Preparing the Way for Improved Cancer Care in West Virginia

2013 CAMC Cancer Services Report
Power of Many makes outpatient cancer center a reality

If current trends continue, the David Lee Cancer Center, DLCC, expects to treat about 34,000 patients in 2017, nearly double the number it saw in 2004.

There is a need in southern West Virginia for comprehensive outpatient cancer care based on an increase in cancer, both regionally and across the United States.

Even with recent renovations, the DLCC has major space constraints.

Administrators believe a comprehensive, consolidated and freestanding outpatient cancer center will bring hospitals, physicians, allied health professionals and communities together to provide quality and convenient care.

The 100,000-square-foot facility, being built on a vacant lot across the street from CAMC Memorial Hospital, will open its doors to patients in early 2015.

The building will be three floors and will include street level parking.

Many cancer and cancer-related services will be more effectively and efficiently served by the new center including: radiation oncology, medical oncology, oncological surgery office space, clinical trials and an infusion center.

Additionally, CAMC expects to cut patient wait times, add more infusion bays, add four new linear accelerator vaults and add 25-30 physician offices and exam rooms.

The outpatient center will allow for improved patient experience through a soothing atmosphere that will imbue the center with “life” with features that include: an open, light-filled environment; multiple, comfortable waiting areas; family and community meeting space; patient reference library; coffee shop and/or café; wig and prosthesis shop; and healing garden.
The David Lee Cancer Center (DLCC) is CAMC’s center for adult medical oncology and hematology care. A Joint Commission accredited facility, DLCC provides personalized multidisciplinary cancer care, access to innovative clinical cancer research trials and hematological care for a diversity of benign and malignant conditions in a caring environment.

David Lee Cancer Center’s infusion center treats on the average of 60 patients daily, while 8 Heme/Oncs have full schedules Monday through Friday from 8am till 5pm.

To address the growing access-to-care needs of our community, DLCC hematology oncology staff has improved patient access with the addition of Dr. Terrance Rhodes last August. This year Dr. Suzanne Cole, and Dr. Ni Gorsuch have implemented an educational program for our physician extenders. DLCC currently has four Physician Assistants, who compliment our physician team. This has proven to be an enhancement to our inpatient care.

The Teays Valley office will be staffed by Dr. Ron Chitta Sarker in early 2014. This office will offer the services of hematology and oncology specialty, with privileges at CAMC Teays Valley Hospital, and a complete chemo infusion area.

The majority of DLCC’s nurses are certified in oncology and the cancer center was honored to receive a plaque from the oncology nursing certification corporation for promoting certification and maintaining the majority of certified nurses. DLCC is also privileged to have two board certified oncology pharmacists on staff to assist in meeting the demands of the cancer center.

Patient navigation remains a focus of DLCC. Currently there is a dedicated navigator for colorectal cancer patients and lung cancer patients. The navigator follows the patients from diagnosis through treatment and recovery and is there to assist with any barriers or concerns experienced during the cancer care continuum. There will be additional breast cancer patient navigator in 2014.

DLCC has a dedicated financial navigator and new patient coordinator for the oncology population. The financial navigator assists patients in obtaining health care coverage, indigent medication assistance, and access to local and national organizations that provides support to cancer patients. The new patient coordinator is a dedicated scheduler that provides a contact for patients and referring physicians.

The PET Therapy program at DLCC continues to thrive and is thoroughly appreciated by staff and patients. Inspired by the innovative patient-centered care initiated by our pediatric hematology oncology colleagues and supported by the adult oncology collaborative practice committee, this program has been warmly embraced by our DLCC patients and families. “Barney” and “Bailey”, certified pet therapy dogs, have been a “big hit” and we look forward to expanding this unique initiative for our patients undergoing active chemotherapy treatments.
The DLCC physician team has continued its’ participation in numerous quality improvement, medical staff, graduate medical education and clinical cancer research activities. Our physicians actively participate in the weekly multidisciplinary CAMC tumor board conference led by Dr. Steven Jubelirer which facilitates peer-reviewed input in the initial and/or ongoing management of individual patients. Patients presented at this conference also contribute to the Breast Cancer Center of Excellence program led by Dr. Roberto Kusminsky. There has also been a monthly gastrointestinal tumor board that has been well attended by multiple disciplines. In addition, DLCC physician representation at the monthly meetings of the oncology collaborative practice committee and CAMC cancer committee provide essential physician leadership in the support of inpatient-outpatient adult cancer care initiatives and medical center wide activities necessary for ongoing Accreditation by the American College of Surgeons Commission on Cancer. DLCC Physician Leaders continue to play an important role in IHCPI, department of medicine activities as well as medicine quality improvement committee, performance improvement committee and presentations to the CAMC board on quality on topical issues. The DLCC physicians and staff have achieved certification by the American Society of Clinical Oncology’s Quality Oncology Practice Initiative (QOPI), a volunteer initiative of self-assessment in the quality delivery of cancer care with participating oncology practices throughout the United States. DLCC currently holds the honor of being the first and only cancer center to receive the QOPI accreditation by ASCO.

In 2012, DLCC physician and nursing senior staff have been actively involved in leadership activities at the state and national level. These organizational activities include: West Virginia Oncology Society (president; board of directors; WV-Clinical Trials Network Working Group), American Society of Clinical Oncology (member, practice guideline implementation network; chairperson, risk evaluation mitigation strategies working group; member, clinical practice committee) and Oncology Nursing Society (member, presenter, spring WVOS meeting; local chapter president, president-elect, treasurer and secretary).

In addition to patient care and quality improvement activities, DLCC physicians participate in the education of internal medicine residents of the WVU School of Medicine Charleston-Division at CAMC. Our physicians with volunteer faculty appointments provide clinical training in adult hematology oncology for the newly created four-week block rotations as well as providing year-round formal academic lectures on topics in hematology oncology. Trainees also have the opportunity to work with DLCC staff physicians on research projects leading to academic presentations/publications integral to their training requirements.
CAMC’s Clinical Cancer Research activities have been central to providing state of the art cancer care opportunities for our patients for over 25 years. In this issue, Dr. Dan Lucas summarizes our cancer center’s contributions to this ongoing effort over the past year. At DLCC, Dr. Steven Jubelirer has been the physician champion for this research effort in partnership with the CAMC Healthcare Education and Research Institute (CHERI) and fellow DLCC physicians. Dr. Jubelirer has expanded physician mentorship and co-leadership for these activities to include Dr. Ahmed Khalid for National Surgical Adjuvant Breast and Bowel Project (NSABP) Clinical Trials and Dr. Arun Nagarajan for Eastern Cooperative Oncology Group (ECOG) Clinical Trials. Each DLCC physician entering patients into clinical cancer research trials is approved by the CAMC Investigational Review Board and National Cancer Institute. Under the auspices of the West Virginia Oncology Society, DLCC physicians and CHERI leadership, in joint collaboration with other cancer clinical trial sites and cancer care practice sites in WV, continue to address expanding clinical trial access to West Virginians.

DLCC physicians and staff continue their collaborative participation in activities relating to the development of a new cancer center for our health care system. CAMC foundation began the “Power of Many” campaign to increase awareness of the project in 2012 and construction began during the summer 2013. The planning for the new center includes involvement from patients, families and staff. The positive momentum demonstrated to date makes the dream of a new cancer center within reach. The new cancer center will include multidisciplinary care in one location. Including the Breast Center, David Lee Cancer Center, and Charleston Radiation Oncology. The center is proposed to open to patients in early 2015. This center will lead to enhanced multidisciplinary collegial opportunities in service to our patients and their families in a modern and nurturing environment of care.

Publications from Physicians of the David Lee Cancer Center:

Published editorial:


Frame JN, Spence C. Health economics of subcutaneous desirudin relative to argatroban in patients with clinically-suspected or confirmed heparin-induced thrombocytopenia (HIT): The PREVENT-HIT Study.

(Accepted for Poster Presentation and publication in Proceedings of the Society of Critical Care Medicine; for January 2011 National Mtg, San Diego, CA)


Hemophagocytic Lymphohistiocytosis (HLH) in a 25-year-old presenting with multisystem organ failure

Authors: Samantha Lane, DO PGY2, CAMC, Dept of Internal Medicine/Pediatrics; Christina Andrist MSIV, WVU School of Medicine; Arun Nagarajan, MD Assistant Professor, CAMC, Dept of Hematology Oncology, Charleston W.Va.

Abstract
Hemophagocytic lymphohistiocytosis (HLH) is a rare syndrome of extreme inflammation caused by pathologic activation of the immune system. Diagnosis of HLH is challenging as the clinical presentation is similar to common medical entities such as sepsis. When a source of the extreme inflammation is not found, HLH should be considered in the differential diagnosis. In HLH, inflammatory markers such as soluble CD25 and ferritin levels are elevated.1 Ferritin assay is widely available at most institutions; a level greater than 10,000 is highly suggestive of HLH.2 Delayed diagnosis and failure to initiate cytotoxic chemotherapy will result in a fatal outcome.

Introduction
HLH can be classified as primary or secondary. Primary HLH caused by genetic abnormalities occurs in infants and young children. Secondary HLH occurs in older children or adults, often triggered by an infection or medical condition but could also be due to genetic abnormalities. Signs and symptoms include hepatosplenomegaly, prolonged fever, cytopenias, elevated triglycerides and elevated ferritin.1 Complete diagnosis is made by identification of the abnormal genetic mutations or when five of the following eight diagnostic criteria are identified: fever, splenomegaly, cytopenias, hypertriglyceridemia and/or hypofibrinogenemia, hemophagocytosis, low or absent NK-cell activity, elevated ferritin, and elevated sCD25.3 While five of the eight criteria are required to make a complete diagnosis, not all of these criteria need to be present to suspect and begin treatment for HLH. The presence of hemophagocytosis in the bone marrow is helpful but not necessary for the initial diagnosis of HLH. A prompt diagnosis and subsequent treatment is imperative to avoid a fatal outcome.
Case Report
25-year-old previously healthy Caucasian male presented to the ED complaining of severe, sharp, anteriorly located chest pain as well as dyspnea and a syncopal episode. Review of system was otherwise negative for fever, chills, night sweats. The patient had no significant past medical, surgical, family or social history. Initial physical exam was negative for fever, rash, pallor, and hepatosplenomegaly, Initial labs showed hyponatremia and an elevated C-reactive protein but otherwise not significant. Soon after presentation, he became confused and combative then developed hypotension and respiratory failure requiring intubation, large volume fluid resuscitation and hemodynamic support with multiple vasopressors. On day #2 of his hospitalization, he began having fevers. He further developed cytopenia with platelets as low as 28,000/mL and hemoglobin as low as 8.8 g/dL. He began showing signs of multisystem organ failure with respiratory failure requiring mechanical ventilation, transaminitis with alanine transaminase (ALT) >1400 and aspartate aminotransferase (AST) >2800 and renal failure requiring continuous renal replacement therapy. He developed coagulopathy with an INR as high as 2.9 as well as hypofibrinogenemia, with fibrinogen level as low as 144 mg/dL. At this time, hematology was consulted and the diagnosis of HLH was considered. A ferritin level was obtained and found to be markedly elevated at 56,248 ng/mL. Emergent bone marrow aspiration and core biopsy showed hemophagocytosis without signs of lymphoma or leukemia, confirming the diagnosis of HLH (Figure 1, Figure 2). A viral panel consisting of EBV, CMV, parvovirus B19, toxoplasma, HIV, and hepatitis was obtained and found to be negative. CT scan of the head showed sinusitis. Triglyceride levels were obtained and not found to be elevated. The patient was started on dexamethasone and etoposide treatment which led to marked clinical improvement allowing for extubation, resolution of organ dysfunction and eventual discharge. He subsequently underwent maintenance etoposide chemotherapy however, his ferritin levels began to increase; therefore he was referred for genetic testing as well as hematopoietic stem cell transplant.

Discussion
HLH is a potentially fatal hyper inflammatory condition with an incidence of 1.2 cases per million children a year. Incidence in the adult population is unknown. It is thought to be caused by over activity of antigen presenting cells and lymphocytes leading to multisystem inflammation and eventually leading to organ failure. HLH can be classified as primary or secondary. Primary HLH occurs in children typically less than 18 months of age and is caused by one of several genetic mutations. Secondary or viral-associated HLH occurs in older children or young adults. Secondary HLH is triggered by infection, malignancy, or rheumatologic abnormalities. Genetic mutations in secondary HLH have been reported.
Diagnostic criteria for HLH used in the HLH-2004 trial. The diagnosis of HLH is established by:

A. A molecular diagnosis consistent with HLH: Pathological mutations of PRF1, UNC13D, Munc18-2, Rab27a, STX11, SH2D1A, or BIRC4

-OR-

B. Five out of the eight criteria listed below are fulfilled:

1. Fever >38.5
2. Splenomegaly
3. Cytopenias (affecting at least 2 of 3 lineages in the peripheral blood)
4. Hypertriglyceridemia (>265 mg/dL, fasting) and/or hypofibrinogenemia (<150 mg/dL)
5. Hemophagocytosis in bone marrow, spleen, lymph nodes, or liver
6. Low or absent NK-cell activity
7. Ferritin >500 ng/mL
8. Elevated soluble CD25 (alpha chain of soluble IL-2 receptor)

Infections that may be associated with HLH include but are not limited to: Epstein-Barr virus, cytomegalovirus, herpes simplex, HIV, influenza, parvovirus B19, rubella, and varicella zoster. Autoimmune disorders including systemic lupus erythematosus and rheumatoid arthritis may trigger HLH. Certain malignancies such as lymphomas are also frequent triggers of HLH.

Although there are eight diagnostic criteria for HLH, it is not always necessary to meet 5 of the 8 criteria to diagnose and treat HLH. A review of charts of pediatric patients with elevated ferritin level at a large pediatric hospital in 2007 revealed that a ferritin level of more than 10,000 ng/mL was 90% sensitive and 96% specific for HLH. Although the patient in this case had a ferritin level that was highly specific for HLH, he also met 5 out of 8 diagnostic criteria including cytopenia, fever, hypofibrinogenemia, hemophagocytosis as well as hypofibrinogenemia. Labs such as NK-cell activity and soluble CD25 were not readily available at our institution therefore, these labs were not obtained.

It is recommended that treatment be initiated when clinical suspicion exists, even before all diagnostic studies are available in order to prevent further organ damage. Prior to initiation of current treatment regimens, the 1-year survival rate of children with HLH was close to 0%. Induction therapy for HLH includes an 8-week course of etoposide and dexamethasone as recommended in HLH-94 trial published in 2011. At 6.2 years of median follow-up, estimated 5-year survival was 54% +− 6%. Patients with familial disease had a 5-year survival of 50% + 13%; none survived without HSCT.

Conclusion
Hemophagocytic lymphohistiocytosis is a relatively uncommon condition; however it should be considered in the differential diagnosis of a patient with sepsis and multisystem organ failure of unknown etiology. Ferritin assay, a relatively inexpensive test, may facilitate the diagnosis of HLH. Failure of prompt diagnosis and treatment will invariably lead to a fatal outcome.
References

Factors related to delayed treatment between diagnosis and initial treatment in West Virginia patients with breast cancer, Steven J. Jubelirer, MD1, Alana Hudson, PhD, MPH2, Dheeraj Kodali, MD1, Andrea Labus, BA1, Christine A. Welch, MS1 1Charleston Area Medical Center, 2. Division of Cancer Epidemiology Office of Epidemiology and Prevention Services

Introduction: Breast cancer is the second leading cause of cancer mortality in women. It is a good means to assess cancer care quality due to widespread prevalence and standardized treatments. In the last decade, there has been a progressive delay between diagnoses and treatment initiation of invasive breast cancer.

Objective: To determine risk factors associated with delayed (>60 days) treatment initiation after diagnosis of invasive breast cancer in WV female patients from 2004 to 2009

Methods: A retrospective study was conducted to review factors associated with delay in treatment initiation after invasive breast cancer diagnosis in female patients living in West Virginia between 2004 and 2009. The records of 5,358 patients from the West Virginia Cancer Registry were analyzed for factors related to treatment delay. To be included, female patients had to have resided in West Virginia with invasive breast cancer as their first primary cancer, from January 1, 2004, to December 31, 2009.

Results: The average age was 61.6 ± 13.3 years (range 19 - 97), 97% were Caucasian, the largest proportion had grade II tumors (39%), and the majority were infiltrating ductal carcinoma (75%), and localized disease (66.7%) with the remainder being regional disease (33.3%). Overall the median time to first treatment after diagnosis was 17 days (range, 0 to 175 days), and 73% of patients were treated in < 30 days and 95.6% were treated in < 60 days. Most women (94.9%) received surgery as their first course of treatment (98% of localized and 89% of regional, p<0.001), followed by chemotherapy
Logistic regression modeling for first treatment ≥ 60 days showed that those who did not receive surgery as the first course of treatment were 2.0 times (95% CI: 1.0-1.8, p = .02), those who had sentinel lymph nodes removed were 1.7 times (95% CI: 1.3-2.3, p = .0002), those who were unmarried 1.4 times (95% CI: 1.1-1.9, p = .02), those without known commercial insurance 1.4 times (95% CI 1.0-1.8, p = .02), and those that were estrogen receptor positive 1.5 times (95% CI: 1.0-2.2, p = .04) more likely to have a delayed first treatment of ≥ 60 days.

**Conclusion:** This is the first study done in West Virginia reviewing factors associated with delayed treatment of invasive breast cancer. Availability of resources and efficiency of health care system play an important role in delay. Translational research of these factors into quality enhancing initiatives may help improve timeliness of care.

**Measuring Distress in Patients at an Outpatient Oncology Office**

Steven J. Jubelirer, MD, Dheeraj Kodali, MD, Christine A. Welch, MS, Areesha Khan, Emily Witsberger

**Introduction:** The diagnosis and treatment of cancer undoubtedly causes significant levels of distress. This facet continues to be neglected in cancer care. The National Comprehensive Cancer Network has developed a distress scale that should be used to screen all patients in cancer clinics to assess their physical, emotional, social or spiritual distress.

**Objective:** The purpose of this study was to determine the level of physical, emotional, spiritual or social distress in patients who visited an oncology clinic and how many patients with significant distress (distress thermometer scale ≥ 5) had an intervention.

**Methods:** The NCCN distress thermometer tool and distress items checklist were used for assessment of patients with an oncologic or a malignant hematologic problem in the David Lee Cancer Center. Various demographic and clinical variables were collected. Chart review was done on those with significant distress (distress thermometer scale ≥ 5).

**Results:** There were 173 cancer patients who were an average age of 62.5 ± 13.2 years (range: 22-92), 96% were Caucasian, 66% were married and 64% were female. The most prevalent types of cancer were breast 31.2%, lung 19.7%, and gastrointestinal 9.8%. The most noted practical problems mentioned were insurance (21%), family health issues (25%) and worry (39%), while the most common physical problem noted was fatigue (55%). Difference between genders included dealing with children (p = 0.03), sexual (p = 0.04) and pain (p = 0.04). Those who had been diagnosed most recently (< 5 years) had greater fears (p = 0.01), fatigue (p = 0.002), and nausea (p = 0.004). Overall, 47% of the population had distress thermometer reading ≥ 5. Focusing on those with a thermometer reading ≥ 5 a chart review showed that in 88.6% of the patients, physicians either noted the distress, psychotropic medications were initiated / optimized, or a referral was made.

**Conclusion:** This study documents the initiation of the NCCN distress scale in an outpatient oncology clinic and demonstrates the importance of measuring the level and types of distress in cancer patients.
Cancer Incidence in Elderly West Virginians
Alana G. Hudson, PhD, MPH, Kristen J. Mertz, MD, MPH, Steven J. Jubelirer, MD, John W. Wilson, PhD

Abstract: West Virginia has one of the oldest populations in the nation. Cancer is a common disease among the elderly. With the projected growth of the elderly population (defined as 65 years and older), cancer will become a major public health burden. This article provides a summary of cancer incidence in elderly West Virginians. Incidence data were obtained from the West Virginia Cancer Registry. Approximately 6,262 elderly persons are diagnosed with some form of reportable cancer in West Virginia each year. Among those aged 65 and older, the four leading primary cancer sites in the order of their relative frequency were lung and bronchus cancer (21.8%), prostate (14.6%), colorectal cancer (12.7%) and female breast cancer (9.6%). In general, the burden of cancer was greater in elderly men than in elderly women. Knowledge of the epidemiology of cancer in the elderly can potentially help guide statewide cancer prevention and control efforts and be used for anticipating future health care needs in the state.

Utilization of adjuvant therapy among completely resected non-small cell lung cancer (NSCLC) patients at CAMC. A comparison to the NCCN outcomes database project.
Seth Larson, OMS II, Steven Jubelirer, MD, Christine A. Welch, MS

Adjuvant treatments for Non Small Cell Lung Cancer can include chemotherapy, radiation and targeted therapies. This retrospective study examined the therapies used for patients diagnosed with stage Ib through IIIA non small cell lung cancer at CAMC from 2005-2012. Patient records were gathered from the CAMC Cancer Registry and additional variables were collected from the patient records. CAMC had recorded nearly 2500 lung cancer patients for the time period. Preliminary results in 224 patients, which met study inclusion criteria, showed that 96% were Caucasian, and average age of 66 ± 10 years of age with a range of 40-86 years. Males were majority of the population at 63.3% (n = 140), 60% were married, and the majority (56%) had Medicare/Medicaid coverage, 42% commercial, while 1.8% were self-pay/uninsured. The largest proportion of the persons resided in Kanawha County (39%). Cardiac classified comorbidities were experienced by 50% of the population followed by hypertension (46%), hyperlipidemia (28%), and diabetes (24%). Stages at diagnosis were Ib (43%), 2A (18%), 2B (27%), and 3A (12%). The majority of pathology was adenocarcinoma (47%), followed by squamous cell (42%). The majority of patients (85%) had undergone a bilobectomy. Of those treated the majority had cisplatin-based chemotherapy (47.13%), followed by carboplatin-based (28.74%), concurrent chemotherapy/radiation (14.94%), radiation alone (6.9%), and sequential chemotherapy radiation (2.3%). Of patients who were not treated refusal/elected observation encompassed the majority of cases (73.4%), while 14.2% were not treated due to comorbidities and 12.4% expired within 2 months of surgery. Table 1, shows that overall patients had adjuvant treatment at a rate similar to that found by Zornosa1. Logistic regression revealed that those who were treated were male (odds ratio 2.2, CI 1.1-4.4, p = .03), age < 65 years (odds ratio 2.5, CI 1.3-5.0, p = .01), and increasing in stage (odd ratio 2.3, CI 1.7-3.3, p < .0001). Overall, patients were treated effectively and appropriately.
Niacin Induced Coagulopathy as a Manifestation of Occult Liver Injury

*Steven J. Jubelirer, MD, Ehab Haj Ali, MD, Brittain McJunkin, MD, William Hood, DO*

**Abstract:** Niacin is an effective lipid-lowering agent which occasionally may cause hepatic failure. Live enzymes are periodically tested during niacin therapy to assess for hepatic injury. We report a case of suppressed synthesis of hepatically derived coagulation factors and other liver proteins in a patient on niacin with no elevation of hepatic aminotransferases. The protein abnormalities reversed rapidly on discontinuation of niacin. It appears that niacin can cause occult liver injury without frank aminotransferases elevations, and may portend severe hepatotoxicity. Periodic assessment of prothrombin time should be considered in addition to aminotransferases levels to screen for liver injury. We believe this is the first reported case of occult hepatic injury due to extended release niacin, presenting as coagulopathy.

**Conclusion:** Extended-release niacin as well as other niacin preparations may suppress hepatic protein synthesis resulting in coagulopathy and other abnormalities without frank elevation of hepatic enzymes. These changes may reflect underlying potentially severe occult hepatic injury. Pharmaceutical marketing for extended-release niacin may result in more frequent reported episodes of this form of toxicity. Prothrombin time should be included with hepatic enzymes in the routine monitoring of patients on niacin.


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The David Lee Cancer Center is now a QOPI Certified Center
By James N. Frame, MD, FACP and Gwen McDevitt, B.P.H.S.

The David Lee Cancer Center, known for focused patient centered care in Southern West Virginia, has now joined an elite group of cancer centers by becoming the first cancer center in the State of West Virginia to receive the prestigious national certification from the Quality Oncology Practice Initiative (QOPI) Program; a certification from the American Society of Clinical Oncology (ASCO).

QOPI Certification is only awarded to cancer centers that meet the highest quality standards for cancer care. Certification was awarded to the David Lee Cancer Center in December of 2012. This certification is valid for 3 years. DLCC journey to quality excellence commenced in early 2011, this voluntary substantial and substantive undertaking is designed to promote excellence in comprehensive cancer care through a comprehensive retrospective review that compares more than 160 evidence-based and consensus quality measures. In addition to a chart review QOPI evaluates policy and procedures and performed an on-site inspection. During the on-site review QOPI evaluated chemotherapy compounding procedures, chemotherapy administration, interviewed various staff members, and inspected all aspects of the practice. DLCC is obligated and continues to submit specified data over the course of the certification period which translates to better patient care and satisfaction, in the fall and spring of each year.

QOPI assist the David Lee Cancer Center in determining where our practice’s strengths are and where there is room for improvement. As the David Lee Cancer Center continues to strive for excellence several new or improved initiatives been implemented, including:

- Furthering education to provide a Survivorship Program;
- More patient education to help assist in their understanding of chemotherapy and its implications; and
- An increased focus on patients’ pain and emotional well-being.

According to Beverly Farmer RN, OCN, CNIII, Practice Administrator at the David Lee Cancer Center, “The QOPI efforts of the physicians and staff have caused an even greater collaboration in the care process resulting in noticeable improvements in our delivery of care and quality of life for our patients. These efforts to obtain certification required much, much behind the scene work by the center. Close monitoring and self-critiquing continues, virtually every day. Over the past five data entry periods in excess of 550 charts were extracted, analyzed, and reported. This consuming effort is to showing results separate and apart from progress in obtaining certification for the David Lee Cancer Center.”

Three data entry periods have shown several improvements including the following:
- Core -
Pain Addressed Appropriately

- Core -
Chemotherapy Intent Documented (Curative vs. Palliative)
- Core -
Patient Emotional Well-Being
Assessed by the Second Office Visit

- Breast Cancer -
Trastuzumab Received by Patients with
AJCC Stage I (T1c) to III Her-2/neu Positive
Breast Cancer
Cancer Survivorship  
Jo Thomas, RN, BSN, OCN, CNIV

The number of cancer survivors in the US has grown from 3 million to over 12 million in the past 35 years. Cancer survivorship is not a new concept to cancer patients or care providers, but the process of providing a comprehensive survivorship program is new.

The initiative for the program came from the Institute of Medicine’s 2005 report, From Cancer Patient to Cancer Survivor: Lost in Translation. This report brought attention to the gap that existed when cancer patients completed treatment and re-entered their life.

The report recommended that patients who complete primary treatment should be provided with a comprehensive care summary and follow up plan that is clearly and effectively explained. Due to this recommendation, the ACOS CoC instituted that standard be implemented by all accredited cancer centers by January 2015.

The goal for DLCC is to have the patient have a comprehensive visit with a nurse practitioner at the completion of treatment. During this visit, the NP will review the treatment summary, explain follow up plan, and identify late effects of cancer treatment. A copy of this plan will be given to the patient and sent to the primary care provider.

CAMC Certified Tumor Registrars  
Susan Thompson, CTR

In order to be compliant with Standard 5.1 by 2015, CAMC has offered AHIMA Distance Education in Cancer Registry Management Formal Education Program to Cancer Registry employees that were not already CTR’s (Certified Tumor Registrars). Three registry employees have completed the program and went on to pass the Cancer Registry test to become CTR’s. We have two other employees currently taking the AHIMA Classes who will sit for the CTR Exam upon completion. This will bring the total CTR’s to 5 employees in the Tumor Registry Department, with the addition of the Cancer Registry Manager who had already obtained her CTR.

Upon comparing other hospitals within West Virginia, CAMC not only accessions the most newly diagnosed cancers, we also employee the most CTR’s. We feel we are on the right track for being compliant for the new Standard by 2015.
Oncologic Surgery
Michael Elmore, MD

The section of oncologic surgery has advanced steadily over the years, supported by a long history of cutting-edge approaches to the treatment of solid tumors.

The oncologic surgeons have frequently been the first in the state to introduce treatment modalities for complex surgical oncologic problems. Such was the case, for instance, with intra-arterial delivery of chemotherapy for patients with head and neck tumors, or the use of hyperthermic arterial infusions for melanoma, or the insertion of pumps in the hepatic artery to deliver chemotherapy to hepatic tumors.

Every week the section’s surgeons treat patients with tumors of the breast, thyroid, colon, rectum, pancreas, liver, melanoma, esophagus, stomach, and many others. James Lohan, MD and Benjamin Dyer, MD are using the advanced technology of robotic surgery to aid in the surgical resection of colon and rectal tumors. Robotic surgery is also being utilized for esophageal cancer by Ed Tiley, MD and John Deel, MD. Todd Witsberger, MD is providing exceptional surgical results for patients with breast cancer, and with assistance of the plastic surgery department, is able to have patients receive immediate or delayed breast reconstruction. A large number of patients have benefitted from the surgical skill of Bryan Richmond, MD, whose vast experience includes thyroid and pancreatic cancer. The expertise in the areas of hepato-biliary surgery has been enhanced with the recruitment of Michael Elmore, MD, a surgical oncologist who has rapidly taken charge of patients with liver, pancreas, and biliary tumors.

Dr. Elmore is a surgical oncologist who specializes in surgery of hepatic and biliary tumors, many of which he approaches laparoscopically. He has successfully removed metastatic liver tumors using advanced techniques, such as radio frequency ablation. When all tumor burden can thus be removed from the liver and treatment is coupled with chemotherapy, patients have a chance to survive that can be as high as 40% at five years, an outcome not commonly seen in years past.

The team of surgeons in this section consistently applies the latest technological advances used in surgery of solid tumors.
CAMC Breast Center
By Roberto Kusminsky, MD

The Breast Center at CAMC continues to evolve, solidifying its contribution to the community with a range of services accessed by patients with increasing frequency. Among these, the ability to evaluate patients quickly has resulted in an influx of women who otherwise would have been forced to endure some of the processes associated with an older model of care. Now, the sequence of mammography, further diagnostic tests if needed, biopsy if indicated and treatment decisions follows a rapid sequence which enables patients to be taken care of in a short time period.

The Breast Center infrastructure has been tested by time, and the results have proven to be nothing short of spectacular. Each step of the processes linked to the gamut of services offered is firmly supported by skillful providers. The role of the Breast Navigator continues to grow, with the support thus provided touching a progressively larger population of patients. Mammographic and imaging services are streamlined so physicians referring patients to the Breast Center can choose to participate in the RAPID CALL BACK and RAPID DIAGNOSTIC programs, which allows them to expedite the care of their patients. These and other processes of care are now being offered to an expanded population of patients and doctors. The results are a simpler and more effective way to provide access to important services and quickly solve all problems of patients with breast diseases.

Outstanding progress is being made in several service areas. For instance, the routine risk evaluation that is given to any patient who enters the Breast Center has been redesigned and a formal Risk Clinic has opened its doors under the direction of Dr. Roberto Kusminsky, a Professor of Surgery at West Virginia University with years of advanced expertise in the diagnosis and care of patients with breast diseases. The Risk Clinic provides risk evaluation, risk analysis, genetic testing and genetic counseling to patients in need of these services. These patients are identified by their referring physicians, by a profile drawn by specially trained nurses or by a screening tool completed upon entry through our Breast Center. We are currently recruiting a genetic counselor to join our Breast Center staff. The Clinic’s main focus is on patients at risk for breast cancer, but the program will expand to patients who might be at risk for colorectal and gynecological cancer as well. This effort will link this service to those offered by the Cancer Center and in this manner it will create a seamless process for patients to benefit from these services.

Many patients have already accessed the Risk Clinic on their doctor’s advice, and a significant number of them have already received genetic testing/counseling. These improvements have facilitated the decision-making of the multidisciplinary group that convenes weekly to determine the best options of treatment for patients diagnosed with breast cancer.
Outreach programs to help the community and the state are almost ready to be implemented. In the following months, the Breast Center will put in place a program of conferences for the public, to inform and educate on issues of prevention and treatment of breast cancer.

These and many other programs undergo routine scrutiny and evaluation by the group of experts that manages the operations of the Breast Center. The result of these activities is a clear direction for the Breast Center, which continues its advance using the most current and proven scientific methods in use to assist patients with breast concerns. The gamut of services and programs available at The Breast Center are offered in a pleasant physical environment which is warm and welcoming because of its skillful and compassionate staff.
Pediatric Oncology  
Allen Chauvenet, MD, Howard Grodman, MD, Chibuzo O’Suoj, MD, Alicia Harper, C-FNP

We continue to be the only full member of the Children’s Oncology Group (COG) in West Virginia. The COG is recognized as the largest cooperative group in the world with a focus on childhood cancer.

Clinical Care and COG Research Participation

Our pediatric oncology service underwent an audit by the Children's Oncology Group (routine every 3 years) in August 2013. We received excellent evaluations (as was the case in our prior audits) and will thus be due for a routine audit in August of 2016.

We continue to actively enroll patients on COG protocols and are looking to increase the efficiency of our entire COG operation. We receive financial support from the COG.

With continued support from child life, pastoral care, clinical psychology, nutrition as well as pathology, radiation oncology, diagnostic imaging and our pharmacy program, we are well positioned to maintain and expand the excellent of our childhood cancer program.

Dr. Chauvenet is retiring from practice 10/31/2013 and the clinical service will be maintained by Drs. Grodman and O’Suoji along with our nurse practitioner, Alicia Harper.

Teaching

We provide three hours of instruction for all third year students on the pediatric rotation and present two to three pediatric grand rounds each year as well as monthly resident teaching conferences. All second year pediatric (and Med/Peds) residents rotate on our service; we received excellent evaluations from residents in 2012-2013. Resident scores on the pediatric board exam in our subspecialty continue to be above the program and national means.

Service

Dr. O’Suoji originated the idea of a “Cure Search” walk for Children’s Cancer in WV and with great support from our Nurse Practitioner, Alicia Harper, this became in reality in September of 2013, raising over $20,000. Many of our patients attended which provides increased recognition of our program.

Administrative/Research/Publications

Dr. Grodman assumed the position of COG Principal Investigator effective 1 October 2013.

Our CRA, Donna Pauley, continues to do an exemplary job in data submission as our timeliness and compliance remain in the upper cohort of all COG institutions.

We continue to receive support from the CAMC Foundation which allows our annual family picnic to take place, helps make our summer camp free for patients and provides support funding for families in need.
**PUBLICATIONS:** Dr. O’Suoji is the first author on a paper published in Pediatric Blood and Cancer:


One letter to the editor and one case report, both initiated by senior pediatric residents, we accepted as noted below:

Thomas, Matthew W, Chauvenet, Allen R, O’Suoji, C. Repeating Blood Cultures in Neutropenic Children with Persistent Fevers When the Initial Blood Culture is Negative

(Accepted, Pediatr Blood & Cancer 6/12/13).

Steward SC, Chauvenet AR, O’Suoji C. Nasopharyngeal Rhabdomyosarcoma Mimicking a Peritonsillar Abscess. West Virginia Medical Journal, Accepted 9/24/2013

The following paper has been SUBMITTED to Journal of Pediatrics: (as of publication, this is currently under review)

Steward, Sarah C, Chauvenet, Allen R, O’Suoji, C: Hereditary Spherocytosis: Consequences of Delayed Diagnosis

Dr. O’Suoji continues as the supervising faculty member for an ongoing resident research project:
Evaluation of Patients referred for a prolonged PTT
Oncology unit renovation will create comfortable, healing environment

Martha Taylor, RN, OCN, clinical management coordinator
Jennifer Ferrell, RN, OCN, nurse manager

Exciting changes continue to take place on the inpatient oncology unit. A complete renovation is underway to create a comfortable environment that will promote healing for patients and their families.

All 29 rooms and baths are private and conducive to individualized care that promotes family involvement and maximizes comfort. There are sofa beds in each room to accommodate care partners who may wish to stay with their loved ones.

The unit has a dedicated, highly skilled and efficient team of professionals available to meet the diverse needs of patients during an intensely challenging time in their lives.

Other improvements include the addition of a new conference room for meetings and staff education, a larger break room for staff, an ample physician dictation room and an improved family resource room stocked with the latest health information available. Renovations should be completed by fall 2013.

The nursing staff is excited about the positive changes that are happening in the department. They look forward to caring for their patients in a beautiful, well-designed space.
RESEARCH AND OUTCOMES

CAMC Cancer Statistics by Stage
CAMC Benchmark and Survival Rates
US Cancer Statistics
The Center for Cancer Research is primarily involved in cooperative group treatment and prevention studies sponsored by the National Cancer Institute (NCI). Current affiliations include: the National Surgical Adjuvant Breast and Bowel Project (NSABP), Eastern Cooperative Oncology Group (ECOG), Children’s Oncology Group (COG) and the Southwest Oncology Group (SWOG). Additionally, the Cancer Research Center is provides access to selected pharmaceutical sponsored trials of interest to clinicians and patients.

The Cancer Research Center currently maintains greater than 100 protocols at the center, opening additional protocols for cancer patients each month. More than three hundred patients are currently enrolled in cancer research trials at CAMC.

Referrals to the research center come from private physicians, oncologists, surgeons, urologists, radiologists, and from patients themselves. The Center works closely with the David Lee Cancer Center, which is affiliated with CAMC.

Participation in research, a surrogate for a versatile and leading edge cancer program, is a requirement for our status with the American College of Surgeons (ACoS). The College provides standards for cancer programs, such as the one established at CAMC, assuring patients and their families of optimal care. The goal of the Cancer Research Center is to provide opportunities to participate in research trials for a variety of cancers to patients in this area, allowing patients of the Kanawha Valley opportunities to participate in research trials here at CAMC. Important to patients and their families, having these trials available at CAMC allows patients of this area to participate in research, and at the same time remain close to family and friends. Notably, our cancer program has achieved commendation levels from the ACoS in the past few years for its efforts in the domain of research.

In addition to the aforementioned partnering NCI affiliations, we have access to several cooperative group trials through the CTSU (Clinical Trials Support Unit). Sponsored by the NCI, the CTSU allows sites access to protocols without the requirement of group membership. We have recently become active members with RTOG (radiation treatment group trials), allowing for prostate cancer treatment in cooperation with Charleston Radiation Therapy Associates. This has complimented CAMC’s movement toward offering a focused center of excellence in prostate health.

With increased funding via NIH, state and private industry in the area of cancer research, we are pleased to be a part of bringing the resulting accelerated research innovation to our community. Recently, we have added several research protocols that involve state of the art technology, such as gene
mapping, and molecular markers to determine therapies for cancer treatment. We also have protocols utilizing novel chemotherapeutic agents for front-line therapy, as well as protocols for advanced cancers, both of which give cancer patients at various stages of disease ready access to cutting-edge research in their home communities.

Data management and regulatory functions are often opaque aspects of a research program; however they are substantively important in maintaining a quality research program. We have undertaken efforts to improve related processes. There has been improvement in our working through a centralized IRB review of cancer protocols, allowing a more efficient and less burdensome delivery of approved research protocols to our patients. Implementing revised local IRB guidelines for submissions has greatly streamlined paperwork flow (often times hundreds of pages for review and approval) between internal and external offices.

The Center for Cancer Research is located in Suite 203 of the CAMC Medical Staff Office Building, one floor above the David Lee Cancer Center, allowing for more convenient physician and patient access. New patient referrals are taken immediately, allowing clinic patient flow to continue without interruption. Access to the Center’s medical records area, the oncologist’s transcriptions through EMON, and the use of Medical Manager have also helped to reduce the data delinquency rates by allowing our staff more ready access to the information necessary for patient reporting to the study groups.

The Cancer Research Center welcomes referrals from all disciplines, and looks forward to serving well the West Virginia community. In addition to referrals, availability of specific research protocols may be known by contacting us via phone (304) 388-9936 or (304) 388-9940 or email karen.shirey@camc.org, or augusta.kosowicz@camc.org.

**Staff**

Steven Jubelirer, MD, Senior Research Scientist
Karen Shirey, RN, BSN, Research Coordinator
Augusta Kosowicz, PA-C, Research Coordinator
Megan Ware, Research Assistant
Jongie Shelton, Research Assistant
B. Daniel Lucas, Jr., PharmD, Director
RQRS Comparison Information on Performance Rate in all 2010 - 2012
Erin Coffindaffer, CTR

The Rapid Quality Reporting System (RQRS) is a real-time program used to monitor compliance on Commission on Cancer’s (CoC) standards for breast, colon, and rectal cancers. Participation in the program is voluntary. RQRS sends alerts on patients who have not received recommended treatment within the appropriate time frame. This helps CAMC uncover any deficiencies in treatment, allowing us to ensure the highest level of care possible.

The Cancer Committee closely monitors the data collected in RQRS and works to make sure that all information is accurate. Listed below are CAMC’s year-to-date performances compared with regional and national data according to each standard.

1. Radiation therapy is administered within one year (365 days) of diagnosis for women under age 70 receiving breast conserving surgery for breast cancer.
2. Tamoxifen or third generation aromatase inhibitor is considered or administered within one year (365 days) of diagnosis for women with AJCC T1cN0Mo, or Stage II or III hormone receptor positive breast.

3. Combination chemotherapy is considered or administered within 4 months (120 days) of diagnosis for women under 70 with AJCC T1cN0M0 or Stage II or III hormone receptor negative breast.
4. At least 12 regional lymph nodes are removed and pathologically examined for resected colon cancer.

5. Adjuvant chemotherapy is considered or administered within 4 months (120 days) of diagnosis for patients under the age of 80 with AJCC Stage III (lymph node positive) colon cancer.
6. Radiation therapy is considered or administered within 6 months (180 days) of diagnosis for patients under the age of 80 with clinical or pathologic AJCC T4N0M0 or Stage III receiving surgical resection for rectal cancer.
Notice: When comparing survival rates between your cancer program and all other CoC-accredited cancer programs: if the confidence intervals of stage-specific or overall survival rates overlap after five years, then there is no statistical difference between survival rate of patients at your facility with that of other CoC-accredited cancer programs.
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Beginning in 2012, two new standards were introduced in order to measure levels of care for Commission on Cancer (CoC) accredited facilities. These standards are maintained and monitored on the CP³R site provided by the National Cancer Data Base (NCDB). There are four accountability measures which must be maintained at 90% or the upper bound of the 95% confidence interval (CI). There is also one quality measure for colon cancer which must be maintained at 80% or the upper bound of the 95% CI and one surveillance measure for rectal cancer. CP³R allows CAMC to benchmark performance on accountability and quality measures related to breast, colon, and rectal cancers. The Cancer Committee closely monitors this information and works with the tumor registry to ensure information is accurate.

The tables listed demonstrate CAMC’s performance against other accredited facilities; including West Virginia, the South Atlantic census region, southeast region, other academic facilities sharing CAMC’s accreditation status, and all facilities in the United States. CAMC meets and exceeds minimum quality standards in all measures.

<table>
<thead>
<tr>
<th></th>
<th>Accountability Measures Standard 4.4</th>
<th>Quality Measure Standard 4.5</th>
<th>Surveillance Measure</th>
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<tbody>
<tr>
<td></td>
<td>BCS/RT</td>
<td>MAC</td>
<td>HT</td>
</tr>
<tr>
<td>CAMC</td>
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<td>✓</td>
<td>✓</td>
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<tr>
<td></td>
<td>89.40%</td>
<td>91.30%</td>
<td>94.70%</td>
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<tr>
<td><strong>Required Performance</strong></td>
<td>&gt;90%</td>
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<tr>
<td>Upper Bound of the 95% Confidence interval&gt;=90%</td>
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<tr>
<td></td>
<td>98.20%</td>
<td>100%</td>
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<tr>
<td>Upper Bound of the 95% Confidence interval&gt;=80%</td>
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<td></td>
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</tr>
<tr>
<td>WV</td>
<td>94.80%</td>
<td>91.50%</td>
<td>95.70%</td>
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<tr>
<td>South Atlantic</td>
<td>91.70%</td>
<td>91.90%</td>
<td>89.00%</td>
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<tr>
<td>Southeast</td>
<td>93.00%</td>
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<tr>
<td>Academic</td>
<td>91.50%</td>
<td>91.50%</td>
<td>89.90%</td>
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<tr>
<td>All</td>
<td>92.30%</td>
<td>92.90%</td>
<td>90.30%</td>
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## 2011 Data

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<th>Quality Measure</th>
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<td>Standard 4.4</td>
<td>Standard 4.5</td>
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</tr>
<tr>
<td>CAMC</td>
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</tr>
<tr>
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</tr>
<tr>
<td>MAC</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>HT</td>
<td>✓</td>
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<tr>
<td>ACT</td>
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<td>✓</td>
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<tr>
<td>12RLN</td>
<td></td>
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<tr>
<td>Rec/RT</td>
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<td>Required Performance</td>
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<tr>
<td>Upper Bound of the 95% Confidence interval &gt;=90%</td>
<td>100.00%</td>
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</tr>
<tr>
<td>Academic</td>
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<tr>
<td>All</td>
<td>90.70%</td>
<td>91.40%</td>
</tr>
</tbody>
</table>

**Required Performance**

- WV: 92.20%, 91.40%, 90.30%, 86.00%, 78.90%, 96%
- South Atlantic: 89.80%, 90.30%, 86.10%, 85.70%, 86.60%, 92.90%
- Southeast: 91.40%, 91.70%, 88.80%, 88.00%, 86.60%, 93.30%
- Academic: 90.30%, 90.60%, 87.00%, 86.10%, 91.20%, 92.80%
- All: 90.70%, 91.40%, 87.60%, 88.30%, 87.80%, 93%
Cancer Program Practice Profile Reports (CP³R) for Breast, Colon and Rectal Cancers Diagnosed 2009 - 2011

Charleston Area Medical Center, Charleston, WV

Interpreting This Report: The estimated performance rates shown below provides your cancer program with an indication of the proportion of breast and colorectal patients treated according to recognized standards of care by diagnosis year. These proportions are computed based on data directly reported from your registry to the NCDB. This Cancer Program Practice Profile Reports (CP³R) application provides cancer programs with the opportunity to examine data to determine if these performance rates are representative of the care provided at the institution. Cancer programs have the ability to review and modify cases by clicking on “case review” for the measure of interest. Displayed performance rates are immediately updated once modifications via the CP³R are completed by cancer program staff, comparison rates are updated nightly. Note: Any modifications made online should be reflected at the local cancer registry. Cancer programs are encouraged to resubmit reconciled cases to the NCDB.

<table>
<thead>
<tr>
<th>Select Breast &amp; Colorectal Measures</th>
<th>Estimated Performance Rates (click rate for comparisons)</th>
<th>Case Review</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2009</td>
<td>2010</td>
</tr>
<tr>
<td>Breast Radiation therapy is administered within 1 year (365 days) of diagnosis for women under age 70 receiving breast conserving surgery for breast cancer. [BCH/RT]</td>
<td>96%</td>
<td>89.4%</td>
</tr>
<tr>
<td>Breast Combination chemotherapy is considered or administered within 4 months (120 days) of diagnosis for women under 70 with AJCC T3N0 MO, or Stage II or III ERA and PRA negative breast cancer. [MAC]</td>
<td>94.1%</td>
<td>91.3%</td>
</tr>
<tr>
<td>Breast Tamoxifen or third generation aromatase inhibitor is considered or administered within 1 year (365 days) of diagnosis for women with AJCC T1c N0 M0, or Stage II or III ERA and/or PRA positive breast cancer. [HT]</td>
<td>98.7%</td>
<td>94.7%</td>
</tr>
<tr>
<td>Colon Adjuvant chemotherapy is considered or administered within 4 months (120 days) of diagnosis for patients under the age of 80 with AJCC Stage III (lymph node positive) colon cancer. [ACT]</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Colon At least 12 regional lymph nodes are removed and pathologically examined for resected colon cancer. [12RLN]</td>
<td>86.3%</td>
<td>76.3%</td>
</tr>
<tr>
<td>Colon/Rectal Radiation therapy is considered or administered within 6 months (180 days) of diagnosis for patients under the age of 80 of with clinical or pathologic AJCC T4NO0 or Stage III receiving surgical resection for rectal cancer. [AdjRT]</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Background: The National Quality Forum (NQF) brought public and private payers together with consumers, researchers, and clinicians to broaden consensus on performance measures for breast and colorectal cancer. The performance rates shown in the Cancer Program Practice Profile Reports (CP³R) match the specifications of the breast, colon and rectal cancer care measures endorsed by the NQF in April, 2007. The Commission on Cancer has been actively engaged in this process. The CoC has instituted the CP³R as a facility feedback mechanism to promote awareness of the importance of charting and coding accuracy in line with evidence based practice guidelines. In light of the national movement towards Pay for Performance (P4P), these reports provide CoC-Approved programs with the ability to examine program-specific breast, colon and rectal cancer care practices.

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Top Six Sites of 2012 at CAMC

- Corpus Uteri (6.3%)
- Kidney and Renal Pelvis (7.1%)
- Colon (7.6%)
- Prostate (10.3%)
- Lung/Brachial-Non Sm. Cell (13.2%)
- Breast (18.8%)
CAMC Physicians Group - Urology
By Drs. Samuel Deem and J.P. Tierney

As an integral part of Charleston Area Medical Center, the Department of Urology strives to provide excellence in patient care, teaching and research within the specialty of pediatric and adult urology. Our team of over 40 physicians, nurses and staff are dedicated to providing state-of-the-art care within a compassionate and caring environment.

Our medical team focuses on providing the best possible care for individuals experiencing such illnesses as prostate cancer, bladder cancer, adrenal cancer, kidney cancer and other kidney anomalies, testicular cancer, female and pediatric urological conditions, impotence and infertility, urinary tract infections, incontinence and bladder dysfunction. We provide an integral part of the treatment plan for those afflicted with genitourinary cancers including state-of-the-art treatment for all of these malignancies.

Because each individual’s health care needs are unique, every patient has an individualized plan of care. We combine compassion and respect with the very best in medical and surgical care. This approach coupled with the expertise of our board-certified physicians and dedicated staff enables the department to be a leading provider of urological health care in the state and the region.

The establishment of the CAMC Urologic Surgery residency in 2006 marked a new era in the department of Urology. Teaching of future urologic surgeons to further enhance the quality of urologic care in the region became a priority. Since that time, the residency has grown to include 10 total resident physicians from all across the U.S. For the past three consecutive years our graduating residents have been awarded the ACOS resident achievement award for their accomplishments as a resident.

In 2011, the department established a multidisciplinary genitourinary cancer conference. This conference now meets bimonthly to discuss and review all complicated cases of prostate, bladder, kidney, testicular and penile cancer. Specialists attending the conference include urologist, radiologist, medical oncologist, radiation oncologist and the areas first dedicated genitourinary pathologist. This multidisciplinary approach ensures every patient receives the opinion of multiple professionals prior to proceeding with their individualized care. Improved outcomes and prolonged survival are the goals of the conference and patients can be assured they are receiving a multidisciplinary care plan to ensure we reach these goals.

In 2007, led by department chairman Dr. J.P. Tierney, CAMC purchased the first of two current da Vinci surgical robots. As of September 2012 we completed more than 1,500 robotic procedures. Our dedicated robotic nursing team and ancillary staff enable us to continually improve the patient experience. Robotic procedures currently performed by CAMC urologist include radical prostatectomy,
pelvic lymph node dissection, partial and radical cystectomy, partial and radical nephrectomy, pyeloplasty, ureteral reimplantation and adrenalectomy. Benefits of the robotic procedures include improved visualization, less blood loss, more accurate dissection, less pain, and shorter hospital stay.

Robotic assisted laparoscopic partial nephrectomy has revolutionized the care of small kidney cancers. Our recently introduced CT renal mass protocol ensures we have the necessary information to preserve as much healthy tissue as possible for each case. Utilizing the 3-D, High Definition, magnified image of the da Vinci Si surgical system, urologists at CAMC are able to preserve nearly the entire kidney while removing the entire tumor. Blood loss and pain are dramatically reduced with this procedure. Newer technology utilizing Indocyanine green dye is allowing our team to improve the accuracy of removing the tumor and sparing the kidney. When injected intravenously, the da Vinci robot is supplied with “firefly” technology, similar to a black light, causing the kidney to fluoresce and the tumor to remain black. Most patients leave the next day or 2 days after this procedure.

Bladder cancer is expected to be diagnosed in about 73,510 people in the U.S. in 2012. At CAMC, we are aggressively pursuing new avenues to diagnose, treat, and manage this aggressive disease. Hexaminolevulinic acid (Marketed as Cysview in the US) is an agent that can be instilled in the bladder and fluoresces under blue light cystoscopy helping to identify small bladder tumors. This technology has been shown to decrease recurrence of bladder cancer by allowing urologists to identify tumors that could not be seen with traditional white light cystoscopy. For advanced bladder cancer we coordinate with our medical oncology colleagues to provide chemotherapy before surgery with the da Vinci robot to further improve the chances for cure of the cancer.

In addition to the primary treatment of genitourinary cancer cases, CAMC Physicians Group – Urology has recently recruited a reconstructive urologist to assist in more difficult issues that arise as a result of radiation or surgery for cancer. Reconstruction of the male or female urethra, ureters or bladder is now routinely performed as well as all types of urinary diversions.

CAMC Physicians Group – Urology has become the leader in management of genitourinary cancer in the state and region. Our fellowship trained surgeons are capable of utilizing the most current available technology to offer the finest urologic care in the largest community in West Virginia.
The Department of Radiology provides diagnostic and interventional imaging services for the clinical and research programs at CAMC. Imaging Services are provided at five convenient locations; Memorial, General and Women & Children’s Hospitals and outpatient imaging centers in Kanawha City and Southridge. All locations are staffed with registered and licensed technologists and nurses.

Associated Radiologist, Inc., comprised of 17 full-time board certified radiologists with expertise in nearly every specialty and diagnostic modality, staffs the Department of Radiology. Faculty members have received training in outstanding medical centers throughout the United States, many completing postgraduate work and fellowship training. The department is composed of highly dedicated physicians, nurses, technologists and staff who specialize in cancer screening, diagnosis, intervention and surveillance.

The department of diagnostic imaging offers a full complement of screening, diagnostic and non-vascular interventional radiological technologies. Modalities offered include X-ray, fluoroscopy, ultrasound, digital mammography, bone density (DEXA), computed tomography (CT), magnetic resonance imaging (MRI) including diagnostic and interventional breast care and MR spectroscopy, nuclear imaging, positron emission tomography (PET) and image-guided biopsy services.

Some of our highlights are our state of the art equipment. We have three full-field (1.5 tesla) MRI scanners and one three tesla MRI scanner. One of the 1.5 and the 3T are large diameter bore for claustrophobic and larger patient accommodation. CAMC’s newest MRI scanner, the Philips Ingenia 3T, provides unique capabilities in many areas of study, specifically neurological imaging. One feature of this technology is the NeuroQuant®, which is a special analysis that is added to a brain MRI. The NeuroQuant® is a tool that screens for Alzheimer’s disease and other neurological disorders. It automatically measures the size of the structures in the brain and compares scans against a national database, the Alzheimer’s Disease Neuroimaging Initiative. Functional MRI (fMRI) is another capability of the 3T MRI. The fMRI examines the anatomy of the brain, helps to determine critical functions of the parts of the brain (brain mapping) and helps neurosurgeons plan for procedures.

In The Breast Center, CAMC offers all digital mammography and the MammoPad for softer imaging. All images are acquired in digital format, interpreted on electronic workstations, filed and stored electronically, and distributed to clinicians by an in-house network and the World Wide Web. Mammography is performed at the Breast Center and both outpatient imaging locations. The Breast Center is a Center of Excellence as awarded by the American College of Surgeons.

In CT we have a fixed 16 slice CT scanner combined with a fixed PET scanner; one 256-slice CT scanner, two 128-slice scanners, two 64-slice CT scanners and two 16-slice CT scanners.
In 2012, CAMC Women and Children’s Hospital unveiled its newest 128-slice CT machine. This scanner produces faster scans and is equipped with low-dose technology allowing a lot less radiation to be used – while a computer program boosts the quality of the image. The renovated CT room also features an ambient experience which creates a friendly atmosphere for both children and adults. The room is specially-designed with curved walls for projecting images, providing a movie theatre-like experience without glasses or headphones needed. An important aspect of the system is the patient actually chooses the room theme before their scan using a special control pad. This interaction between patient and equipment is designed to make people more relaxed and move their attention away from any anxiety caused by the impending procedure.

CAMC is privileged to have our own hospital based Nuclear Pharmacy. This allows for CAMC to maintain USP 797 certification for compounding and supply of Radiopharmaceuticals to CAMC Health System and the local Charleston Area Nuclear Medicine providers. The Nuclear Pharmacy is operated by one of the few Board Certified Nuclear Pharmacists in the state. During national drug shortages over the last few years, CAMC has maintained production to allow for Nuclear Medicine procedures for our patients and community providers.

CAMC Imaging Services uses PACS or Picture Archiving, Communication and Storage system which eliminates standard X-ray film. This technology allows for faster interpretations and provides improved accuracy, efficiency and satisfaction by patients and clinicians. We have a shared VPN with several facilities such as Logan Regional Medical Center, Raleigh General, Greenbrier Valley Medical Center, WVU Hospitals and Summersville Regional Medical Center so we can share images with clinicians at these locations to assist in the transition of care for patients transferring out of or in to CAMC. In 2014 patients can view and download their imaging reports within 36 hours of their exam completion thru a patient portal once provisioned through the hospital.
Charleston Radiation Therapy Consultants (CRTC):
An important ally in the fight against cancer
By Prem Raja, MD

CRTC is CAMC’s Radiation Oncology Department encompassing the lower floor from the CAMC David Lee Cancer Center, where its dedicated team of medical experts utilizes the latest in state-of-the-art technologies to help fight cancer.

The Radiation Oncology Department involves a 45-member team consisting of Radiation Oncologists, Medical Physicists, Medical Dosimetrists, Radiation Therapists, Radiation Oncology Nurses, and support staff, each dedicated to providing excellence in patient-centered care. This includes five American Board Certified (ABR) Radiation Oncologists and three full-time, on-site American Board Certified Medical Physicists ensuring the highest standard of quality assurance.

CRTC is fully accredited by the American College of Radiation Oncology (ACRO). This accreditation process involves an in-depth appraisal of the practice facility, equipment, policies, procedures, staff and clinical treatment methods. The American College of Radiation Oncology (ACRO) concluded the CRTC Radiation Oncology practice to be “a well organized and operated radiation oncology practice that not only meets but in many aspects exceeds the ACRO Standards of practice accreditation”.

Radiation Treatment Options Available at CRTC:

- 3D Conformal Radiation Therapy (3DCRT)
- Intensity Modulated Radiation Therapy (IMRT)
- Image Guided Radiation Therapy (IGRT)
- 4D (four dimensional) CT-based treatment planning
- Stereotactic Radiosurgery (SRS): for brain
- Stereotactic Body Radiation Therapy (SBRT)
  - Stereotactic tools/systems (3): Radionics XKnife, Brain Lab’s ExacTrac, Sieman’s MVision.
- Superficial Radiation Therapy (skin cancer)
- Advanced Brachytherapy Program
  - High Dose Rate (HDR) Intracavitary Brachytherapy (uterine/cervix cancer)
  - High Dose Rate (HDR) Interstitial Brachytherapy (soft tissue sarcoma)
  - Mammosite Brachytherapy (accelerated partial breast radiation)
  - Prostate Seed Brachytherapy
- Radiation Oncology Research and Education
3D Conformal Radiation Therapy (3DCRT)

In the past, radiation oncologists could only plan using two dimensions (width and length), due to limitations in imaging technology. With current advanced imaging and computer technology, CRTC’s Radiation Oncologists can plan treatment in three dimensions (length, width, and depth). This process is known as 3D Conformal Radiation Therapy (3DCRT).

The process starts with a CT scan, which gives a three dimensional picture of the patient's body, including the tumor to be treated as well as all normal anatomy. This picture can be supplemented with additional information from other 3D images such as PET and MRI scans which can be “fused” or superimposed with the planning CT.

Using this picture as a map of the body, the Radiation Oncologist identifies the target to be treated and any sensitive healthy tissue that needs to be avoided. The Radiation Oncology team then uses powerful computers to design a radiation treatment plan with multiple beams aimed at the target. Each beam is shaped to deliver the optimal dose to the target, while avoiding surrounding sensitive normal structures. Thus, the radiation “conforms” to the target volume.

Intensity Modulated Radiation Therapy (IMRT)

Intensity Modulated Radiation Therapy (IMRT) is a specialized form of 3DCRT that allows radiation to be more precisely shaped to fit the tumor. With IMRT, the radiation beam can be broken up into many “beamlets” and the intensity of each beamlet can be adjusted individually. This allows for better control over shaping the radiation delivery to the target volume while avoiding healthy tissue. In many situations, this can allow a higher dose to the tumor while improving normal tissue avoidance, increasing chance for cure.

Image Guided Radiation Therapy (IGRT)

3D-CRT/IMRT is further enhanced with use of daily image guidance (IGRT). One challenge that the radiation oncology team faces is how to accurately and consistently position the patient for their daily treatments. Tumors are not always where they are expected to be because of patient movement/breathing and normal tissue filling (GI tract, rectum, bladder, etc.) which can change between each treatment and during treatment.
With IGRT an image is obtained daily before and during radiation treatments. This identifies precisely where the tumor and other critical normal structures reside at the most important time, when the treatment is being given. In some cases, we implant a tiny piece of metal called a fiducial marker near or in the tumor to further help localize the tumor during IGRT. Changes in set up can be made to insure optimal daily targeting.

CRTC offers the most advanced Image Guided Radiation Therapy currently available. We utilize daily infra-red visualization and kilovoltage-based tumor tracking using BrainLab’s Exac-Trac 6-dimensional X-ray system. This allows day-to-day accuracy to within one to two millimeters, a level of precision that is higher than what has ever been achieved before.

4D (four-dimension) CT-based treatment planning

A technique that provides information to help plan when breathing impacts tumor motion. This allows us to conform the radiation dose to the tumor’s motion. By accounting for tumor motion during breathing, doses to critical normal organs can be limited allowing the delivery of higher doses to the tumor. This tool along with other technologies allows Stereotactic Body Radiation Therapy (discussed later below).

Brain Stereotactic Radiosurgery (SRS)

Stereotactic Radiosurgery is a highly precise form of radiation therapy used primarily to treat tumors and other abnormalities of the brain. This has been performed by CRTC Radiation Oncologists for more than ten years, which is longer than any other department in the state. Despite its name, stereotactic radiosurgery is a non-surgical procedure that delivers a single high dose of precisely targeted radiation using highly focused X-ray beams aimed at the brain tumor. This is usually provided in a single treatment however is sometimes provided in multiple sessions for larger tumors. SRS requires a collaborative effort between the Neurosurgeon, Radiation Oncologist, and Medical Physicist. When being treated with such high doses in a single or very few sessions, patient immobilization becomes much more important. For that reason a head frame (halo) is often placed by the Neurosurgeon. Newer devices also allow for less invasive frame-less based immobilization.
Stereotactic Radiosurgery (SRS) for the brain has been around for more than 40 years by the Gamma Knife system. Newer tools for Stereotactic Brain Radiosurgery involve LINAC based systems where a Linear Accelerator is used to deliver x-rays by way of a gantry that rotates around the patient to deliver the radiation from different angles (Gamma Knife delivers multiple beams while being stationary). The LINAC based system has a technical advantage over Gamma Knife in circumstances where the tumor is relatively large, being able to deliver a more uniform dose. CRTC utilizes such LINAC based stereotactic systems to provide SRS. The Brain Radiosurgery suite has also been updated with the latest technology. We currently use the Radionics X-knife system for SRS.

Stereotactic Radiosurgery (SRS) is an important alternative to invasive surgery, especially for tumors located deep within or close to vital areas of the brain or for patients not able to tolerate traditional neurosurgery.

**Stereotactic Body Radiation Therapy (SBRT)**

Stereotactic Body Radiation Therapy (SBRT) is a similar procedure to stereotactic radiosurgery for the brain, except it is used on tumors within the body. This is provided in 5 treatments or less (as opposed to traditional radiation which may take several weeks). SBRT is most commonly used for small tumors within the lung, liver, and spine.

SBRT is a relatively recent advancement as opposed to SRS. In the past, the ability to direct such a localized ablative form of radiation to the body was limited by previous imaging techniques, lack of optimal daily patient/tumor set-up verification, and the fact that tumors within the body move. Tumors move on a daily basis dependent on normal organ filling, emptying (GI tract, bladder) and during breathing (diaphragm). Recent advancements in imaging techniques (see 4D-CT planning above), immobilization tools (vaeloc, body frames, etc.), and precise daily patient/tumor positioning verification (see IGRT above) have allowed radiation oncologists to provide SBRT.

With SBRT, local control for small tumors in many cases is as good as with surgery or better than invasive procedures. It is often utilized in circumstances where surgery is not an option. With better target localization via image guided planning and delivery, and patient immobilization, more healthy tissue near the tumor is unharmed with SBRT.

CRTC Radiation Oncologists have been providing SBRT for more than two years.
Names for Stereotactic Radiation

There is often confusion regarding the brand naming for equipment separate from the terminology of SRS or SBRT. Stereotactic radiation may be delivered by a number of different devices. Brand name stereotactic treatment machines/systems include: Axesse, BrainLab’s ExacTrac, CyberKnife, Elekta, Gamma Knife, Novalis, Primatom, Radionic’s X-Knife, Siemen’s MVision, Synergy, Tomo Therapy, Trilogy, Varian, etc.

It is important not to confuse these brand names with the actual type of stereotactic radiation under consideration. There are some technical advantages/disadvantages between the various systems, however, there has been no significant clinical advantage demonstrated between the various brand names. What is clinically significant is that the appropriate case be chosen for SRS or SBRT (stereotactic radiation) and that the optimal radiation dose/volume and fractionation (# of treatments) is provided. This will be determined by the Radiation Oncologist.

The CRTC radiation oncology practice currently has three such brand name machines/systems for delivering SRS or SBRT namely, Radionic’s X-Knife, Siemen’s MVision, and BrainLab’s ExacTrac. CRTC and CAMC are also committed to staying ahead of the technology curve through obtaining and appropriately utilizing the latest in state-of-the-art technology to better fight cancer.

Superficial Radiation Therapy (Skin Treatment)

Radiation therapy is an extremely effective method for treating (non-melanoma) skin cancer. Non-melanoma skin cancer includes basal cell and squamous cell skin cancers. Superficial (on the skin) treatment for such skin cancers can be provided by a special machine that has a better ability to treat the skin while avoiding and preserving underlying tissues. Superficial treatment machines are not commonly found at most radiation oncology practices, however, CRTC houses just such a machine, namely, the Picker superficial x-ray unit. Radiation treatment for skin cancer (non-melanoma) has excellent control rates and cosmetic outcome. Such treatment allows many patients to avoid the alternative option of surgery, which can often result in scarring/cosmetic changes.

High Dose Rate Brachytherapy (HDR)

High Dose Rate Brachytherapy (HDR), also referred to, as “internal radiation therapy” is a radiation treatment, which uses a small radioactive source temporarily, placed inside or near the tumor. Interstitial HDR Brachytherapy is performed for Soft tissue sarcomas as an adjunct to surgery. Intracavitary HDR Brachytherapy is provided as a definitive treatment (along with external beam radiation) for advanced uterine cervix cancer and as an adjunct (alone) following hysterectomy for higher risk uterine endometrial cancer (vaginal cuff).
Under computer control the position and timing of the radiation source placement can be precisely controlled, allowing the physician to shape the radiation dose to the target. Because of the high dose rate characteristics, this brachytherapy treatment is provided during a short time frame on an outpatient basis. This avoids the hospitalization (and related complications with extended patient immobilization) that was required with previous low dose rate techniques (LDR).

**Mammosite Brachytherapy (Accelerated Partial Breast Treatment)**

CRTC radiation oncologists and Charleston surgeons offer Mammosite Brachytherapy as a treatment option for selected early stage breast cancer in conjunction with a lumpectomy. This treatment option uses an Iridium-192 radioactive source, which delivers radiation to the lumpectomy cavity (partial breast) by way of a Mammosite balloon. At the time of the lumpectomy or shortly after, the surgeon will place the deflated mammosite balloon into the cavity, which is inflated by catheter conforming to the lumpectomy cavity prior to the radiation delivery. This radiation treatment is delivered two times a day for five days as opposed to standard fractionated treatment, which is delivered daily for five to six weeks.

**Prostate Seed Brachytherapy**

With this technique, radiation can be delivered to the prostate alone by implanting radioactive seeds (permanent seed implants using Iodine-125 or Palladium-103). For high risk category prostate cancer the seed brachytherapy should be combined with a shortened course of external beam radiation therapy (5 weeks). For low risk category prostate cancer the seed brachytherapy is provided alone. The major advantage for seed implant is the ability to give a high radiation dose while confining the treatment more tightly to the prostate, which leads to excellent tumor control and fewer long-term complications. Prostate brachytherapy is a combined effort where CRTC radiation oncologists perform this procedure along with CAMC urologists. The Prostate Brachytherapy program has been refined at CAMC for nearly 10 years representing one of the strongest experiences in the state (over 300 cases performed).

The recommendation for prostate seed brachytherapy (implants) depends on a number of patient and tumor factors: this includes pre-treatment prostate size, urinary symptoms, previous prostate surgical history (TURP), cancer risk profile (low vs. intermediate vs. high risk category), and the patient’s surgical candidacy and desires. Depending on these factors many patients may better be served by treating the prostate with modern external beam radiation therapy (see IMRT/IGRT above) or prostatectomy (also see daVinci Robotic surgery discussed elsewhere in this book). The breadth of treatment options available allows the physician and patient to select the specific treatment, which is best suited to each patient’s particular medical needs.
CRTC radiation oncologists strongly favor a multidisciplinary approach for making decisions regarding optimal treatment for prostate cancer and encourage patients to seek consultations with a urologic surgeon as well as a radiation oncologist. CAMC radiation oncologists, urologists, and medical oncologists meet regularly during “peer review conference” where we collectively review and discuss optimal treatment options for urologic cancer cases.

Pediatric Radiation Therapy

CRTC radiation oncologists have experience treating common and very rare forms of childhood cancers at CAMC. Radiation treatment is often an integral part of optimal treatment for cancers in the pediatric population. Depending on each child’s specific diagnosis, radiation therapy may be used as the primary form of treatment, or may be used before or after other types of treatment such as surgery or chemotherapy. CRTC and CAMC are also on the leading edge in offering state-of-the-art radiation therapy options for childhood cancer. The pediatric radiation therapy program builds upon CAMC’s well established and experienced Pediatric Oncology department. Along with CAMC pediatric oncologists and their staff, CRTC radiation oncologists, medical physicists, and other scientists actively participate in research through the national Children’s Oncology Group (COG).

Radiation Oncology Research and Education

CRTC and CAMC are dedicated to providing patients with the most up-to-date radiation treatment options. CRTC and CAMC are affiliated with the internationally renowned Radiation Therapy Oncology Group (RTOG) and offer enrollment in RTOG clinical trials for qualifying patients. Through this affiliation, multiple clinical trials for patients with higher risk prostate cancer have recently been made available for enrollment.

The radiation oncologists also participate as Assistant Clinical Professors for the WVU School of Medicine and offer elective educational rotations for medical students as well as for CAMC training Resident doctors interested in oncology. The multidisciplinary approach to cancer care coupled with the use of cutting edge technologies and dedication to research and education help provide better outcomes and experiences for patients.

Radiation Physics

Dimitris Mihailidis, PhD is CRTC’s Chief Medical Physicist and head of the Physics Department. One of his primary interests is to make improvements upon existing radiation treatment planning techniques. He has authored/co-authored over 40 scientific publications regarding radiation oncology treatment planning techniques and solutions. Dr. Mihailidis’ efforts ensure the highest quality and standard in radiation treatment planning at CRTC/CAMC.
ENDOSCOPIC ULTRASOUND (EUS)
Jeremy R. Stapleton, DO

Endoscopic Ultrasound (EUS) combines endoscopy and ultrasound in order to obtain images and information about the digestive tract and the surrounding tissue and organs.

“When the procedure is performed, conscious sedation is administered. Once the patient is sedated, a special endoscope is inserted which has a camera for direct visualization of the esophagus, stomach, small bowel, or colon; as well as an ultrasound probe for examination of surrounding structures,” said Jeremy R. Stapleton, DO.

At that time, the physician observes the inside of the intestinal tract on a television monitor and the ultrasound image on another monitor. The entire procedure takes about 30 to 90 minutes, depending on the complexity and whether or not fine needle aspiration (FNA) is performed.

“Endoscopic ultrasound has become a crucial part of the diagnosis, staging and management of numerous gastrointestinal and mediastinal diseases,” Stapleton said.

EUS can help diagnose via FNA and stage gastrointestinal cancers including pancreatic, esophageal, gastric, duodenal, ampullary, and colorectal cancers. Other indications for EUS include; evaluation for chronic pancreatitis, evaluation of pancreatic masses, detection of common bile duct stones, assessment of enlarged stomach folds or submucosal masses that may be unreachable by surface biopsies, and safely and accurately collect fluid samples from the abdominal cavity or pancreatic cysts for analysis.

“There are probably fewer than five physicians performing this procedure throughout the state, and three of them are here at CAMC,” Stapleton said. “Endoscopic ultrasound can have extremely important implications in diagnosis and management through diagnostic FNA and staging of cancers.”
CAMC Hemophilia Treatment Center
By Donna Arden, hemophilia coordinator

The CAMC Hemophilia Treatment Center (HTC) is a federal and state funded program that sees patients who have a congenital bleeding disorder, such as hemophilia and von Willebrand’s disease. Care is provided throughout the life span. Clinics are offered for both pediatrics and adults at CAMC Memorial Hospital with three clinics in Teays Valley annually. Dr. Steven Jubelirer is the medical director and adult hematologist. Dr. Howard Grodman and Dr. Chibuzo O’Suoji are the pediatric hematologists.

The federally funded Hemophilia Treatment Centers were originally a pilot program through the Centers for Disease Control and Prevention for comprehensive care. During clinic visits, approximately 175 patients annually are seen by a hematologist (adult or pediatric), RN, social worker and physical therapist. It has been shown that people with congenital bleeding disorders who are seen in a HTC have fewer complications, live longer and reduces the number of hospital admissions.

A 340B factor program was started two years ago in which the HTC distributes required factor products through a contract pharmacy to the patients. This gives the patients the additional choice of providers and allows the HTC revenue in which must be used for program and patient costs.

Ambulatory Infusion Center
Martha Taylor, RN, OCN clinical management coordinator
Jennifer Ferrell, RN, OCN, nurse manager

In addition to services provided at DLCC, the outpatient Ambulatory Infusion Center meets the needs of patients requiring a variety of infusion services. The space provides a comfortable and convenient setting for patients needing blood transfusions, antibiotic therapy, injections, chemotherapy and PICC line insertions.

The center, located at CAMC Memorial Hospital, is staffed by a dedicated and efficient team of nurses and is open 7 days a week. Appointments are made by physician referral.
Pathology
By Todd Kuenstner, MD, laboratory medical director

CAMC Department of Pathology Laboratory Medicine is accredited by the College of American Pathologists. The department’s 13 pathologists are all certified by the American Board of Pathology. Many of them hold subspecialty board certifications, including hematopathology, immunopathology, neuropathology, cytopathology, and transfusion medicine. Several pathologists have particular areas of expertise and interest in fine needle aspiration, gynecologic oncology, renal pathology, and bone and soft tissue tumors.

CAMC’s Department of Pathology has approximately 35,000 surgical cases and 24,000 cytology cases per year. The Department offers in-house ancillary diagnostic modalities: flow cytometry, immunohistochemistry and automated quantitative image analysis. The department has telepathology capability for intraoperative consultation between hospitals (Memorial, General, and Women and Children’s).

Pathologists participate in weekly Tumor Board Conference with oncologists, radiologists, and surgeons. Pathologists also present cases discussed at Genitourinary Pathology Conference, Neuroscience Rounds, and Orthopedic Conference. There are intradepartmental conferences held twice a week for evaluation of problematic cases.

The Department of Pathology is affiliated with West Virginia University’s Pathology Residency Program, and WVU residents regularly rotate through the various laboratory areas.

Palliative Care
Deborah J Cotes, DO
Medical Director, Palliative Care Services

Palliative care is an inpatient service at CAMC that helps cancer patients and their families cope with the multiple dimensions of their disease. Attention focuses on quality of life and relief from pain and symptoms that can interfere with daily life. Assistance is also provided with goal clarification, advance care planning and discharge options.

As part of the cancer team, palliative care collaborates with the oncologists, supporting curative treatment or helping with options when cure no longer is the goal. Psychosocial, emotional and spiritual needs are addressed through family meetings with patients and their loved ones. Hospice referrals can be made if appropriate.

Our team consists of a psychologist, pharmacist, physicians and nurse practitioners. We are available week days from 8 a.m. to 5 p.m. for consultations.