BUILDING On STRENGTH
2013 ANNUAL REPORT

MULTIDISCIPLINARY CLINICAL TEAMS + PATIENT NAVIGATION
+ GENETIC COUNSELING + CLINICAL RESEARCH + CLINICAL
EDUCATION + INTEGRATIVE MEDICINE + PATIENT SUPPORT
AND EDUCATION + INNOVATIVE CLINICAL TRIALS CENTER
+ SURVIVOR CELEBRATIONS + COMMUNITY OUTREACH
Baylor Dallas Leadership: Building on Strength

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Cancer research studies on the campus of Baylor University Medical Center in Dallas are conducted through Baylor Research Institute, Texas Oncology, and US Oncology. Each review, approves, and conducts clinical trials independently. Their clinical trials are listed together, in this publication, for the convenience of patients and physicians.

Physicians are members of the medical staff of one of Baylor Health Care System’s subsidiary, community, or affiliated medical centers and are neither employees nor agents of those centers, Baylor University Medical Center, nor Baylor Health Care System.

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In 2013, we continued to build, but not so much with bricks and mortar, but building on our strengths.

“Over the past several years, our annual reports have concentrated on building. We have built physical facilities including the Baylor Charles A. Sammons Cancer at Dallas which opened in March 2011, and in 2012, the Baylor T. Boone Pickens Cancer Hospital. In addition to our advanced facilities, we continue to build hope through innovative treatment opportunities and outstanding patient support.

In 2013, we continued to build, but not so much with bricks and mortar, but building on our strengths. The Blood and Marrow Transplant Program celebrated 30 years of providing curative treatment opportunities and performed the 5000th transplant since the program’s inception. Clinical trials opportunities increased with the opening in September of the Swim Across America Innovative Clinical Trials Center. With the generous support of the Swim Across America organization, we can now offer more patients the opportunity to participate in clinical trials of advanced investigational therapies including targeted and immunotherapies.

Site-Tumor conferences, a mainstay of our academic approach to multidisciplinary treatment planning, have expanded and new conferences centered around pancreatic and colorectal cancer were added. Scientific publications in peer-reviewed journals continued to rise and have doubled in the past five years.

Throughout the following pages you will read of how the Baylor Charles A. Sammons Cancer Center at Dallas is building on these and other strengths to provide more options and hope to those with cancer.

Alan M. Miller, MD, PhD
Chief of Oncology, Baylor Health Care System
Medical Director, Baylor Charles A. Sammons Cancer Center at Dallas

CANCER COMMITTEE MEMBERS

Required Members:
John T. Prevedlit, Sr., MD, Chair (Surgery)
(Cancer Registry Quality Coordinator)
Erik Bloxom, MD [Radiology]
S. Scott Creek, MD [Radiation Oncology]
Peter A. Dyant, MD [Pathology]
Robert L. Fine, MD [Palliative Care]
E. Colli Korn, MD, PhD [Cancer Liasion Physician]
Clanton M. Matthews, MD [Quality Improvement Coordinator]
Robert G. Merril, MD [Medical Oncology]
Amy J. Wilson, MD [Hematology]
Johanna Bannock, RN, CHRO [Performance Improvement/Quality Management]
Pan Carnevale, MHA [Quality Center]
Community Outreach Coordinator
Sylvia Coates [Cancer Program Administrator]
Michelle Murray, PhD [Psychosocial Services Coordinator]
Janel Reynolds, CTR [CTR] (Cancer Conference Coordinator)
Cheryl Sampson, CCP [MBA] (Clinical Research Coordinator)
Kathleen Shaup, MD, RN, ACNN, APN
Sheryl Walker, OCN [Oncology Nurse]
Kathy Thomas Welch, LMSW [Social Work]

Other Members:
Charis Beards, MD
Yvonne Cole, MD
Karen L. Fink, MD
James W. Fleshman, MD
Julienne Jones, RN, FACHE
Ronald C. Jones, MD
Kennard Konrad, MD
Z. H. Linberman, MD
Alan M. Miller, MD, PhD
John C. O’Brien, MD

Invited to Attend:
Patrick Allgood, RN, BSN
Anna Barber
Jane Dabney, RN, MBA
Ann Giddens, ACN
Kimberlee Hanna, RN, BSN, OCN, CHPN
John McHorter, President BUMC
Noah Igoe, PharmD
Lynn Randolph, VP Nursing
Taryn Pemberton, Marketing
Laura Siciliano, RN, CTR
Julie Smith, Marketing
For nearly four decades, Baylor Charles A. Sammons Cancer Center has provided quality clinical care, advanced technology, and clinical research to patients, along with comprehensive support services and programs for patients and their families. With the opening of the 10-story outpatient treatment facility and integration with Baylor T. Boone Pickens Cancer Hospital in Dallas, it is now the largest outpatient cancer center in North Texas. Annually, more than 90,000 cancer visits occur at Baylor Sammons Cancer Center at Dallas, and more than 800 people participate in research trials.

Baylor Charles A. Sammons Cancer Center Network

Seven facilities across Baylor Health Care System carry the Baylor Charles A. Sammons Cancer Center name as part of the system’s focus to bring patients throughout North Texas quality clinical care and advanced technology. Facilities in McKinney and Carrollton also offer oncology services and are expected to carry the Baylor Charles A. Sammons Cancer Center name in the future.

Baylor T. Boone Pickens Cancer Hospital

This is the first dedicated cancer hospital in North Texas and only the second in the state. The 96-bed, 175,000-square-foot facility has been specially designed to provide a place of healing, calming, and spirituality. A skybridge connects the inpatient hospital to many outpatient services of Baylor Sammons Cancer Center at Dallas. Larger rooms enable patient families and caregivers to have their own space, and families and caregivers have access to two areas in the hospital for showering, washing clothes, working or relaxing.

Baylor Charles A. Sammons Cancer Center at Dallas offers treatment for all forms of cancer, with particular emphasis on lung, prostate, colon, breast, and gynecologic cancers. Physicians on the medical staff of Baylor Sammons Cancer Center at Dallas also have special expertise in treating blood and bone marrow cancers such as leukemia, lymphoma, and myeloma.

Baylor offers a full spectrum of oncology services, from education to advanced treatment options and rehabilitation programs. Specialties and staff work diligently to treat patients in an environment filled with compassionate, quality care by using effective methods in prevention, diagnostic, and treatment.

Depending on the type of cancer and the needs of each individual patient, both standard and innovative treatment options are available. Therapies include blood and marrow transplantation, surgery, chemotherapy, immunotherapy, radiation, CyberKnife® and Gamma Knife® radiosurgery, monoclonal antibodies, thermal ablation for liver cancer, and ultrasound-guided transperineal radioactive seed implants. Scientists at Baylor Sammons Cancer Center perform extensive cancer research, and support services like the Civello Patient Education Center, Erin’s Appearance Center, and the Healing Environment Program help Baylor Sammons Cancer Center treat the whole patient.

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Building on Strength | Baylor Charles A. Sammons Cancer Center at Dallas

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**AREAS OF FOCUS 2013**

**BLOOD AND MARROW TRANSPLANT PROGRAM: CURATIVE CELL RESEARCH**

Celebrating more than 30 years and 5,000 transplants, the Blood and Marrow Transplant (BMT) Program at Baylor Charles A. Sammons Cancer Center at Dallas, is one of the leading blood and marrow programs in the state of Texas, and has grown into one of the largest and most comprehensive in the nation. Led by Edward Agura, MD, medical director, our BMT program continues to move research forward to improve outcomes for those affected by blood cancers and deficiencies for which bone marrow transplantation may provide lifesaving treatment. If a patient comes to us today for a bone marrow transplant, there is almost no reason we cannot find a donor for him or her,” says Dr. Agura.

At Baylor University Medical Center at Dallas, the BMT team is performing a study comparing the use of umbilical cord blood versus conventional marrow or peripheral blood stem cell transplants. The stem cells in cord blood have a rare capacity to repair bone marrow and boost immune system recovery. “The patient’s diseased bone marrow with cancer is completely eliminated with high doses of chemotherapy and sometimes radiation, or a combination of the two,” says Luis Pineiro, MD, FACMG, a hematologic oncologist on the medical staff at Baylor Dallas. “Healthy stem cells from a donor will repopulate the bone marrow. In the case of inherited deficiencies, the ‘deficient’ cells will be replenished by the healthy transplanted donor cells.”

Healing Power

About 70 percent of individuals requiring a stem cell transplant are not able to find a suitable match in their family. Through the BMT program’s research efforts, patients have access to donated cord blood units that have been frozen and stored for transplantation. “Not long ago, cord blood was discarded,” says Dr. Pineiro. “It is incredible that today it can be utilized to perform life-saving procedures.”

Unlike adult hematopoietic — or blood-forming — stem cells, cord blood stem cells are young, flexible cells that can easily develop into different blood cell types that perform specialized tasks. For people with blood cancers such as leukemia, lymphoma and myeloma, an infusion of cord blood stem cells can regenerate bone marrow following cancer therapy. For individuals with inherited disorders of red blood cell production, such as sickle cell anemia or thalassemia, cord blood stem cells can replace defective cells with a genetically normal counterpart, thus restoring red-cell function: the delivery of vital oxygen to the body. In immune deficiency disease, cord blood stem cells help fend off infections and diseases by replacing defective white blood cells with their healthy counterparts.

Cherysee Daniels, Cancer Survivor and Dr. Edward Agura, MD

“IF A PATIENT COMES TO US TODAY FOR A BONE MARROW TRANSPLANT, THERE IS ALMOST NO REASON WE CANNOT FIND A DONOR FOR HIM OR HER.” - DR. AGURA
Flexible Fit

For a transplant to be successful, the human leukocyte antigen (HLA) markers in the donor’s stem cells must match those of the recipient. Because cord blood stem cells are better able to adapt themselves to a patient’s body, there is less chance of immunologic side effects such as rejection or graft-versus-host disease.

“When used for transplantation these cells are more tolerant, and therefore less likely to get ‘activated’ when exposed to their new environment in the recipient. The end result is less rejection and less graft-versus-host reaction,” says Dr. Pineiro. “Since we expect to see less immunologic activation, we can then use ‘less than perfect’ matches for transplantation. This has increased the number of patients in which stem cell transplant is feasible.”

Although cord blood contains fewer stem cells than a marrow or blood stem cell transplant, Baylor researchers are able to combine cord blood products from multiple donors, thereby increasing the number of stem cells infused and providing faster recovery of blood counts.
Recognizing the critical importance of phase 1 trials, Baylor Charles A. Sammons Cancer Center at Dallas boasts a 6,375-square-foot facility, the Swim Across America Innovative Clinical Trials Center (ICTC), offering patients better access to a wide range of new research and treatment options. The ICTC expands the already extensive program of cancer clinical trials offered at Baylor Sammons Cancer Center.

With the cost of bringing a new drug to market currently hovering around $1 billion, or more, phase 1 clinical trials at the ICTC continue, in part, due to funding sponsors from pharmaceutical or biotechnology companies; however, for those agents without a sponsor, other funding must be found to run the clinical trials. An ideal match was found for the ICTC when Swim Across America (SAA), a national organization that holds swim-related events to raise funds supporting cancer research, prevention and treatment, came forward with an offer to support the center. According to Daniel Watters, chairman of the SAA-Dallas committee and a member of the 1988 U.S. Olympic swim team, SAA-Dallas chose to support the ICTC at Baylor Sammons Cancer Center at Dallas after an intensive search for “the best of the best” in terms of cancer research and treatment in North Texas.

INnovATIVE CLINICaL TRIaLS CENTER: moving CANCER CaRE foR word

The first open-water swim, held in June 2011 at Lake Ray Hubbard in Rockwall, Texas, was the beginning of a four-year commitment to the ICTC, with the goal of raising in excess of $1 million during those four years to benefit the phase 1 clinical trials program. SAA-Dallas is likely to exceed that goal in June 2013 bringing the total amount raised to $950,000. “We hope and anticipate that this commitment will be extended for many, many more years to come,” says Watters.

In recognition of the support and dedication of SAA-Dallas, the ICTC has been named the Swim Across America Innovative Clinical Trials Center at Baylor Charles A. Sammons Cancer Center at Dallas. The naming was officially announced on June 7, 2013, the day before the open-water swim.

Under the leadership of Carlos Becerra, MD, medical director of the ICTC, the center plans to use the expanding knowledge about the biology and genetics of cancer in exploring novel treatments for patients with hard-to-treat cancers. Says Dr. Becerra, “In the past, for breast cancer or colon cancer, as examples, we treated everyone the same. Now, as we dissect tumors at the molecular genetics level, we have learned that colon or breast cancer can be subdivided into different types of disease that need to be treated differently. This gives us the knowledge to be smarter in treating our patients, using specific drugs to shut down specific pathways.”
Because of current genetic research, physicians now have the tools to identify specific genetic mutations passed down through families that are responsible for a large number of colon cancers. “The current estimate is that one in 200 people has one of these genetic mutations,” says C. Richard Boland, MD, chief of gastroenterology and a physician on the medical staff at Baylor University Medical Center at Dallas. The condition is called Lynch syndrome, and knowing its genetic roots gives people the chance to protect themselves and their families from the cancers it can cause.

Experts estimate that three out of every 100 colon cancers are caused by Lynch syndrome. Screening is critical because colorectal cancer is the third most common cancer – about 150,000 Americans are diagnosed annually. It’s also the third most deadly, claiming about 50,000 lives each year, according to the American Cancer Society. When Dr. Boland first theorized that inherited genes were the cause, he did not have to go far to find a family to study. “My father first got colon cancer when he was in his mid-20s,” he says. “Ten out of 13 of his siblings had cancer of some kind. So for me, this is personal.” Though few others supported Dr. Boland’s theory about a genetic link, Henry T. Lynch, MD, had published papers to support just that. In one of his own papers, Dr. Boland named the connection “Lynch syndrome.” Today, researchers have not only confirmed that Lynch syndrome is surprisingly common, but they’ve identified how the mutations lead to cancer. Research also shows that, among people with Lynch syndrome, the chance of having colorectal cancer is 70 percent in men and 40 percent in women. Women also have a 40 percent chance of having endometrial cancers (in the lining of the uterus), plus smaller risks of having a variety of other cancers. Also, a child of someone with the condition has a 30 percent chance of having it, a fact that leads to large clusters of affected relatives, as in Dr. Boland’s family. “Once we identify one person with it, we end up working with entire families,” Dr. Boland says. “Then, we are able to alter how Lynch affects a person and their relatives.”

Genetic counseling at Baylor Charles A. Sammons Cancer Center at Dallas can help identify patients who are at risk of developing colon cancer as a result of a genetic mutation. Board-certified genetic counselors help patients understand their diagnosis, the inheritance pattern, and the recommended screening and prevention options.
Getting an annual mammogram is important, but life sometimes gets in the way of keeping that potentially lifesaving appointment. “Women often don’t take the time to take care of their health like they should,” says Sherry Fox, mobile account executive at Baylor University Medical Center at Dallas. “By making mammograms convenient and efficient though, they’re much more likely to follow through.” Baylor Dallas’ Darlene G. Casa Women’s Imaging Center Mobile Mammography aims to do just that. The 41-foot coach is staffed by two women, including a certified mammographer, and travels to businesses, churches, school districts and corporations to bring mammography services to women right where they are.

The specially-designed bus equipped with three-dimensional breast imaging technology began making regular stops at key locations in the fall of 2013. The mobile machine enables women to have quality breast screening at a location convenient for them. The bus serves patients with two changing rooms with direct access to the mammography area assuring convenience and privacy. The mobile program can serve up to 50 women per day and the vehicle is equipped with internet capabilities to sync patient data with the hospital.

“The mobile program features digital mammography that includes Computer Assisted Detection (CAD), an application that scans the patient’s screening mammogram to identify suspicious features that may warrant a second review by the radiologist,” says Ethel Randall, director of breast imaging for Baylor Health Care System’s Baylor Charles A. Sammons Cancer Center. “Digital mammography technology also provides faster processing times and the ability to store images electronically.”
American Cancer Society

The American Cancer Society has an incredible supporter of Baylor Sammons Cancer Center at Dallas to deliver lifesaving results. Together, we are a relentless force fighting cancer. American Cancer Society representatives collaborate with oncology staff to deliver support, and serve on the cancer committee to help provide resources to fulfill the Commission on Cancer standards for cancer care.

In 2013, the American Cancer Society served 1,026 patients with 3,148 services at Baylor University Medical Center at Dallas. Patients received weekly support from the Society’s ACS Day representative and all newly diagnosted patients received a Personal Health Manager kit from the Society which provides personalized information on their specific cancer type, as well as helping patients and caregivers keep appointments, test results and prescriptions organized throughout treatment. As the official sponsor of birthdays, the American Cancer Society knows how important each and every birthday can be. In May of 2013, the Society celebrated its 100th birthday – one-hundred years of saving lives and twenty years supporting Baylor hospitals. In the last two decades the Society has contributed to a 20% decline in cancer death rates in the US.

Last year the Society and Baylor hospitals reached over 2,100 patients with more than 6,000 programs and services, that’s 1-in-4 cancer patients treated at Baylor receiving valuable services by the Society.

Patients at Baylor University Medical Center at Dallas are able to receive guidance on Society programs, including the Reach To Recovery® program for those coping with their breast cancer experience. Female patients may also get involved in the Look Good Feel Better® program, dedicated to improving the self-esteem and quality of life of people undergoing treatment.

The American Cancer Society is the only organization offering cancer patients and their families around-the-clock guidance and support through their toll-free line, 1-800-227-2345 and at www.cancer.org.

CANCER CENTER HIGHLIGHTS +

COMMUNITY EVENTS/OUTREACH:
TAKING CANCER INFORMATION AND SCREENING TO THE COMMUNITY

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Baylor Sammons Cancer Center facilities host several cancer education events, free screenings and participate in many health fairs throughout the community. In 2013, 34 community education/outreach events were held and were attended by a total of nearly 3,700 participants.

TOGETHER, WE ARE A RELENTLESS FORCE FIGHTING CANCER.
Free Community Screenings

Baylor Sammons Cancer Center at Dallas hosted a head and neck cancer screening on April 27 followed by a skin cancer screening conducted on May 11. In all, a total of 38 patients received abnormal results and were contacted by a member of our patient navigation team to facilitate an appointment with a member of our medical staff.

Community Outreach Events

On October 6, women from throughout Dallas gathered to take a proactive stand against breast and ovarian cancers at this year’s Sole Sisters™ event held at Tower Club Dallas. This health & beauty boot camp event promotes good health/fitness practices and early detection. More than 100 women enjoyed spa treatments, group workout classes and health/beauty consultations. A special highlight of the event was an interactive discussion panel covering genetics, prevention/screening, integrative medicine and survivorship. Ivana Hall, Miss Texas 2013 served as event emcee.

More than 100 survivors and their families attended the Blood and Marrow Transplant Reunion: Cirque du Celebration, on September 29, 2013. Attendees enjoyed carnival style games, treats and were entertained by Circus Freaks, a circus style performance group. The highlight of the reunion was when John King, a leukemia survivor from Bossier City, Louisiana met his blood donor match, Camilla Bresciani who traveled from Dubai to meet the man her donation saved. Through the Be The Match® National Marrow Donor Program database, Camilla was identified as a perfect match for Mr. King, enabling him to receive his lifesaving transplant on June 5, 2012.

Baylor Charles A. Sammons Cancer Center at Dallas hosted a lighted vigil as part of a national campaign to raise awareness for lung cancer on November 14, 2013. Dallas joined more than 100 communities across the nation in hosting a Shine a Light on Lung Cancer Vigil in collaboration with the Lung Cancer Alliance. The purpose of this vigil was designed to provide hope, support and compassion to the thousands who are diagnosed with lung cancer.

Young Adult Cancer Survivors’ Summit

In an effort to better meet the needs of young adult cancer survivors (YACS), the Young Adult Cancer Survivors’ Coalition hosted the annual Down with Cancer, Up with Survival YACS Summit in April at the University of Texas at Arlington. This year’s event featured keynote speakers: Heidi Adams, a young adult cancer survivor, author and president and CEO of Critical Mass along with Karen Albritton, MD, a researcher specializing in young adult cancers at Cook Children’s Medical Center at Fort Worth. Event attendees participated in interactive breakout sessions covering topics such as nutrition, caregiving and building emotional support.
Baylor Sammons Cancer Center at Dallas held 350 site-specific tumor conferences in 2013, where more than 1,500 patients were discussed. Nearly 8,000 physicians, trainees, nurses and allied health staff attended these conferences focusing on malignancies in bone and soft tissue, breast, chest, colorectal, endocrine, GI, gynecology, head and neck, liver, neuro-oncology, pancreas, skin, urology and hematopoietic diseases.

Value of Tumor Conferences by Robert G. Mennel, MD

The value of the tumor conferences can be summed up in four benefits:

1. Exposure to interesting and problematic cases:
   - The conferences are a clearing-house for the most interesting and difficult cases seen at Baylor. In this one place a health care professional can learn about every aspect of a patient’s case, the pathology, the radiological findings, the genetics, the social impediments to the therapy, etc. The whole book of business about the patient’s problem is presented in one venue. It has tremendous value and efficiency of time for the health care practitioner.

2. Insight into other disciplines’ thought processes towards the same problem:
   - Different disciplines, by virtue of their training, approach the same problem from different angles. For example, the pathologist and medical oncologist may need more tissue for a diagnosis and think that this would be a minor procedure of very little risk for the patient. However, the interventional radiologist or surgeon sitting in the same room and looking at the same images may point out that the procedure to get the tissue may be much more involved than originally thought and fraught with significant risk for the patient. This could change the whole care of the patient.

3. Education leading ultimately to better patient care:
   - These conferences have all levels of trainees from students to staff and all disciplines from general surgeons to genetic counselors. Interpreting X-rays with a radiologist teaches the other disciplines how to interpret X-rays, what is the best X-ray to order, and the problems the radiologist faces in interpreting the film. The same is true for anatomic pathologists, molecular pathologists, surgeons, medical oncologists, and radiation oncologists. Having the scientific studies presented that apply to this patient’s disease teaches everyone about the disease. Education and discussion lead to better patient care.

4. Professional camaraderie:
   - In this era of increasing ways of communication (emails, tweets, webinars, etc.) but decreasing depth of communication, these conferences put everyone in the same room, face to face, to engage in education and friendly professional bantering that builds the ties within this cancer center. This camaraderie may be the major benefit of our tumor conferences.
Clinical Oncology Research Coordination (CORC) Office

The Clinical Oncology Research Coordination Office underwent a major change in April of 2013 when Angelia Drake, MSN, RN, assumed the role of director. In addition to being responsible for this system-wide office she also supervises the Division of Surgical Oncology and the development of the Surgical Oncology Clinical Research Database or SOC RD. SOC RD is a meta-registry where multiple databases are connected from the tumor registry data imports, multi-disciplinary tumor conferences, investigator-initiated clinical trials, pathology, and radiology.

SOC RD is a central location where information from all of these sources can be stored, validated, and accessed for feasibility and future research.

Currently, Drake and her staff are re-vamping the infrastructure and processes in the department to accommodate the rapid expansion of clinical trials in Baylor Health Care System. While focusing on continuing the growth of these trials, as well as trials in the Innovative Clinical Trials Center (ICTC), the department is maintaining its focus on providing quality and service to patients, investigators, and sponsors. In August 2013, M.Y. Levy, MD, became the medical director of Hematological Malignancies of the ICTC. Thanks to Dr. Levy and Dr. Carlos Becerra, medical director of Hematologic Malignancies, there has been a big increase in the number of phase I and II trials being offered through the clinic. At present, oncology clinical trials are being conducted at the Dallas, Fort Worth, and Irving campuses. CORC hopes to expand to more of the Baylor Health Care System hospitals in the near future. The expanded network of locations for clinical trials should result in growth of the number of clinical trials and the number of patients enrolled in the trials.

At Baylor Charles A. Sammons Cancer Center at Dallas, we understand the overwhelming nature of a cancer diagnosis. Understanding and following complex treatment recommendations can be difficult for both the cancer patient and family members. This is why every family that walks through our doors has access to a patient navigator. Our patient navigation team is a group of dedicated registered nurses that partner with patients and their families to serve as an advocate, guide, and resource through cancer treatment and recovery.

Our patient navigation team also works very closely with our Virginia R. Cvetko Patient Education and Support Center. Free cancer screenings are one of many resources our Cvetko Center offers to the community. In 2013, we screened 109 individuals and found 38 of them to be at risk for either skin cancer or head and neck cancer. To make sure those at-risk individuals are connected with a physician on staff at Baylor as quickly as possible, patient navigators will call each person to facilitate setting up an appointment with the appropriate provider.

PATIENT NAVIGATORS:
• Answer questions and address patient concerns
• Educate and empower patients to make an informed decision
• Work with a multidisciplinary team of doctors to provide efficient, timely, and quality care
• Assist patient and family members with finding appropriate resources
• Explore and assist with financial resources
In 2009, Rodgers’ scans revealed another tumor. She began a two-year clinical trial testing another form of immunotherapy at Baylor Charles A. Sammons Cancer Center at Dallas. Today, she has been cancer free for two years. Rodgers credits her physicians and the clinical trial offered through Baylor Institute for Immunology Research for her remarkable recovery.

Rodgers has taken a new position as a school counselor in a smaller school district. She enjoys every day with her husband and children and she says everyday she remembers how far she and her family have come and friends over to her home. “I love the feel and sound of a house full of friends and family and the memories that are being made,” she says. “Being in remission is a new place for me because for the past several years I’ve been living and dealing with cancer,” Rodgers admits. “I’m living proof that immunotherapy works and that there can be hope and a light at the end of the tunnel. The research continues to identify new treatment options. Whatever we can do to increase the research, increase the other outcomes and opportunities for new clinical trials to occur and increase the other outcomes to increase the survival rate and have more survivors, then I’m all for it.”
### Estimated Number* of New Cancer Cases by Sex, US, 2013/State of Texas, 2013 versus Actual Number** of Analytic Cancer Cases by Sex, Baylor Health Care System, 2012

#### TOP TEN CANCER SITES

<table>
<thead>
<tr>
<th>Site</th>
<th>Estimated New Cancer Cases Nationally, 2013</th>
<th>Estimated New Cancer Cases in the State of Texas, 2013</th>
<th>Actual Cancer Cases, Baylor University Medical Center, 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Men</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prostate</td>
<td>238,590 28%</td>
<td>17,379 28%</td>
<td>157 13%</td>
</tr>
<tr>
<td>Lung &amp; Bronchus</td>
<td>118,080 14%</td>
<td>9,054 14%</td>
<td>102 9%</td>
</tr>
<tr>
<td>Colon &amp; Rectum</td>
<td>73,683 9%</td>
<td>6,058 10%</td>
<td>136 11%</td>
</tr>
<tr>
<td>Urinary Bladder</td>
<td>54,810 6%</td>
<td>3,081 5%</td>
<td>49 4%</td>
</tr>
<tr>
<td>Melanoma of the Skin</td>
<td>45,090 5%</td>
<td>2,369 5%</td>
<td>47 4%</td>
</tr>
<tr>
<td>Kidney &amp; Renal Pelvis</td>
<td>40,430 5%</td>
<td>2,734 4%</td>
<td>78 6%</td>
</tr>
<tr>
<td>Non-Hodgkin Lymphoma</td>
<td>37,630 4%</td>
<td>2,541 4%</td>
<td>56 5%</td>
</tr>
<tr>
<td>Oral Cavity &amp; Pharynx</td>
<td>29,620 3%</td>
<td>1,943 3%</td>
<td>52 4%</td>
</tr>
<tr>
<td>Leukemia</td>
<td>27,880 3%</td>
<td>1,870 3%</td>
<td>47 4%</td>
</tr>
<tr>
<td>Pancreas</td>
<td>22,740 3%</td>
<td>1,449 2%</td>
<td>41 3%</td>
</tr>
<tr>
<td><strong>Women</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breast</td>
<td>232,340 29%</td>
<td>17,052 31%</td>
<td>580 57%</td>
</tr>
<tr>
<td>Lung &amp; Bronchus</td>
<td>110,110 14%</td>
<td>7,370 12%</td>
<td>102 6%</td>
</tr>
<tr>
<td>Colon &amp; Rectum</td>
<td>69,110 9%</td>
<td>4,975 9%</td>
<td>95 6%</td>
</tr>
<tr>
<td>Uterine Corpus</td>
<td>49,950 6%</td>
<td>2,683 5%</td>
<td>127 8%</td>
</tr>
<tr>
<td>Thyroid</td>
<td>45,310 6%</td>
<td>2,076 4%</td>
<td>71 4%</td>
</tr>
<tr>
<td>Non-Hodgkin Lymphoma</td>
<td>31,240 4%</td>
<td>2,111 4%</td>
<td>37 2%</td>
</tr>
<tr>
<td>Melanoma of the Skin</td>
<td>31,630 4%</td>
<td>1,976 4%</td>
<td>41 3%</td>
</tr>
<tr>
<td>Kidney &amp; Renal Pelvis</td>
<td>24,720 3%</td>
<td>1,775 3%</td>
<td>39 2%</td>
</tr>
<tr>
<td>Pancreas</td>
<td>22,480 3%</td>
<td>1,305 2%</td>
<td>47 3%</td>
</tr>
<tr>
<td>Ovary</td>
<td>22,240 3%</td>
<td>1,626 3%</td>
<td>40 3%</td>
</tr>
<tr>
<td><strong>All Sites</strong></td>
<td>854,790 100%</td>
<td>62,740 100%</td>
<td>1212 100%</td>
</tr>
</tbody>
</table>

Source: *2013, American Cancer Society, Inc., Surveillance Research*
Source: *Cancer Epidemiology and Surveillance Branch, Texas Department of State Health Services, April 2013*

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### Estimated Number* of New Cancer Cases by Sex, US, 2013/State of Texas, 2013 versus Actual Number** of Analytic Cancer Cases by Sex, Baylor Health Care System, 2012

#### TOP TEN CANCER SITES

<table>
<thead>
<tr>
<th>Site</th>
<th>Estimated New Cancer Cases Nationally, 2013</th>
<th>Estimated New Cancer Cases in the State of Texas, 2013</th>
<th>Actual Cancer Cases, Baylor University Medical Center, 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Women</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breast</td>
<td>232,340 29%</td>
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Source: *2013, American Cancer Society, Inc., Surveillance Research*
Source: *Cancer Epidemiology and Surveillance Branch, Texas Department of State Health Services, April 2013*

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* Estimated Number: 2013, American Cancer Society, Inc., Surveillance Research  
** Actual Number: 2013, American Cancer Society, Inc., Surveillance Research  
Source: *Cancer Epidemiology and Surveillance Branch, Texas Department of State Health Services, April 2013*  
Source: *Baylor Health Care System Cancer Registry, Electronic Registry System*  
Source: *Baylor Health Care System Cancer Registry, Electronic Registry System*
ONCOLOGY QUALITY METRICS 2012

BREAST CANCER

Post Breast Conserving Surgery Irradiation:
Radiation therapy is administered within 1 year (365 days) of diagnosis for women under age 70 and receiving breast conserving surgery for breast cancer (Accountability Measure)

Adjuvant Chemotherapy: Combination chemotherapy is considered or administered within 4 months (120 days) of diagnosis for women under 70 with AJCC T1cNoMo, or Stage II or III hormone receptor negative breast cancer (Accountability Measure)

Adjuvant Hormonal Therapy: Tamoxifen or third generation aromatase inhibitor is considered or administered within 1 year (365 days) of diagnosis for women with AJCC T1cNoMo, or Stage II or III hormone receptor positive breast cancer (Accountability Measure)

COLORECTAL CANCER

Adjuvant Chemotherapy: Adjuvant chemotherapy is considered or administered within 4 months (120 days) of diagnosis to patients under age 80 with AJCC III (lymph node positive) colon cancer (Accountability Measure)

Surgical Resection Includes at Least 12 Lymph Nodes: At least 12 regional lymph nodes are removed and pathologically examined for resected colon cancer (Surveillance Measure)

RECTAL CANCER

Radiation Therapy for Rectal Cancer: Radiation therapy is considered or administered within 6 months (180 days) of diagnosis for patients under the age of 80 with clinical or pathological AJCC T4aN0M0 or Stage III receiving surgical resection of rectal cancer (Surveillance Measure)

*Source: American College of Surgeons National Cancer Data Base
## Baylor University Medical Center at Dallas: Analytic/Non-Analytic Cases Diagnosed 2012

### Primary Site

<table>
<thead>
<tr>
<th>All Sites</th>
<th>Analytic</th>
<th>Non-Analytic</th>
<th>Male</th>
<th>Female</th>
<th>In Situ</th>
<th>Local</th>
<th>Regional</th>
<th>Distal</th>
<th>NA/Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>4050</td>
<td>2011</td>
<td>1239</td>
<td>1010</td>
<td>2240</td>
<td>150</td>
<td>1045</td>
<td>775</td>
<td>795</td>
<td>968</td>
</tr>
</tbody>
</table>

### Cancer Sites

- **Oral Cavity**
  - Lip: 124, 83, 41, 81, 43, 1, 32, 62, 11, 18
  - Tongue: 5, 3, 2, 2, 3, 0, 2, 1
  - Dorsal Pharynx: 51, 36, 15, 33, 18, 1, 18, 25, 3, 4
  - Hypopharynx: 4, 2, 2, 1, 2, 0, 0

- **Digestive System**
  - Esophagus: 756, 592, 204, 485, 208, 6, 290, 222, 138, 132
  - Stomach: 31, 21, 10, 29, 9, 1, 8, 7, 4, 11

- **Respiratory System**
  - Lung/Bronchus: 317, 173, 43, 167, 54, 1, 135, 50, 15, 26
  - Pancreas: 127, 88, 39, 38, 69, 2, 22, 37, 46, 20

- **Blood & Bone Marrow**
  - Leukemia: 193, 92, 66, 86, 74, 0, 1, 52, 169, 195

- **Connective/Tissue**
  - Skin: 134, 94, 40, 79, 55, 8, 58, 30, 10, 28

### Other Sites

- **Bone**: 62, 40, 21, 0, 0, 0, 0, 0, 0, 0
- **Other**: 30, 16, 10, 6, 5, 8, 0, 3, 1, 2

### Summary

- **Breast**: 893, 595, 211, 5, 801
- **Female Gastro**: 293, 207, 54, 0, 281
- **Prostate**: 160, 128, 114, 0, 171

### Other/Ill-Defined

- **Unknown Primary**: 19

### Data Source

Electronic Registry System. Baylor Health Care System Cancer Registry.

This report includes all new cases, breast, ovarian, and basal cell skin cancers, and in situ epithelial neoplasia cases phoma/myeloma category.
Acute Myelogenous Leukemia at Baylor Charles A. Sammons Cancer Center from 2010 to 2012

Background
According to the American Cancer Society, in 2012 there was an estimated 13,780 new cases of acute myelogenous leukemia (AML) and 10,230 deaths. While the 5-year relative survival of patients diagnosed with AML is only 24%, there are large differences in patients’ prognosis, which are influenced by patient-specific factors and perhaps most importantly the genetics of the disease. While AML was initially classified by the French-American-British (FAB) classification system, which used cell morphology and cytochemical stains to categorize the disease, a newer classification system developed by the World Health Organization (WHO) incorporates genetic studies is now used. This system, most recently updated in 2008, combines the traditional clinical features, morphology, and cytochemistry into one that is based on genetics. The incorporation of genetic studies into AML was published recently, further delineating AML patients based on genetics as well as age.

Cytogenetic information not only influences the classification of AML but also provides important prognostic information regarding remission rates, risk of relapse, and overall survival. Patients with favorable, intermediate, or adverse cytogenetics have 5-year survival rates of 65%, 41%, and 14%, respectively. Table 1 lists the mutations related to each prognostic group. Classification among risk groups provides important prognostic information that is used in additional treatment. Those classified as favorable show complete response rates to treatment of 90%, while those in the adverse or unfavorable group have a complete response rate of approximately 60%.

Among patients with normal cytogenetics, or those considered to be at intermediate risk, a more detailed analysis for the presence of molecular markers is needed. Examination of the FLT-3, NPM1, CEPBA, RUNX1, MLL, and EVI1 genes allows further stratification among the prognostic group, potentially influencing treatment and response due to the significant progress that has been made in identifying molecular markers and their role in pathogenesis, new recommendations have been developed that define general practice guidelines for the diagnosis of AML, the most recent published from the International Leukemia

The exceptions of cytogenetic studies are considered mandatory as part of the diagnostic evaluation. Cytogenetic abnormalities provide information regarding treatment response and risk stratification of newly diagnosed cases of AML. Cytogenetics

Table 1. Prognostic Value of Cytogenetics

<table>
<thead>
<tr>
<th>Prognostic Group</th>
<th>5-Year Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable</td>
<td>65%</td>
</tr>
<tr>
<td>Intermediate</td>
<td>41%</td>
</tr>
<tr>
<td>Adverse</td>
<td>14%</td>
</tr>
</tbody>
</table>

The table lists the different cytogenetic groups and their corresponding 5-year survival rates. The favorable group has a survival rate of 65%, the intermediate group has a survival rate of 41%, and the adverse group has a survival rate of 14%.

For all patients with a new or suspected AML diagnosis, cytogenetic analysis is considered mandatory as part of the diagnostic evaluation. Cytogenetic abnormalities provide important prognostic information regarding treatment response and risk stratification of newly diagnosed cases of AML. Cytogenetics

Acute Myelogenous Leukemia at Baylor Charles A. Sammons Cancer Center from 2010 to 2012

The mutations related to each prognostic group. Classification among risk groups provides important prognostic information that is used in additional treatment. Those classified as favorable show complete response rates to treatment of 90%, while those in the adverse or unfavorable group have a complete response rate of approximately 60%.

Among patients with normal cytogenetics, or those considered to be at intermediate risk, a more detailed analysis for the presence of molecular markers is needed. Examination of the FLT-3, NPM1, CEPBA, RUNX1, MLL, and EVI1 genes allows further stratification among the prognostic group, potentially influencing treatment and response due to the significant progress that has been made in identifying molecular markers and their role in pathogenesis, new recommendations have been developed that define general practice guidelines for the diagnosis of AML, the most recent published from the International Leukemia
Review and documentation of a patient’s standard in the initial patient evaluation. Assessments should be performed as a diagnosis of AML, several additional tests and genetic studies to establish a diagnosis. Clinical trials. The most common comorbidity present in 17 patients (23%), followed by coronary artery disease in 9 patients (11.6%) and chronic obstructive pulmonary disease in 5 patients (8.4%). Demographic information is summarized in Table 2.

Laboratory results are summarized in Table 3. All patients had a complete blood count and a platelet count at initial presentation. The mean white blood cell count was 35.0 K/uL (range, 0–95%). All patients except one were anemic at presentation, with mean hemoglobin levels of 8.6 g/dL (range, 3.6–12.0 g/dL). Thrombocytopenia was present at presentation in 72 patients (93.5%) and the mean platelet count was 55.9 K/uL (range, 2–1217). The presence of blasts in the peripheral blood was also assessed in all patients at the time of presentation, with a mean of 33.1% (range, 0–85%). All cases had histologic evaluation of the bone marrow biopsy and flow cytometric analyses. The mean blast percentage in the bone marrow was 80% (range, 9–98%). Conventional cytogenetic analysis was completed in 74 patients (96%). Based on results of conventional cytogenetics, 17 patients (22%) were given a prognostic classification of favorable risk. Fourteen patients, or 18%, had a history of prior malignancy. Diabetes mellitus was the most common comorbidity present in 17 patients (23%), followed by coronary artery disease in 11 patients (14%) and chronic obstructive pulmonary disease in 8 patients (8.4%).

Documentation of these various factors to be protective in significant patients in 26.2% (923/3522) or 16.3% (193/1193). Among this specific patient population a mutation of ITD is associated with a worse prognosis. All three of these patients had mutated RUNX1.

In addition to bone marrow examination and genetic studies to establish a diagnosis, AML in several additional tests and assessments should be performed as a standard in the initial patient evaluation. Review and documentation of a patient’s performance status, comorbidities, basic blood counts and chemistry profile, hepatic and HIV testing, chest x-ray and electrocardiogram and transplant assessment should all be performed based on standard guidelines and expert panel recommendations. Documentation of these various factors to determine higher risk is important, as age >60 years and medical comorbidities, specifically diabetes, coronary artery disease, and chronic obstructive pulmonary disease, have been associated with adverse prognostic outcomes. Treatment approach, age >60 is associated with a higher prevalence of unfavorable factors, such that this is considered a decision point for therapeutic recommendations. Patients considered potential candidates for allogeneic stem cell transplant should undergo a HLA typing performed at diagnosis, along with typing of their first-degree relatives, an assessment of key importance particularly in patients with adverse cytogenetics. The presences of blasts in the peripheral blood was also assessed in all patients at the time of presentation, with a mean of 33.1% (range, 0–85%).

Acute Myelogenous Leukemia at Baylor Sammons Cancer Center

From February to December 2010, 77 new cases of AML were diagnosed at Baylor Charles A. Sammons Cancer Center, a tertiary referral center in Dallas. Cases were identified through our tumor registry and then reviewed for demographic information, initial laboratory assessments and diagnostic and therapeutic evaluations performed at presentation, as well as cytogenetic and molecular studies performed. The mean age of patients in our cohort was 58 years (range, 20–83 years). Males represented 57% of the patients. Fourteen patients, or 18%, had a history of prior malignancy. Diabetes mellitus was the most common comorbidity present in 17 patients (23%), followed by coronary artery disease in 11 patients (14%) and chronic obstructive pulmonary disease in 8 patients (8.4%).

Conventional cytogenetic evaluation is considered standard in the diagnosis and workup of new cases of AML. In our cohort, conventional cytogenetics was performed in only 96% of the patients; however, of the three patients without conventional cytogenetics, molecular cytogenetics was performed in two, giving the necessity for genetic diagnostic information. Overall, complete cytogenetic evaluation was performed in 98.8% of our patients. For the single patient who did not have cytogenetic evaluation, the reason is not clear, as charts were not reviewed for treatment or survival data.

Optional/Institutional Studies

Additional molecular cytogenetic evaluation via FISH was performed in 96 patients (95%). The presence of the Ph1-RARA gene rearrangement was identified in 11 patients. Of those eleven patients, all but one had conventional cytogenetic evaluation. Of the remaining two patients, molecular cytogenetics findings correlated with conventional cytogenetics, which demonstrated the presence of (t15;11)(q22;p11) consistent with a diagnosis of APL. Overall, patients with APL had an indexed survival at 5 years of 80%.

Four patients had inv(16)(p13.1);p(11.2) accounted for 4% of our new AML diagnoses.

Two patients had t(8;21)(q22;q22) associated with a diagnosis of APL. Overall, patients with APL had an indexed survival at 5 years of 80%.

Table 3. Performance of HLA Typing by Risk Group and Age

<table>
<thead>
<tr>
<th>Risk Group</th>
<th>Total</th>
<th>Favorable</th>
<th>Intermediate</th>
<th>Adverse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>38(49%)</td>
<td>8(10%)</td>
<td>20(26%)</td>
<td>10(13%)</td>
</tr>
<tr>
<td>AML</td>
<td>14(18%)</td>
<td>6(8%)</td>
<td>5(6%)</td>
<td>3(4%)</td>
</tr>
</tbody>
</table>

Table 2. Patient Demographics

<table>
<thead>
<tr>
<th>Patients</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25(33%)</td>
<td>25(33%)</td>
<td>27(36%)</td>
<td>77(100%)</td>
</tr>
<tr>
<td>Age, years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 to 60</td>
<td>11</td>
<td>17</td>
<td>37</td>
<td>65 (49%)</td>
</tr>
<tr>
<td>&gt;60</td>
<td>5</td>
<td>4</td>
<td>11</td>
<td>20 (14%)</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>9</td>
<td>6</td>
<td>29 (38%)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>14</td>
<td>13</td>
<td>17</td>
<td>44 (22%)</td>
</tr>
<tr>
<td>Female</td>
<td>11</td>
<td>12</td>
<td>10</td>
<td>23 (14%)</td>
</tr>
<tr>
<td>Comorbidities</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Prior malignancy</td>
<td>9</td>
<td>3</td>
<td>2</td>
<td>14 (18%)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>17 (22%)</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>9 (11.6%)</td>
</tr>
</tbody>
</table>

Table 3. Results

<table>
<thead>
<tr>
<th>Diagnosis (ICD-10)</th>
<th>Total</th>
<th>Favorable</th>
<th>Intermediate</th>
<th>Adverse</th>
</tr>
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<tbody>
<tr>
<td>AML</td>
<td>38</td>
<td>8</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Leukemia</td>
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<tr>
<td>HLA Typing</td>
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<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Not done</td>
<td>14</td>
<td>3</td>
<td>6</td>
<td>5</td>
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</table>

Risk Group

<table>
<thead>
<tr>
<th>Risk Group</th>
<th>Total</th>
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<tr>
<td>AML</td>
<td>14</td>
<td>3</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>AML with MDS</td>
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<td>AML with MDS and MDS</td>
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<tr>
<td>AML with MDS and MDS with MDS</td>
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<td>3</td>
<td>6</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 4. Performance of HLA Typing by Risk Group and Age
had the gene rearrangement RUNX1-TWIST1, which was consistent with the conventional cytogenetic finding of t(12;21) in two of the patients. Mutations in RUNX1 were present in 11.7% of our patient cohort, with 2.6% occurring in association with t(12;21) or t(22;22).

The t(15;17)(pl3-;q22) or DEK-CAN1 was diagnosed in one patient by conventional cytogenetics. In addition, one patient with a normal karyotype (CN-AML) had a t(8;21) and one patient had a double isolated NPM1 mutation, while seven performed in three patients (12.5%), all positive in 12 patients (50%); and CEBPA, performed in 17 patients (79.2%) and positive in 11 patients (50%); NPM1, for the presence of FLT-3, which was a normal karyotype included evaluation. Mutation analysis among patients with and 20 (83%) had mutation analysis. Our data demonstrate that patients newly diagnosed with AML at Baylor University Medical Center at Dallas undergo thorough diagnostic evaluation in keeping with current recommendations. In addition, a large portion of patients had further genetic and molecular evaluations, which although considered optional or investigational by current recommendations have prognostic significance. While this additional useful and prognostically significant testing is frequently performed we did find that the positivity rate for this testing needs to be more specifically defined. Currently, we are investigating having patients undergo reflex genetic testing to better define their specific disease while avoiding unnecessary genetic evaluations which come at increased cost. Reflex testing has been adopted at Baylor University Medical Center for specific types of lung, colon and uterine cancer and is being discussed for several others. Our study did not evaluate how choice of therapy or overall survival were influenced by the additional genetic and molecular evaluations, however complete information allows for the most informed treatment planning. Only 49% of patients with AML received upfront HLA testing, including 57% in the intermediate and high-risk groups, and 60% in those under 60. It should be a goal to provide HLA testing as early as possible in those patients who may benefit from allogeneic transplant to avoid delays in identifying a donor. One can hope that continued efforts to obtain all available prognostic information and biomarkers translate to improvements in treatment and patient survival.
# Patient Outcome Studies +

## Radiation Treatment for Glioblastoma Multiforme: The Baylor Charles A. Sammons Cancer Center Experience, 2010 to 2012

Gliomas are tumors that arise from glia, or support cells from within the central nervous system. Grade IV glioma, or glioblastoma (GBM), is the most common and most aggressive glioma in humans. Unfortunately, GBM has very limited options, and the median survival remains dismal at 14.3 months with standard therapy. Based on data from the Central Brain Tumor Registry of the United States, 15.0% of all brain tumors are GBMs, and 45.2% of malignant brain tumors are GBMs. They are more common in older adults and are approximately 1.5 times more common in men than women. The 5-year survival of patients with GBMs is poor, normally less than 5%. Thus, GBMs are one of the most challenging types of brain tumors to treat. With research dedicated to better understanding this disease, along with clinical trials testing new treatments, survival is improving. It is important that patients receive the standard care according to National Comprehensive Cancer Network (NCCN) guidelines or enroll in clinical trials to add to our knowledge base and improve their chances of survival.

We determined how radiation treatment of patients at Baylor University Medical Center at Dallas (Baylor Dallas) from 2010 to 2012 compared with NCCN guidelines. Treatment for GBM involves a combination of surgery, radiation treatment, and chemotherapy. The recommended radiation dose for high-grade glioma is 60 Gray in 1.8- to 2.0-Gray fractions. A slightly lower dose of 53 to 57 Gray can be applied when the tumor volume is very large, such as in gliomatosis or grade III astrocytoma. For debilitated patients or the elderly, a hypofractionated accelerated course of 3 to 4 weeks with a total dose of 40 to 50 Gray has also been found to be effective.

### Results

A total of 39 patients were diagnosed with GBM at Baylor Dallas from 2010 to 2012. Of these 39 patients, 37 patients had surgery. Thirty of these 37 patients received chemotherapy. In the remaining 9 patients, four refused chemotherapy and five died prior to the recommended therapy. Among those who died, one patient had Gliadel® wafers implanted at the time of surgery and died before planned systemic therapy. Of the patients treated at the Baylor Dallas campus from 2010 to 2012, 30 patients received radiation therapy. Among the nine patients who did not receive radiation therapy, four declined it and five died prior to the recommended treatment. Of the 20 patients who were treated with radiation, 17 had received less than the recommended 35 to 63 Gray of radiation, and three patients received a dose of 60 Gray or more. When the records were checked to determine the reason for these patients receiving less than the recommended dosage, two patients had stopped their treatment and were transferred to hospice care, while the remaining patient had whole-brain radiation treatment. This patient was discovered to have gliomatosis cerebri, a rare, diffusely infiltrating glial tumor of the cerebral cortex, and whole-brain radiation is the recommended treatment for this rare brain tumor.

In addition to the 39 patients who received all of their treatment at Baylor Dallas, 27 patients received some of their care at Baylor Dallas from 2010 to 2012. Of these 27 patients, 24 underwent surgery to remove all or part of their tumor, and 22 received chemotherapy. Among those who did not receive radiation therapy, for one patient it was not recommended; another patient refused treatment, two patients died before they could get the recommended treatment, and the other patient was referred to but was never seen by Dr. Fink, so was lost to follow-up. Finally, these same 22 patients out of 27 who received chemotherapy also received radiation therapy. Of the 22 patients who did receive radiation therapy, 20 received the full 60-Gray doses, while one received a total only 32 Gray fractions, existing before the end of treatment. The remaining patient received radiation treatment, but at an unknown dosage.

Thus, for patients treated entirely or partially at Baylor Dallas, the NCCN guidelines were followed regarding radiation treatment of GBMs. When patients did not receive the recommended treatment, the reason was the death of the patient or patient choice, not any decisions made by their oncologist.

### Table: Treatment Comparison

<table>
<thead>
<tr>
<th>Reason</th>
<th>Number of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expired prior to recommended treatment</td>
<td>69% (27)</td>
</tr>
<tr>
<td>Treatment to &lt;45 Gy</td>
<td>7% (2)</td>
</tr>
<tr>
<td>Treatment to &lt;60 Gy</td>
<td>7% (2)</td>
</tr>
<tr>
<td>Treatment to &lt;45 Gy + unknown</td>
<td>13% (5)</td>
</tr>
<tr>
<td>Treatment to &lt;60 Gy + unknown</td>
<td>8% (4)</td>
</tr>
<tr>
<td>Refused radiation treatment</td>
<td>10% (4)</td>
</tr>
<tr>
<td>Outside Sammons XRT</td>
<td>7% (2)</td>
</tr>
</tbody>
</table>

Baylor Sammons Cancer Center and Baylor T. Boone Pickens Cancer Hospital are located on the campus of Baylor University Medical Center at Dallas, and are accessible from U.S. 75 (North Central Expressway/I-45) and I-30.

A map on the facing page illustrates highway access to the medical center.

Valet parking is available at the front entrance and other nearby locations.

Self-parking is conveniently located adjacent to Baylor Sammons Cancer Center in garage 4.

Self-parking for the new Baylor T. Boone Pickens Cancer Hospital is available in garage 4 or valet in front of the hospital.

The campus is also accessible via the DART Green Line to Baylor University Medical Center station. Baylor Sammons Cancer Center is a two-block walk.