The George Washington University

Cancer Program and Cancer Registry

Annual Report 2010

The George Washington University Cancer Institute
The George Washington University Hospital
The Dr. Cyrus and Myrtle Katzen Cancer Research Center

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Research, Compassionate Care, Education, and Service

LETTER FROM THE EXECUTIVE DIRECTOR

As we enter the second decade of the 21st century, we are on the precipice of a new era in cancer care and research — what is sometimes called P4 Medicine™: predictive, preventive, personalized, and participatory. These concepts have always been at the forefront of the GW Cancer Institute's (GWCI) strategic mission, and, through increased emphasis on translational research, as well as major grants for survivorship and patient navigation, they will continue to guide the institute.

With an eye toward becoming the preeminent cancer center in the Washington, D.C., metropolitan area, GWCI is battling cancer and cancer disparities by leveraging strengths in research, clinical care, and education and outreach initiatives; and by establishing key partnerships in the local community and beyond. These investments have positioned GWCI for rapid expansion in the coming years.

This year brought major developments in basic science research from the School of Medicine and Health Sciences. Under the leadership of Rakesh Kumar, Ph.D., Catharine Birch and William McCormick Endowed Chair of the Department of Biochemistry and Molecular Biology, we have added several new investigators to contribute to our understanding of the molecular and cellular biology of cancer. Just this winter, GW also announced the addition of Nobel Prize winner Ferid Murad, M.D., Ph.D., to the department, where, among other priorities, he will focus his research on glioblastoma, an aggressive type of brain tumor.

What's more, the outstanding physicians and clinical staff of the GW Medical Faculty Associates and GW Hospital have enabled us to increase our capacity to offer high-quality cancer screening, diagnosis, treatment, clinical trials, and comprehensive support services. Investments in people, programmatic development, and technology have aligned our clinical growth with our research strengths for maximum synergy and the development of trans-disciplinary cancer site teams focused on breast, prostate, and colorectal cancer.

Research and treatment are not always enough, however. GWCI continues to build its reputation as a community resource through education, outreach, prevention, patient navigation, and survivorship. Our initiatives are specifically targeted to help eliminate cancer disparities in a city that leads the nation with its burden of breast, prostate, and colorectal cancer. Our innovative survivorship and patient navigation programs have garnered major research grants from the Centers for Disease Control and the D.C. Cancer Consortium that promise to radically alter the landscape of patient care.

The achievements that fill this report, while just a sample of our larger body of work, are examples of the tremendous dedication of our physicians, nurses, researchers, students, and staff, as well as by our benefactors, partners, and friends who assist us in the fight against cancer. I invite all of you to read this report and to learn more about our efforts and our progress.

Sincerely,

STEVEN PATIERNO, PH.D.
EXECUTIVE DIRECTOR OF THE GWCI

PHOTOGRAPHY: DAWN MISKELL

LETTER FROM THE CHAIR

It is with pleasure that I introduce the 2010 annual report for the GW Cancer Program. We continue to show great progress in the expansion of our cancer services. The highlight of this year was the American College of Surgeons survey that was completed in September. After a careful review of our tumor registry and cancer conferences, GW was again granted full accreditation with commendation. These results reflect the hard work performed mainly by our registrar, Hong Nguyen , M.P.H., C.T.R., and her staff.

The registry maintains survival records of GW's cancer patients over the past three, five, and 10 years. Such records allow us to compare the lifespan of our patients to the Surveillance, Epidemiology, and End Results (SEER) national database of cancer patients, and we consistently meet or exceed national averages. During calendar year 2009, our tumor registry recorded 1,382 new patients who were diagnosed and treated at GW, compared to 1,225 cases in 2008, and 1,197 cases in 2007.

There are a number of additional steps forward that can be noted with great pride. First, the RapidArc — a device that permits more rapid and precise radiation directed toward cancerous tumors — was installed and tested and is now a functioning tool in our Division of Radiation Oncology.

In July, the Cancer Survivorship clinic began as a very successful collaboration between the GW Hospital, the GW Medical Faculty Associates, the GW Cancer Institute (GWCI), and Children's National Medical Center. It is now focused on transitioning patients who had been treated at Children's Hospital to the adult facilities of our medical center, but we expect it to soon begin offering services to all of our cancer patients. A special "thank you" should be extended to GWCI Executive Director Steven Patierno, Ph.D., and Mandi Pratt-Chapman, director of GWCI's Division of Cancer Survivorship for writing several successful grant applications that have brought more funding to this new and innovative program.

GWCI also has been highly successful in obtaining major grants to support the patient navigators at GW and other medical centers in the District of Columbia, as well as developing a National Cancer Survivorship Resource Center.

We welcome Rebecca Kaltman, M.D., assistant professor of Medicine, to our faculty in the Division of Hematology/Oncology. Kaltman brings her interest and enormous experience in treating breast cancer and counseling women at high risk for developing the disease.

Thanks to the hard work of Jeanny Aragon-Ching, M.D., assistant professor of Medicine in the Department of Hematology/Oncology, the number of clinical trials available to cancer patients at GW has approximately doubled over the past two years. We now have several important studies ongoing in prostate cancer, non-Hodgkin's lymphoma, breast cancer, and multiple myeloma.

Sincerely,

ROBERT S. SIEGEL, M.D.
CHAIR, CANCER COMMITTEE
DIRECTOR, DIVISION OF HEMATOLOGY AND ONCOLOGY

PHOTOGRAPHY: MICHAEL LEONG

The sky is the limit for cancer researchers affiliated with the GW Cancer Institute. With creativity and persistence, these scientists are working to secure a future where much of cancer is prevented, where treatments are personalized and precise, and where cancer disparities cease to exist.

PHOTOGRAPHY: HOLGER THOSS

RESEARCH

Over the past year, GW Cancer Institute (GWCI) members made significant strides toward the future, unveiling a slew of high-impact reports, awarding several highly competitive grants to aspiring cancer researchers, and recruiting a number of accomplished cancer scientists. The School of Medicine and Health Sciences Department of Biochemistry and Molecular Biology recently recruited Nobel Laureate Ferid Murad, M.D., Ph.D., to its faculty. Murad will conduct research in a number of key areas including cancer.

GW cancer researchers revealed the role of a key protein in controlling cell division, discovering a missing link in cell mitosis. Lead authors Poonam R. Molli, Ph.D., ex-postdoctoral fellow, and Da-Qiang Li, M.D., assistant research professor, both from GW's Department of Biochemistry and Molecular Biology, identified a protein, Arpc1b, that serves as both an activator as well as a substrate for Aurora A, an enzyme that plays a central role in cellular reproduction in normal cells but is overexpressed in several cancers. This revelation represents perhaps the earliest step in mitosis and helps explain what keeps the process in balance.

> "Asking a question and staying involved until you find the answer to close the loop is critical in scientific discovery."

The discovery, which was published in the *The Journal of Cell Biology*, is not only revolutionizing the way scientists think about key aspects of the cellular life cycle, but is also offering cancer researchers a new avenue for therapeutic interventions. Because the authors found that an over-expression of Arpc1b promotes tumorigenic properties of breast cancer cells, they hope that a drug can be created to suppress its activity, thus restoring this dynamic, yet tightly regulated, biological event.

"This discovery is the result of persistence and the commitment to scientific breakthroughs," says Rakesh Kumar, Ph.D., Catharine Birch and William McCormick Chair of the Department of Biochemistry and Molecular Biology. "Asking a question and staying involved until you find the answer to close the loop is critical in scientific discovery."

Additionally, **GW cancer scientists discovered an accomplice in breast cancer** — a master control switch with the power to set off a cascade of reactions orchestrated by a cancer-causing gene (or oncogene) named Wnt1. This executive molecule and its *modus operandi* were reported by lead author Kumar in the journal *Cancer Research*.

Although Wnt1 has been connected with breast cancer for nearly 30 years, the signals (other than mutations) that trigger it have remained largely unknown. The recent discovery — which revealed that cancer-causing signals from Wnt1 in human breast cancer cells are triggered by MTA1 (metastasis-associated protein 1) expression — may help explain why increased levels of MTA1 are oncogenic in certain types of breast cancer.

The work may also help clarify why cancer progression is correlated with some inflammation-inducers, since inflammation may drive MTA1. "We've raised the next level question," says Kumar, "and now

A GW study found race and ethnicity appear to affect diagnostic delay more than insurance status for women with breast abnormalities.

we're going back into the lab to ask if this pathway plays a role in inflammation-related cancer."

A major study, led by Heather J. Hoffman, Ph.D., assistant professor of Epidemiology and Biostatistics in the GW School of Public Health and Health Services, found that race and ethnicity appear to affect diagnostic delay more than insurance status for women with breast abnormalities. After reviewing the experiences of close to 1,000 local women who were screened for breast cancer between 1998 and 2009, Hoffman and her colleagues revealed that — among those with government or private insurance — **non-Hispanic black and Hispanic women waited more than twice as long for a definitive diagnosis than did non-Hispanic white women.**

The study also found that uninsured black women endured a diagnostic delay time (or the amount of time between an abnormal finding and the diagnosis) that was more than twice as long as that of black women with private insurance.

"We thought having health insurance would even the field among all women," said Hoffman. "We thought that insured women should have had the same rapid evaluation regardless of race and ethnicity, but we were wrong."

While these scientists were announcing discoveries, other GWCI researchers were just beginning to launch their own projects. Four particularly promising faculty members, recognized for independence and innovation early in their careers, were granted **Young Investigator Pilot awards** from GWCI's American Cancer Society Institutional Research Grant (ACSIRG).

One winner, Jeanny Aragon-Ching, M.D., assistant professor of Medicine in the Department of Hematology/Oncology, is investigating the role of circulating tumor cells in patients with prostate specific antigen (PSA)-only recurrence and its association with PSA doubling time. "About a third of patients treated for prostate cancer experience a return of the disease in the form of a rising PSA alone, but without evidence of cancer cells," explains Aragon-Ching. She will work to determine the yield of circulating tumor cells in these patients and establish its correlation with the PSA's rate of growth.

Another winner, Aleksandar Jeremic, Ph.D., assistant professor of Biological Science, is using his award to explore the role of proteins called SNAREs (Soluble NSF Attachment Protein Receptors) in pancreatic adenocarcinoma, one of the deadliest cancers. According to Jeremic, SNAREs are essential proteins that regulate cells' basic functions, but he believes they could also be a contributing factor in migration and metastasis. "Our project seeks to understand at the molecular level the machinery that propagates and disseminates pancreatic cancer cells throughout the body," Jeremic says. "If we can identify the components of the machinery, we can produce better selective drugs to target this cancer."

The third awardee, Irene Riz, Ph.D., assistant research professor of Anatomy and Regenerative Biology, was recognized for her research efforts on T cell acute lymphoblastic leukemia (T-ALL), which accounts for between 10 and 15 percent of pediatric cases and 25 percent of adult cases of leukemia. In comparison to other types of leukemia, T-ALL patients experience more severe symptoms, and roughly 30 percent don't survive therapy or die within the first two years following treatment.

"We expect to see a lot of big things coming from this year's winners," says Steven Patierno, Ph.D., executive director

GW scientists discovered an accomplice in breast cancer—a master control switch that can set off a cascade reaction orchestrated by WNT1.

of GWCI, Principal Investigator to the ACSIRG and chair of the of the Institutional Review Committee. "Their proposals were exciting, innovative, well-planned, and representative of GWCI's mission to bring diverse experiences and understanding to the fight against cancer."

Building upon its established and aspiring investigators, GWCI welcomed **four new cancer researchers to the Department of Biochemistry and Molecular Biology.**

Goberdhan Dimri, Ph.D., came to GW from NorthShore University Health System, a teaching affiliate of the University of Chicago Pritzker School of Medicine. His research focuses on the complex genetic changes in cells that lead to a loss of normal growth control mechanisms. In particular, he is interested in a family of genes that encode polycomb group proteins, such as BMI 1. The BMI 1 gene is usually over-expressed in cancer cells, turning off tumor suppressor genes and causing cancer cells to proliferate uncontrollably. Dimri hopes to help identify — and eventually eliminate — potential precursor cancer cells, halting the progression of deadly diseases such as breast cancer.

"I have followed Dr. Kumar's work for many years. He is a top scientist in the breast cancer research field," says Dimri. "So when I saw an opportunity to work with him, to be in Washington, D.C., and to be a part of the top-notch research going on in the department, I found it all very attractive. GW is a good fit for my research and a good place to grow."

Another recent recruit to the department is Jeong-Ho Kim, Ph.D., who most recently hails from the University of Southern Mississippi. In 2009, Kim received a $1-million grant from the National Institutes of Health to study the Warburg effect, a known hallmark of cancer. The Warburg effect causes cancer cells to prefer to metabolize glucose through glycolysis, even in the presence of abundant oxygen. Because the budding yeast *S. cerevisiae* also experiences the Warburg effect, Kim uses this organism as a model system to uncover the effect's molecular basis.

"We believe that a deeper understanding of the Warburg effect in yeasts will inform cancer biology, and may even suggest opportunities for developing therapeutic interventions," he explains.

The third new department member, Ray-Chang Wu, Ph.D., spent the last five years prior to his GW appointment conducting post-doctoral research at Baylor College of Medicine. Now at GW, Wu continues to study a pro-inflammatory cytokine that he identified called macrophage migration inhibitory factor (MIF). MIF is a potential molecular target for steroid receptor coactivators, a family of proteins that play a key role in the function of steroid hormone receptors, which, in turn, control gene expression and are important in the development of breast and prostate cancer. Even though anti-estrogen treatments are available to prevent estrogen receptors from functioning, "too many times the tumor comes back — and it comes back with a vengeance," says Wu. MIF, he hopes, will provide an answer to how these resistances develop and guide development of future medical interventions. The molecule too, he says, may help to understand why endocrine cancers prefer to metastasize to the bone.

GWCI was also pleased to welcome Wenge Zhu, Ph.D., assistant professor of Biochemistry and Molecular Biology, to its team of cancer researchers. An expert in DNA regulation and genome stability, Zhu recently identified that most cancer cells are sensitive to the suppression of geminin, a protein that inhibits DNA re-replication.

He found that depletion of geminin leads to apoptosis in cancer cells but not in normal cells, which benefit from other stabilizing mechanisms. "We think geminin is a very good target for cancer therapy," he says of his research that was patented by the NIH.

Since his arrival at GW in January 2010, Zhu has been exploring how geminin can be suppressed. While siRNA transfection — a process that can silence specific genes without affecting others — would be the ideal method, "the problem is how to deliver it," he explains. So, Zhu and his team — supported by a $750,000 NIH/NCI Pathway to Independence Award — are seeking molecules that mimic siRNA's function against geminin. He is optimistic that this project might translate a biological discovery into a life-saving therapy. "As with anything, the life of a researcher is hard at the beginning," Zhu says. "But if you work hard, and if you work smartly, it will pay off in the end."

In perhaps its biggest news of the year, GW announced that **a Nobel Laureate will lead a lab program in the Department of Biochemistry and Molecular Biology,** teach a course for undergraduates, and mentor graduate and medical students. Ferid Murad, M.D., Ph.D. — who, along with two colleagues, won the Nobel Prize in medicine in 1998 for discovering the first biological effects of nitric oxide — will direct part of his research agenda toward developing a treatment for glioblastoma, an extremely aggressive and lethal type of brain tumor.

Murad comes to GW from the University of Texas at Houston, where, among other roles, he serves as director emeritus of the Brown Foundation Institute of Molecular Medicine for the Prevention of Human Diseases. In his work with glioblastoma, Murad and colleagues have found ways to manipulate human tumor cells in culture so that when they are implanted in the brains of mice, life expectancy is increased four-fold. "Can we do that with humans?" he asks. "I don't know, but I hope so."

"Dr. Murad is more than a brilliant Nobel Laureate; he is a compassionate collaborator and mentor whose infectious intellectual curiosity will also spark a fresh spirit of creativity on our campus," says Kumar. "We have been given a wonderful and rare opportunity, and I look forward to watching our students and faculty grow under his leadership."

Rakesh Kumar, Ph.D.

PHOTOGRAPHY: HOLGER THOSS

Successful cancer treatment is, first and foremost, a reflection of leading-edge clinical care delivered with a compassionate, personal touch. This caliber of care is delivered by teams of top clinicians, nurses, and health care specialists at the GW Hospital and the GW Medical Faculty Associates, where a new outpatient infusion center and the Dr. Cyrus and Myrtle Katzen Cancer Research Center reside.

PHOTOGRAPHY: HOLGER THOSS

CLINICAL CARE

Equipped with state-of-the-art technology and highly reputed clinicians, GW is home to an ever-expanding, always-improving repertoire of clinical care that is consistently honored for its excellence.

Over the past two years, the number of clinical trials available to cancer patients through the Dr. Cyrus and Myrtle Katzen Cancer Research Center (Katzen Center) at the GW Medical Faculty Associates (MFA) has nearly doubled, with ongoing studies focusing on prostate cancer, non-Hodgkin's lymphoma, breast cancer, and multiple myeloma. **The Katzen Center is actively building translational science,** "bridging the gap between basic science and patient care," said Jeanny Aragon-Ching, M.D., assistant professor of Medicine in the Department of Hematology/Oncology, a key contributor to the increase in clinical research.

"Ultimately, we want to expand on the basic science work researchers are conducting, such as decoding the cancer genome and identifying new risk factors associated with different types of cancers, and translate it in a meaningful way for patients," she added.

To bridge that gap, the Katzen Center is exploring ways to offer its patients treatment options. The center is participating in a number of pharmaceutical industry-sponsored drug trials, as well as working with cooperative group trials through the National Cancer Institute and Eastern Cooperative Oncology Group. It is also eager to expand its investigator-initiated trials, such as those sponsored internally through GWCI (see page 9).

This year, the integrated cancer program was awarded **accreditation with commendation** by the American College of Surgeons' Commission on Cancer for its top-tier cancer conferences and tumor registry. According to the impeccably documented registry, GW cancer patients live as long, if not longer, than the national average of cancer survivors.

In June, the **GW MFA Breast Care Center was awarded a full accreditation** designation for three years by the National Accreditation Program for Breast Centers, a program also administered by the American College of Surgeons. This honor reflects the center's firm commitment to offer its patients every significant advantage in their battle against breast cancer.

"We have an unwavering commitment to patients with breast cancer throughout their entire journey from diagnosis to survivorship," said Christine Teal, M.D., director of the Breast Care Center. "This recognition underscores that dedication and acknowledges the quality of our comprehensive program."

GW's cancer program recently received the 2010 Outstanding Achievement Award from The Commission on Cancer of the American College of Surgeons. The award recognizes cancer programs that demonstrate a commendation-level of compliance in five areas of cancer program activity: cancer committee leadership, cancer data management, community outreach, quality improvement, and research.

1.46 MILLION

NUMBER OF AMERICANS DIAGNOSED WITH CANCER EACH YEAR

5

NUMBER OF CANCER TYPES THE DISTRICT OF COLUMBIA LEADS THE NATION IN INCIDENCE — BREAST, CERVIX, KAPOSI SARCOMA, MYELOMA, AND PROSTATE (BASED ON CDC DATA FROM 2003-07)

2.2

THE ANNUAL PERCENTAGE BREAST CANCER MORTALITY HAS DECREASED BETWEEN 1990 AND 2007

The **GW Division of Radiation Oncology recently added RapidArc radiotherapy technology,** a new approach to delivering image-guided, intensity-modulated radiation therapy (IG-IMRT). The RapidArc enables clinicians to deliver higher doses of radiation directly to tumors and cancer cells, while decreasing potentially harmful doses to surrounding healthy tissue.

GW became a local leader in colorectal cancer care when Vincent Obias, M.D., assistant professor of Surgery, became the first surgeon in the Washington, D.C., region to use the da Vinci system for robotic colon and rectal surgery. This robot-assisted approach offers surgeons more precision, requiring only a few tiny incisions rather than the long incision used in traditional open colon surgery. Colectomies performed by the da Vinci robot offer advantages for colorectal cancer patients as well, such as lower hernia rates, less scarring, shorter recovery times, less pain, and lower rates of infection.

GW also welcomed new additions to its clinical practices this year. Chief among the new faces were Rebecca Kaltman, M.D., with the Department of Hematology/Oncology, and Harold A. Frazier, II, M.D., with the Department of Urology.

Kaltman serves as assistant professor of Medicine. A board-certified physician in Internal Medicine and Medical Oncology, Kaltman previously staffed the University of Pennsylvania's Cancer Risk Evaluation Program and, most recently, practiced at a private clinic for breast-specific oncology. She hopes to use her background in genetic counseling to initiate a clinic at the MFA that tracks high-risk breast cancer patients and gives them access to an interdisciplinary team of clinicians. "GW is an academic center that values clinical care — and that's not always the case, at other institutions" she says. "It's a great fit for me."

Building upon a long-standing relationship with GW and the MFA, Frazier officially joined GW earlier this year as the clinical director of Urologic Oncology at GW Hospital and clinical professor of Urology.

The high incidence of prostate cancer in Washington, D.C., particularly among African Americans, motivates Frazier to invest in outreach, screening, and educational efforts. To encourage men to get tested, Frazier re-launched a prostate cancer screening clinic at the MFA in September and has held a number of other screening events, including two at Redskins Park, the headquarters for the Washington Redskins NFL football team.

"Forty percent of the men we've screened so far are uninsured or under-insured," said Frazier. "These are the guys we need to get in here because otherwise they might not come in at all."

He also announced that GW recently partnered with local running supply store Pacers and the grassroots organization ZERO to host a Father's Day charity run to help increase screening initiatives in the region.

Rebecca Kaltman, M.D.

PHOTOGRAPHY: DAWN MISKELL

As cancer survivors continue to live longer and healthier post-treatment lives, "survivorship" has taken hold as a national buzzword. The GW Cancer Institute is a pioneer in cancer survivorship, with a dedicated team of clinicians, nurses, social workers, and patient navigators.

PHOTOGRAPHY: DANUTA OTFINOWSKI

SURVIVORSHIP

SURVIVORSHIP

This year, GWCI's survivorship program hit an all-time high with the receipt of a $4.25-million grant from the Centers for Disease Control and Prevention to establish a **National Cancer Survivorship Resource Center** in collaboration with the American Cancer Society (ACS). Through the five-year grant, GWCI and ACS will assess current survivorship initiatives, identify gaps in cancer survivorship services, and collaborate with cancer coalitions and community-based organizations at the national, state, and local levels to improve the quality of life of survivors. The center will allow GWCI and ACS to guide national progress toward improved health outcomes for cancer survivors and develop a strategic plan for enhancing nationwide surveillance of cancer survivors.

"GWCI and the American Cancer Society are taking a major step towards a cancer survivorship strategy to significantly improve cancer survivor care and quality of life by jointly assessing and addressing survivor needs," says Steven Patierno, Ph.D., executive director of GWCI.

The GW Foggy Bottom Campus is brimming with exciting new survivorship programs. In July, GWCI, Children's National Medical Center, the MFA, and the GW Center for Integrative Medicine announced the launch of the **Thriving After Cancer (TAC)** program, a multidisciplinary clinic offering comprehensive quality care to adult survivors of pediatric cancer. The program,

Charting the Course for a Smooth Continuum of Care: Patient Navigation

When tourists visiting Washington, D.C., lose their way, they consult a map or a friendly local. But when new cancer patients get lost within the labyrinth of health care systems, treatment options, and appointments, their solution is not so obvious. Without a map or a guide, navigating cancer care, as well as life after successful treatment, can become nearly as traumatic as the cancer itself.

But patients in Washington, D.C., will soon have an influx of navigators to help guide them throughout treatment and care. Thanks to a $2.4-million grant from the D.C. Cancer Consortium, the GW Cancer Institute (GWCI) will establish and coordinate a City-Wide Patient Navigation Network (CPNN), to create a seamless and cohesive framework for cancer care coordination across the city.

"This grant allows us to both deepen and widen city-wide efforts in cancer care coordination," says Steven Patierno, Ph.D., executive director of GWCI. Patierno adds that CPNN will be an expansion of the institute's existing navigation network – which grew out of GWCI's five-year Patient Navigation Research Program that demonstrated the effectiveness of patient navigation.

The CPNN will be accessible to Washington, D.C., residents, offering them assisted access to appropriate screening services. Should a suspicious result be found or a cancer diagnosis be made, the network will further guide patients through timely and coordinated treatment following the standard of care. Navigators will monitor patients throughout the cancer continuum, connecting them with appropriate support services all the way into the post-treatment survivorship period. This comprehensive aid is anticipated to improve health outcomes, particularly among populations suffering from cancer care disparities.

The network will include patient navigators stationed at locations throughout the city, including The George Washington University Medical Center, Washington Hospital Center, Capital Breast Care Center, Howard University Cancer Center, Providence Hospital, Children's National Medical Center, D.C. Area Health Education Centers, D.C. Primary Care Association, Unity Health Care, Nueva Vida, Mautner Project, Smith Farm for the Healing Arts, Food and Friends, and the D.C. Pediatric Palliative Care Collaboration.

The GW Cancer Institute and the American Cancer Society are taking a major step towards a cancer survivorship strategy to improve cancer survivor care and quality of life.

which is supported for its first year by the D.C. Cancer Consortium, seeks to fill a void in follow-up care as more children with cancer survive into adulthood than ever before.

"The sobering incidence of significant long-term medical conditions has made it necessary for life-long follow up of individuals diagnosed with and treated for cancer as children," explains Gregory Reaman, M.D., professor of Pediatrics at GW's School of Medicine and Health Sciences, who initiated the TAC program.

The clinics are held each Wednesday morning at the MFA, where patients meet with a multi-disciplinary team of specialists who assess and document each participant's medical history and offer follow-up care. "We hope patients will leave better educated about their previous treatments and better equipped to manage and prevent future health risks," says Mandi Pratt-Chapman, director of GWCI's Division of Cancer Survivorship. "Overall, we want to help survivors attain the best quality of life."

TAC program staff includes Gregory Reaman, M.D., professor of Pediatrics; Kat Steacy, R.N., F.N.P., C.P.O.N., nurse practitioner and program manager; April Barbour, M.D., director, Division of Internal Medicine; internists Chi-Hyun Kim, M.D., Jillian Catalanotti, M.D., and Michael Czarnecki, D.O.; Lorenzo Norris, M.D., director, Psychiatric Consult-Liaison Service; Mary Barron, Ph.D., A.T.C., L.A.T., assistant professor, Department of Exercise Science; Kate Shafer, L.I.C.S.W., patient navigator; medical residents Michael Mrizek, M.D., and Kristine Dangermond, M.D.; and graduate interns Meagan Kline, A.C.L.S., Kelley Vargo, and Kara Sax.

Also new on campus this year are a series of **navigation and survivorship training programs** that equip decision makers with the tools and resources needed to launch and sustain patient navigation and cancer survivorship programs. The training programs are hosted by the GWCI Center for the Advancement of Cancer Survivorship, Navigation, and Policy (caSNP) and funded by Pfizer Oncology and Pfizer Global Health Partnerships.

The first session focused on strategic planning techniques for developing, implementing, evaluating, and sustaining patient navigation and survivorship programs. The second offered specialized patient navigation skills training for social workers, nurse navigators, and other medical and lay personnel who help guide patients through the health care system.

"Navigation and survivorship are two cornerstones of patient-centered care," said Chapman. "Our center is training today's cancer program leaders in strategic management to ensure sustainability for these critical programs. This kind of hands-on training for administrators is not offered anywhere else."

In October, caSNP also hosted its first class of **Cancer Health Policy Scholars** in partnership with the Department of Health Policy in the GW School of Public Health and Health Services (SPHHS). The three-day training program educated senior health professionals about the policy context in which cancer research and care is delivered.

Finally, GWCI was thrilled to launch **Healing with Basketball,** a free monthly clinic for D.C.-area breast cancer survivors supported by the EagleBank Foundation and the GW Women's Athletic Department. Based on research showing that physical activity can reduce breast cancer recurrence by up to 50 percent, the clinics incorporate strategic themes like strength and flexibility to heal the participants both emotionally and physically.

"Each month these women — many of them from the inner city — share their stories and use basketball to help recover

upper body strength," said the program's founder and manager, Lynn Grodzki, a breast cancer survivor and psychotherapist. "Healing with Basketball gives women the motivation to live better lives." The exercises, which are carefully designed to target areas most weakened during breast cancer treatments, are led by "Coach" Andrew Weiss, a certified personal trainer.

A preliminary analysis of the self-reported pre- and post-test evaluation data revealed that the clinics improved survivors' level of energy, perception of strength, well-being, physical flexibility, and perception of support, according to a report issued by GWCI's Division of Cancer Survivorship.

With renewed funding from its sponsors and continued interest from participants, the Division of Cancer Survivorship launched an expanded and improved 10-month version of the Healing with Basketball program in September 2010. The office is also partnering with Barron and GW's SPHHS in an effort to secure funding for an exercise-based research project. If funded, the project — which will study the physiological and psychosocial effects of Healing with Basketball compared to the effects of yoga on women who have been diagnosed with breast cancer — will begin recruiting participants in 2012.

Right, Patricia Valverde leads a patient navigation class during a recent skills training seminar hosted by the Center for the Advancement of Cancer Survivorship, Navigation, and Policy.

Thriving After Cancer: Anne Willis

At age 28, Anne Willis feared her body was "a ticking time bomb." Though she had been cancer-free for 13 years, she knew her heart could suffer from latent effects of chemotherapy. But that was about all she knew.

Willis, who had been diagnosed with Ewing's Sarcoma at age 15, didn't know the exact dosages of the medications she had received, or whether her fertility had been compromised in the process. She didn't know if her intense exercise regimen was risky, or if her lifespan had been truncated. And – despite endless attempts to contact old hospitals and doctors, visits to multiple clinics, and even landing a career in the field of cancer survivorship – she couldn't find out.

So when a colleague mentioned GWCI's Thriving After Cancer (TAC) Program, "this huge sense of anxiety just went away," she recalls.

Willis promptly entered the TAC program as one of its first patients. "I have never in my life been so excited to spend a morning in a clinic, and I've never seen clinicians so excited to spend the morning with me," she says. During her visit, the TAC team helped Willis piece together a treatment summary and a survivorship care plan. She didn't get all of her answers, but she did learn how to obtain them, and – most importantly – she knew she had a support system that wouldn't let her slip through the cracks again.

"When one of the doctors told me, 'We want this to be your medical home,' I thought, 'Finally! I have a place. I have a place where everything is coordinated, where everybody is together, and where I don't have to worry about making sure my doctors are communicating because they are already doing it,' " she says. "I have finally found what I've been looking for."

PHOTOGRAPHY: DAWN MISKELL

PHOTOGRAPHY: DAWN MISKELL

Reducing cancer incidence, suffering, and death remains more than just innovative research and clinical care — particularly in Washington, D.C., a region ranked one of the highest in overall cancer mortality. To become a leader in the fight against cancer, a cancer center needs to serve as a resource for the community through its education, outreach, and prevention efforts.

PHOTOGRAPHY: MICHAEL LEONG


CANCER SUCKS
for 2 days, we walk as 1
AVONWALK.ORG
Remember, early detection helps save lives.
Reebok
for 2 days, we walk as 1
AVONWALK.ORG
Reebok

COMMUNITY

Offering programs that educate the community about prevention, early detection, and treatment of cancer, as well as serving as an information and referral source for area cancer patients and survivors, has been a hallmark of the GW Cancer Institute (GWCI) since its inception. This status is built on many successful partnerships within the community that have enabled GWCI staff to spread their message and care among community centers, schools and universities, church groups, and more.

This year, GWCI extended its definition of community to the world at large, teaming with leading Spanish financial institution Banca Civica to fight cancer in Washington, D.C., as part of the bank's innovative "civic banking" concept.

Civic banking is a revolutionary banking model based on transparency and participation. The idea involves Banca Civica disclosing its earnings from various business ventures to its customers and empowering those customers to allocate up to 30 percent of the bank's profits to charities of their choice. Last year, Banca Civica's 1.8 million customers allocated $60 million to more than 6,000 social projects in 78 countries.

The United States is a natural fit for Banca Civica, explains Iñigo Jodra, Banca Civica's president of U.S. operations. "Banca Civica has noticed in the last years the increasing interest from our customers in supporting medical research," says Jodra. "GWCI brings to the table an interesting option for those civic customers who are attracted to this field."

Through the partnership, **Banca Civica's customers can donate profits to GWCI, where funds will be used to support the institute's multi- and trans-disciplinary initiatives,** such as cancer genomics, prevention and community health, patient navigation, and survivorship.

GWCI recently named Christina Cianflone, J.D., as the new director of the Division of Cancer Prevention and Community Health. As someone who has lost two family members to cancer, Cianflone understands the devastating impact of cancer on a patient and a family. "I think at this point, almost everyone has their own cancer story," says Cianflone. "Whether it's a family member or a friend, just about everyone can put a face on the disease."

Cianflone's mission is to make the Division of Cancer Prevention and Community Health a comprehensive team, focusing not just on outreach and screening, but also on awareness and education about healthy lifestyle and prevention. The challenge with public health, she says, is that it takes a lot to shift behavior. "We certainly can't do it alone," Cianflone points out. "It has to be about partnerships in prevention, and that's my job. I'm working to rally the Washington, D.C., community around these health care issues, and to develop opportunities for residents of underserved neighborhoods."

Just as GWCI was contemplating how to best assess the post-treatment medical and supportive care needs of cancer patients treated at GW, it was selected to partner with LIVESTRONG to implement a survivorship survey to evaluate people's experiences with cancer.

GWCI was one of several partner institutions across the country chosen for the survey, "Understanding How Cancer Affects People's Lives." The survey will provide national data to inform future cancer research as well as local data on the needs of survivors.

The survey adapts to the experience of each participant, who may be a patient, survivor, caregiver, or health care professional.

With support from the Avon Foundation for Women, **GWCI developed a program that makes cell phone usage healthy for District of Columbia residents.** Using text messages, GWCI launched a breast health awareness program that sends monthly breast self-exam reminders to enrollees. The program not only reminds

GWCI extended its definition of community to the world at large, teaming with Spanish financial institution Banca Civica to fight cancer.

women to perform a self-exam and get an annual mammogram, if appropriate, but it also provides reinforcement upon completion. If a woman's exam reveals something suspicious, for example, an instant alert is sent to a patient navigator at GWCI who will offer support and ensure that the woman has scheduled a follow-up doctor's appointment.

The program is an extension from a 2008 grant to support breast cancer outreach, education, and screening services in Washington, D.C. The extension also includes continued support of the GW Mammovan, a mobile mammography unit, as it travels monthly to Wards 7 and 8, an underserved area in the District with only one mammography facility.

Members of the GW community and the GWCI went the distance in the fight against cancer this year during three area events designed to raise money and awareness: the annual Susan G. Komen National Race for the Cure, the eighth annual Avon Walk, and, for the first time, the Marine Corps Marathon. Together, these **teams of runners, walkers, and volunteers turned time and dedication into significant contributions to GWCI and the city.**

"For many people in the Washington, D.C., area, making a substantial contribution to a charity they believe in just isn't realistic," said Steven Patierno, Ph.D., executive director of GWCI. "But a commitment of time and energy to these fundraising events allows for huge multiplication; with help from family and friends, a little bit can go a lot farther. Opportunities like these can put philanthropy within reach."

Plans for the 36th annual Marine Corps Marathon, as well as a new Marine Corps 10K team, are already underway. For more information about the 2011 GWCI marathon and 10K teams, as well as Avon Walk and Komen Race for the Cure opportunities, e-mail: cancer@gwumc.edu.

GWCI: Preparing for Growth

Since its inception in 2003, GWCI has been guided by three core principles: Commitment, Compassion, and Community. The institute's efforts have led to advances in basic science; cancer education; and community outreach, patient assistance, and cancer survivorship initiatives. As the institute has grown, its founding principles have persisted.

To maintain that successful pace, GWCI has reorganized, expanding its existing offices and pairing them with new faculty-led divisions. The expanded offices include the Division of Cancer Prevention and Community Health, the Division of Cancer Control and Epidemiology, and the Division of Cancer Survivorship.

Building upon the successes of these divisions, GWCI will add four new teams – the divisions of Translational BioInformatics and Computational Medicine; Cancer Disparities and Social and Behavioral Health; Cancer Policy, Comparative Effectiveness, and Outcomes Research; and Global Cancer Health.

Computational cancer medicine relies on methodologies and modeling to uncover the underlying causes of cancer and to develop more effective means for diagnosis and treatment. The division also will explore "clinical informatics," a method of organizing health care information using information technology, computer science, and bioinformatics to increase the impact of patient-centered research. Working closely with GW's School of Public Health and Health Services (SPHHS), GWCI will create the Division of Cancer Disparities and Social and Behavioral Health to explore how to affect cancer-related health behaviors. Jennifer Lee, M.D., Jennifer Leonard, J.D., M.P.H., and Avi Dor, Ph.D., will lead a new Division of Cancer Policy, Comparative Effectiveness, and Outcomes Research to look for ways to cut costs, improve quality, and bridge the gap between scientific discovery and clinical delivery. And through the new Division of Global Cancer Health, GWCI will look to faculty members from the Department of Global Health in the School of Public Health and Health Services and researchers from the Biochemistry and Molecular Biology in the School of Medicine and Health Sciences to help identify opportunities for international cancer collaborations.

2010 GW CANCER REGISTRY ANNUAL REPORT

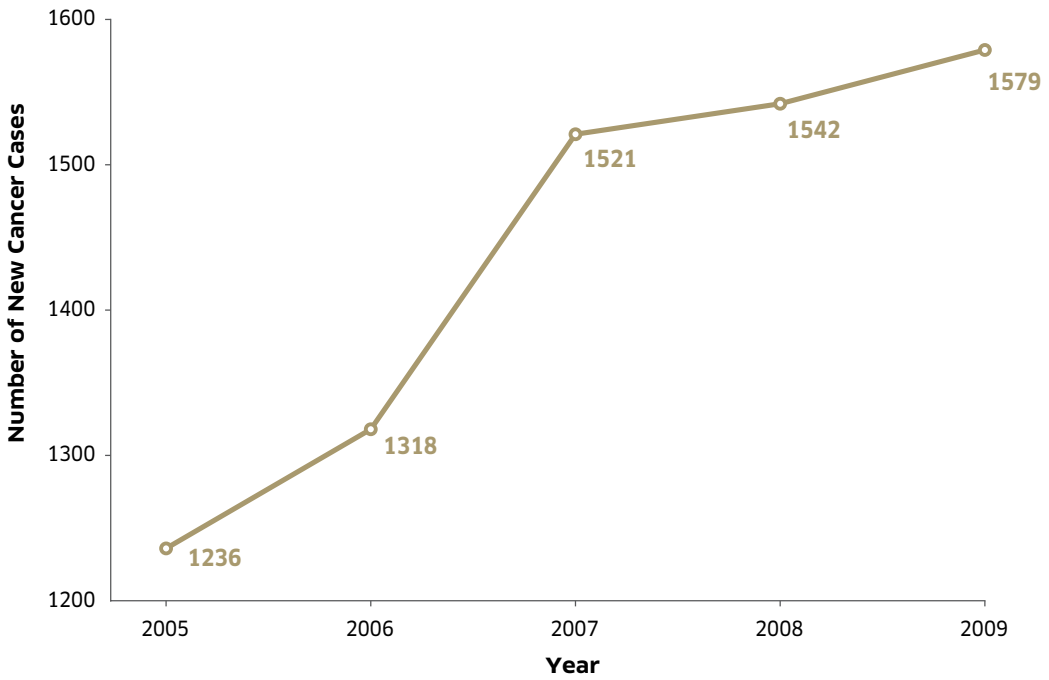
The GW cancer registry has grown consistently over the past five years (Figure 1). The number of patients diagnosed and/or treated at The George Washington University Hospital has increased from 1,236 in 2005 to 1,579 in 2009 (Figure 1). Of these, 1,384 (87.7 percent) were analytic cases, patients diagnosed and treated at GW Hospital, and the remaining 195 cases (12.3 percent) were non-analytic, those referred to GW Hospital for subsequent treatment.

Figure 2 shows a similar trend in state origins of new cancer patients at GW Hospital in 2009 when compared to 2008. More than 40 percent of new GW Hospital cancer patients reside in Maryland. The second largest population (35.2 percent) of new patients came from Washington, D.C., and 20.6 percent of patients live in Virginia. This distribution is explained by the hospital's central location in Washington, D.C., and by the fact that many federal government jobs are based in the District.

According to Figure 3, the five major cancer sites remain the same as previous years: breast, lung, prostate, colon, and kidney cancers. There was a slight increase among reported cancer cases of the respiratory system, urinary system, central nervous system, and hematopoietic neoplasms. There was a significant increase in the percentage of cancer cases involving the female reproductive system: from 21.2 percent in 2008 to 24.3 percent in 2009, due to the increase in breast cancer cases, from 42.4 percent in 2008 to 47 percent in 2009 respectively (Table 2B). This data is a combined effort between the Breast Imaging and Intervention Center and the Breast Care Center.

Table 2A and 2B compared GW Hospital cancer cases to national American Cancer Society (ACS) data among male and female patients. Being female carries increased risk of getting thyroid cancer. There was a significant increase in new cases of kidney/ureter and renal pelvis cancers among male patients at GW Hospital up from 8.6 percent in 2008 to 10.8 percent in 2009. The percent distribution is higher than national ACS data: 10.8 percent versus 5 percent respectively.

Figure 1: 2009 Trend in Numbers of New Cancer Patients Admitted at GWUH



PHOTOGRAPHY: HOLGER THOSS

TABLE 1: The GW Hospital Cancer Registry 2009 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 2009 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: 2007–09 ANALYTIC CASES – THE MOST FREQUENT CANCERS IN MALE

Primary Site	2009 Cases (%)		2008 Cases (%)		2007 Cases (%)		2006 Cases (%)	
	GW	ACS	GW	ACS	GW	ACS	GW	ACS
Prostate	329 (43.9)	192,280 (25.0)	320 (47.1)	186,320 (25.0)	344 (47.3)	218,890 (29.0)	167 (35.5)	232,090 (33.0)
Kidney/Pelvis/Ureter	81 (10.8)	35,430 (5.0)	58 (8.5)	33,130 (4.0)	91 (12.5)	31,590 (4.0)	41 (8.7)	93,010 (13.0)
Lung	72 (9.6)	116,090 (15.0)	58 (8.5)	114,690 (15.0)	50 (6.9)	114,760 (15.0)	23 (5.0)	22,490 (3.0)
Urinary Bladder	60 (8.0)	52,810 (7.0)	40 (5.9)	51,230 (7.0)	50 (6.9)	50,040 (7.0)	27 (5.6)	47,010 (7.0)
Colon/Rectum	29 (3.9)	75,590 (10.0)	26 (3.8)	77,250 (10.0)	28 (3.9)	79,130 (10.0)	50 (10.5)	71,820 (10.0)
Lymphoma	25 (3.3)	35,990 (5.0)	12 (1.8)	35,450 (5.0)	16 (2.2)	34.200 (4.0)	17 (3.6)	33,580 (5.0)
Brain/Other CNS	19 (2.5)	12,010 (2.0)	15 (2.2)	11,780 (2.0)	12 (1.7)	11,170 (2.0)	18 (3.8)	10,620 (1.0)
Leukemia	13 (1.7)	25,630 (3.0)	13 (1.9)	25,180 (3.0)	10 (1.4)	24,800 (3.0)	7 (1.5)	16,100 (2.0)
Melanoma	12 (1.6)	39,080 (5.0)	19 (2.8)	34,950 (5.0)	22 (3.0)	33,910 (4.0)	11 (2.3)	19,640 (3.0)
Testis	12 (1.6)	8,400 (1.0)	9 (1.3)	8,090 (1.0)	15 (2.1)	7,920 (1.0)	11 (2.3)	33,050 (5.0)
Pancreas	11 (1.5)	21,050 (3.0)	13 (1.9)	18,770 (3.0)	4 (0.6)	18,830 (3.0)	10 (2.2)	6,500 (1.0)
Others	87 (11.6)	151,770 (19.0)	96 (14.1)	148,340 (20.0)	85 (11.7)	141,620 (18.0)	91 (19.0)	124,130 (17.0)

Table 2b: 2007–09 ANALYTIC CASES – THE MOST FREQUENT CANCERS IN FEMALE

Primary Site	2009 Cases (%)		2008 Cases (%)		2007 Cases (%)		2006 Cases (%)	
	GW	ACS	GW	ACS	GW	ACS	GW	ACS
Breast	295 (47.0)	192,370 (27.0)	233 (42.4)	182,460 (26.0)	214 (45.5)	178,480 (26.0)	164 (35.4)	211,240 (32.0)
Lung	53 (8.4)	103,350 (14.0)	50 (9.1)	100,330 (15.0)	18 (3.8)	98,620 (15.0)	18 (3.8)	13,670 (2.0)
Kidney/Pelvis/Ureter	50 (8.0)	22,330 (3.0)	51 (9.2)	21,260 (3.0)	36 (7.7)	19,600 (3.0)	56 (12.2)	79,560 (12.0)
Thyroid	33 (5.3)	27,200 (4.0)	37 (6.7)	28,410 (4.0)	14 (3.0)	25,480 (4.0)	11 (2.4)	19,190 (3.0)
Brain/Other CNS	31 (4.9)	10,060 (1.0)	24 (4.4)	10,030 (1.0)	10 (2.1)	9,330 (1.0)	34 (7.4)	73,470 (11.0)
Corpus Uterine	24 (3.8)	42,160 (6.0)	11 (2.0)	40,100 (6.0)	12 (2.6)	39,080 (6.0)	28 (6.1)	7,880 (1.0)
Colon/Rectum	22 (3.5)	71,380 (10.0)	25 (4.6)	71,560 (10.0)	28 (6.0)	74,630 (11.0)	18 (3.8)	16,200 (2.0)
Urinary Bladder	20 (3.2)	18,170 (3.0)	20 (3.6)	17,580 (3.0)	16 (3.4)	17,120 (3.0)	11 (2.4)	15,170 (2.0)
Lymphoma	13 (2.1)	29,990 (4.0)	14 (2.6)	30,670 (4.0)	13 (2.8)	32,710 (5.0)	8 (1.7)	30,690 (5.0)
Ovary	10 (1.6)	21,550 (3.0)	7 (1.3)	21,650 (3.0)	9 (1.9)	22,430 (4.0)	24 (5.4)	40,880 (6.0)
Pancreas	9 (1.4)	21,420 (3.0)	9 (1.6)	18,910 (2.0)	7 (1.4)	18,340 (3.0)	10 (2.2)	6,500 (1.0)
Others	68 (10.8)	153,240 (22.0)	68 (12.4)	149,040 (22.0)	93 (19.8)	142,240 (22.0)	91 (19.0)	124,130 (17.0)

Figure 2: State Residency Distribution at Diagnosis in 2008 and 2009

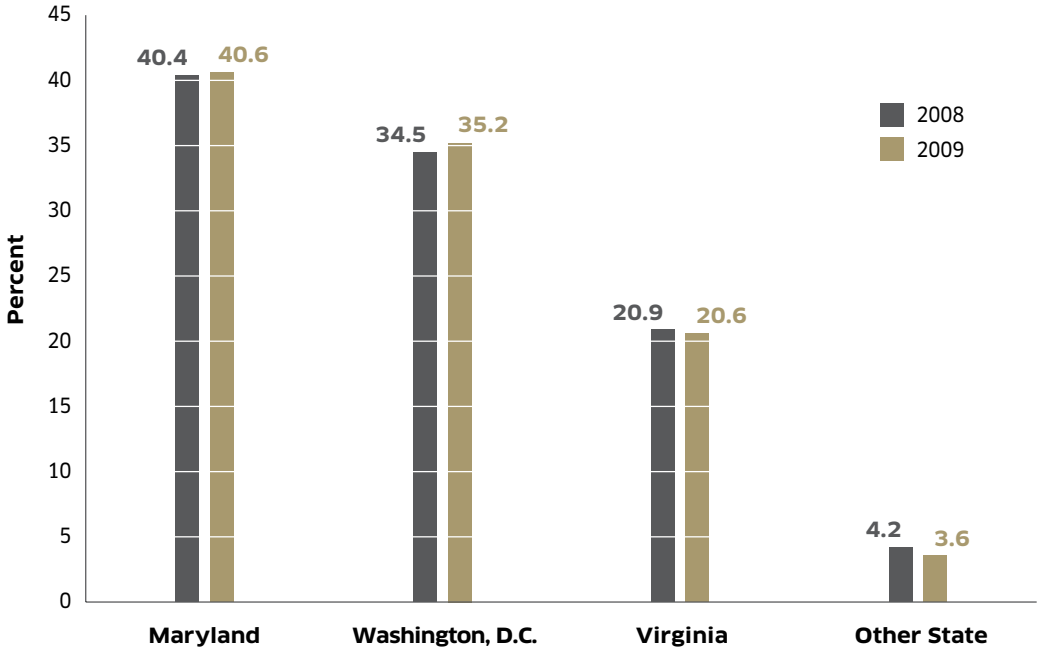
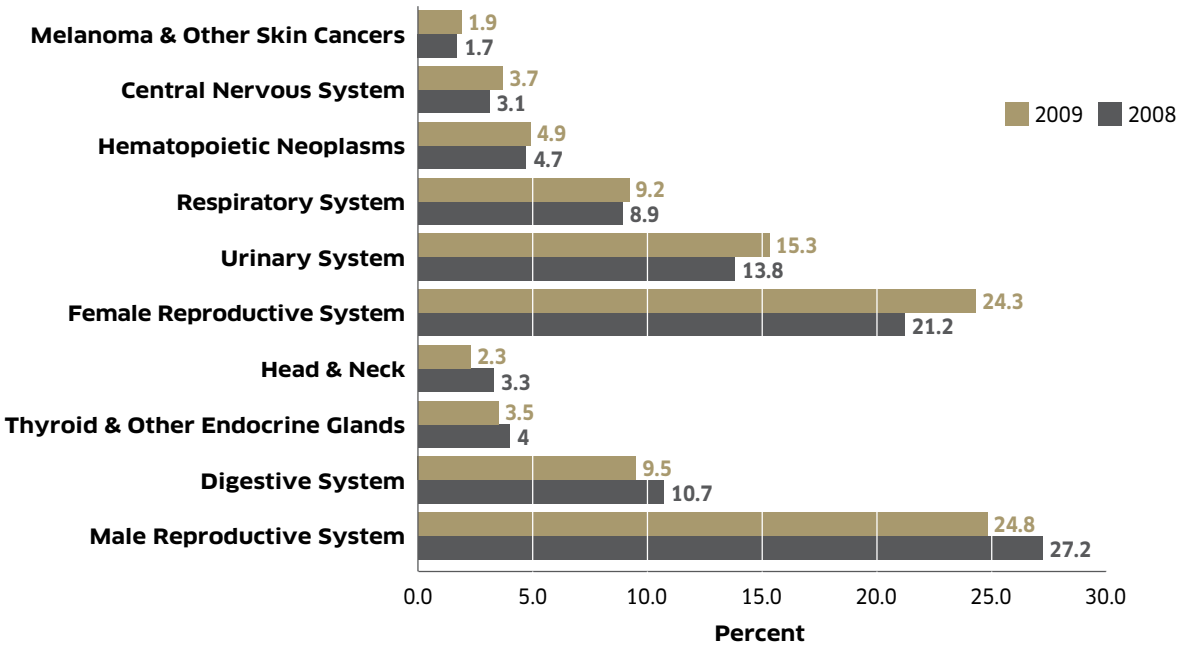


Figure 3: Trends for New Analytic Cases by Site and Year of Admission



THYROID AND TESTICULAR CANCER REPORT

PAPILLARY AND FOLLICULAR THYROID CANCER

GW HOSPITAL AND SEER DATA BETWEEN 2000-2007 | BY NADER SADEGHI, M.D., AND STANLEY KNOLL, M.D.

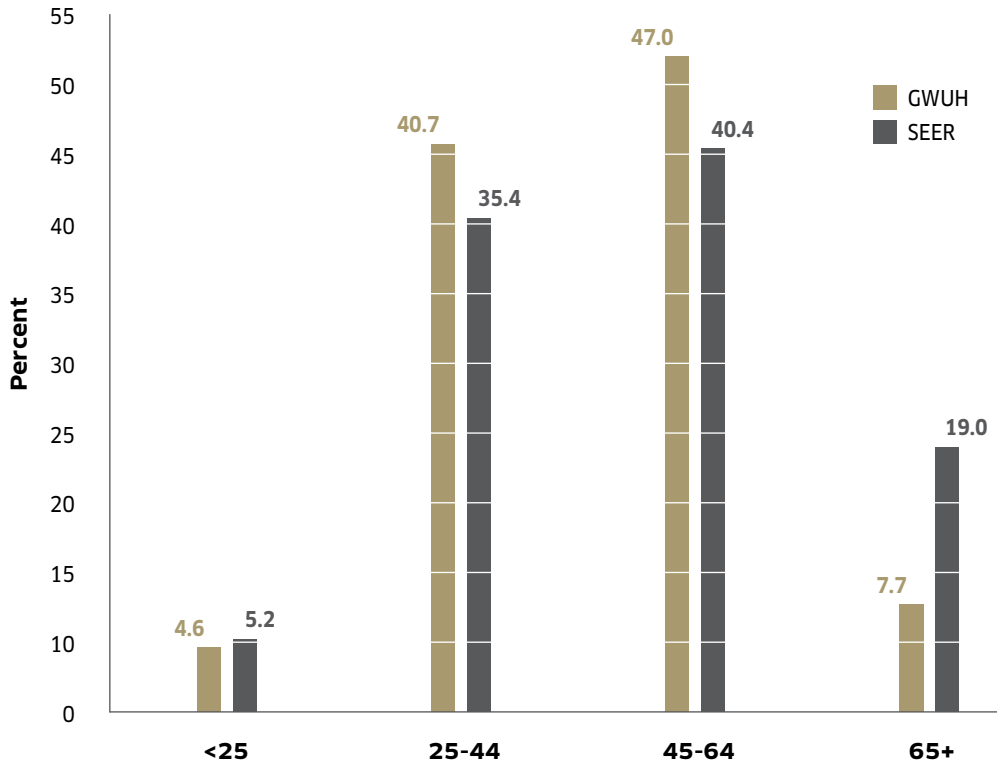
Thyroid cancer is not a common cancer in comparison to breast cancer in females or prostate cancer in males. However, in the United States the incidence of thyroid cancer has increased significantly over the past eight years, from 20,700 cases in 2002 to an estimated 44,670 in 2010, representing 2.2-fold increase. (Retrieved from www.cancer.gov/cancertopics/types/thyroid). This is partly due to the increased use of thyroid ultrasound and intensive investigation of patients with small thyroid nodules identified by ultrasound. As such, it may not represent a real increase in the incidence of thyroid cancer. It may only represent the identification of smaller, less than 1 cm, well-differentiated thyroid cancers that might have remained dormant without significant growth to become palpable.

A total of 279 papillary and follicular thyroid cancer cases diagnosed at GW Hospital between 2000 and 2007 were used for this data analysis. Patients with medullary and anaplastic thyroid cancer were excluded from this review.

In the United States, the major risk factors for thyroid cancer are aging and being female and Caucasian. In 2010, out of 44,670 newly diagnosed thyroid cancer cases, 33,930 were women, accounting for 76 percent of the cases. Men accounted for 24 percent of the cases, a 3:1 ratio of women to men. A similar trend was found among the GW Hospital thyroid cancer patient population with women accounting for 72 percent of the cases versus 28 percent among men. According to the National Cancer Institute, "the lifetime risk of invasive thyroid cancer is estimated at 0.82 percent (1 in 122) for women and 0.30 percent (1 in 333) for men."

Age is a risk factor for developing thyroid cancer as well as being an important factor for disease prognosis. Younger patients have

Figure 1: Papillary and Follicular Thyroid Cancer Distribution by Age at Diagnosis
GWUH and SEER DATA: 2000-2007



PHOTOGRAPHY: HOLGER THOSS

a better prognosis. Forty-five percent of GW Hospital thyroid cancer patients are less than 45 years of age, versus 40 percent in Surveillance, Epidemiology and End Results (SEER) data (Figure 1). The great majority of differentiated thyroid cancer patients present at early stages of the disease. Figure 2 shows a high number of early stage papillary and follicular thyroid cancers at GW Hospital: 63 percent stage I, 14 percent stage II, 17 percent stage III, and 6 percent stage IV. A similar trend was found in SEER data: 70 percent, 9 percent, 11 percent, and 10 percent respectively. A very large percentage of stage I disease in both GW and SEER data is explained by the American Joint Committee on Cancer (AJCC) staging system for well-differentiated thyroid cancer. In this system, for patients younger than 45 years of age, tumor and lymph node extent is not taken into consideration in staging. Patients younger than 45 have either stage I disease, when there is no distant metastasis, or are stage II when distant metastasis is present.

Despite a younger population in the GW Hospital data compared to SEER, 62 percent of GW Hospital patients present in stage I versus 70 percent for SEER, and 14

Figure2: Papillary and Follicular Thyroid Cancer Distribution by AJCC Stage at Diagnosis GWUH and SEER DATA: 2000-2007

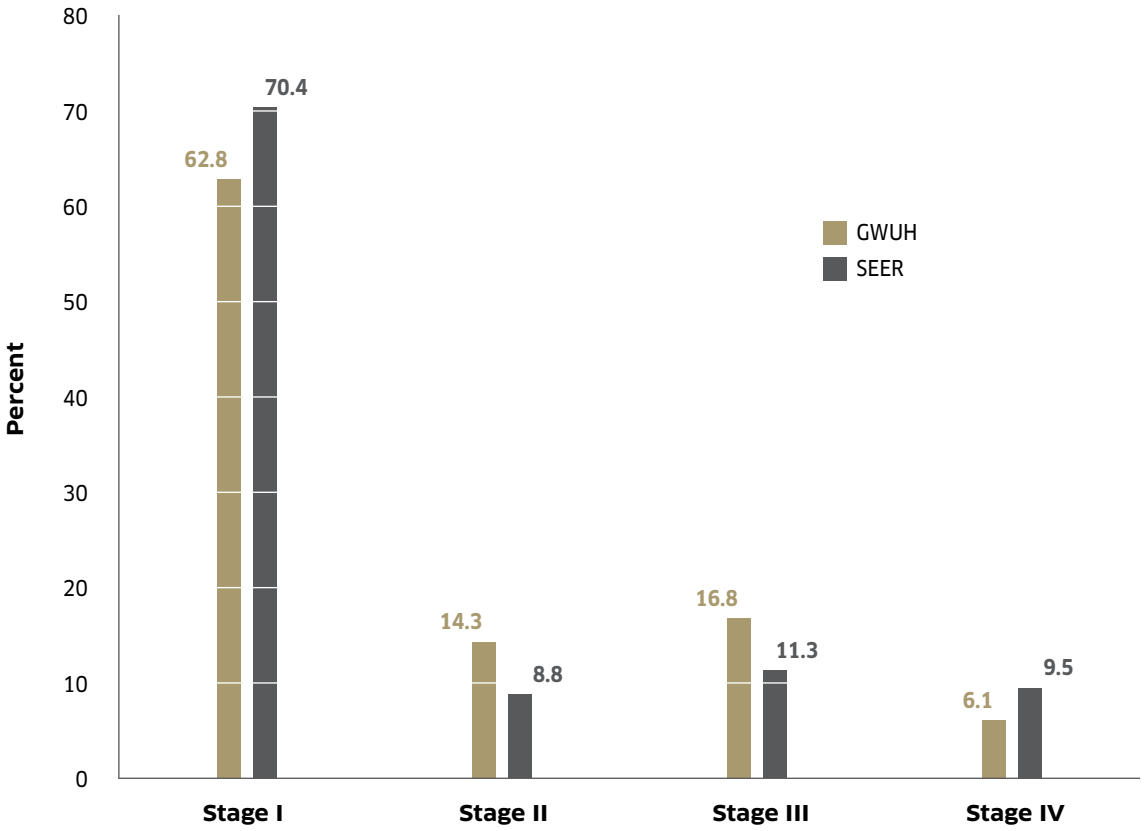
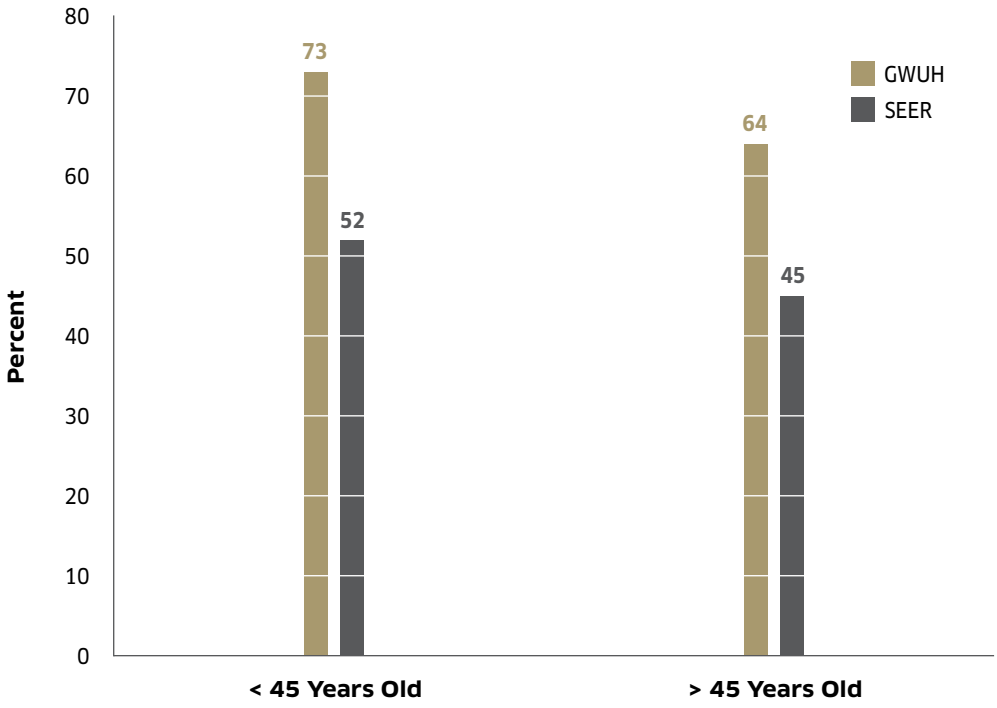


Figure 3: Papillary and Follicular Thyroid Cancer Radio-isotope Treatment by Age at Diagnosis GWUH and SEER DATA: 2000-2007



percent of GW Hospital patients are stage II versus 8 percent in SEER. This suggests that GW Hospital patients under age 45 present with more advanced disease with almost double the number of stage II patients at GW Hospital compared to SEER. This likely explains the trend towards slightly lower nine-year survival among patients less than 45 years of age at GW Hospital compared to SEER: 95.6 percent and 97.5 percent respectively **(Figure 6).** This difference however, is not statistically significant.

A retrospective study reviewed 614 patient records with diagnosis of thyroid cancer between Jan. 1, 1987, and Jan. 31, 2006, and found a better survival rate among patients with radioactive iodine after total thyroidectomy. (Retrieved from www.thyroid.org/professionals/publications/clinthy/volume22/issue6/clinthy_v226_18_21.pdf) At GW Hospital the multidisciplinary thyroid cancer care team promotes the use of postsurgical radioactive iodine treatment for intermediate and high risk patients: older than 45, tumor size larger than 15mm, and advanced AJCC stage disease. **Figures 3, 4, and 5** show a higher number of radioactive iodine use at GW Hopsital compared to national SEER data. This may explain a trend towards better nine-year survival rates among GW Hospital patients 45 years of age and older: 82 percent at GW compared to 79 percent in national SEER data **(Figure 6).**

Both GW and national SEER data suggest that papillary and follicular thyroid cancer, accounting for over 95 percent of all thyroid cancers, are highly curable diseases. Appropriate treatment with thyroidectomy and postoperative radioactive iodine treatment in intermediate and high-risk patients results in very high long-term survival rates.

Figure 4: Papillary and Follicular Thyroid Cancer
Radio-isotopes Treatment by Tumor Size
GWUH and SEER DATA: 2004-2007

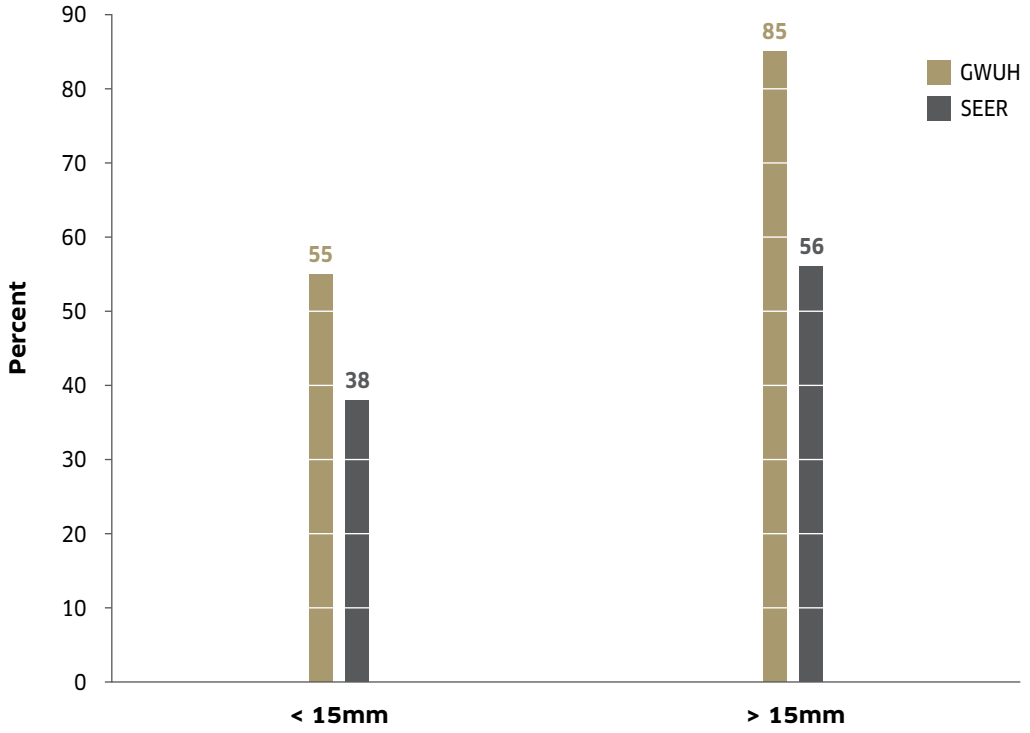


Figure 5: Papillary and Follicular Thyroid Cancer
Radio-isotopes Treatment by AJCC Stage
GWUH and SEER DATA: 2004-2007

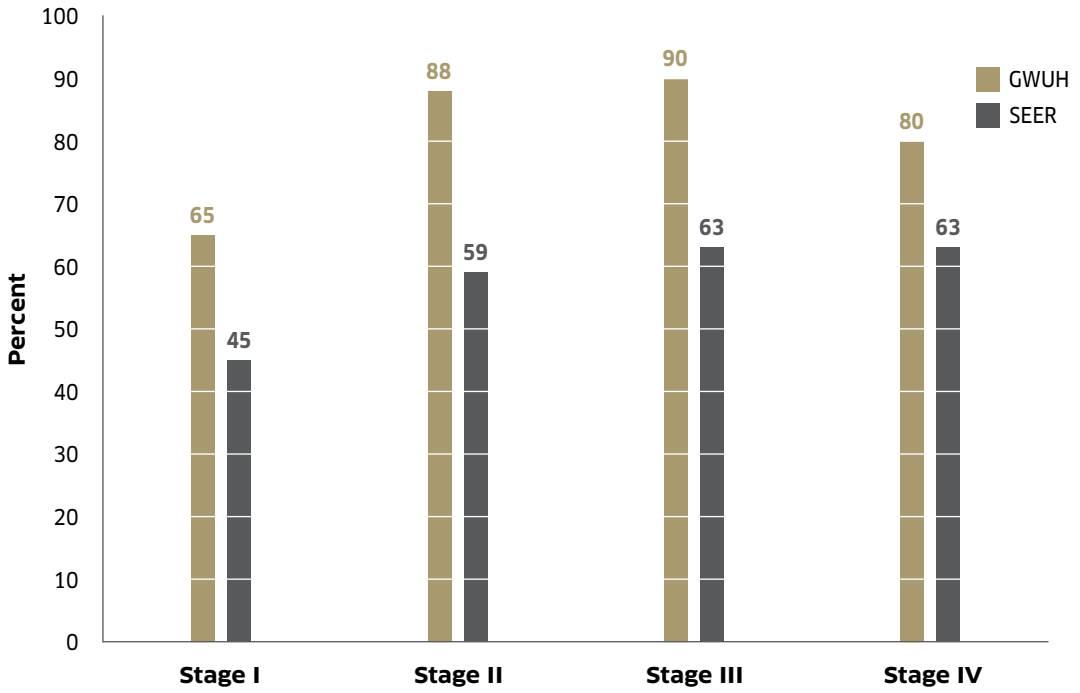
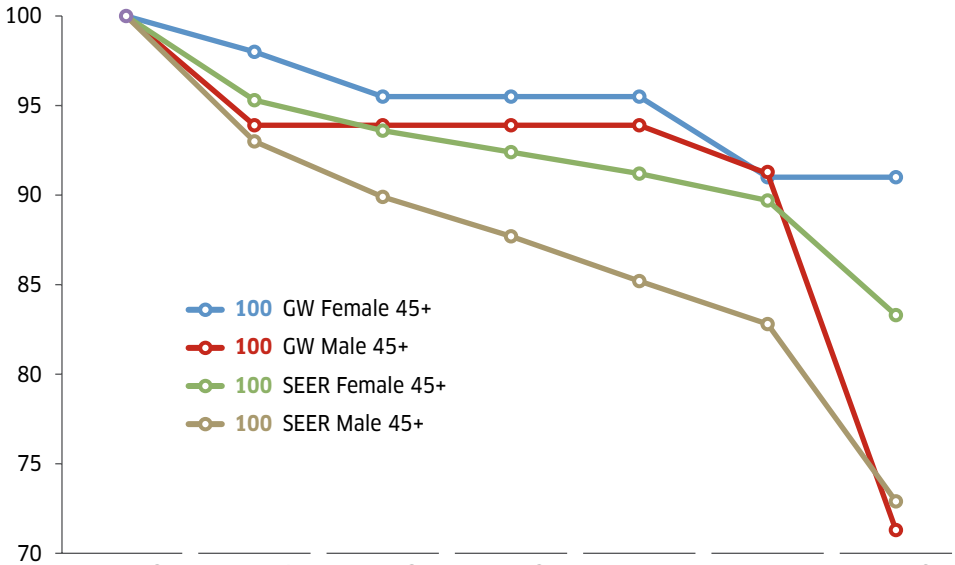
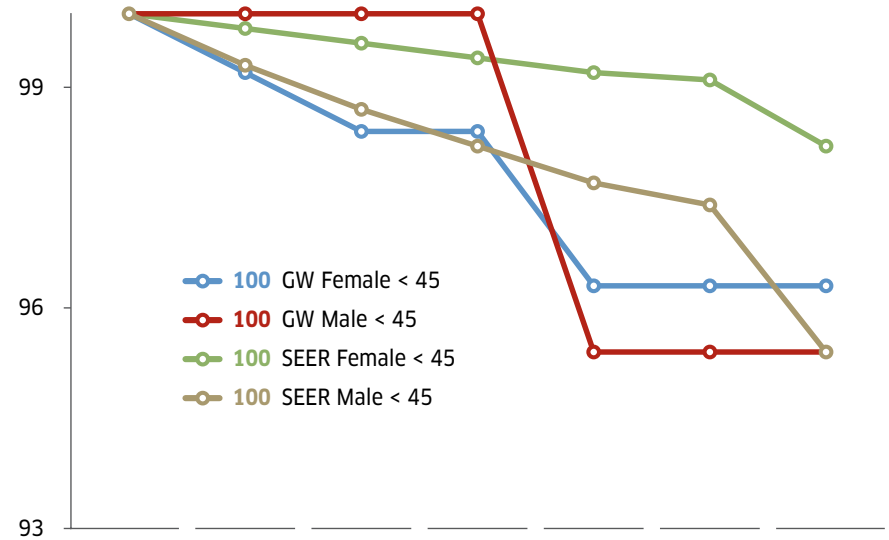


Figure 6: Papillary and Follicular Thyroid Cancer Nine-Year Observed Survival Among Patients 45 and Older GWUH and SEER DATA: 1998-2004



	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 9
GW Female 45+	100	98	95.5	95.5	95.5	91	91
GW Male 45+	100	93.9	93.9	93.9	93.9	91.2	71.3
SEER Female 45+	100	95.3	93.6	92.4	91.2	89.7	83.3
SEER Male 45+	100	93	89.9	87.7	85.2	82.8	72.9

Figure 7: Papillary and Follicular Thyroid Cancer NIne-Year Observed Survival Among Patients Less Than 45 GWUH and SEER DATA: 1998-2004

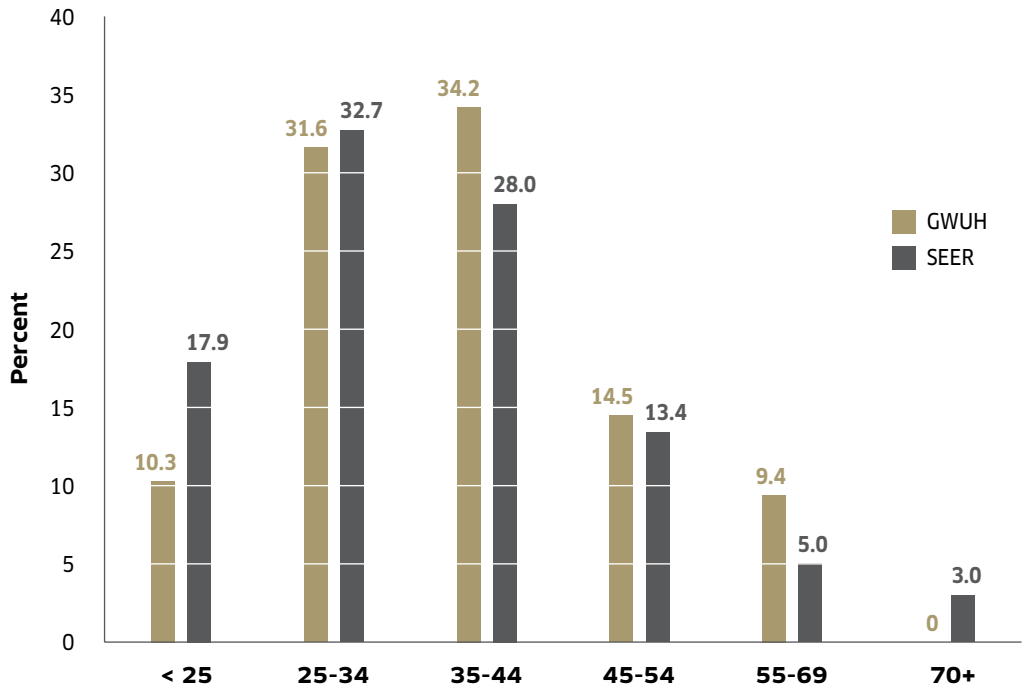


	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 9
GW Female < 45	100	99.2	98.4	98.4	96.3	96.3	96.3
GW Male < 45	100	100	100	100	95.4	95.4	95.4
SEER Female < 45	100	99.8	99.6	99.4	99.2	99.1	98.2
SEER Male < 45	100	99.3	98.7	98.2	97.7	97.4	95.4

Testicular cancer is a rare genitourinary malignancy, with an incidence of 8,480 in the United States during 2010, and an estimated 350 total cancer deaths, making testicular cancers one of the more curable neoplasms. While testicular cancer is uncommon, it occurs predominantly in young males; the majority will be diagnosed at an early stage and treatment is directed towards the histopathology and stage at diagnosis. Surgery, chemotherapy, and radiation, either alone or in combination, have been utilized in the treatment of testicular cancer.

The incidence of testicular cancer at GW Hospital was 117 cases between 2000 and 2009. According to the Surveillance Epidemiology and End Results (SEER) database, about 50.6 percent of diagnoses are seen in patients up to 34 years of age. However, at GW Hospital, only about 42 percent make up the same age range of diagnoses. Patients 35 to 69 years of age make up the remaining 58 percent of cases compared to 47 percent of cases seen in SEER, suggesting a relatively older population is seen at GW Hospital (Figure 1). Demographics showed 79.5 percent of Caucasians, 10 percent of African-Americans, and a remainder of 10 percent of other races were diagnosed from 2000–07 (Figure 2). Seminoma was the predominant histology seen. The majority of patients had stage I testicular cancer. Surgery comprises the most common treatment for both seminoma and non-seminoma with additional chemotherapy used with non-seminoma and adjuvant radiotherapy seen in seminoma (Figure 3). The nine-

Figure 1: Testis Cancer: Distribution by Age at Diagnosis
GWUH: 2000-2009 and SEER: 2000-2007



year observed survival data from 2000 to 2009 for seminoma is comparable and better than national standards, as depicted in Figure 4. A similar observed survival rate is seen in non-seminoma, as shown in Figure 5.

At GW Hospital, tailored multidisciplinary treatment is geared towards achieving the best possible care for our patients. Significant improvements in outcomes for testicular cancer make follow-up of long-term survivors equally an important goal for treatment. Our team of experts from the fields of Urology, Medical Oncology, Radiation Oncology, Fertility, social work, and patient navigation services continue to foster and build relationships with the surrounding medical communities for improved outcomes for patients with testicular cancer.

Figure 2: Testis Cancer: Distribution by Race at Diagnosis
GWUH: 2000-2009 and SEER: 2000-2007

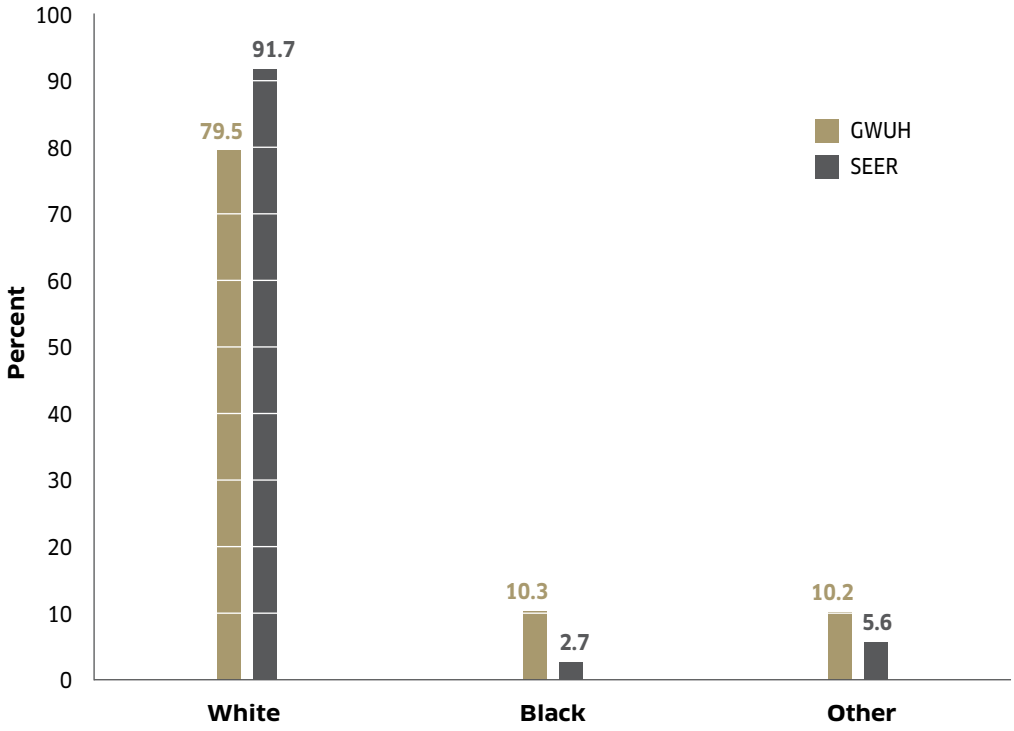


Figure 3: Testicular Cancer: GWUH: 2000-2009
Treatment by Seminoma vs. Non-Seminoma

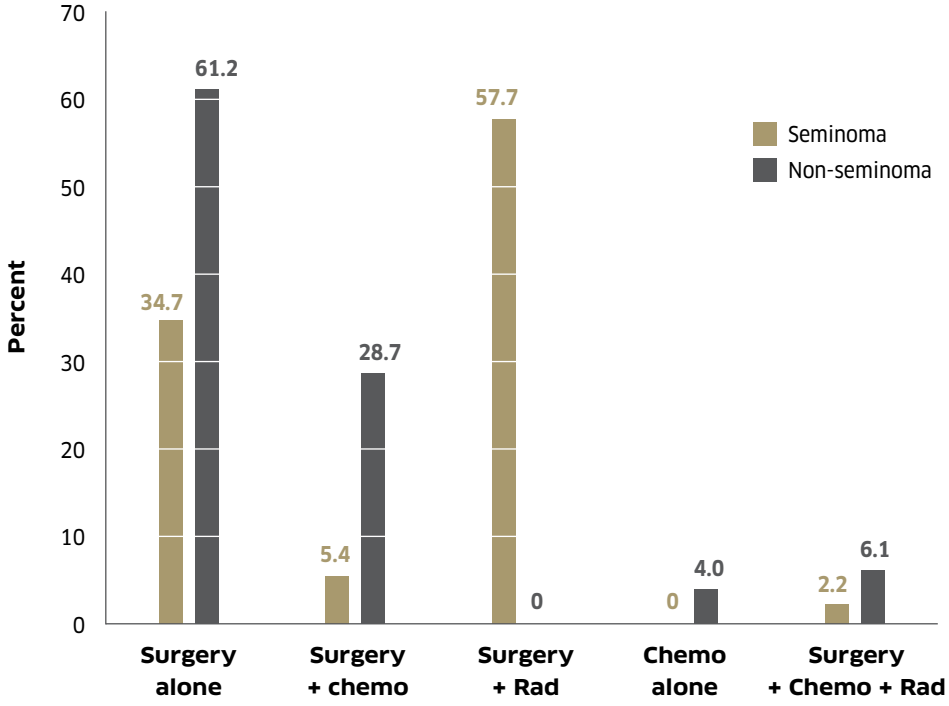


Figure 4: Seminoma Testicular Cancer: Nine-Year Observed Survival Rate
GWUH: 1998-2007 and SEER: 1998-2007

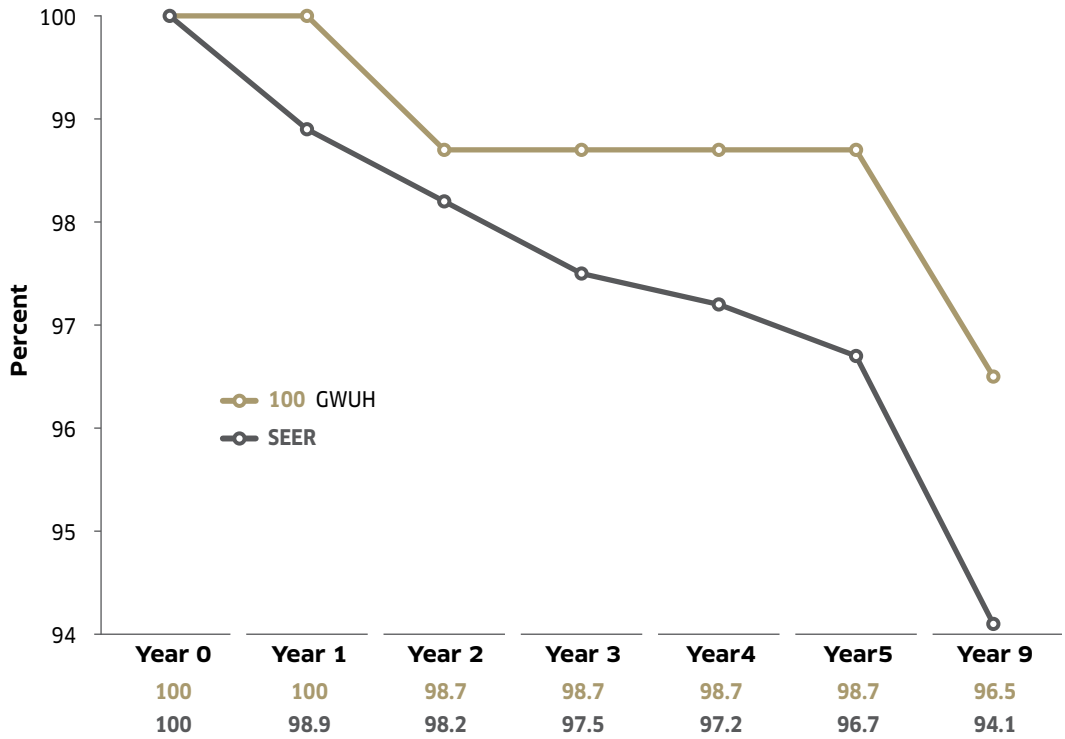
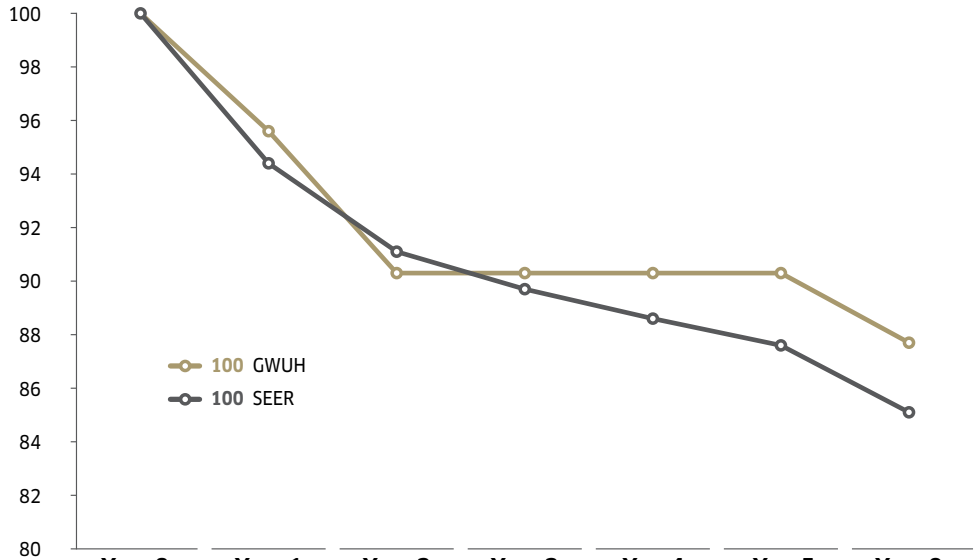


Figure 5: Non-Seminoma Testicular Cancer: Nine-Year Observed Survival
GWUH: 1998-2000 and SEER: 1998-2007



	Year 0	Year 1	Year 2	Year 3	Year4	Year5	Year 9
100 GWUH	100	95.6	90.3	90.3	90.3	90.3	87.7
100 SEER	100	94.4	91.1	89.7	88.6	87.6	85.1

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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
2150 Pennsylvania Ave., N.W.
Washington, D.C. 20037
(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
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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
2300 Eye St., N.W., Suite 514
Washington, D.C. 20037
(202) 994-2214

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

Radiation Oncology
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Washington, D.C. 20037
(202) 715-5120

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

Rehabilitation Services
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Washington, D.C. 20037
(202) 715-5271

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
2300 Eye St., N.W., Suite 514
Washington, D.C. 20037
(202) 994-2449

Support Groups

Active Treatment (all cancers)
Medical Faculty Associates
2150 Pennsylvania Ave., N.W.
First Floor,
Cancer Center Board Room
Washington, D.C. 20037
FACILITATOR: Jennifer Bires, L.G.S.W.
(202) 741-2218

Bladder Cancer Support Group
2300 Eye St., N.W., Ross Hall,
Room 105
Washington, D.C. 20037
FACILITATOR: Ted Billings, L.I.C.S.W.
(202) 232-2001

Breast Cancer Support Group
(current treatment)
Medical Faculty Associates
2150 Pennsylvania Ave., N.W.,
Room 1-402
Washington, D.C. 20037
FACILITATOR: Laureen Littlejohn,
L.I.C.S.W.
(202) 741-3158

Breast Cancer Support Group
(after treatment)
Medical Faculty Associates
2150 Pennsylvania Ave., N.W.
First Floor, Cancer Center Board Room
Washington, D.C. 20037
FACILITATORS: Laureen Littlejohn,
L.I.C.S.W. and
Jennifer Bires, L.G.S.W.
(202) 741-3158 or
(202) 741-2218

Caregivers' Support Group
Medical Faculty Associates
2150 Pennsylvania Ave., N.W.,
Room 1-402
Washington, D.C. 20037
FACILITATOR: Jennifer Bires, L.G.S.W.
(202) 741-2218

Gynecological Cancer Support Group
Medical Faculty Associates
2150 Pennsylvania Ave., N.W.,
Room 1-402
Washington, D.C. 20037
FACILITATOR: Jennifer Bires, L.G.S.W.
(202) 741-2218

Look Good, Feel Better Program
Medical Faculty Associates
FACILITATOR: Jennifer Bires, L.G.S.W.
Please call for confirmation of location and
time: (202) 741-2218

Prostate Cancer Support Group
2300 Eye St, N.W., Ross Hall, Room 401
Washington, D.C. 20037
FACILITATOR: Ted Billings, L.I.C.S.W.
(202) 232-2001

Support Group for Children Whose
Parent/Grandparent Has Cancer
FACILITATORS: Jennifer Bires, L.G.S.W.,
Katy Dolan, R.N., Theo Wyche, R.N.
(202) 741-2218

Washington, D.C., Metropolitan Area
Brain Tumor Support Group
Medical Faculty Associates
2150 Pennsylvania Ave., N.W.,
Room 1-401 or 1-402
Washington, D.C. 20037
FACILITATOR: Jeff Schanz
(202) 616-4669 or (703) 836-2276

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

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

TED BILLINGS, L.I.C.S.W. (202) 232-2001
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