Summary of treatment chart – clinical AJCC stage at diagnosis (n=74)

Treatment	I	2A	2B	3	4 (nodes only)	4 (ext & mets)	99
Rad/Horm		8	17	2	4	2	
Rad	6	7	3			2	
Surg/Rad	1	3	2	1			3
Surg/Rad/Horm		1	3	1		2	1
Chem/Rad/Horm				2	1	2	
Totals (n=74)	7	19	25	6	5	8	4

Our radiation therapy population comprises 74 analytic prostate cancer patients from 2016.

There were no AJCC stage 0 in situ or “precancerous” lesion patients in our population. This is primarily due to the lack of symptoms and the absence of early detection methods for this cancer site.

Not all prostate cancer patients are pathologically staged, so we group these by clinical staging. Then we examine if they have deviations from normal treatments, and at that point also analyze pathologic stage.

Unstageable disease

Four patients had unstageable disease. This is because full assessment of cancer status, such as lymph node assessment, was not documented or could not be determined prior to cancer treatment. Each patient had surgery and radiation. One also received hormone therapy.

Clinical AJCC stage 1

There were seven stage 1 patients. The mainstay for stage 1 disease is generally surgery or observation or radiation. Six of the seven stage 1 patients received radiation only, which is appropriate. One patient had surgery followed by radiation; this patient’s disease was high-grade pathologically (pathological T3) so surgery followed by radiation therapy was appropriate. No cases in this analysis were placed on active surveillance, because by definition, all patients in this analysis had radiation as a component of their management.

Clinical AJCC stage group	Path AJCC stage group
1	3

The clinical stage 1 patient who received surgery and radiation had disease with a higher pathologic stage.

Clinical AJCC stage 2A

There were 19 stage 2A patients. This is still considered early stage disease, and treatment choices are primary surgery and radiation. Four patients whose disease was pathologically T3A or T3B had surgery followed by radiation, which is appropriate. One of the four additionally received hormone therapy. Seven patients received radiation as the sole cancer-directed treatment. Eight additional patients received radiation with hormone therapy. Hormone therapy is often used in addition to primary radiation treatment for stage 2 disease when there is a higher risk of recurrence. This is indicated by the presence of a higher Gleason score or higher PSA.

Clinical AJCC stage group	Path AJCC stage group
2A	3

In those who received radiation and surgery, pathologic staging was higher than clinical staging.

Clinical AJCC stage 2B

There were 25 stage 2B patients. Five patients had surgery followed by radiation. Three of them were pathologic stage 3B and one was pathologic stage 2B; the final one had a transurethral resection of the prostate followed

by brachytherapy vs. beam radiation. Three patients in this group additionally had hormone treatment. Only three patients in the 2B group had radiation as the sole cancer-directed treatment. Seventeen additional patients received radiation with hormone therapy, which is appropriate for this stage, depending on PSA, Gleason score, age and other health conditions.

Clinical AJCC stage group	Path AJCC stage group
2B	2B
2B	3
2B	3
2B	4
2B	99

Clinical stage 2B patients who received surgery and radiation had disease with a higher pathologic stage.

Clinical AJCC stage 3

There were six patients with stage 3 disease. One had surgery with radiation. Two had chemotherapy, radiation and hormone therapy. One had surgery, radiation and hormone treatment. Two had radiation and hormone treatment. These cancers are more likely to recur than earlier stage disease, so multimodality treatment is typically available, which we saw with this group.

Clinical AJCC stage 4 (lymph node involvement)

There were 13 patients with metastatic disease upon presentation. Stage 4 disease is not generally considered “curable,” so often we address symptoms only. To conduct a more complete analysis, we separately examined those cases that had regional nodal involvement only. Four of the five cases that were stage 4 due to lymph node involvement only received radiation and hormone therapy. The fifth case that had nodal involvement only received Taxotere® (docetaxel) chemotherapy in addition to radiation and hormone therapy.

Clinical AJCC stage 4 (T4 extension or distant metastasis)

Eight patients with metastatic disease fit into this category. One patient had T4 disease, with tumor extension into the distal ureter; this patient had radiation only to the prostate and pelvis. A common site for prostate cancer metastasis is bone; radiation often helps with palliation for this painful disease.

Of the seven additional patients who had distant metastasis, one had radiation alone; two had radiation and hormone therapy; two had surgery to the primary site, followed by radiation therapy and hormone therapy; and two had chemotherapy with radiation and hormone therapy. Taxotere was the chemotherapy used in each stage 4 patient who received chemotherapy. All treatment reviewed was appropriate.

To summarize, in terms of guideline concordant care, there is a role for radiation in all stages of prostate cancer. This holds true for cases where treatment is definitive, and is also the case in metastatic cancers, since they may receive palliative radiation that can enhance or prolong quality of life. We had a typical distribution of prostate cancer patients. The data review for our prostate cancer cases that received radiation therapy demonstrates appropriate treatment per NCCN and other national guidelines.

National Cancer Institute designation

Through world-class research and patient care, The University of Kansas Cancer Center is working toward a world without cancer. As one of only 69 National Cancer Institute-designated cancer centers in the country, The University of Kansas Cancer Center is committed to providing the highest level of research, treatment, prevention and survivorship services available.

Why NCI designation is important

NCI designation is only awarded to the nation's premier cancer research and treatment centers. NCI-designated cancer centers are pioneers in cancer research, recognized for scientific leadership, resources and depth of research in basic, clinical and population science.

NCI designation transforms our region

Each year, approximately 14,500 Kansans are diagnosed with cancer. The University of Kansas Cancer Center's NCI designation allows these patients to remain close to home while receiving the most advanced cancer care from a deep bench of specialists.

- Patients treated at NCI centers have a 25 percent greater chance of survival.
- 90 percent of Kansas City patients now receive lifesaving cancer treatments in their own backyard.
- Economic driver – 3,600 jobs created and \$2.5 billion in economic development by 2018.

Joining forces to fight cancer

Our cancer efforts are bolstered by our NCI-recognized consortium partners, Stowers Institute for Medical Research and, more recently, Children's Mercy Hospital. Together, we represent more than 350 cancer researchers and clinicians.

Partnering with Children's Mercy further strengthens our collective efforts, particularly in addressing pediatric cancer. The NCI has identified children as an underserved population in cancer research. With the physicians and researchers at Children's Mercy focused entirely on pediatrics, this partnership makes a meaningful impact on pediatric cancer research. Together, our research and clinical care program spans the entire spectrum of patients, from infants and children to adults.

Focused prevention and treatment efforts

As an NCI-designated cancer center, we disseminate cancer prevention methods and provide early-detection screenings to the diverse and far-reaching communities we serve, by:

- Improving access to prevention services and cancer treatment for underserved, high-risk and minority communities
- Decreasing smoking rates, increasing human papillomavirus vaccinations and reducing obesity rates through public education and outreach programs
- Identifying new therapies and prevention strategies, and improving cancer patient/survivor quality of life with innovative clinical trials
- Informing national research and treatment priorities through evidence-based work with specific populations

Our journey continues

NCI centers like ours pioneer improved cancer treatments that contribute significantly to the 15 million-plus cancer survivors in the U.S. But there is more work to be done.

- New cancer cases diagnosed annually in the United States will almost double by 2030.
- Cancer is the No. 1 cause of death in Kansas and the No. 2 cause of death in Missouri.
- 1 in 2 men and 1 in 3 women will be diagnosed with cancer in their lifetime.

The future in cancer treatment

The NCI Cancer Centers Program is one of the anchors of the nation's cancer research effort. This means our patients have more opportunities to take part in clinical trials that

test the latest treatment advancements. We envision a cancer-free Kansas and beyond, and that is only possible when we put forward our best efforts.

- Highly personalized cancer treatments for each unique patient
- Newest, most promising therapies and laboratory discoveries
- Highly-trained, multidisciplinary team, including physician-scientists
- Innovation in drug discovery and development

The University of Kansas Cancer Center is committed to elevating standards in cancer care, and we are moving furiously to translate laboratory discoveries into clinical patient care.

Cancer patient support services

Nurse navigation services

Our nurse navigators guide patients from their first call through their treatment process and follow-up. They answer questions and offer emotional support every step of the way. Nurse navigators make sure patients are prepared to meet with specialists and their cancer care team by collecting medical records, getting orders for tests when needed and identifying support services for patients and their caregivers.

Social services

Our social workers assist patients in both inpatient and outpatient settings. In addition to helping patients and their loved ones cope with distress related to their cancer diagnosis and treatment, our social workers provide resources for lodging, transportation, home care services and financial concerns, including medication assistance programs. They also provide information on Social Security disability and Medicaid and make referrals to community resources that offer numerous classes and programs.

Onco-psychology services

Our licensed psychologists provide patients and their caregivers support for the mental, emotional and behavioral aspects of the cancer experience. They provide assessment, consultation and evidence-based therapeutic interventions and counseling for individuals, groups, families and couples. They also help patients adjust to the lifestyle and behavior changes that accompany cancer diagnosis, treatment and survivorship. Short-term crisis resolution and grief counseling for caregivers and family members are also available.

Nutrition services

Our dietitians provide individualized nutrition care to patients and work with caregivers in helping patients achieve optimal nutrition at home. Our dietitians work closely with each patient's healthcare team to provide comprehensive care, with the goal of keeping patients strong, maintaining muscle mass, promoting healing, treating nutritional deficiencies and minimizing complications and side effects of cancer. Ultimately, the dietitian's goal is to promote overall better quality of life before, during and after cancer diagnosis and treatment through good nutrition.

Spiritual services

We offer pastoral care/spiritual services for our patients and hospital visitors to help them meet their spiritual needs. Members of our spiritual care team are available on request to everyone. All of our spiritual care team members are ordained ministers and able to offer prayer, pastoral counseling and worship services.

Financial counseling services

Our financial counselors help patients navigate the cancer journey by understanding the costs of cancer and insurance implications, and the complex application process for Medicaid and other financial assistance programs. They also assist patients in securing financial benefits from these programs and from private health insurance. The Patients in Need Fund at Missys' Boutique at our Westwood campus helps uninsured and underinsured patients receive the boutique's cancer-related services and products at no charge.

Educational resource services

Our patient resource centers provide answers, resources and support for cancer patients, their families and the community. Staffed by an experienced oncology nurse, each center offers information about specific types of cancer, treatments, clinical trials and other cancer-related issues. A variety of cancer-related programs and educational classes is offered throughout the community as well. Others are available through televideo.

Practical and emotional support groups

Our staff facilitates support groups and educational programs for patients and families affected by gynecologic, breast, renal cell, head and neck, prostate and other cancers, along with groups for caregivers. Patients and families also receive information about community cancer support groups and agencies that provide practical and emotional support.

Turning Point: The Center for Hope and Healing in south Kansas City, a program of The University of Kansas Health System, provides educational programs at different locations throughout the greater Kansas City area at no charge. Topics include mind/body, movement, nutrition, art and more for all patients with chronic illnesses. It also offers programs for children of all ages and their family members.

Onco-rehabilitation services

Our onco-rehabilitation physiatrist works with cancer patients and caregivers in inpatient and outpatient settings to help them maintain and improve their functional abilities, alleviate pain, minimize fatigue and improve quality of life. Occupational therapists focus on helping patients with activities of daily living, and speech pathologists help patients who have difficulty with communication, cognition or swallowing.

Personal appearance services

Missys' Boutique, located at our Westwood campus, is an accredited appearance center dedicated to helping patients overcome appearance obstacles with dignity and style. Services include bra and wig fittings. Products include breast forms, postsurgery bras and camisoles and a wide assortment of clothing and accessories.

Survivorship services

Surviving cancer begins the day of diagnosis and continues every day after. Survivorship services include:

- Providing patients with treatment summaries
- Providing ongoing care of survivors and their caregivers
- Scheduling follow-up appointments
- Referring patients to appropriate support services to address late effects such as energy balance or cognitive concerns

Fertility preservation services

Cancer treatments result in fertility challenges following treatment. We provide fertility preservation services in which eggs and sperm are harvested from the body, preserved through freezing and transplanted back after treatment.

Palliative care

Palliative care focuses on how well patients with a terminal illness can live better every day. We provide for the medical, emotional and spiritual needs of patients of all ages with illnesses at any stage. Outpatient services are offered through the Allen J. Block Outpatient Palliative Care Program.

Genetic counseling

Through genetic consultation, we are able to help patients proactively. With a full assessment of risk factors and family history, we can better understand the underlying cause of a patient's disease. This allows us to more accurately predict the patient's response to treatment and create a highly individualized treatment plan.

Pharmacy patient advocate services

We provide pharmacy patient advocates, or PPAs, who answer patients' questions or concerns, reorder medications and streamline payment processing.

Second opinion services

We offer second opinions to provide patients and referring physicians the opportunity to receive multidisciplinary opinions and the confidence to begin treatment.

National Cancer Institute Cancer Information Service

The NCI Cancer Information Service provides the latest and most accurate information to patients, their families, the public and healthcare professionals. This national information and education network is a free public service of the NCI. Call toll-free 800-4-CANCER.

Biospecimen Bank

The Biospecimen Bank at The University of Kansas Cancer Center supports cancer research by serving as a bank for human tissues and fluids. Researchers use these biospecimens to study causes, prevention, detection, diagnosis and treatment of cancer. Find out how you can make a tissue or fluid donation by calling toll-free 855-211-1475.

Glossary of terms

Accession number: A unique number assigned to each patient entered into The University of Kansas Health System's Cancer Registry. The first two digits specify the year of diagnosis. The last four numbers are the numeric order in which the case was entered into the database.

Adjusted (observed) survival rate: Whenever reliable information on cause of death is available, an adjustment can be made for deaths due to causes other than the disease under study. Patients who died without disease are treated in the same manner as patients "last seen alive during the year."

AJCC stage: A staging system developed by the American Joint Committee on Cancer and the International Union Against Cancer. It takes into account the tumor size (T) and/or depth of invasion, lymph node involvement (N) and distant metastases (M). A combination of T, N and M elements gives an overall classification of stage 0, 1, 2, 3, 4 or unknown stage.

Analytic case: A case that is first diagnosed and/or receives all or part of the first course of treatment at The University of Kansas Cancer Center.

Distant: A malignant neoplasm that has spread to parts of the body remote from the primary tumor either by direct extension or by discontinuous metastasis to other organs, tissues or lymph nodes.

In situ: A neoplasm that fulfills all microscopic criteria for malignancy without invasion.

Localized: A locally staged neoplasm that is restricted to the organ of origin.

Nonanalytic case: A case that was diagnosed elsewhere and received all the first course of treatment at another institution, presenting here for recurrence or progression of disease.

Regional: A neoplasm that has spread by direct extension to immediately adjacent organs or tissues and/or regional lymph nodes.

Systemic: A neoplasm that is disseminated throughout the body or found in blood and/or bone marrow.

Unknown: A neoplasm whose stage cannot be determined by a medical authority or indeterminate stage from the medical record.

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