

The George Washington University

Cancer Program and Cancer Registry

Annual Report 2012

The George Washington University Cancer Institute

The George Washington University Hospital

The George Washington Medical Faculty Associates

The Dr. Cyrus and Myrtle Katzen Cancer Research Center

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Research, Compassionate Care,
Education, and Service



LETTER FROM THE CHAIR

I am pleased to present the 2012 Annual Report of the Cancer Program for the George Washington University. We are proud to have been recognized by the Commission on Cancer for creating a model program for optimal cancer survivorship. In the coming year we will build on our accomplishments as we continue to develop and improve our program.

GW's cancer programs have remained quite active with the addition of new faculty and services. We welcomed Samir Agarwal, M.D., FACS, a colorectal surgeon, and Lisa McGrail, M.D., a medical oncologist who specializes in breast cancer.

Launched in early October 2011, the GW Cancer Pro Bono project was formed to provide cancer patients with needed legal services by connecting them with law students under the supervision of licensed practicing attorneys. The distress screening pilot project has been successfully implemented for patients in the Division of Hematology/Oncology and will be expanded to include the Breast Care Center. Furthermore, we received a grant from the AVON Foundation to support the patient navigation program and a "text reminder program" for women's health.

In anticipation of a move to a larger permanent facility, Radiation Oncology has been temporarily relocated to the corner of 23rd and H streets, where it continues to provide state-of-the-art treatment. Additionally, thanks to improvements to the GW Hospital's Emergency Department and the availability of added operating rooms, patients are now able to move more swiftly through our programs. Our in-patient hospice proposal was approved and Danielle Doberman, M.D., M.P.H., joined palliative care at GW Hospital as a full-time staff member. Rachel Wong was recently hired to serve as a registered oncology dietician in the GW Hospital nutrition department. GW Hospital remains the only facility in the region with Breast Specific Gamma Imaging, and is the first to offer Automated Whole Breast Ultrasound that can assist with detecting early breast cancer in women who have dense breast tissue.

The Katzen Cancer Research Center initiated a grant program for innovative cancer research and received 12 applications in 2012. It awarded four grants valued at nearly \$350,000 for projects focused on cancer biology and therapy. The goal is to make significant improvements in cancer prevention, early diagnosis and treatment, and ultimately lead to a cure.

The GW Cancer Registry remains a vital part of the GW Cancer Program, has grown continually over the past five years, despite a slight decline in 2011. This year's report shows that the number of cancer patients entrusting their care to GW increased, from 1,197 in 2007 to 1,333 in 2011 (Figure 1, p. 25). Of these patients, 1,092 (82 percent) were diagnosed and treated at GW Hospital. While the five major cancer sites treated at GW Hospital remain breast, lung, prostate, colon, and kidney cancers (Table 1, pp. 26–27), lymphoma-hematopoietic cancers rose from 5.7 percent in 2010 to 9.7 percent in 2011 and head and neck cancers increased from 3.8 percent in 2010 to 5.3 in 2011 (Figure 2, p. 29).

We look forward to a successful year and a coming survey in October 2013.

Sincerely,



ROBERT S. SIEGEL, M.D.
CHAIR, CANCER COMMITTEE



COMMUNITY

“NewsBabes” Support Screenings for Women

Washington, D.C.’s Howard Theatre set the stage for the fourth annual NewsBabes Bash for Breast Cancer. This year the group, comprising Washington’s most prominent television and radio newswomen, sought something different. The women wanted the event to directly support the local community by giving money to a group that was doing work directly related to breast cancer.

The NewsBabes chose the GW Medical Faculty Associates (MFA) Mammovan as the sole beneficiary of the bash because they wanted to make an immediate impact on the local community. Raising money for the GW Mammovan meant supporting screenings for women who need them right now. “I think the visibility of the van, the impact of the van, and the local nature of the van, really drew the NewsBabes to it,” said Rachel F. Brem, M.D., FACR, director of breast imaging and intervention, vice chair for research and faculty development, and professor of radiology at the MFA.

The pink cocktail party raised more than \$18,000 for the GW Mammovan. According to Brem, it costs just under \$4,000 a day to keep

the Mammovan running. “The fact that we are raising money and helping fund an organization that brings breast cancer screenings to people who can’t afford it, is huge,” said event Co-Host Hillary Howard, WTOP’s weekday anchor and event co-host.

Created in 1996, the Mobile Mammography Program seeks to make life-saving, early detection of breast cancer possible for all women throughout the Washington, D.C. area, regardless of their ability to pay. The self-contained mobile unit has screened more than 35,000 women since it started. The van performs roughly 16 mammograms each month and is on the road for close to 200 days out of the year. The van travels to corporate and community sites, but makes the most trips to D.C.’s Anacostia and Mount Pleasant neighborhoods to perform screenings. Because of the Mammovan’s efforts, 116 cases of breast cancer have been diagnosed.

The NewsBabes bash was packed with supporters, survivors, politicians and friends who came together to raise awareness for breast cancer and support the GW Mammovan’s

Washington, D.C.’s most prominent television and radio newswomen comprise the “NewsBabes.”



PHOTOGRAPHY: COURTESY GW MEDICAL FACULTY ASSOCIATES

“The aim of the GW Mammovan is to bring life-saving mammography screenings to underserved communities, where women aren’t insured, don’t have easy access to health care, and often lack transportation.”

mission. “The aim of the GW Mammovan is to bring life-saving mammography screenings to underserved communities, where women aren’t insured, don’t have easy access to health care, and often lack transportation,” said Rachel Brem, M.D., professor of radiology, GW School of Medicine and Health Sciences, and director of Breast Imaging and Intervention at the GW MFA. The GW Mammovan also serves as a billboard for preventive screenings.

Aiming to raise awareness and funds for breast cancer research and prevention, the NewsBabes concept was formed in 2009 when a group of local television and radio news reporters and anchors in the Washington, D.C. area decided they wanted to do more than just report on breast cancer. These newswomen wanted to heighten awareness for breast cancer, which is the most common cancer among American women, except for skin cancer according to the Centers for Disease Control and Prevention.

For the NewsBabes it’s all about women helping other women. “We live in a community where a lot of people are underserved, so the idea that we could get together as a group, have an event, and raise money to help people find out whether or not they have breast cancer is incredible,” said Howard.



GW Breast Care Center Annual Luncheon Supports Breast Cancer Survivors

Women in pink scarves, hats, and jackets filed into the Four Seasons Hotel in Washington, D.C. Oct. 24. Attendees registered and received nametags, but few needed them; they were at home. As they entered the reception hall, faces lit up and hugs were given freely as old friends reunited. They were amongst fellow breast cancer survivors at the GW Breast Care Center Annual Luncheon.

The annual celebration, organized by the GW School of Medicine and Health Sciences (SMHS), provides an opportunity for former and current patients of the GW Breast Care Center to support and strengthen one another. The patients often know each other from their days of chemotherapy and grim diagnoses. Many women, like three-time breast cancer survivor Deborah Thomas, return year after year.

“We are always so happy to see each other doing well,” said Thomas. “We are here to give each other support.”

Annie Beatty, whose breast cancer has been in remission for one year, attended the luncheon for the first time. She plans to go again next year, and the year after, as well.

“Since I’ve arrived, I’ve been meeting a lot of new people. It’s nice to ask questions, since many of the people here have been through it all before,” said Beatty. “These are questions only people who have gone through it can answer. It’s interesting to see how different, or exactly the same, their story is to your story.”

As the women were seated for lunch in the chandelier-filled ballroom, a slideshow played with photos from luncheons past. Former patients planned the first luncheon. As the luncheon grew from a simple gathering to a full-fledged event, the SMHS Development office soon began booking larger and larger venues. Three hundred and twenty people



Christine Teal, M.D., FACS, associate professor of surgery and director of GW’s Breast Care Center, (standing) shares a laugh with (seated from left) Sara Fiske, Mary Petrocci, and Annie R. Beatty.

attended this year’s luncheon.

Andrea Roane, weekday morning anchor on WUSA-9 news, kicked off the event. Known for her coverage of breast cancer issues, Roane said that Washington, D.C. has one of the highest mortality rates from breast cancer in the country. She thanked GW for its steady commitment to supporting women with breast cancer and working to change this statistic.

Anita McSwain, M.D., assistant professor of surgery at SMHS and breast surgeon at the GW Breast Care Center, led the attendees in the annual survivor’s toast. One by one, women stood up as one-, two-, five-, 10-, 15-, and 20-year survivors raised their glasses to each other. The women scanned the room and beamed as each milestone was called out. They were in a room full of women who understood exactly what they have experienced.

Next, Rachel Brem, M.D., professor of radiology at SMHS and director of breast imaging and intervention at GW Medical

Faculty Associates, spoke about her passion for medicine and her decision to specialize in breast cancer diagnosis. **Brem revealed that while testing different breast imaging machines for the Breast Imaging Center, she uncovered her own breast cancer.**

“Those of us in it, we have an intimacy,” said Brem. “We know something about each other nobody else can understand.”

Cara Scharf, a singer and a breast cancer survivor, took the stage to tell of her journey after being diagnosed with breast cancer in March 2011. She spoke of her mother, who died of breast cancer when she was just three

years old, and the reverence she feels for those who did not have the chance to call themselves breast cancer survivors. Music, she said, helped her face her fears during difficult moments – and she concluded by singing “You Walk With Me” from the Broadway musical *The Full Monty*. “Over the hilltop, down in the valley,” she sang. “Never alone, for you walk with me.”

As the women finished their lunches and trickled outside with those whom they had shared their best and worst moments, they felt anything but alone.

Success Continues with Prostate Cancer Awareness Run

Prostate cancer is “the most common cancer in men,” and Washington, D.C. has the highest number of prostate cancer-related deaths per capita in the country, according to Harold Frazier II, M.D., clinical director of urologic oncology at the George Washington University Hospital and clinical professor of Urology at the School of Medicine and Health Sciences (SMHS). “Yet the awareness is very low,” he says.

Educating the public, raising awareness, and increasing research dollars is the goal of DASH-4DAD, a nationwide run/walk locally sponsored by the GW Medical Faculty Associates (MFA), ZERO — The Project to End Prostate Cancer, and Pacers Running Stores. Racers took part in a four-mile run, a one-mile run, or the kids’ race. GW medical students, doctors, and nurses participated alongside two dozen prostate cancer survivors and more than 1,500 other participants, including many father-children teams.

The event has experienced tremendous growth since the MFA became involved in 2011. DASH4DAD organizers approached the MFA to help expand the event, knowing that community outreach would only grow as a result. “The

dedication to the race by the MFA Urology faculty was evident,” says Siobhan Hartigan, a fourth-year medical student who participated in the event.

“It’s necessary,” Frazier says of his involvement with the race. He acted as the point person, negotiating communication and agreements between the sponsors and the DASH-4DAD organization, and assisted with marketing the event. “To see the joy and the excitement in people, to know they’re making a difference” made the hard work worth it for Frazier.

Free Cancer Screening Day

The School of Medicine and Health Sciences, along with the GW Medical Faculty Associates and the GW Hospital, hosted a free cancer screening day on Oct. 19 from 9 am to 2 pm. **During this event, GW screened for skin, breast, and prostate cancer, and administered lung-function testing.** The event reached nearly 100 members of the community.

La Vie en Rose Benefit in Support of GW’s Mobile Mammography Program

More than 250 guests joined George Washington University President Steven Knapp and Vice President for Health Affairs and Dean of GW’s School of Medicine and Health Sciences Jeffrey S. Akman, M.D. ’81, for the inaugural La Vie en Rose benefit in support of GW’s Mobile Mammography Program at the French Embassy’s La Maison Francaise in October.

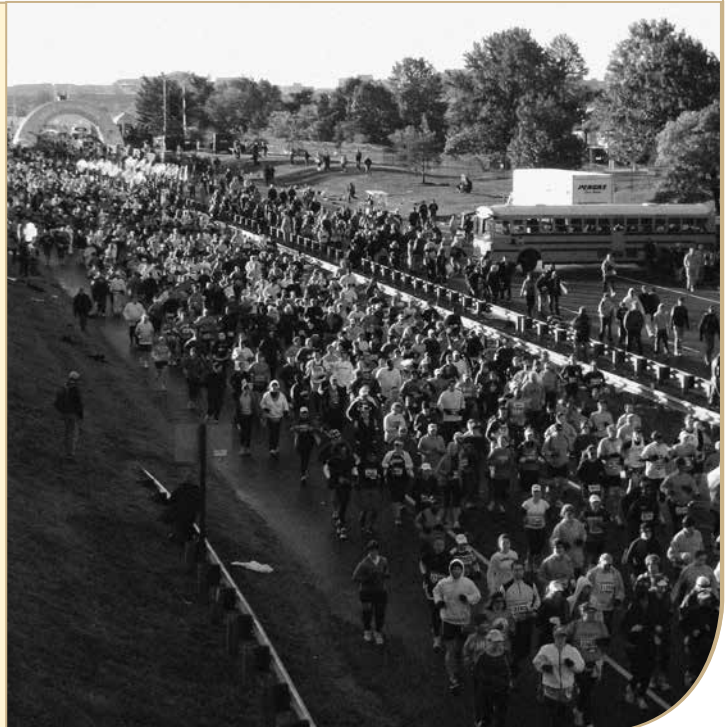
ABC News Political Commentator Cokie Roberts introduced the afternoon’s honorary chair and keynote speaker, former Chief Executive of Hewlett-Packard Co. and breast cancer survivor, Carly Fiorina.

The luncheon, sponsored by the George Washington University Medical Faculty Associates Women’s Health Board, brought in more than \$275,000 from sponsors including McKesson, Martone Construction, Huelet Parimucha Healing Design, EHR Revolution, and BB&T Bank.

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GWCI Team Finishes Strong at the Marine Corps Marathon

For the third consecutive year, **supporters of the George Washington University Cancer Institute pounded the pavement throughout Washington, D.C., as participants of the 37th annual Marine Corps Marathon** Oct. 28. This year’s GWCI Marine Corps Marathon Team, comprising 41 marathoners and 82 10K runners, raised more than \$42,000 to support the Cancer Institute’s efforts to eliminate cancer and cancer disparities. They joined 23,515 runners from all 50 states and 54 countries from around the world to cross the finish line and complete the fourth largest marathon in the country. The 26.2-mile course starts in front of the Pentagon and winds its way throughout northwest Washington, D.C., before ending at the foot of the Marine Corps War Memorial in Arlington, Va.





CLINICAL CARE

Lung Cancer in the Unexpected Patient Receives Surprising News after Routine Physical

By Christina Heilman

On a Friday afternoon, March 23, 2012, Greta Kreuz, reporter and anchor for WJLA-TV, received news that would turn her life upside-down. She was diagnosed with Stage 1B lung cancer following a routine physical with her primary care physician.

Complaining of a slight pulling pressure in her upper sternum, Kreuz believed it was brought on from exercise. She was in great physical condition — and had never smoked. As a precaution, her physician ordered a chest X-ray. Following additional scans, Kreuz got the news just minutes before doing a live report for the evening news: a tumor, half-inch in diameter was found in her lower left lung involving the lining of the lung.

GW Hospital's Cardiothoracic Surgeon Marc Margolis, M.D., performed minimally invasive surgery to remove the lower left lobe, using the hospital's da Vinci Robot. With 3D viewing and 10 times magnification, the da Vinci Robot allows for a more precise surgical procedure and a faster recovery. After taking five weeks off from work, Kreuz was able to resume a nearly normal routine, although she still had a slight ache in the surgical area and her stamina was still limited. For the next two years, Kreuz will be required to have C-T scans every three months.

“There are too many variables to pinpoint the actual cause for her diagnosis,” said Margolis. “Growing up in a home with smokers, Kreuz was exposed to second-hand smoke; however, other factors could have also played a role.”

“Most people diagnosed with lung cancer are often embarrassed and don't speak about it; however, I received incredible feedback since I told my story. People don't realize non-smokers can get lung cancer too,” said Kreuz. “I couldn't believe how little research, funds, and resources are available for those living with lung cancer.”

Lung cancer takes more lives than breast, prostate, and colon cancers combined according to the American Cancer Society; accounting for 27 percent of all cancer deaths. In an effort to raise awareness, Kreuz is now participating in an International Early Lung Cancer Action Program, an early screening and lung cancer research initiative led by an international, collaborative group of lung cancer experts.

Very fortunate for her early diagnosis (only about 15 percent of lung cancers are caught before spreading), Kreuz advises others to speak up if something doesn't feel right. While the pain she was having turned out not to be related to the tumor, the chest X-ray and subsequent tests saved her life. She stated, “It's your health, your body, your life.”

Marc Margolis, M.D. and Greta Kreuz



A New Approach to Breast Cancer Care



Lisa McGrail, M.D.

For 11 years, Lisa McGrail, M.D., worked on the front line as a general oncologist in the United States Military. During her active duty, McGrail's primary mission was studying breast cancer vaccines, as well as discovering new ways to prevent reoccurrence in women with advanced stage cancer. Her time in the military was spent working at Walter Reed Army Medical Center in Washington, D.C., and Malcolm Grow Medical Center, a United States Air Force hospital located on Andrews Air Force Base in Maryland. For McGrail, exploring and researching breast cancer vaccines is a way to help women put this debilitating disease behind them for good and get on with their everyday lives. In her new role as assistant clinical professor of medicine at the GW Medical Faculty Associates (MFA), McGrail hopes to help women do just that.

McGrail brings a fresh perspective and philosophy to breast cancer care, taking a holistic approach to breast cancer treatment and prevention. She believes that the entire process, from diagnoses to recovery, should involve exercise, diet, nutrition, and supplemental therapy. GW's Breast Care Center is leading the way on this front according to McGrail. "It's a unique multidisciplinary center," said McGrail. "They created a place for women to go for their breast health, where they will be understood and treated with care and compassion." McGrail will be working alongside a team of doctors who specialize in breast cancer care including Rebecca Kaltman, M.D., assistant professor of medicine at GW MFA, Christine Teal, M.D.,

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director of the Breast Care Center at GW MFA, and Rachel Brem, M.D., director of the breast imaging and intervention center at GW MFA.

McGrail is continuing her vaccine studies at GW's Breast Care Center and so far, the results are promising. "One of our studies found a 50 percent decrease in the risk of reoccurrence in women who have a high risk of the disease returning," said McGrail. These cutting-edge studies bring basic science

research into the clinic where it is making a real impact on women's lives. McGrail is very excited about this research and its possible positive affects for women battling advanced-stage breast cancer. "Because it shows that we can stimulate a woman's own immune system to recognize breast cancer cells as foreign and destroy them. In this way we are using our own natural defenses to fight cancer from within," said McGrail.

New Commission on Cancer Standards

In 2012, the American College of Surgeons' Commission on Cancer (CoC) rolled out three new continuum-of-care standards focused on patient-centered care. The standards, to be phased in by 2015, address patient navigation, distress screening, and survivorship care planning.

The CoC's new standards for patient navigation require that the navigation process be driven by a community needs assessment that addresses health care disparities and barriers to care for patients. Programs must be evaluated, documented, and reported to the cancer committee annually.

Currently, GW cancer programs offer patient navigation for breast imaging, breast surgery, head and neck surgery, urology, radiation/oncology, and post-treatment survivorship.

"GWCI has begun mapping the navigation process for quality improvement and piloting a database to capture core metrics across the navigation program," says Mandi Pratt-Chapman, associate director of GWCI. The database will provide information on the barriers patients experience to fulfill this accreditation requirement and feed quality improvements.

The new CoC standards now require cancer committees to develop and implement a process to integrate and monitor on-site psychosocial distress screening and referral for the provision of psychosocial care.

In 2012, GW piloted a new distress screening process in the Division of Hematology/Oncology under the direction of Jennifer Bires, LICSW. The GWCI navigation team plans to begin expanding distress screening in 2013 to provide all patients with at least one pivotal cancer visit by 2014.

In the area of survivorship, the CoC is now asking programs to provide survivorship care plans to every patient who completes cancer treatment, and those plans should be monitored, evaluated, and reported to the cancer committee annually.

Since 2010, GWCI launched the Thriving After Cancer (TAC) program for adult survivors of pediatric cancer in 2010. The collaborative effort with the GW Medical Faculty Associates (MFA) and Children's National Medical Center provides comprehensive multi-disciplinary care to cancer survivors and provides each patient with a treatment summary and comprehensive follow-up care plan.

In 2012, that model was adapted for a new adult-onset TAC program, led by Oncology Nurse Practitioner Carrie Tilley, for patients completing treatment at GW.

GWCI is now working with clinicians at the MFA to create a more efficient survivorship care planning process to expand the provision of survivorship care planning and survivorship care services to a broader patient population at GW.



RESEARCH

GW Katzen Cancer Research Center Supports Cutting-Edge Cancer Research

The Dr. Cyrus and Myrtle Katzen Cancer Research Center awarded four George Washington University (GW) researchers nearly \$350,000 in research grants to study cancer biology and therapy.

“It is rewarding to support researchers who are finding clues to why cancers present in patients and identify new and creative therapies for treatment,” said Robert Siegel, M.D., director of hematology/oncology at the Medical Faculty Associates (MFA), director of the Katzen Cancer Research Center, and professor of medicine at the School of Medicine and Health Sciences (SMHS). The center’s annual research grants are awarded in an effort to make advancements in cancer prevention, diagnosis, and treatment that could one day lead to a cure. Now in its fourth year, the center works in collaboration with GW Hospital and the GW MFA. “We are reaching out for new partners at GW and one of the first grants was awarded to an associate professor of engineering,” said Siegel.

Paul Brindley, Ph.D., professor of microbiology, immunology, and tropical medicine, SMHS, was also awarded a \$100,000 grant to examine miRNA-based circulating biomarkers that can detect the risk for a type of liver cancer called cholangiocarcinoma (CCA), which is the second most common type of liver cancer in the U.S. This research builds on well-established studies that focus on the parasitic infection that causes liver cancer (CCA) in East Asia. While the cause is unknown in the Western world, a parasitic worm called liver fluke is believed to be the primary cause for the cancer in East Asia. Brindley’s research will concentrate on identifying miRNA markers for early diagnosis in an effort to greatly improve the prognosis and therapy for CCA.

Robert Hawley, Ph.D., professor and chair, Department of Anatomy and Regenerative Biology is using his \$100,000 grant from the Katzen Cancer Research Center to explore the second most common blood cell cancer in the U.S.

multiple myeloma — cancer of the plasma cells (the white blood cells that normally produce antibodies) found in bone marrow. “Our goal is to characterize the myeloma cells that survive chemotherapy and are responsible for disease relapse (the tumor-propagating cells),” said Hawley, professor and chair of anatomy and regenerative biology at SMHS.

Hawley and his team are currently developing a manuscript describing their findings, which they believe, based on a comparison of their expression data with the published data of thousands of myeloma patients, have provided

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them with a novel and sensitive assay of high-risk myeloma, as well as insight into some of the mechanisms that are responsible for chemotherapy resistance.

In the future, Hawley plans to examine specimens obtained from myeloma patients who are treated at GW with the goal of

RESEARCH

predicting which patients will respond better to certain treatments.

Ray-Chang Wu, Ph.D., assistant professor of biochemistry and molecular medicine at SMHS, received a \$62,500 grant to fund targeting the addiction to the steroid receptor coactivator 3/amplified in breast cancer 1 (SRC-3/AIB1) oncogene for cancer therapy. “My goal is to identify novel cellular function and elucidate the underlying molecular mechanism to advance understanding into the oncogenic activity of SRC-3 and to provide the basis for targeting SRC-3 in cancer therapy,” said Wu.

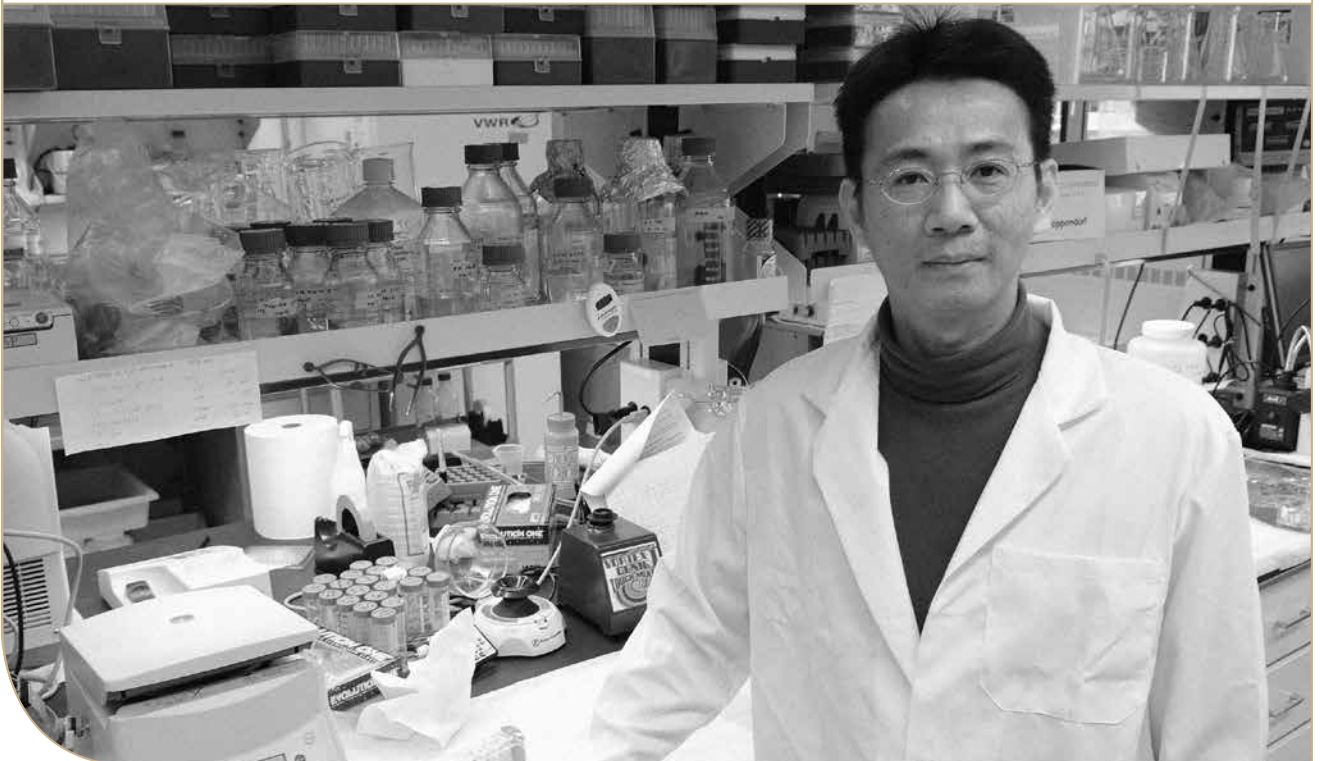
If successful, this study will provide the first evidence to support that SRC-3 oncogene is a potent regulator of cell stress and that down-regulation of SRC-3 induces autophagy (from the Greek word auto or “oneself” and phagy or “to eat”) and cell senescence, the two main tumor suppressive mechanisms induced by cell stress. Wu’s research results indicate that

oncogenic activity of SRC-3 is directly tied to its ability to prevent cell stress and argue that targeting “addiction” to SRC-3 is a viable anti-cancer strategy.”

The project has the potential to significantly impact cancer therapy. **“Since SRC-3 is frequently over-expressed in a wide variety of human cancers, our study argues that cancer drugs targeting SRC-3 or its downstream molecular targets are useful for more than one type of cancer,” said Wu.**

Jason Zara, associate professor of engineering and applied science GW’s School of Engineering and Applied Science, was awarded a \$75,000 grant to develop an imaging probe that can detect and treat early-stage cancers. Zara will work with Michael Keidar, Ph.D., associate professor of mechanical and aerospace engineering; and Mary Ann Stepp, Ph.D., professor of anatomy, cell biology, and ophthalmology, to investigate concurrent imaging and treatment of epithelial cancers using optical coherence tomography and cold plasmas.

Ray-Chang Wu, Ph.D., assistant professor of biochemistry and molecular medicine



“The overall goal of the project is to design and build a probe that combines imaging with Optical Coherence Tomography (OCT) with treatment from cold plasmas,” said Zara.

According to Zara, OCT, along with computer algorithms focused on identifying changes in OCT images with changes due to cancer development or plasma treatment, have the potential to detect early stage cancers in epithelial tissues (the tissues that line all the surfaces of the body) and the plasma has the potential to selectively kill the cancer cells while leaving healthy tissues unharmed. The changes in the images that occur with treat-

ment will also be investigated to examine the possibility of monitoring a patient’s treatment process in real-time. Zara and his team are currently developing the combined imaging/treatment probe and developing capabilities to grow 3-D tissue cultures that will more accurately mimic live tissue for future imaging/treatment experiments.

“We are hoping to use principles of engineering to fight this disease. Robotics, computer science, nanobiotechnology, molecular imaging, and cold plasma are engineering-based advances that will help us achieve our mission,” said Siegel.

New Research Helps Predict Susceptibility to Burkitt Lymphoma

New research from George Washington University School of Medicine and Health Sciences (SMHS) faculty members Jeffrey Bethony, Ph.D., and Amar Jariwala, M.D., has identified important associations between a form of malaria and non-Hodgkins lymphatic cancer. The research, presented at the 54th Annual Meeting of the American Society of Hematology (ASH), links *Plasmodium falciparum* (*Pf*) malaria with endemic Burkitt lymphoma (eBL), a discovery that may help researchers identify young children who are more susceptible to eBL.

Unlike previous studies in which malaria infection alone was considered the important factor, this study focused on the immune system’s complex response to *Pf* exposure as a key component for risk of developing eBL in children living in malaria-endemic areas of Equatorial Africa. Investigators believe this immune response could be used to identify biomarkers indicating eBL risk resulting from malaria infection.

The study, titled “Risk of Burkitt Lymphoma Correlates with Breadth and Strength of Antibody Response to *Plasmodium falciparum*



Jeffrey Bethony, Ph.D.

Malaria Stage-Specific Antigens,” was authored by Bethony, associate professor in the department of microbiology, immunology, and tropical medicine (MITM), and Jariwala, assistant research professor in MITM, as well as Maria Candida Vila, a graduate student in GW’s



Institute for Biomedical Sciences. Research was done in collaboration with Sam Mbulaiteye, M.D., from the infections and immunoepidemiology branch of the Division of Cancer

Epidemiology and Genetics at the NIH National Cancer Institute, who spent decades collecting the case and control sera in Ghana, as well as the study design and statistics.

“*Plasmodium falciparum* malaria has long been suspected as an important trigger to Epstein-Barr virus associated lymphoma of very young children living in Equatorial Africa,” said Bethony. “Our study adds to this literature, explaining that it is not simply the presence or absence of *Pf* malaria infection, but the breadth and complexity of the antibody response to malaria that may be the true indicating factor for who develops eBL and who does not.”

The SMHS research team developed, optimized, and standardized an extensive panel of serological tests of recombinant *Pf* antigens representing several stages of the parasite life-cycle. They combed the data from more than 700 cases of children living in regions prone to *Pf* malaria. Bethony and his colleagues were able to identify a pattern of immune responses rather than a single immune response, identifying the children who are at risk for developing eBL. They also determined that there was a significant increase in the risk of developing eBL among young children who had this distinct pattern of antibody responses to *Pf* malaria antigens, including some antigens they believe may be vaccine candidates.

**“*Plasmodium falciparum*
malaria has long been
suspected as an important
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in Equatorial Africa.”**

GW Professor Awarded Grant to Study New Methods of Early Breast Cancer Detection

Patients with precancerous lesions or early-stage breast cancer are commonly diagnosed with a mammogram. Conventional mammography, however, is not without limitations. The technology can sometimes lead to false-positives or false-negatives, and mammography has trouble screening women with dense breast tissue (nearly 40 percent of women), nor can it determine whether pre-cancerous cells will actually turn into breast cancer. Promising new research conducted by Sidney Fu, M.D., professor of medicine at the George Washington School of Medicine and Health Sciences (SMHS), might lead to a new method for spotting the immergence of breast cancer. By using novel small-RNA (microRNA or miRNA) biomarkers, Fu hopes to develop a blood test to determine with greater precision whether a patient carries cells that will eventually turn into breast cancer. The project, funded through a 2-year \$362,062 grant from the National Cancer Institute, could more accurately distinguish benign cells and those that might develop into breast cancer, sparing millions of women the trauma of unnecessary and costly procedures.

Breast cancer typically develops in the cells surrounding the breast ducts. Somehow, either through internal or environmental factors, those cells gradually change in a patient who may develop breast cancer. Initially, cells will just accumulate. At this point, they are normal cells, which are called hyperplasia. If the cells continue to progress, they then become abnormal and enter into the Atypical Ductal Hyperplasia (ADH) stage. At the ADH stage, cells look abnormal under the microscope, but they are not cancer cells. If cells continue to progress into the Ductal Carcinoma In Situ (DCIS) stage (the most common type of non-invasive breast cancer), the cells then become cancer cells. Unfortunately, women who are diagnosed with DCIS have a higher risk of developing invasive breast cancer that may require surgery, radiation, or a mastectomy to remove the tumor. However,

there is no proven way to predict which women diagnosed with DCIS will eventually develop invasive breast cancer over the years, or if they never will. Fu's research is exploring new methods for the detection of early breast lesions. Through the identification of novel biomarkers, a

Research by Sidney Fu, M.D., might lead to a new method for spotting the immergence of breast cancer.

simple blood test could provide the information necessary to help physicians determine whether or not a patient diagnosed with DCIS should be treated rigorously or with simple follow-ups.

In less than a decade, miRNA has become one of the most important sets of regulatory molecules in the body. Because the deregulation of these small RNAs are associated with cancer initiation and development, and because they circulate stably in blood, they have great potential as diagnostic and/or prognostic biomarkers for cancer and other diseases. This led Fu to believe that by studying the role of miRNA in early stage breast cancer, he could find novel biomarkers that could tell him whether or not cells will turn cancerous.

“If we can identify the miRNA signatures in DCIS, which can be used to differentiate between patients whose cells may eventually develop into invasive breast cancer and those patients whose cells will never develop into cancer, we would be able to eliminate unnecessary surgery, and/or chemotherapy and radiation therapy for those patients who will not benefit,” said Fu.



SURVIVORSHIP

Navigation Works: Citywide Patient Navigation Network Data Proves Navigation Helps Cancer Patients Get Better Care

Breast cancer patients who received patient navigation services experienced significantly shorter diagnostic time than non-navigated breast cancer patients according to research published in the journal *Cancer Epidemiology, Biomarkers, and Prevention* in October 2012. GW researchers led by Heather Hoffman, Ph.D., associate professor of epidemiology and biostatistics; Heather Young, Ph.D., M.P.H., associate professor of epidemiology and biostatistics; and Nancy LaVerda, M.P.H., program manager, GW Cancer Institute (GWCI), showed that navigated breast cancer patients encountered diagnostic resolution in nearly half the time as patients who didn't receive navigation assistance (25.1 days versus 42.1 days). The results were based on data from the GWCI-led District of Columbia Citywide Patient Navigation Network (CPNN).

A total of 2,601 women (1,047 navigated; 1,554 concurrent records-based non-navigated) who had a suspicious breast abnormality identified between 2006 and 2010 at one of nine Washington, D.C. area hospitals or clinics were selected for the study. Analyses included only women who reached complete diagnostic resolution.

GW investigators concluded that women who received navigation assistance, especially those requiring a biopsy, reached their diagnostic resolution significantly faster than non-navigated women. Researchers concluded that, as a result of these findings, patient navigation should be a reimbursable expense to ensure all cancer patients have access to navigation services.

Since 2010, the GWCI has coordinated the CPNN to provide a safety net system of navigation across primary care settings, screening sites, and cancer centers in the District. Since 2010, CPNN navigators have removed more than 17,000 barriers to accessing cancer continuum of care services for 4,754 individuals. Among the 2,840 individuals CPNN navigators helped last year, top barriers reported included social/practical support (16.7 percent), financial barriers (14 percent), system fragmentation and problems

with scheduling care (14 percent), and language barriers (10.6 percent). Of those navigated, 86.2 percent were minorities and 9.3 percent were from Ward 8, the city's most underserved neighborhood. Most individuals received navigation from the point of screening onward and the most prevalent cancer risk category was breast.

**Breast cancer patients who
received patient navigation
services experienced significantly
shorter diagnostic time than non-
navigated breast cancer patients.**

GWCI, partnering with the D.C. Cancer Consortium, the D.C. Department of Health, and 16 other area health care organizations and community sites, created a patient navigation network to improve cancer outcomes among D.C. patients. Through a system of patient navigators strategically placed along the cancer health care continuum, from community clinics and advocacy organizations to comprehensive medical centers, the network offers a seamless and cohesive framework for cancer care coordination across the city. The project goal is to help patients overcome barriers to care, with special attention to vulnerable and minority populations. Navigators help patients obtain timely, coordinated cancer care, including screening and diagnostic services, treatment, survivorship, and end-of-life care.

SURVIVORSHIP

Grant Supports Access to Survivorship Care for Area Breast Cancer Survivors

The GW Cancer Institute (GWCI) received a **\$500,000 grant from Susan G. Komen for the Cure to increase access to survivorship care for D.C. area breast cancer survivors** who have completed primary treatment. Thanks to modern medicine, more and more women and men are surviving breast cancer, and these survivors

are in need of ongoing follow-up care and attention to manage the long-term physical, psychological, social, and practical effects of cancer and its treatment. GWCI strategically works in partnership with other organizations and thought leaders to improve survivorship care in the D.C. community and nationally.

New Appointments at GWCI

Associate Director Mandi Pratt-Chapman was recently appointed adjunct instructor in clinical research and leadership for the School of Medicine and Health Sciences. “I am pleased to be working more closely with the team in Health Sciences,” said Pratt-Chapman. “The resources in Health Sciences combined with rich talent across the George Washington University will bolster the GW Cancer Institute’s (GWCI) capacity to lead patient-centered outcomes research and quality improvement initiatives in the years ahead.”

NEW NAVIGATORS TO LEAD THE WAY

In 2012, GWCI welcomed three new navigators and a new Director of Cancer Care Access and Quality to its Patient Navigation teams run in collaboration with the GW Medical Faculty Associates and the GW Hospital. Eva Ruiz, an American Cancer Society/GWCI patient navigator, supports patients seen in Urology, Radiation Oncology, and Head and Neck Surgery. Diana Garcia, patient navigator for the Breast Imaging and Intervention Center, serves those with abnormal mammography and helps them access timely diagnosis and treatment. Monica Dreyer, patient navigator with the GW Breast Care Center, assists diagnosed patients through their breast cancer journey. These navigators work closely with Jennifer Bires, LICSW, program coordinator for patient support services and community outreach in the Katzen Cancer Research Center.

GWCI HIRED KAPP TO IMPROVE ACCESS AND QUALITY

In November, Heather Kapp, MPH, LICSW, joined GWCI as the new Director of Cancer Care Access and Quality. Kapp comes to GWCI from the Washington Hospital Center’s Washington Cancer Institute, where she oversaw patient and family support services. She will focus on improving the navigation process and piloting a navigation database to capture core metrics for the cancer program at GW while informing navigation standards at a national level. Kapp also serves as the program manager for CPNN, working closely with Project Director Mandi Pratt-Chapman and Lorenzo Norris, M.D., assistant professor of Psychiatry and Behavioral Sciences at the GW School of Medicine and Health Sciences, to sustain this critical initiative for the Washington, D.C. region’s most vulnerable patients.

In 2012, GWCI welcomed

three new navigators

and a new director.

National Institutes of Health Federal Credit Union Sponsors New GW Cancer Institute Lecture Series

The National Institutes of Health Federal Credit Union (NIHFCU) joined with the George Washington Cancer Institute (GWCI) to support a five-event lecture series and an online training program that will reach approximately 500 health care providers, including program executives, clinicians, and students. **The initiative recognizes the NIHFCU as the lead partner for GWCI's Center for the Advancement of Cancer Survivorship, Navigation and Policy (caSNP), whose mission is to advance efforts both locally and nationally through training, research, policy analysis, outreach, and education.**

“The NIHFCU recognizes the wonderful contributions the GWCI is making in the area of cancer treatment,” said Juli Anne Callis, NIHFCU president and CEO. “We are honored to be aligned with such a fine organization focused on training those who are working so tirelessly on making the world a healthier place.”

The intensive training programs offered for health care practitioners and institutions

through caSNP serve to promote the effectiveness of navigation and survivorship programs and share best practices. Trainees learn about the barriers affecting patient care, and receive training to launch or improve programs and gain tools to implement institutional change.

“With the support of the NIHFCU, GWCI will provide skills training to patient navigators to guide newly diagnosed cancer patients through a fragmented health care delivery system,” said Mandi Pratt-Chapman, associate director of community programs for GWCI, “Our navigators can train program leaders to build patient-centered initiatives that best support survivors and their families, and the institute is launching an e-learning site in 2013 for primary care providers to improve the infrastructure of survivorship care. With support from organizations such as NIHFCU, GWCI can continue to serve health care professionals at all levels in the D.C. area.”

Mandi Pratt-Chapman, associate director of community programs for GWCI; Vince Chiappinelli, Ph.D., associate vice president for health affairs and associate dean, SMHS; and, Juli Anne Callis, National Institutes of Health Federal Credit Union president and CEO, lead a partnership between NIHFCU and GWCI to support a five-event lecture series and an online training program





2012 GW HOSPITAL CANCER
REGISTRY ANNUAL REPORT

THE GEORGE WASHINGTON UNIVERSITY HOSPITAL 2012 CANCER REGISTRY ANNUAL REPORT (BASED ON 2011 CANCER DATA)

The GW cancer registry has grown for the past five years. The number of patients diagnosed and/or treated (analytic cases) at the GW Hospital increased from 1,197 in 2007 to 1,333 in 2011 (Figure 1). Of these patients, 1,092, or 82 percent, were diagnosed and treated at GW Hospital. The remaining 241 cases, or 18 percent, were only diagnosed and/or treated elsewhere.

The five major cancer sites treated at GW Hospital continue to be breast, lung, prostate, colon, and kidney cancers (Table 1). There was an increase in thyroid and other endocrine glands, nervous, and digestive systems as well as a significant increase in head and neck cancers and lymphoma-hematopoietic cancers. Lymphoma-hematopoietic cancers rose from 5.7 percent in 2010 to 9.7 percent in 2011, while head and neck cancers increased from 3.8 percent in 2010 to 5.3 percent in 2011 (Figure 2).

Table 2A and 2B show a comparison between GW Hospital cancer cases and national Ameri-

can Cancer Society (ACS) data for male and female patients. While there was a slight decrease in lung cancer among both the male and female populations at GW, patient data indicates a significant increase in leukemia cases that is even higher than it is among the ACS population. Thyroid cancer is a major female cancer for both the GW Hospital (6.7 percent) and ACS (5 percent) populations when compared to the male population at GW Hospital (2.3 percent) and ACS (1.0 percent). The rates of liver cancer cases increased from 0.9 percent in 2010 to 2.0 percent among male patients in 2011. Pancreatic cancer became a major cancer among GW Hospital's female patient population in 2011, while stomach cancer is a major cancer for the GW Hospital's male and female populations for the year. This was a contributing factor in the increased colorectal cancer observed in 2011 at GW Hospital.

FIGURE 1: 2011 TREND IN NUMBER OF NEW CANCER PATIENTS
DIAGNOSED AND/OR TREATED AT GW HOSPITAL

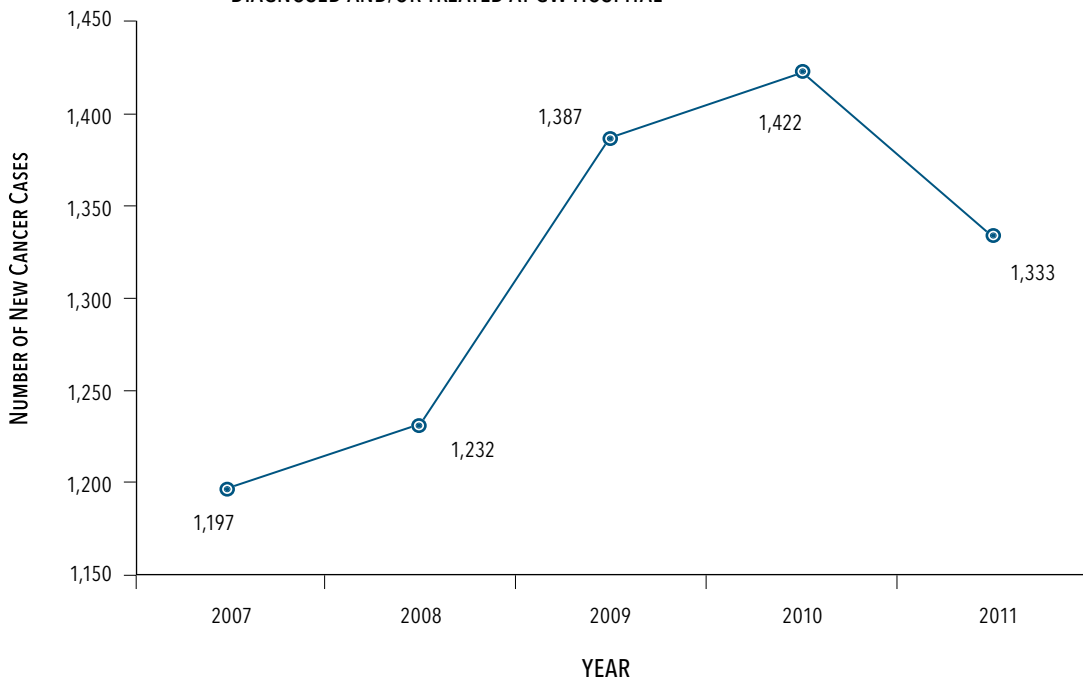


TABLE 1: The GW Hospital Cancer Registry 2011 Cancer Cases by Anatomic Site

Primary Site	# Cases	% Cases	Class of Cases		Race***			AJCC Stage at Diagnosis (Analytic Cases Only)						
			Analytic	Non-Analytic**	W	B	O	0	I	II	III	IV	NA	UNK
HEAD AND NECK	40	2.6	34	6	24	13	3	0	7	5	6	12	4	0
Tongue	6	0.4	5	1	5	1	0	0	2	1	0	2	0	0
Oral Cavity	3	0.3	2	1	2	1	0	0	0	0	0	1	1	0
Salivary Glands	6	0.4	5	1	2	2	2	0	2	1	0	2	0	0
Tonsil	2	0.1	2	0	2	0	0	0	0	0	0	2	0	0
Oro- & Hypo-Pharynx	6	0.4	5	1	3	3	0	0	0	2	1	2	0	0
Naso Pharynx	2	0.1	2	0	2	0	0	0	1	0	0	1	0	0
Nasal Cavity & Sinuses	2	0.1	1	1	2	0	0	0	0	0	0	1	0	0
Larynx	10	0.6	9	1	4	5	1	0	2	1	4	1	1	0
Thymus	3	0.2	3	0	2	1	0	0	0	0	1	0	2	0
DIGESTIVE SYSTEM	141	8.9	130	11	56	60	25	2	31	25	27	40	5	0
Esophagus	15	0.9	15	0	9	4	2	0	6	3	1	5	0	0
Stomach	8	0.5	7	1	3	1	4	0	2	0	3	2	0	0
Small Intestine	10	0.6	9	1	2	6	2	0	1	2	1	5	0	0
Colon/Rectum	57	3.6	51	6	20	29	8	2	11	11	13	9	5	0
Anal Canal	9	0.6	9	0	4	4	1	0	2	4	3	0	0	0
Liver	14	0.9	11	3	3	7	4	0	4	0	4	3	0	0
Gall bladder/Biliary	8	0.5	8	0	3	3	2	0	3	1	1	3	0	0
Pancreas	20	1.3	20	0	12	6	2	0	2	4	1	13	0	0
RESPIRATORY SYSTEM	133	8.5	126	7	63	61	9	0	58	15	18	32	2	1
Bronchus & Lung	132	8.4	125	7	62	61	9	0	57	15	18	32	2	1
Pleura	1	0.1	1	0	1	0	0	0	1	0	0	0	0	0
SOFT TISSUES	3	0.2	2	1	0	1	2	0	0	1	1	0	0	0
BONE	2	0.2	2	0	1	1	0	0	0	0	1	1	0	0
LYMPHOMA	58	3.7	38	20	19	13	26	0	10	8	2	18	0	0
Non-Hodgkin's	43	2.7	26	17	14	8	21	0	6	3	1	16	0	0
Hodgkin's	15	1.0	12	3	5	5	5	0	4	5	1	2	0	0
BREAST	333	21.1	298	35	128	144	61	88	96	82	23	9	0	0

NOTE:

* Analytic - initially diagnosed at GW Hospital and all or part of first course of therapy at GW Hospital or case diagnosed elsewhere and all or part of first course of therapy at GW Hospital.

** Non-Analytic case - initially diagnosed and treated elsewhere, referred to GW Hospital for recurrence or subsequent therapy and physician office cases.

*** Race - W=White; B=Black; O=Other

AJCC staging at diagnosis is either clinical or pathological staging.

TABLE 1: The GW Hospital Cancer Registry 2011 Cancer Cases by Anatomic Site

Primary Site	# Cases	% Cases	Class of Cases		Race***			AJCC Stage at Diagnosis (Analytic Cases Only)						
			Analytic	Non-Analytic **	W	B	O	0	I	II	III	IV	NA	UNK
FEMALE GENITAL SYSTEM	63	3.9	42	21	22	29	12	2	15	3	12	9	1	0
Cervix Uteri	17	1.1	5	12	6	7	4	2	2	0	0	1	0	0
Corpus Uteri	29	1.8	24	5	10	15	4	0	10	2	9	2	1	0
Ovary	13	0.8	10	3	4	6	3	0	1	1	3	5	0	0
Vulva/Vagina	4	0.2	3	1	2	1	1	0	2	0	0	1	0	0
MALE GENITAL SYSTEM	361	22.8	341	20	172	132	57	0	12	233	83	12	1	0
Prostate Gland	348	22.0	329	19	163	131	54	0	0	233	83	12	1	0
Testis	13	0.8	12	1	9	1	3	0	12	0	0	0	0	0
URINARY SYSTEM	220	13.9	211	9	127	65	28	54	93	17	35	10	2	0
Urinary Bladder	87	5.5	80	7	48	23	16	44	19	7	8	1	1	0
Kidney	109	6.9	107	2	64	36	9	0	67	9	24	7	0	0
Renal Pelvis/Ureter	24	1.5	24	0	15	6	3	10	7	1	3	2	1	0
CENTRAL NERVOUS SYSTEM	53	3.3	50	3	24	14	15	0	0	0	0	0	50	0
Brain/Spinal Cord	37	2.3	34	3	17	8	12	0	0	0	0	0	34	0
Meninges	16	1.0	16	0	7	6	3	0	0	0	0	0	16	0
ENDOCRINE SYSTEM	58	3.6	48	10	30	14	14	0	28	3	6	4	7	0
Thyroid Gland	51	3.2	41	10	28	9	14	0	28	3	6	4	0	0
Other Glands	7	0.4	7	0	2	5	0	0	0	0	0	0	7	0
HEMATOPOIETIC NEOPLASMS	64	4.1	29	35	28	14	22	0	0	0	0	0	29	0
Multiple Myeloma	14	0.9	7	7	6	4	4	0	0	0	0	0	7	0
Leukemia	38	2.4	17	21	19	6	13	0	0	0	0	0	17	0
Other	12	0.8	5	7	3	4	5	0	0	0	0	0	5	0
SKIN	36	2.3	27	9	28	6	2	0	11	4	4	1	7	0
Melanoma	24	1.6	20	4	21	2	1	0	11	4	4	1	0	0
Other Skin Cancer	12	0.7	7	5	7	4	1	0	0	0	0	0	7	0
EYE	1	0.1	0	1	1	0	0	0	0	0	0	0	0	0
UNKNOWN	13	0.8	6	7	2	5	6	0	0	0	0	0	6	0
ALL SITES	1579	100.0	1384	195	725	572	282	146	361	396	218	148	114	1

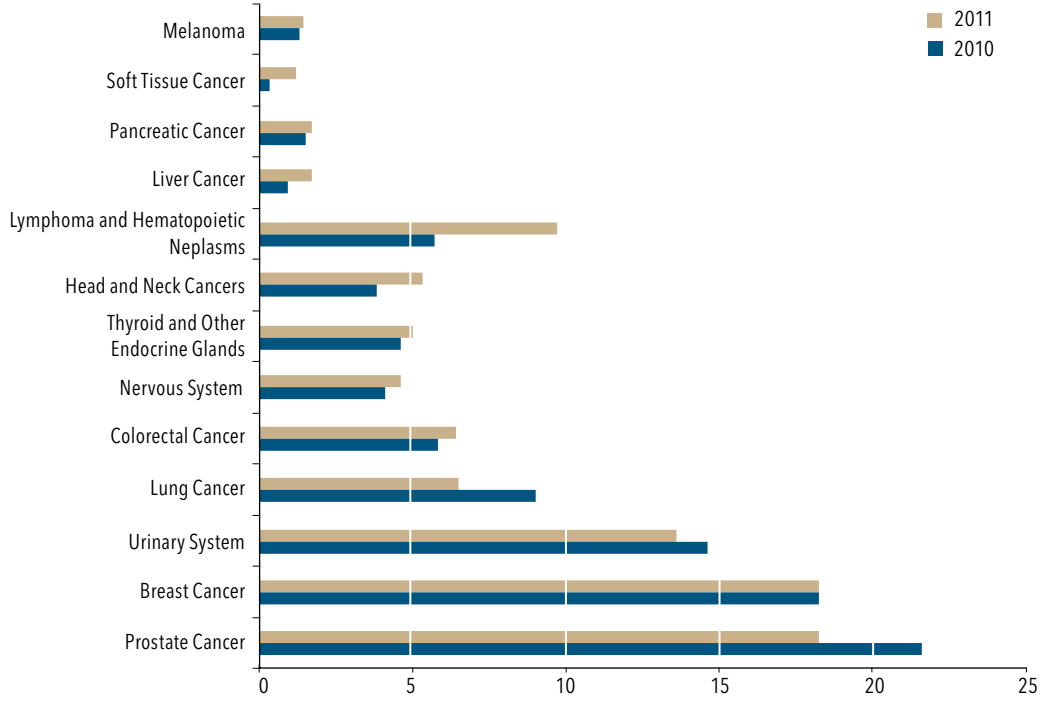
**TABLE 2A: 2008-11 ANALYTIC CASES –
THE MOST FREQUENT CANCERS IN MALE**

Primary site	2011 cases (%)				2010 cases (%)				2009 cases (%)			
	GWUH		ACS		GWUH		ACS		GWUH		ACS	
Prostate	243	(34.6)	240,890	(29.0)	310	(40.0)	217,730	(28.0)	329	(43.6)	192,280	(25.0)
Kidney/Renal Pelvis	76	(10.8)	37,120	(5.0)	83	(10.7)	35,370	(4.0)	81	(10.7)	35,430	(5.0)
Lung	44	(6.3)	115,060	(14.0)	63	(8.0)	116,750	(15.0)	72	(9.5)	116,090	(15.0)
Urinary Bladder	37	(5.3)	52,020	(6.0)	52	(6.7)	52,760	(7.0)	60	(8.0)	52,810	(7.0)
Colon-Rectum	39	(5.5)	71,850	(9.0)	34	(4.4)	72,090	(9.0)	29	(4.0)	75,590	(10.0)
Leukemia/Other	50	(7.1)	25,320	(3.0)	31	(4.0)	24,690	(3.0)	13	(1.7)	25,630	(3.0)
Brain/ Other CNS	28	(4.0)	12,260	(2.0)	29	(3.7)	11,980	(1.5)	19	(2.5)	12,010	(2.0)
Non-Hodgkin's Lymphoma	19	(2.7)	36,060	(4.0)	20	(2.6)	35,380	(4.0)	25	(3.3)	35,990	(5.0)
Thyroid	16	(2.3)	11,470	(1.0)	16	(2.1)	11,890	(1.5)	8	(1.0)	11,070	(1.0)
Liver	14	(2.0)	19,260	(2.0)	7	(0.9)	10,740	(1.0)	8	(1.0)	16,410	(2.0)
Stomach	14	(2.0)	13,120	(2.0)	14	(1.8)	12,730	(2.0)	3	(0.4)	12,820	(2.0)
Testis	13	(1.8)	8,290	(1.0)	18	(2.3)	8,480	(1.0)	12	(1.6)	8,400	(1.0)
Other	110	(15.6)	179,580	(22.0)	99	(12.8)	179,030	(23.0)	95	(12.7)	171,600	(22.0)
TOTAL	703	(100.0)	822,300	(100.0)	776	(100.0)	789,620	(100.0)	754	(100.0)	766,130	(100)

**TABLE 2B: 2008-11 ANALYTIC CASES –
THE MOST FREQUENT CANCERS IN FEMALE**

Primary Site	2011 cases (%)				2010 cases (%)				2009 cases (%)			
	GWUH		ACS		GWUH		ACS		GWUH		ACS	
Breast	239	(37.9)	230,480	(30.0)	256	(39.7)	207,090	(28.0)	297	(46.8)	192,370	(27.0)
Lung	42	(6.7)	106,070	(14.0)	65	(10.0)	105,770	(14.0)	54	(8.5)	103,350	(14.0)
Kidney/ Renal Pelvis	42	(6.7)	23,800	(3.0)	39	(6.0)	22,870	(3.0)	50	(7.8)	22,330	(3.0)
Thyroid	42	(6.7)	36,550	(5.0)	40	(6.2)	33,930	(5.0)	34	(5.4)	27,200	(4.0)
Leukemia/Other	39	(6.2)	19,280	(3.0)	15	(2.3)	18,360	(2.0)	12	(1.9)	19,160	(3.0)
Brain/ Other CNS	32	(5.1)	10,080	(1.0)	30	(4.7)	10,040	(1.0)	33	(5.2)	10,060	(1.0)
Colon-Rectum	32	(5.1)	69,360	(9.0)	48	(7.4)	70,480	(10.0)	22	(3.5)	71,380	(10.0)
Urinary Bladder	24	(3.8)	17,230	(2.0)	33	(5.1)	17,770	(2.0)	21	(3.3)	18,170	(3.0)
Corpus Uterine	15	(2.4)	46,470	(6.0)	15	(2.3)	43,470	(6.0)	23	(3.6)	42,160	(6.0)
Non-Hodgkin's Lymphoma	11	(1.7)	30,300	(4.0)	16	(2.5)	30,160	(4.0)	12	(1.9)	29,990	(4.0)
Stomach	10	(1.6)	8,400	(1.0)	9	(1.4)	8,270	(1.0)	4	(0.6)	8,310	(1.0)
Pancreas	10	(1.6)	21,980	(3.0)	9	(1.4)	21,770	(3.0)	10	(1.6)	21,420	(3.0)
Other	92	(14.5)	154,370	(19.0)	71	(11.0)	154,710	(21.0)	63	(10.0)	147,320	(21.0)
TOTAL	630	(100.0)	774,370	(100.0)	646	(100.0)	739,940	(100.0)	635	(100.0)	713,220	(100.0)

FIGURE 2: TREND FOR NEW ANALYTIC CASES BY ANATOMIC SITES AND YEAR OF ADMISSION





BREAST CANCER REPORT

BREAST CANCER

CANCER REGISTRY 2012 ANNUAL REPORT | BY LISA MCGRAIL, M.D., AND CHRISTINE TEAL, M.D.

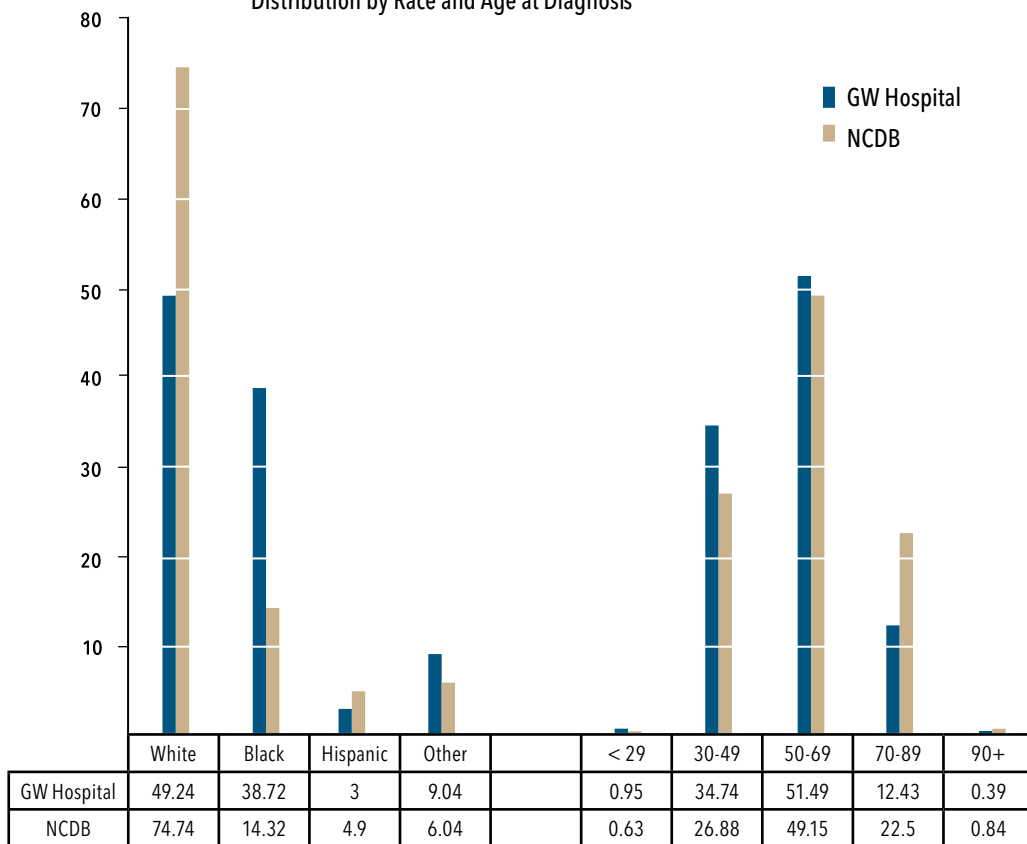
Breast cancer is the most commonly diagnosed cancer in women. According to the American Cancer Society's *2011 Facts and Figures*, an estimated 232,620 new cases of breast cancer were diagnosed in women and men in the United States, resulting in approximately 39,970 deaths. Despite the high frequency of breast cancer diagnosis, the rate of incidence has been declining since 2000. In women, breast cancer ranks second only to lung cancer as a cause of cancer death. However, mortality rates for breast cancer have been decreasing since 1990, which can be attributed to earlier detection, improvement in treatments, and decrease in incidence.

In this review from the George Washington University Hospital (GW Hospital), we included all patients diagnosed and/or treated here for invasive and in situ breast cancer. We relied

on the American Joint Committee on Cancer (AJCC) staging system, but when pathologic staging was not performed, we used Clinical staging. Between 2000 and 2009, a total

GW Hospital has a higher survival rate across all stages of breast cancer when compared with the NCDB.

Figure 1: GW Hospital and NCDB Breast Cancer 2000-09
Distribution by Race and Age at Diagnosis



of 2,191 patients with breast cancer were diagnosed or treated at GW Hospital. These cases were analyzed and compared to those reported to the National Cancer Data Base (NCDB) over the same period.

As shown in **Figure 1**, when compared to the NCDB, GW Hospital has a more racially mixed breast cancer patient population (GW Hospital: 49 percent Caucasian, 39 percent African-American; NCDB: 75 percent Caucasian, 14 percent African-American). This is reflective of the community that GW Hospital serves. The percentage of in situ versus invasive breast disease seen at GW Hospital is similar to the NCDB.

Figure 2 demonstrates that when broken down by stage, GW Hospital diagnoses minority

women at earlier stages compared to the NCDB (GW Hospital stage I: 37 percent African-American, 41 percent Hispanic; NCDB: 28 percent African-American, 30 percent Hispanic). This illustrates GW Hospital's commitment to community outreach, access, and education regarding early annual screening. GW Hospital has a younger population of patients compared to the NCDB series (< 49: GW Hospital 36 percent vs. NCDB 28 percent; 70+: GW Hospital 13 percent vs. NCDB 23 percent). The overall distribution of disease stage, when not broken out for race, is similar to the NCDB, as demonstrated in **Figure 2**.

Based on **Figure 3**, a similar percentage of Stage 0 and Stage I patients undergo breast-conserving surgery in the GW Hospital and

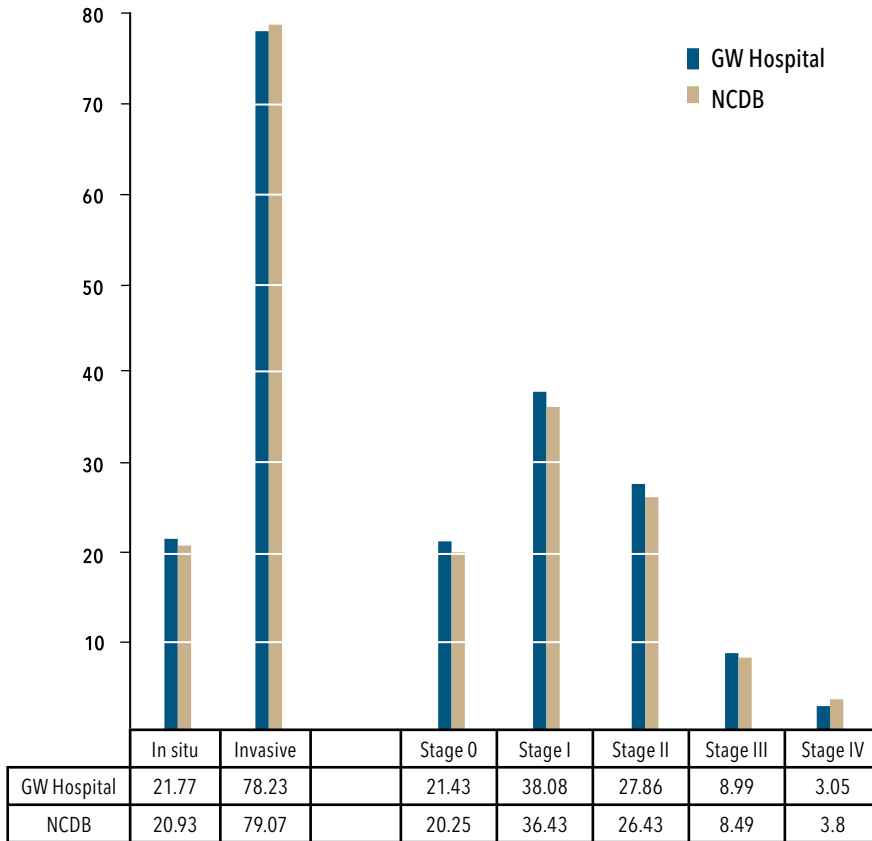
39,970 **Number of deaths from breast cancer in the U.S. in 2011**

28.3* **Mortality rate from breast cancer in Washington, D.C., highest in the country.**

24.3* **Mortality rate from breast cancer nationally**

* per 100,000, age adjusted to the U.S. standard population.

Figure 2: GW Hospital and NCDB Breast Cancer 2000–09
Distribution by Tumor Behavior and AJCC Stage



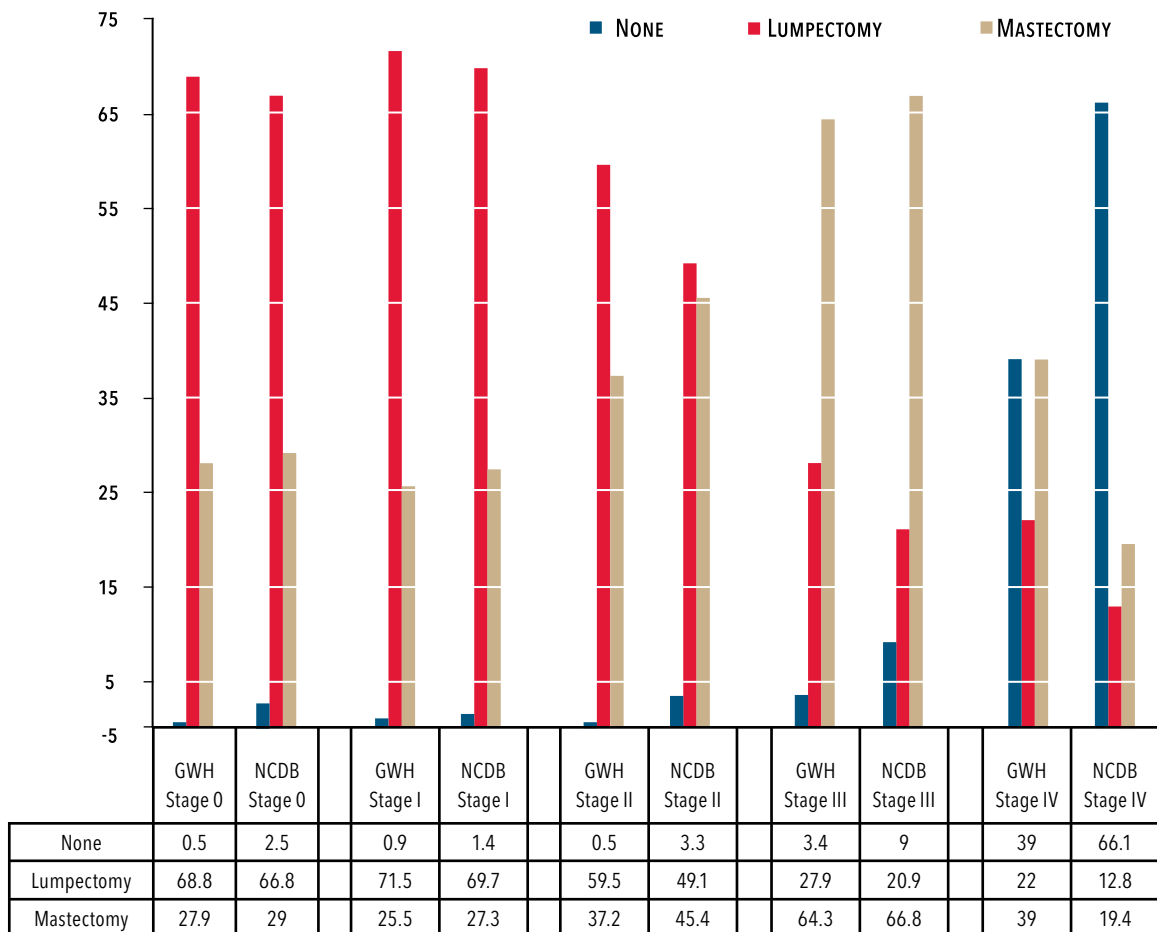
NCDB data. However, among Stage II and Stage III patients, a higher percentage undergo breast conserving surgery at GW Hospital (Stage II: 60 percent vs. 50 percent; Stage III: 28 percent vs. 21 percent) compared to the NCDB series. For Stage IV patients there are more mastectomies performed at GW Hospital compared to NCDB (39 percent vs. 20 percent, respectively). This may reflect the trend for more aggressive care in Stage IV patients who have minimal volume of distant disease.

Figure 4 illustrates overall survival rates. The NCDB has data only for years 2003–05 while

GW Hospital has data from 2000–07. For the purposes of this report we included all available data. As shown, for all stages, GW Hospital’s five-year overall survival rate is superior when compared to that of NCDB’s (Figure 4).

Table 1 compares data from GW Hospital to that of NCDB for three Standard of Care questions. We find that GW Hospital has a higher rate of administering radiation for women under the age of 70 who undergo breast conserving surgery. GW Hospital also has a higher compliance rate in administering combination chemotherapy to hormone insensitive women

FIGURE 3: GW HOSPITAL AND NCDB BREAST CANCER 2000-09 DISTRIBUTION OF FIRST COURSE OF SURGERY BY AJCC STAGE

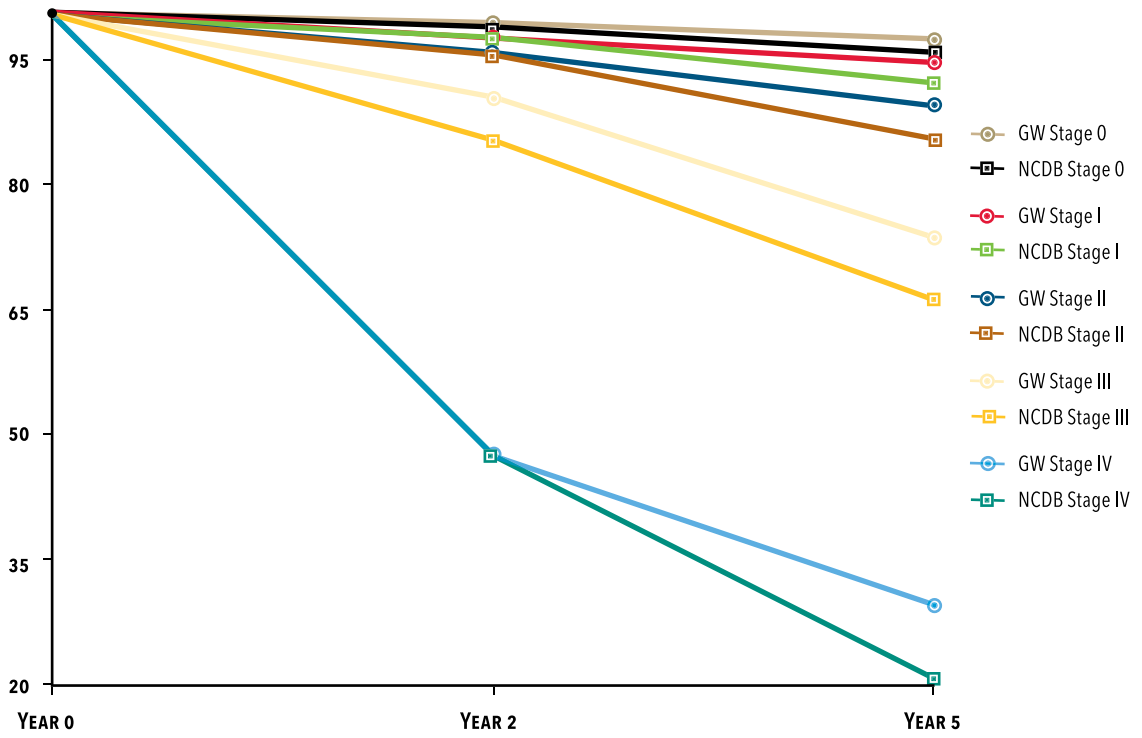


under the age of 70. Furthermore, GW Hospital has a high compliance rate in administering appropriate hormone therapy to hormone-sensitive tumors.

This report illustrates that data from GW Hospital's breast cancer program is on trend with that from the NCDB with a few notable exceptions. GW Hospital has a more diverse

and younger population. Despite this, patients at GW Hospital are diagnosed at earlier stages and undergo more breast conservation therapy. Most reflective of an outstanding multidisciplinary breast cancer program, GW Hospital has a higher survival rate across all stages of breast cancer when compared with the NCDB.

FIGURE 4: BREAST CANCER – GW HOSPITAL 2000–07 AND NCDB 2003–05
 YEAR 2 AND YEAR 5 OVERALL SURVIVAL RATE BY AJCC STAGE





LYMPHOMA REPORT

Lymphoma is a cancer of the lymphatic system and is classified as either being non-Hodgkin's lymphoma or Hodgkin's. The most common non-Hodgkin's lymphomas (NHL) are follicular lymphoma and diffuse large B-cell lymphoma. According to the American Cancer Society's 2012 *Facts and Figures*, an estimated 70,130 new cases of lymphoma were diagnosed in the United States, resulting in approximately 20,130 deaths. The death rates for NHL have been decreasing in both men and women since 1998, reflecting improvements in treatment.

In this lymphoma report from the George Washington University Hospital (GW Hospital), we focused on all patients with NHL. We relied on the American Joint Committee on Cancer (AJCC) staging system. When pathologic staging was not performed, clinical staging was used. Between 2000 and 2011, a total of 242 patients with non-Hodgkin's lymphoma were diagnosed or treated at GW Hospital. These cases were compared to cases diagnosed at teaching and research hospitals in the United States during the period of 2000-2010 and reported to the National Cancer Data Base (NCDB).

Based on **Figure 1**, GW Hospital sees a higher percentage of patients diagnosed with early stage NHL compared to the NCDB data (43 percent vs. 29 percent, respectively). There are more Caucasians than African-Americans in both the GW Hospital and NCDB series (56 percent vs. 32 percent at GW Hospital and 78 percent vs. 10 percent in NCDB data).

In the early stages of follicular lymphoma, the standard of care is observation, and occasionally treated with chemotherapy or ra-

diation. A similar trend in treatment is seen between the GW Hospital data and NCDB series in **Figure 3**. In the advanced stages, chemotherapy is the preferred treatment as demonstrated in both the GW Hospital and NCDB data (71 percent vs. 72 percent).

Figure 4 summarizes the therapy for diffuse large B-cell lymphoma by stage. A high percentage of patients receive chemotherapy at all stages in both the NCDB series and GW Hospital. Furthermore, 33 percent of patients at GW Hospital with early localized disease also received radiation, compared to 31 percent of similar patients in the NCDB. Based on the data, it is evident that the general treatment principles for diffuse large B-cell lymphoma between GW Hospital and NCDB are similar.

The overall survival data for diffuse large B-cell lymphoma at GW Hospital is superior to SEER in both early and late stages. As seen in **Figure 5**, the five-year overall survival rate of GW Hospital patients was better than the Surveillance, Epidemiology and End Results (SEER) rates in both early localized disease (75 percent vs. 62 percent) and advanced stages (56 percent vs. 50 percent). For follicular lymphoma, the overall survival rates at GW Hospital beyond two years are superior to the SEER network, particularly for the 10-year overall survival rate (87 percent vs. 62 percent).

In conclusion, when compared to NCDB data, GW Hospital provides similar treatment for early and advanced stage diffuse large B-cell lymphoma, as well as for follicular lymphoma. Our overall survival rates compare favorably for both diseases across all stages compared to the national database.

FIGURE 1: GW HOSPITAL 2000-01 AND NCDB 2000-10 FOLLICULAR NON-HODGKIN'S LYMPHOMA – DISTRIBUTION BY AJCC STAGE AT DIAGNOSIS

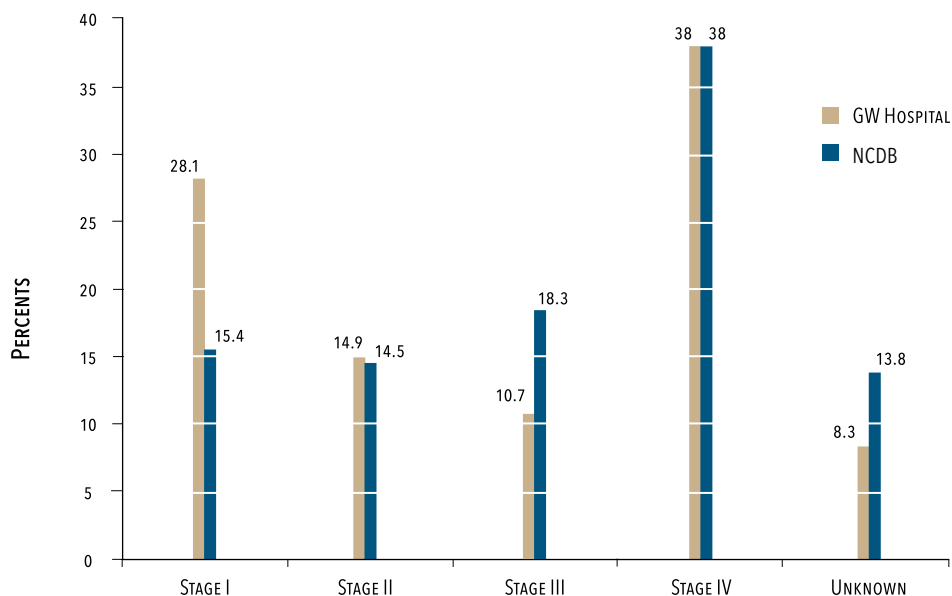


FIGURE 2: GW HOSPITAL 2000-01 AND NCDB 2000-10 FOLLICULAR NON-HODGKIN'S LYMPHOMA – RACE DISTRIBUTION AT DIAGNOSIS

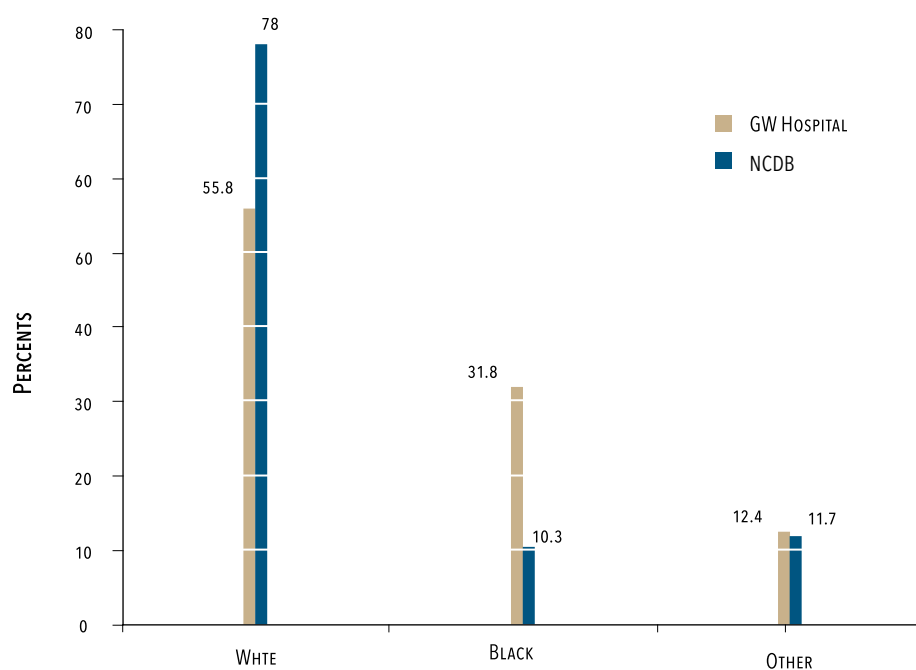


FIGURE 3: GW HOSPITAL 2000-01 AND NCDB 2000-10 FOLLICULAR MALIGNANT LYMPHOMA – TREATMENT BY AJCC STAGE

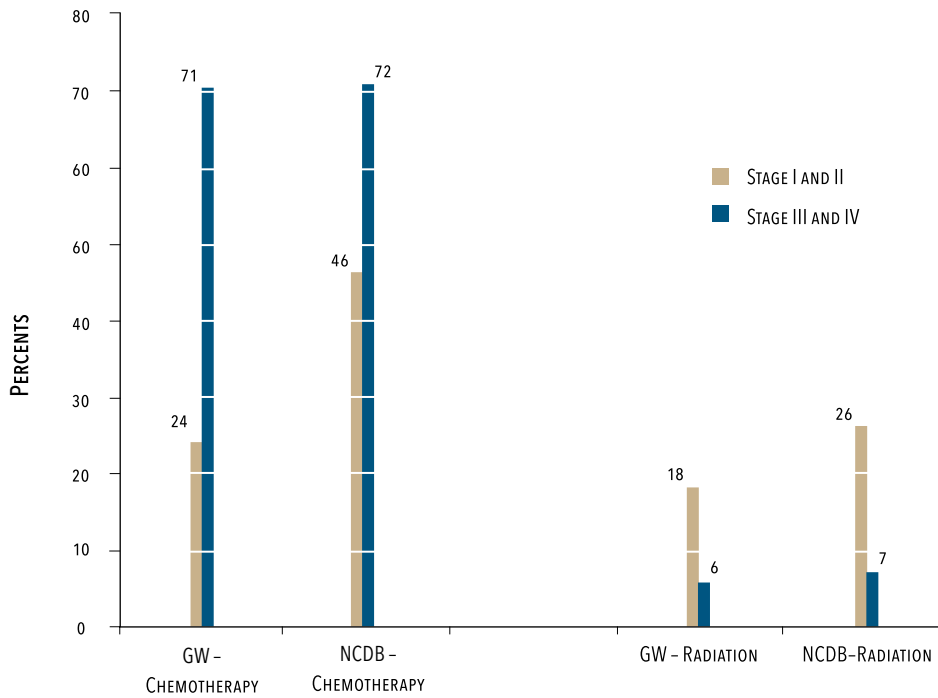


FIGURE 4: GW HOSPITAL 2000-01 AND NCDB 2000-10 DIFFUSE LARGE B-CELL LYMPHOMA – TREATMENT BY AJCC STAGE

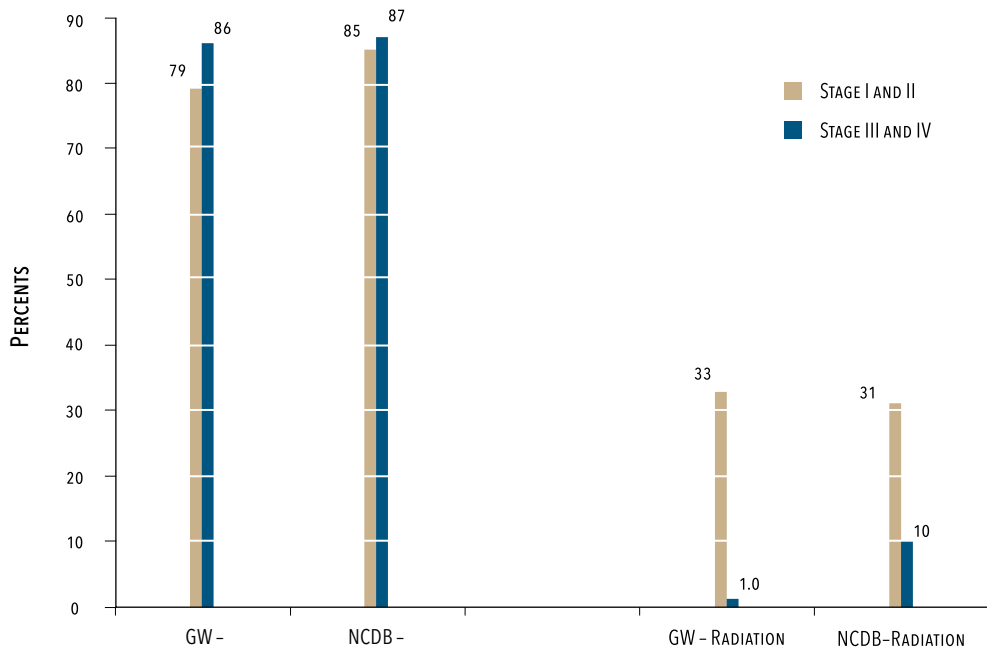


FIGURE 5: GW HOSPITAL AND SEER DATA 2000-07 DIFFUSE LARGE B-CELL LYMPHOMA – YEARS 1, 2, AND 5 OVERALL SURVIVAL BY STAGE

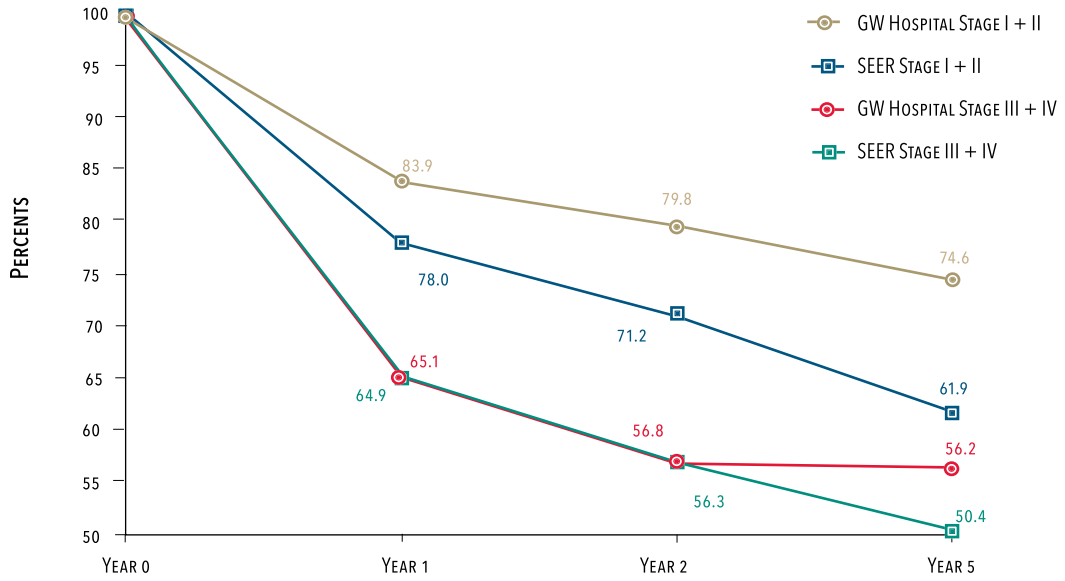
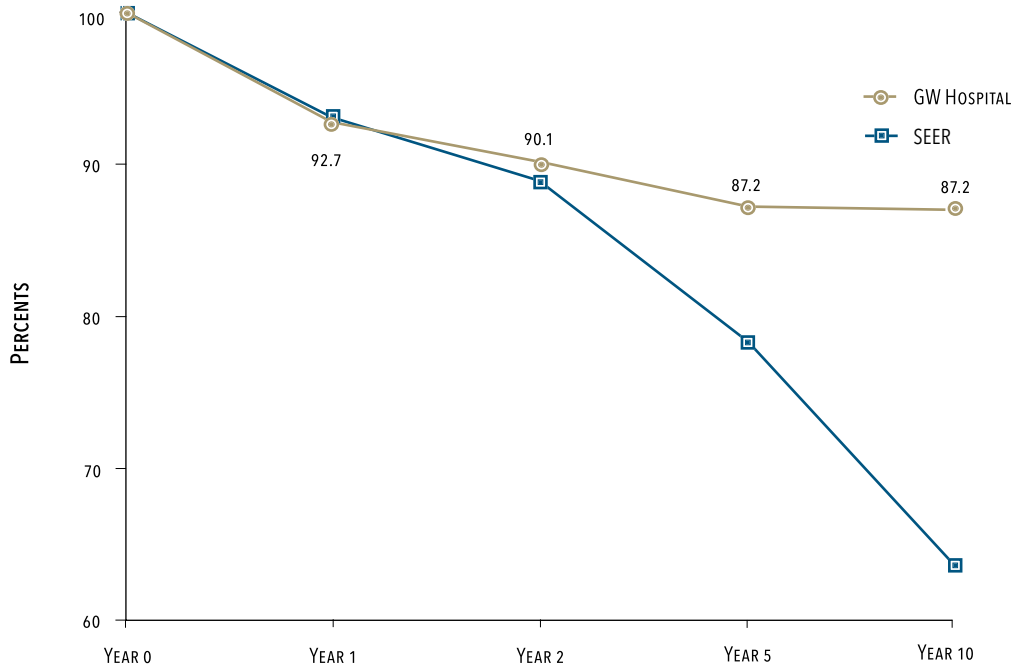
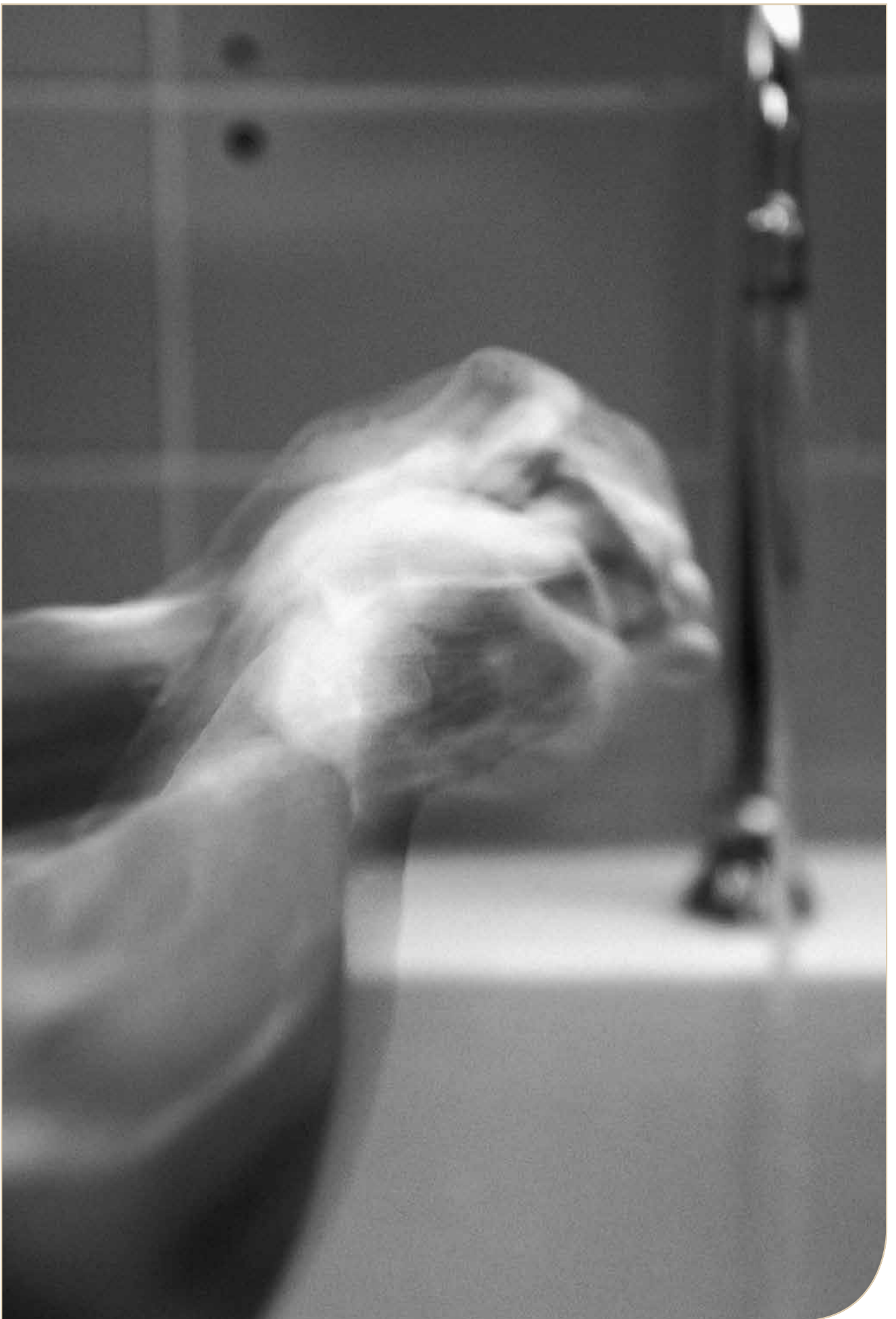


FIGURE 6: GW HOSPITAL AND SEER 2000-07 FOLLICULAR MALIGNANT LYMPHOMA – OVERALL SURVIVAL BY YEAR





THE GEORGE WASHINGTON UNIVERSITY AND GW CANCER INSTITUTE RESOURCES

The George Washington University Hospital
900 23rd St., N.W.
Washington, D.C. 20037
(202) 715-4000
1-888-4GW-DOCS
www.gwhospital.com

The George Washington University
Medical Faculty Associates
2150 Pennsylvania Ave., N.W.
Washington, D.C. 20037
(202) 741-3000
www.gwdocs.com

The George Washington Cancer Institute
2030 M St., N.W., 4th Floor
Washington, D.C. 20036
(202) 994-2449
www.gwcancerinstitute.org

The Dr. Cyrus and Myrtle Katzen
Cancer Research Center
2150 Pennsylvania Ave., N.W., Suite 1-200
Washington, D.C. 20037
(202) 741-2250
www.katzencancer.org

Breast Care Center
2150 Pennsylvania Ave., N.W., D.C. Level
Washington, D.C. 20037
(202) 741-3270

Cancer Education and Outreach
2300 Eye St., N.W., Suite 514
Washington, D.C. 20037
(202) 994-2062

Cancer Prevention and Control
2300 Eye St., N.W., Suite 403
Washington, D.C. 20037
(202) 994-1966

Cancer Registry
900 23rd St., N.W.
Washington, D.C. 20037
(202) 715-4383

Clinical Oncology
2150 Pennsylvania Ave., N.W., 3rd Floor
Washington, D.C. 20037
(202) 741-2210

Hematology/Oncology
2150 Pennsylvania Ave., N.W., 3rd Floor
Washington, D.C. 20037
(202) 741-2210

Pain Management Center
2131 K St., N.W.
Washington, D.C. 20037
(202) 715-4599

Pathology
900 23rd St., N.W.
Washington, D.C. 20037
(202) 715-4665

Patient Navigation Program
2030 M St., N.W., 4th Floor
Washington, D.C. 20036
(202) 994-2214

Mobile Mammography Program
2150 Pennsylvania Ave., N.W.,
D.C. Level
Washington, D.C. 20037
(202) 741-3020

Radiation Oncology
725-A 23rd St., N.W.
(at the corner of H and 23rd streets)
Washington, D.C. 20037
(202) 715-5120

Radiology
900 23rd St., N.W.
Washington, D.C. 20037
(202) 715-5183

Rehabilitation Services
2131 K St., N.W.
Washington, D.C. 20037
(202) 715-5655

Social Work Services
2150 Pennsylvania Ave., N.W., 3rd Floor
Washington, D.C. 20037
(202) 741-2218, (202) 994-2449

Surgery
2150 Pennsylvania Ave., N.W., 6th Floor
Washington, D.C. 20037
(202) 741-3200

Survivorship Program
2030 M St., N.W., 4th Floor
Washington, D.C. 20036
(202) 994-2449

THE GEORGE WASHINGTON UNIVERSITY AND GW CANCER INSTITUTE RESOURCES

Support Groups

Active Treatment (all cancers)
Wednesdays, 12:30 pm–1:30 pm
Katzen Cancer Center
Board Room
Medical Faculty Associates
2150 Pennsylvania Ave., N.W.
Washington, D.C. 20037
Facilitator: Jennifer Bires,
L.I.C.S.W., (202) 741-2218

**Breast Cancer Support Group
(after treatment)**
Medical Faculty Associates
2150 Pennsylvania Ave., N.W.
Katzen Cancer Center
Board Room
Washington, D.C. 20037
Facilitators: Elizabeth Hatcher
(202) 994-2215 and
Lauren Woodard, L.G.S.W.
(202) 994-7336

Caregivers' Support Group
Third Tuesday of every month
12:30 pm–1:45 pm
Katzen Cancer Center
Board Room
Medical Faculty Associates
2150 Pennsylvania Ave., N.W.
Washington, D.C. 20037
Facilitator: Jennifer Bires,
L.I.C.S.W., (202) 741-2218

**Kids Club: Support Group for
Children Whose Parent/Grandparent Has
Cancer (ages 6-11)**
Fourth Tuesday of every month
6 pm–7:30 pm
Katzen Cancer Center
Board Room
Medical Faculty Associates
2150 Pennsylvania Ave., N.W.
Washington, D.C. 20037
Facilitator: Jennifer Bires,
L.I.C.S.W., Katy Dolan, R.N.,
and Theo Wyche, R.N.,
(202) 741-2218

Look Good, Feel Better Program
10 am–Noon
Katzen Cancer Center
Board Room
Medical Faculty Associates
2150 Pennsylvania Ave., N.W.
Washington, D.C. 20037
Please call to confirm dates
Facilitator: Jennifer Bires,
L.I.C.S.W., (202) 741-2218

**Multiple Myeloma Group
(patients and family members)**
Third Friday of every month
Noon–1 pm
Katzen Cancer Center
Board Room
Medical Faculty Associates
2150 Pennsylvania Ave., N.W.
Washington, D.C. 20037
Facilitator: Jennifer Bires,
L.I.C.S.W., (202) 741-2218

Prostate Cancer Support Group
Second Tuesday of every month
6 pm–7:30 pm
Katzen Cancer Center
Board Room
Medical Faculty Associates
2150 Pennsylvania Ave., N.W.
Washington, D.C. 20037
Facilitator: Jennifer Bires,
L.I.C.S.W., (202) 741-2218

Spirituality Group
GW Center for
Integrative Medicine
Please call to confirm location
and times. Facilitator: Rabbi
Tamara Miller, (202) 731-2273

Reconnection and Revitalization
The George Washington University
Marvin Center
800 21 St., N.W.
Washington, D.C. 20037
Please call to confirmation
of location and times
Facilitator: Casey Miller
(202) 741-2218

**Young Adult Support Group
(19 to 39 years of age)**
Third Thursday of every month
6 pm–7:30 pm
Katzen Cancer Center
Board Room
Medical Faculty Associates
2150 Pennsylvania Ave., N.W.
Washington, D.C. 20037
Facilitator: Jennifer Bires,
L.I.C.S.W., (202) 741-2218

**Washington, D.C., Metropolitan Area
Brain Tumor Support Group**
First Thursday of every month,
6:30 pm–8:30 pm
Katzen Cancer Center
Board Room
Medical Faculty Associates
2150 Pennsylvania Ave., N.W.
Washington, D.C. 20037
Facilitator: Jennifer Bires,
L.I.C.S.W., (202) 741-2218

For more information about these support groups
and other supportive services:

JENNIFER BIRES, L.I.C.S.W.
(202) 741-2218
jbires@mfa.gwu.edu

This report is produced by the George Washington University School of Medicine
and Health Sciences' Department of Communications and Marketing.
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Otolaryngology

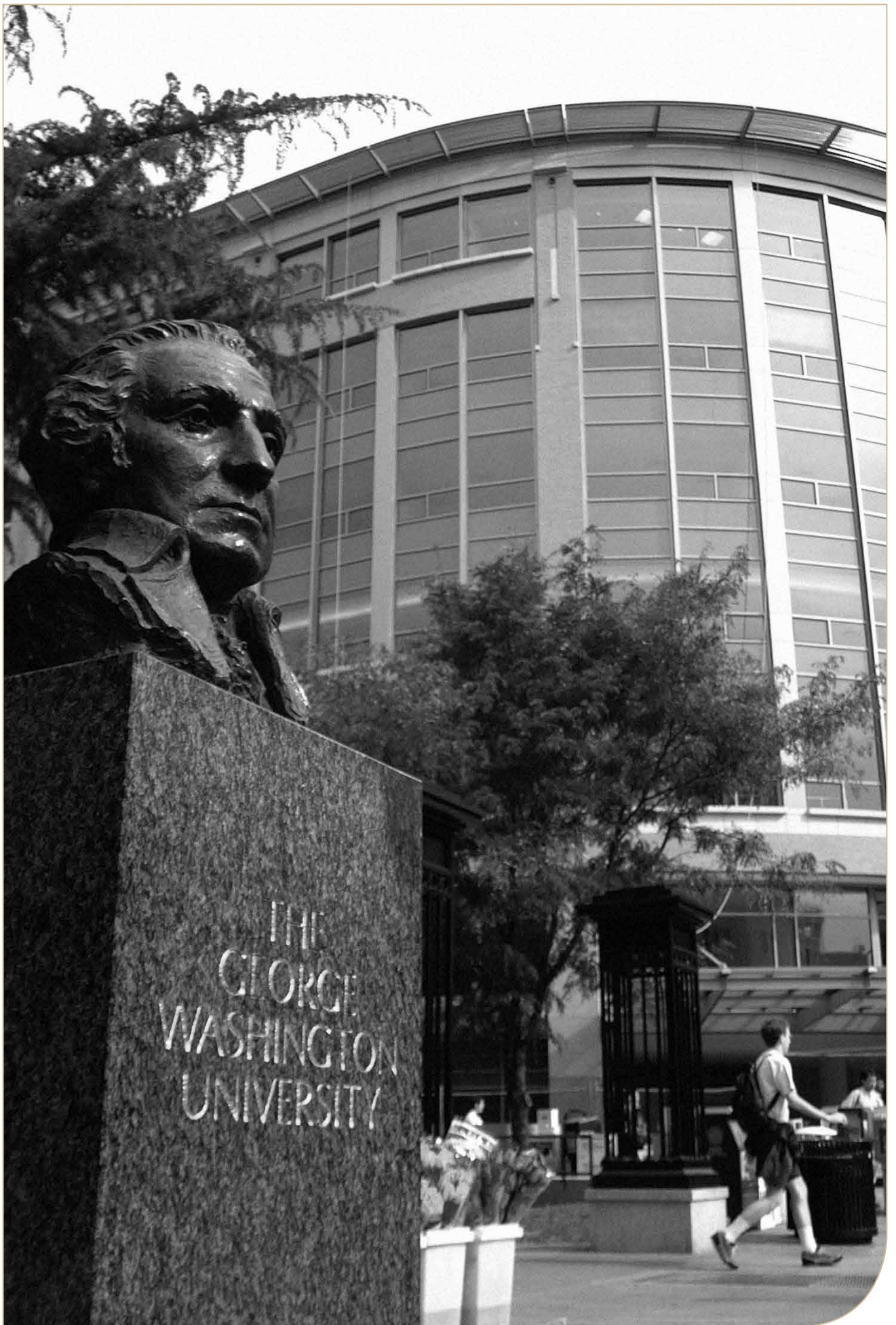
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*Chief/SurPathology
Director/Anatomic Pathology*

Anne Willis, M.A.
*Director/Division of Cancer
Survivorship*

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