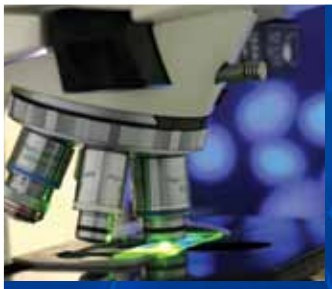
Incorporating the 2013 Cancer Registry Statistical Review



Cancer Program Annual Report 2014

The University of Kansas Cancer Center

Table of Contents

THE PROMISE OF DISCOVERY.
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U.S.News & WORLD REPORT
NATIONAL CANCER
2014–15

NCI·CC
A Cancer Center Designated by the National Cancer Institute

Chair's Report

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

Cancer Committee Chair
Joshua M.V. Mammen
MD, PhD, FACS

I am pleased to share our Cancer Registry's 2014 annual report for the American College of Surgeons Commission on Cancer. More than 1,500 hospitals in the United States and Puerto Rico are CoC-accredited. This represents only 30 percent of all institutions but more than 70 percent of all new cancer cases diagnosed annually. The CoC provides important metrics and tools for cancer centers to achieve even higher quality and personalization of cancer care.

This year, the CoC awarded our cancer program the Outstanding Achievement Award. Only 18.5 percent of more than 400 eligible programs received this honor. It signals to our patients that they receive access to the full scope of subspecialty care and services often not available at all cancer treatment facilities. For patients and their families, accreditation is an important measure of quality care and commitment by The University of Kansas Cancer Center to continually improve the care we provide cancer patients.

The University of Kansas Cancer Center received several prestigious recognitions in the last year for its excellent care of cancer patients. In addition, *U.S. News & World Report's* Best Hospitals rankings once again listed our hospital's cancer program as one of the best in the nation. The University of Kansas Hospital was one of only 14 hospitals in the country recognized in all 12 medical and surgical specialty areas, including cancer care.

To help meet increasing demand for the highest level of academic medicine, The University of Kansas Hospital is expanding with Cambridge North Tower. The expansion will house leading-edge surgical, interventional and diagnostic technologies to enable our physicians to continue to provide the most up-to-date care for patients with complex illnesses, including cancer. The new tower is expected to open in 2017.

The University of Kansas Cancer Center is dedicated to the eradication of cancer. As we pursue this goal, we will continue to 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.

Proposed Cambridge North Tower

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 1947, and the current database still contains data pertaining to patient demographics, cancer diagnosis, treatment information, staging and outcomes since that time. More than 101,057 cases have been added to the registry for the accession years of 1947 through 2013. 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 staff grew in 2013 from 15 to 17. Presently, all 17 of the staff are 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 administrafftive 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), the Kansas City Area Tumor Registrars Association (KCATRA), the Missouri State Tumor Registrars Association (MOSTRA) and the Arkansas Cancer Registrars Association (ACRA). 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 2013 there were 6,116 new cases added to the Registry, with 5,358 of those being 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 1947 is 86 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 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, bi-monthly or monthly basis by an interdisciplinary team consisting of physician representatives from many different departments. The University of Kansas had 11 different cancer conferences in 2013. 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 297 tumor conferences held in 2013, which included multidisciplinary, breast, GI, lymphoma and myeloma, head and neck, thoracic, bone marrow, thyroid and neuro-oncology. Two new conferences, genitourinary (GU) and melanoma, were also added and tracked in 2013. A total of 1,218 cases were presented at these various conferences.

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

Management
- Theresa Jackson, RHIA - 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
- 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

2013 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 7

John Sweetenham, MD
"Expert Insight in NHL: Current Critical Issues and Future Research Priorities"

FEBRUARY 9

Carol Fabian, MD
Qamar Khan, MD
Jennifer Klemp, PhD
Joshua Mammen, MD, PhD
William Gradishar, MD
"Post San Antonio Breast Cancer Symposium Review"

MARCH 9

Fen Wang, MD, PhD
Ramaswamy Govindan, MD
Chao Huang, MD, FACP
Kiran Kakarala, MD
Chris Lominska, MD
Prakash Neupane, MD
"Lung Cancer and Head & Neck Cancer Symposium"

MARCH 16

Sid Ganguly, MD
Brea Lipe, MD
Sunil Abhyankar, MD
Abdulraheem Yacoub, MD
Tara Lin, MD
Suman Kambhampati, MD
"Review of the ASH 2012 Meeting"

APRIL 18

Takefumi Komiya, MD, PhD
"Targeting 'Achilles Heel' in Thoracic Oncology"

APRIL 27

Joseph McGuirk, DO
Sid Ganguly, MD
Brea Lipe, MD
Omar Aljitawi, MD
Tara Lin, MD
Abdulraheem Yacoub, MD
Joanne Wilson, APRN
"Advances in BMT: 2013 Symposium"

MAY 19

Sid Ganguly, MD
"Intracellular Signaling in Hematological Malignancies: A Clinician's Approach"

AUGUST 8

Joaquina Baranda, MD
Priyanka Sharma, MD
Chao Huang, MD, FACP
Suman Kambhampati, MD
"Practice Changing Advances in Cancer Medicine"

AUGUST 9

Dawood Sayed, MD
"Therapeutic Options for the Treatment of Cancer Pain"

OCTOBER 26

Qamar Khan, MD
Joshua Mammen, MD, PhD
Melissa Mitchell, MD
Joaquina Baranda, MD
John Ashcraft, DO
Chris Lominska, MD
Stephen Williamson, MD
Mazin Al-Kasspooles, MD
Philip Johnson, MD
"Multidisciplinary Cancer Symposium"

NOVEMBER 8

Thomas Fahrbach, MD
"Local Regional Therapy Updates"

NOVEMBER 14

David Vesole, MD, PhD
The John Theurer Cancer Center at Hackensack University Medical Center
"Controversies in Myeloma"

NOVEMBER 21

Yogen Saunthararajah, MD
Cleveland Clinic
"Scope of Demethylating Therapies in Hematology and Oncology"

2013 Tumor Conferences

Type of Conference	Interval	Number of Conferences	Number of Analytic Cases Presented
Departmental: Head and Neck	Weekly	36	263
Departmental: Genitourinary(GU)	Bimonthly	4	14
Departmental: Thoracic	Weekly	42	232
Multidisciplinary	Weekly	38	60
Site-Focused: Bone Marrow/BMT	Weekly	46	206
Site-Focused: Breast	Weekly	23	79
Site-Focused: Gastrointestinal(GI)	Weekly	25	79
Site-Focused: Hemepath	Weekly	31	68
Site-Focused: Melanoma	Monthly	8	31
Site-Focused: Neuro-Oncology	Bimonthly	33	102
Site-Focused: Thyroid	Monthly	11	84
Totals		**297**	**1,218**

2013 County Distribution

Kansas by Place of Residence at Diagnosis	Missouri by Place of Residence at Diagnosis
Johnson: 21.11%	Jackson: 21.29%
Wyandotte: 8.19%	Clay: 7.65%
Leavenworth: 3.22%	Platte: 3.74%
Shawnee: 2.96%	Cass: 2.50%
Douglas: 1.80%	Buchanan: 1.16%
Other Kansas: 15.02%	Other Missouri: 10.18%
Total Kansas: 52.30%	**Total Missouri: 46.52%**

All Other States: 1.05%
Unknown County or State: 0.13%

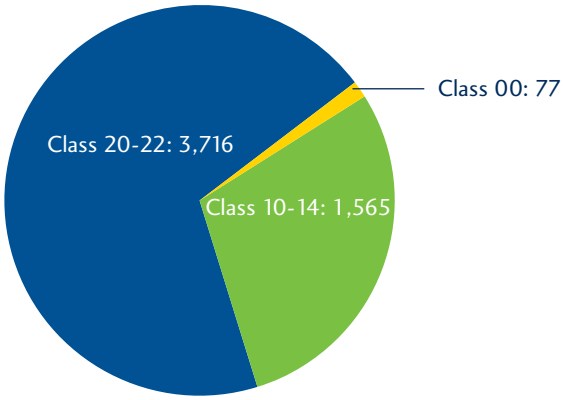
The University of Kansas Hospital – 2013 Primary Site Table*

PRIMARY SITE	ANALYTIC	NONANALYTIC	TOTAL
Oral Cavity	**222**	**26**	**248**
Lip	2	1	3
Tongue	78	15	93
Oropharynx	8	1	9
Hypopharynx	6	1	7
Other	128	8	136
Digestive System	**778**	**98**	**876**
Esophagus	59	5	64
Stomach	63	5	68
Colon	194	40	234
Rectum	106	16	122
Anus/Anal Canal	24	7	31
Liver	142	7	149
Pancreas	118	11	129
Other	72	7	79
Respiratory System	**609**	**67**	**676**
Nasal/Sinus	14	0	14
Larynx	51	13	64
Lung/Bronchus	538	54	592
Other	6	0	6
Blood & Bone Marrow	**482**	**93**	**575**
Leukemia	257	54	311
Multiple Myeloma	129	23	152
Other	96	16	112
Bone	**32**	**7**	**39**
Connect/Soft Tissue	**87**	**12**	**99**
Skin	**202**	**42**	**244**
Melanoma	176	35	211
Other	26	7	33
Breast	**1,118**	**84**	**1,202**
Female Genital	**358**	**27**	**385**
Cervix Uteri	45	5	50
Corpus Uteri	191	9	200
Ovary	81	12	93
Vulva	24	0	24
Other	17	1	18
Male Genital	**338**	**96**	**434**
Prostate	291	87	378
Testis	35	7	42
Other	12	2	14
Urinary System	**367**	**69**	**436**
Bladder	142	39	181
Kidney/Renal	212	27	239
Other	13	3	16
Brain & CNS	**217**	**35**	**252**
Brain (Benign)	16	0	16
Brain (Malignant)	106	21	127
Other	95	14	109
Endocrine	**136**	**21**	**157**
Thyroid	106	11	117
Other	30	10	40
Lymphatic System	**291**	**74**	**365**
Hodgkin Lymphoma	32	16	48
Non-Hodgkin Lymphoma	259	58	317
Unknown Primary	**74**	**3**	**77**
Other/Ill-Defined	**47**	**4**	**51**
All Sites	**5,358**	**758**	**6,116**

*Includes malignant and reportable benign cases.

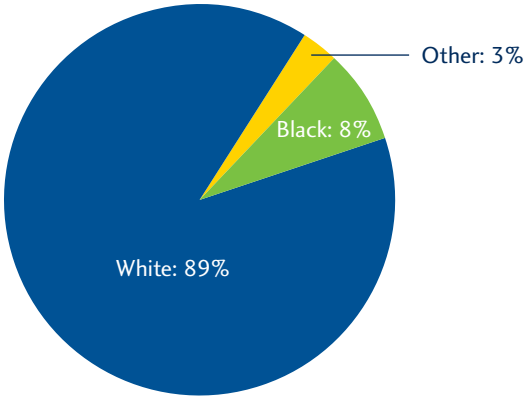
2013 Statistical Graphs – Analytic Cases

Class Distribution

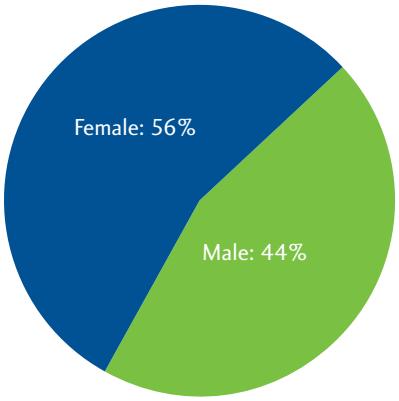


Class 00: Diagnosed here, all treatment elsewhere.
Class 10-14: Diagnosed here, all or part of first-course treatment here.
Class 20-22: Diagnosed elsewhere, all or part of first-course treatment here.

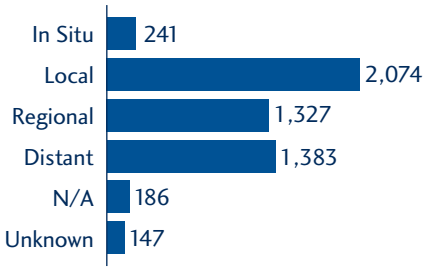
Race Distribution



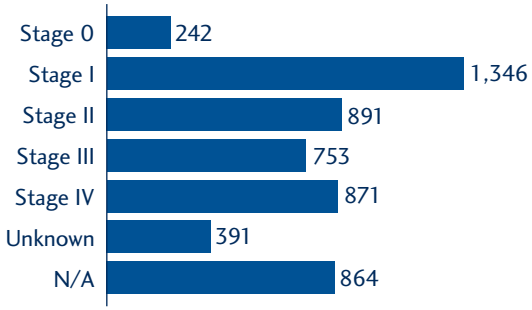
Sex Distribution



SEER Summary Stage at Diagnosis (n=5,358)

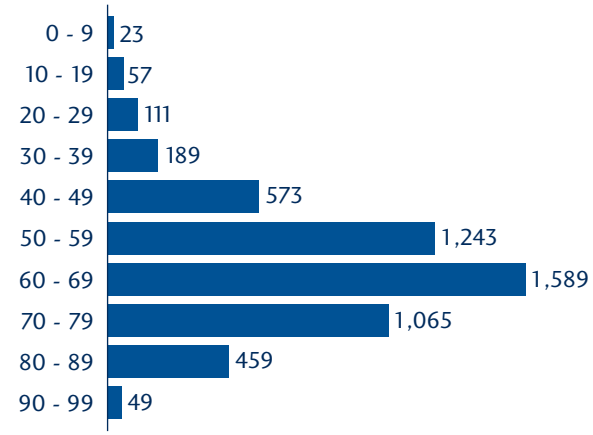


AJCC Stage Group at Diagnosis* (n=5,358)

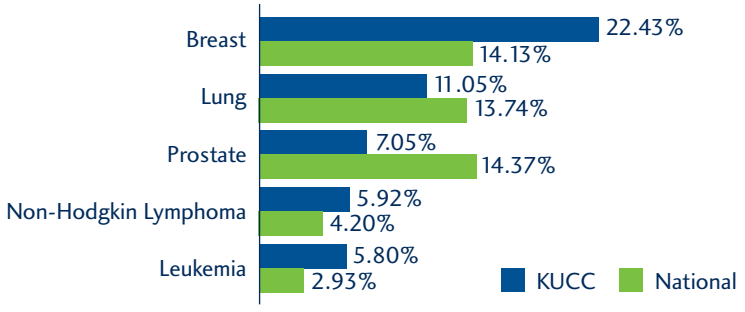


*Class 00 not included/required by CoC.

Age at Diagnosis (n=5,358)



Top Five Primary Sites: American Cancer Society Statistics



Breast Imaging Performance Improvement Initiative: How Minor Changes in Diagnostic Mammography Workflow and Appointment Scheduling Can Decrease Appointment Length and Improve Patient Satisfaction

Neville Irani, MD

The University of Kansas Cancer Center

Background

Over the past three years, expanding services and volumes within a tertiary care Breast Imaging Center created challenges accommodating patient needs while also maintaining efficient workflow. In particular, minimal technologist staffing, clustering of diagnostic mammography reads and disproportionate appointment lengths led to excessive patient wait times, patient dissatisfaction and complaints from internal referring physicians about delayed appointments following imaging.

Objective

The purpose of this performance improvement initiative was to increase patient satisfaction by reducing length of time spent in the Breast Imaging Center.

Method

Baseline timing data was prospectively collected during Q1 2014 on 409 breast imaging patients. Patient-recorded time stamps were collected at arrival, exit and six transition points during appointments (Figure 1). Patients also ranked their satisfaction from 0-5, with five being the best. During Q2 2014 scheduled appointment length was increased for diagnostic mammograms, additional appointment slots were added for non-tomosynthesis exams and a new serial diagnostic exam workflow was implemented (Figure 2, pg. 8). Follow-up data collection was completed for 111 patients in Q3 2014. Patient time in the department and satisfaction were tested against baseline data using independent samples, t-tests and z-tests, respectively.

Figure 1: Patient Recorded Time Stamps

- Sign-in
- Received paperwork
- Completed paperwork
- Enter changing room
- Enter gowning room
- Staff take patient to exam room
- Re-enter gowning room
- Exit

Graph 1: Mammogram Mean Time In Department Pre and Post Interventions

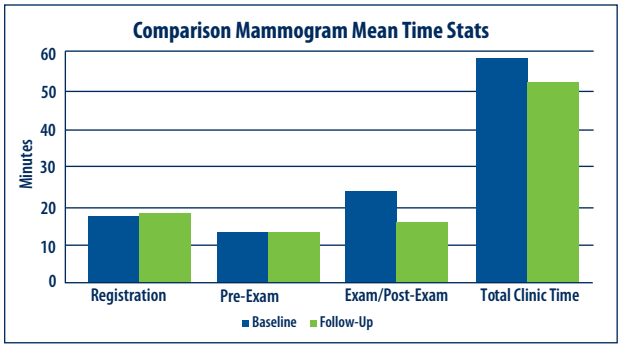


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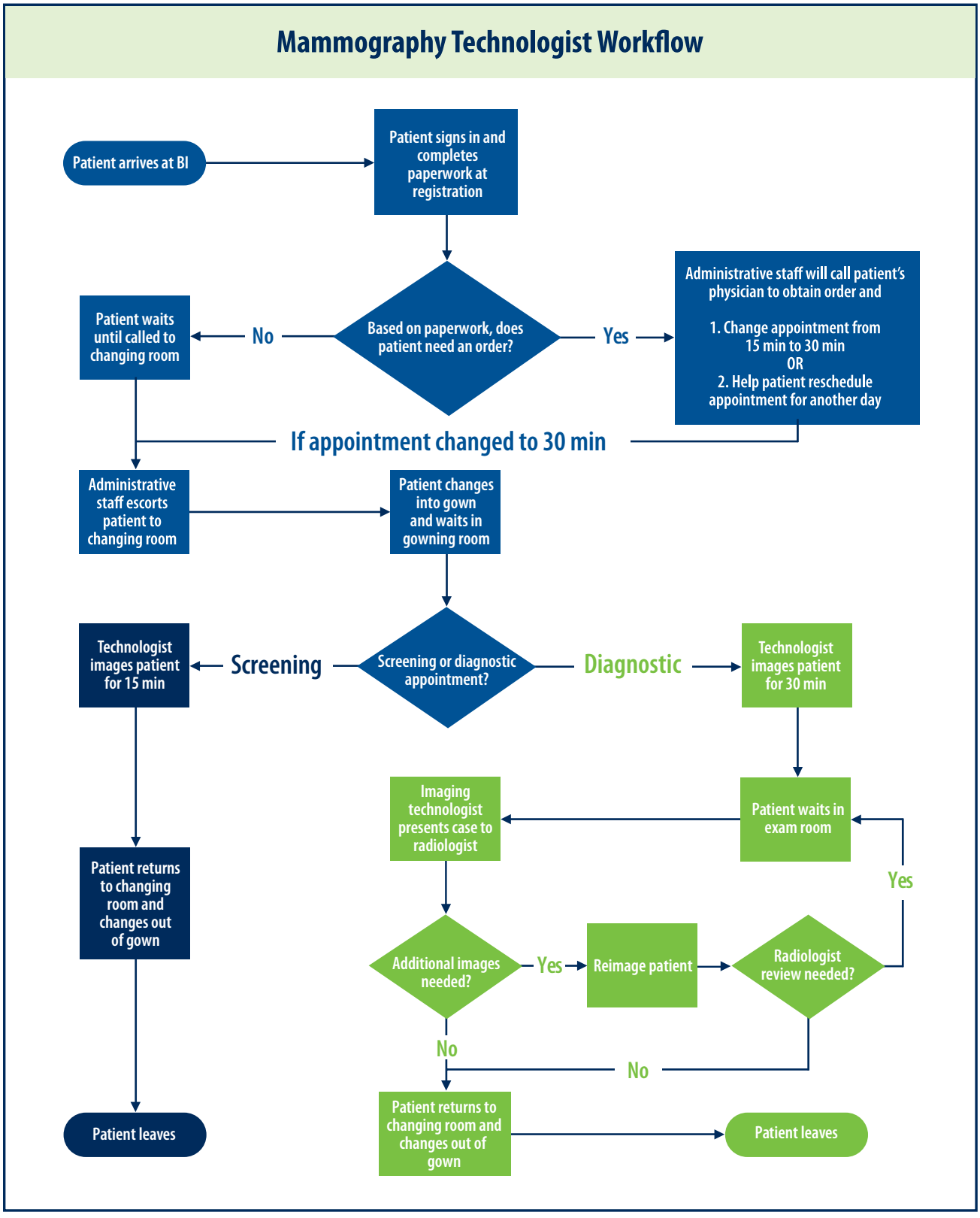
Figure 2: Serial diagnostic exam workflow



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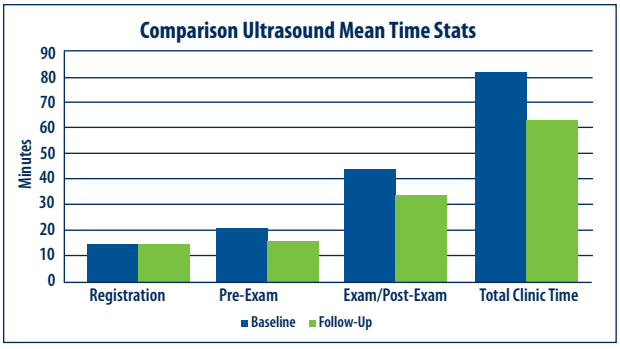
Breast Imaging Performance Improvement Initiative:

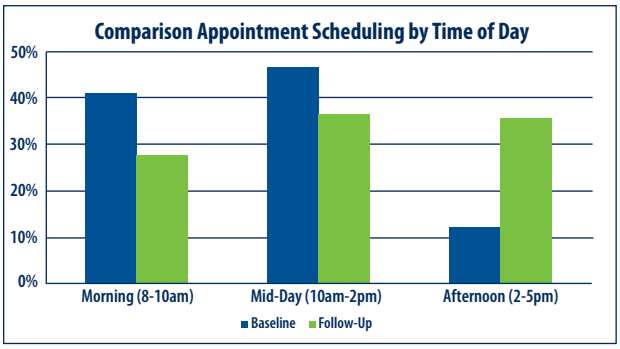
Results

After implementation of serial diagnostic mammography workflow, average time in the department for all mammography patients decreased from 58 to 52 minutes (p = 0.028, Graph 1, pg. 7). Breast ultrasound patients also experienced an average decrease in time from 82 to 63 minutes per visit (p = 0.005, Graph 2). Simultaneously, the proportion of patients rating their visit a 4 or 5 increased from 90 percent at baseline to 96 percent at follow-up (p = 0.046). Appointments were more evenly distributed through the day, with significantly more appointments scheduled in the previously underutilized afternoon slots (p < 0.0001, Graph 3). Average weekly mammography volume also increased 4 percent after diagnostic mammography changes were implemented (Graph 4).

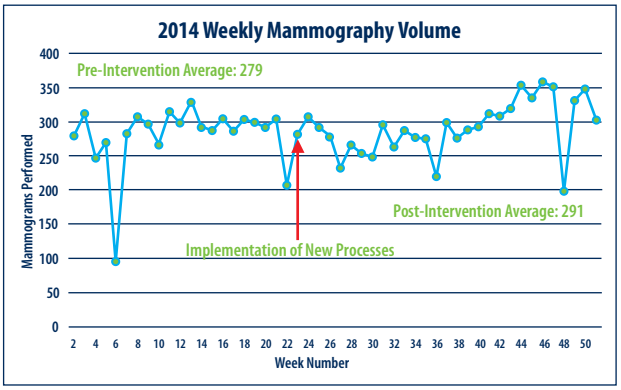
Graph 2: Ultrasound Mean Time In Department Pre and Post Interventions



Graph 3: Proportion of Appointments by Time of Day



Graph 4: Mammography Volumes



Conclusions

Changing the diagnostic mammography workflow from clustered reads to serial reads reduced overall patient time in the department. There was also an unanticipated improvement in delays for breast ultrasound patients, which likely stemmed from the two modalities being linked at the point of interpretation. Additionally, as anticipated, patient satisfaction increased as appointment length decreased.

Abbreviated References

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- U.S. Food and Drug Administration. Mammography Quality Standards Act and Program. Yearly Scorecard Statistics 2014. January 2014 [cited 2014 January 7]; Available from: http://www.fda.gov/Radiation-EmittingProducts/MammographyQualityStandardsActandProgram/DocumentArchives/ucm337647.htm.

Acknowledgements

Team members: Jacqueline Hill, MPH; Debbie Swinehart, MS, MHSA; Meredith Cooper; Amie Robinson; Kimberly Smith, PhD; Jason Gatewood, MD; Mark Redick, MD; Onalisa Winblad, MD; and Marc Inciardi, MD.

Triple-Negative Breast Cancer Study – 2013

Amanda Amin, MD
Joshua Mammen, MD, PhD

The University of Kansas Cancer Center

Breast cancer is the most common noncutaneous malignancy diagnosed in women, representing nearly 30 percent of all cancer diagnoses. Breast cancer awareness campaigns have increased knowledge about incidence and prevalence. However, the general public may not be aware of certain prognostic indicators for breast cancer that can help determine treatment, outcome and overall survival. These indicators include the presence of hormone receptors and HER2 protein receptors on the cancer cells.

Hormone Receptors

Hormone receptor-positive cancer cells can have estrogen receptors (ER) and/or progesterone receptors (PR). If either of these receptors is positive, the patient may benefit from treatment with anti-hormone therapy. Because hormone receptor-positive cancer cells grow more slowly, anti-hormone medication can be used to lower estrogen levels or block estrogen receptors, thus blocking tumor growth. Inversely, hormone receptor-negative cells tend to grow more rapidly and behave more aggressively. Patients with hormone receptor-negative cancers are not candidates for hormone-blocking medication and do not receive the benefits of targeted treatment.

HER2 Protein Receptors

Human epidermal growth factor 2 (HER2) is a protein that is expressed in up to 15 percent of breast cancers. Historically, women with HER2-positive breast cancer had more aggressive tumors, and a poorer prognosis. Recently, new medications have been developed that target HER2-expressing breast cancer cells, resulting in improved overall survival. If HER2 is not expressed in the breast cancer cell, the tumor will not respond to the HER2-targeted drugs. Routine HER2 testing is important for breast cancer. The results are important for making decisions about appropriate systemic therapy.

Triple-Negative Breast Cancer

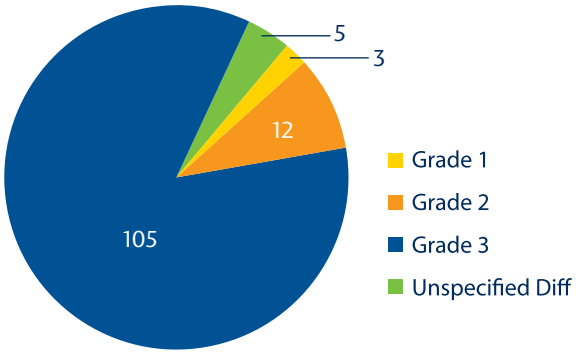
"Triple-negative" is the term used to describe a breast cancer that is negative for ER, PR and HER2 receptors. Triple-negative breast cancers are aggressive with no targeted treatment options. This frequently results in poorer prognosis and outcome.

Cancer Grade

Cancer grade is determined by a pathologist on a scale of 1 to 3, and is a measure of how abnormal the cells appear under the microscope. The higher the grade, the less the cancer cells resemble normal, healthy breast cells in their appearance and growth patterns. A high tumor grade is a surrogate for more aggressive tumor behavior. Triple-negative and HER2 receptor-positive cancers tend to be higher grade than hormone receptor-positive breast cancers.

Of 124 triple-negative breast cases at The University of Kansas Cancer Center, 105 were grade 3.

Fig. 1: Tumor Grade Distribution



Predisposing Factors

Age is the most common risk factor for breast cancer. The more advanced the age, the higher the risk for developing breast cancer. Most cancers are diagnosed over the age of 55. When younger, premenopausal women are diagnosed with breast cancer, they are more commonly found to have triple-negative breast cancers. African-American and Hispanic/Latina populations have an overall lower risk of breast cancer when compared to Caucasians. However, these populations have a higher incidence of triple-negative breast cancer than other populations. A patient with a BRCA1 gene mutation, which is an inherited genetic abnormality predisposing one to developing breast cancer, also has a higher likelihood of developing triple-negative breast cancer.

Fig. 2: Race Distribution

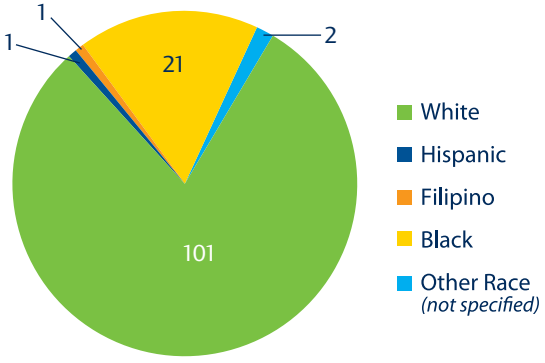
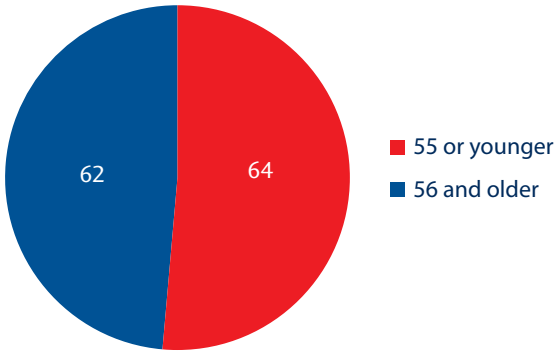


Fig. 3: Age Distribution



Occurrence Rates

About 10-20 percent of breast cancers are triple-negative, testing negative for ER, PR and HER2 protein receptors. Of the 1,118 breast cancer cases at The University of Kansas Cancer Center, 126 or 11 percent, were triple-negative.

Prognosis

Although historically patients with triple-negative breast cancer have poor outcomes when compared to those with hormone receptor-positive tumors, clinicians remain optimistic. According to 2007 studies, triple-negative breast cancer patients (all stages) have a five-year survival rate of 77 percent. This compares to 93 percent overall survival for women with other breast cancer subtypes.* Triple-negative breast cancer appears to have increased mortality risk within five years of diagnosis, but after that time period the risk diminishes.

Treatments

Unfortunately, triple-negative breast cancers are more biologically aggressive than hormone receptor-positive tumors. Without targeted therapies, these patients have fewer treatment options. Chemotherapy, in addition to surgery and radiation for local therapy, remains the only systemic treatment option for these patients.

According to National Comprehensive Cancer Network (NCCN) clinical practice guidelines, surgery with or without radiation is the mainstay for managing locoregional breast cancer. The options for optimal treatment include lumpectomy followed by radiation therapy or mastectomy with or without reconstruction. An axillary procedure, either sentinel lymph node biopsy or axillary lymph node dissection, is performed at the time of breast surgery for axillary nodal staging.

American Joint Committee on Cancer (AJCC) criteria are used to stage breast cancer at the time of physician consult (clinical stage) and at the time of surgery (pathologic stage). AJCC criteria take into account tumor size (T), nodal burden (N) and presence of distance metastasis (M). Tumors that are small in size and have no clinical evidence of lymph node metastases frequently are treated with surgery first. If the tumor is large (>2cm or T2) or if a biopsy confirms nodal metastasis, chemotherapy is often used before surgery, or neoadjuvantly, to decrease the size of the primary tumor. Other indications for using neoadjuvant chemotherapy include high-risk tumors such as HER2 receptor positive and triple-negative, and to assess in situ tumor response, which can provide valuable prognostic information.

Trastuzumab (Herceptin®), lapatinib (Tykerb®) and pertuzumab (Perjeta®) are the current targeted medications available for HER2-positive breast cancer. These medications are only effective in HER2 receptor-positive patients. Therefore, as recommended by NCCN guidelines, they are not utilized as treatment for triple-negative breast cancer. Nor are anti-hormone therapies, such as tamoxifen or aromatase inhibitors, effective in treating triple-negative cancers. According to NCCN guidelines, the standard of care for systemic treatment of triple-negative breast cancer is chemotherapy. Several chemotherapy regimens have been shown to be effective against triple-negative breast cancer. The most commonly used regimens, per NCCN guidelines, include dose dense doxorubicin and cyclophosphamide (ddAC) followed by paclitaxel (T) weekly or every 2 weeks, or docetaxel with cyclophosphamide (TC).

The treatment breakdown for our 2013 triple-negative breast cancer population is:	
Surgery and chemotherapy	63
Surgery, chemotherapy and radiation therapy	43
Chemotherapy only	7
Surgery and radiation therapy	6
Surgery only	4
Surgery, chemotherapy and hormone therapy	1

continues

As expected, trastuzumab (Herceptin), an immunotherapy that targets the HER2 protein receptor, was not used for these cases. Nor was anti-hormone therapy, per NCCN guidelines, routinely prescribed for these patients. The single case where anti-hormone therapy was prescribed was for a patient with multifocal breast cancer who had a tumor that was hormone receptor positive.

AJCC CLINICAL STAGE

42 were AJCC stage I

50 were AJCC stage II

16 were AJCC stage III

3 were AJCC stage IV

13 were unknown/not clinically staged prior to cancer-directed treatment (These tumors were unstageable clinically due to a lack of information regarding presurgical nodal involvement.)

Treatment Analysis and Summary

The University of Kansas Cancer Center manages triple-negative breast cancer in concordance with NCCN guidelines. Surgery with or without radiation is the mainstay for locoregional management for stages I-III. Exceptions to this include those who are stage IV at diagnosis, have multiple co-morbidities or advanced age, refuse or are noncompliant and experience progression of disease on neoadjuvant chemotherapy. Surgery was the sole treatment modality for a few patients with AJCC stage I disease and for one patient with stage IIa who refused chemotherapy.

As expected, anti-hormone therapy was not prescribed to the triple-negative patients in 2013. Only one triple-negative patient received anti-hormone therapy, and the indication was for treatment of a concurrent hormone receptor-positive breast cancer.

The HER2-targeted therapy trastuzumab (Herceptin), which is considered an immunotherapy per SEER Rx (National Cancer Institute's Surveillance, Epidemiology and End Results) classification of neoplastic drugs, was not used.

NCCN guidelines recommend combining adjuvant radiation in patients who have surgical treatment with lumpectomy and occasionally after mastectomy for more advanced tumors. These guidelines were followed in the treatment of patients with triple-negative breast cancer in 2013.

Chemotherapeutic agents were utilized appropriately and were withheld when patients refused, were of advanced age or had co-morbid conditions which did not allow for systemic treatment.

Clinically-Based Quality Improvement

Because there is a lack of targeted agents available for patients with triple-negative breast cancer, more research is needed to identify new targets and new drugs that can be effective for this population. Newer agents currently being investigated as part of clinical trials include poly ADP-ribose polymerase (PARP) inhibitors (iniparib, olaparib), vascular endothelial growth factor (VEGF) inhibitors (bevacizumab, sunitinib), and epidermal growth factor receptor (EGFR)-targeted therapies (cetuximab).

This population also tends to have a robust response to neoadjuvant chemotherapy at the time of surgery, with a 40-60 percent pathologic complete response rate. Further research is necessary to investigate appropriate adjuvant therapy for those with residual tumor burden, who do not achieve complete pathologic response. Another area of investigation includes appropriate locoregional (surgery and radiation) management for those who experience clinical and pathologic resolution of their tumor.

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National Cancer Institute Designation

Central to The University of Kansas Cancer Center's vision to eliminate cancer in our region and beyond was achieving National Cancer Institute, or NCI, designation in June 2012. NCI designation signifies that our academic cancer center has attained the highest standards and that promising cancer research, leading to improved care and treatment, takes place in our community.

The NCI accreditation process

NCI designation is the highest recognition for an academic cancer center. It opens doors to additional research funding, provides related economic benefits and jobs to the community and brings the most advanced cancer care to patients.

With NCI designation, our region realizes a new level of excellence as a bioscience research center. It provides us the opportunity to more fully leverage research investments made by the University of Kansas and the Stowers Institute for Medical Research.

In addition, NCI designation drives growth across many related segments of the regional economy. Approximately 1,200 employees, including faculty, research support, clinical and administrative staff, are dedicated to cancer clinical care and research activities. We estimate that from 2006 to 2011, our pursuit of NCI designation created 1,014 regional jobs and had a regional economic impact of $346 million. By 2016, we estimate the number of jobs created will reach 2,241 and the regional economic impact of NCI investments will total $1.93 billion.

No other regional initiative has as much potential to simultaneously drive economic development and public health.

How patients benefit from NCI designation

Most importantly, NCI designation means patients in our region do not have to travel far to find the most advanced care and clinical trials. These resources are available close to home.

NCI-designated Cancer Centers recruit top physician-scientists. Patients receive the latest evidence-based treatments. Patients who are unresponsive to standardized treatments may have additional options provided through NCI Cancer Center-sponsored trials. Our patients receive access to the same promising therapies offered in clinical trials at other top NCI Cancer Centers.

Becoming the 67th NCI-designated Cancer Center is a milestone in our journey to ultimately eliminate cancer.

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.

Psycho-oncology 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 teams 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 are 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 Hospital, 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. Samuel Kim, MD, the program director, is recognized worldwide for his cryopreservation and transplantation work.

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. Our specialty-trained team of physicians, nurses and social workers:

- Provides psychological and spiritual care to patients and families
- Helps patients live each day as well as possible
- Promotes and facilitates patient-centered decisions

Pediatric palliative care includes services provided by KU Kids Healing Place.

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 Hospital'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 from 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, I, II, III, IV 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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