

2007

# Cancer Annual Review



The Robert H. Lurie Comprehensive  
Cancer Center of Northwestern University  
at Northwestern Memorial Hospital

The Robert H. Lurie Comprehensive Cancer Center of Northwestern University at Northwestern Memorial Hospital proudly presents the 2007 Cancer Annual Review and thanks the outstanding physicians and staff who provide expert patient care, leading-edge research and exciting advances in the field.

In 2007, the Lurie Cancer Center renewed its status and funding as a National Cancer Institute (NCI)-designated center and remains the only Illinois center with the coveted “comprehensive” designation. With expertise in the entire spectrum of cancers, the Lurie Cancer Center sees the largest volume of cancer patients in Illinois and was a founding member of the National Comprehensive Cancer Network (NCCN), a consortium of 21 of the nation’s leading cancer centers committed to the development of cancer treatment guidelines and enhanced access to the most advanced treatment options. The Lurie Cancer Center maintains its position as the only Illinois member of the NCCN.

This report includes highlights from 2007 as well as statistical information reported for 2006. During 2006, our cancer program recorded 5,212 inpatient discharges and the Tumor Registry managed 3,418 analytic and 405 non-analytic cases. This represents a 10 percent increase in the number of analytic cases from the previous year.



William Small, Jr., MD (left), and Steven T. Rosen, MD

Last October, Northwestern Memorial’s new Prentice Women’s Hospital opened its doors and welcomed the Lurie Cancer Center’s inpatient units for medical oncology and hematology to two specially designed patient floors. Prentice also is the new home of the Lynn Sage Comprehensive Breast Center and includes an expansion of radiation oncology. On the move day, 208 patients, including more than 50 oncology patients, were moved safely to the new hospital.

Prentice offers a number of amenities for our patients including 24-hour room service, with food selections that complement the needs of cancer patients. The hospital offers private rooms with flat-screen televisions for easy access to hospital information, health education, the Internet, room service menus, television, movies and games. Cancer patients also benefit from a fully equipped dental office, an oncology pharmacy, a special examination room for ear, nose and throat patients and a more private family suite in the palliative care unit. Oncology care is supported by a full-time recreation therapist who sponsors educational, supportive and diversional activities and events for patients and families.

This report highlights the women’s cancer program with a focus on breast imaging, medical and surgical oncology, radiation oncology and gynecologic oncology; supportive programs such as oncofertility, cancer genetics and reconstructive surgery; and supportive oncology including psychological services, geriatric nurses and other specialized and supportive care.

Our cancer program was awarded a three-year commendation from the American College of Surgeons Commission on Cancer for NCI-designated cancer centers in 2006. Northwestern Memorial’s Committee on Cancer oversees an Oncology Executive Quality Committee that is responsible for the oversight of the quality of care provided to our cancer patients through the development of the cancer program’s quality agenda.

We want to take this opportunity to thank our world-class caregivers for all that they have done on behalf of our patients and their families and to recognize them for all of their exciting accomplishments over the past year.

**William Small, Jr., MD**  
Chair, Committee on Cancer

**Steven T. Rosen, MD**  
Director, Cancer Center

## New Pathways in the Fight Against Women's Cancers

Today, more than 40 percent of women in the United States diagnosed with cancer are found to have breast or gynecologic cancer, according to the U.S. Department of Health and Human Services. In 2007, more than 178,000 women in the United States were diagnosed with breast cancer and more than 78,000 women with gynecological cancers including ovarian cancer, as reported by the National Institutes of Health (NIH).

Early detection, advanced treatment and clinical and scientific research are critical to positively impacting the survival rates for women's cancers. Working collaboratively, Northwestern Memorial Hospital, Northwestern University's Feinberg School of Medicine and the Robert H. Lurie Comprehensive Cancer Center of Northwestern University respond to women's cancers and related healthcare needs through a variety of initiatives that include preventive and genetic screenings, leading-edge diagnostics, tumor banks and specialized clinical trials.

### Breast Oncology

At the Lynn Sage Comprehensive Breast Center at Northwestern Memorial, more than 35,000 routine mammogram screenings are performed each year. During fiscal year 2007, more than 850 patients were diagnosed with breast cancer.

### Early Detection

The use of digital mammography, as well as ultrasound and MRI, are helping detect cancer at the earliest stages, when the disease is most easily treatable, according to Ellen B. Mendelson, MD, an oncologist on the medical staff at Northwestern Memorial and professor of Radiology and section chief of Breast and Women's Imaging at the Feinberg School. "While mammography can help find breast cancer early, some cancers, which appear white, may be hidden in normal breast tissue, which also appears white on the mammograms of women whose breast tissue is dense," Dr. Mendelson says. Physicians turn to ultrasound's imaging capabilities to "see through" tissue when mammogram results are inconclusive, for example, when there is a need to determine whether a



Ellen B. Mendelson, MD, uses ultrasound to obtain enhanced imaging of breast tissue and potential cancerous growths.

lump in the breast is a cyst or a solid mass, Dr. Mendelson says. Increasingly, ultrasound is being used to assist with less invasive biopsies, helping physicians determine if a suspicious lump is cancerous. With benefits to patients including faster recovery times, ultrasound-guided biopsies are used almost exclusively at the breast center.

Dr. Mendelson and other physicians also are participating in the four-year study ACRIN 6666, sponsored by the American College of Radiology Imaging Network in conjunction with the National Cancer Institute (NCI) and supported by the Avon Foundation. The study compares the benefit of adding ultrasound screening to mammography in women with dense breast tissue and at a high risk for breast cancer. At the time of the second follow-up study, breast MRI is offered to shed light on the relative sensitivities of ultrasound and MRI as adjunctive breast cancer screening tools.

### Genetic Research and Treatment

Finding a genetic link to cancer is the focus of ongoing work by Boris Pasche, MD, PhD, director of Cancer Genetics at Northwestern Memorial and associate professor of Medicine at the Feinberg School. Since Dr. Pasche established the Cancer Genetics Program in 2002, nearly 1,000 women have been tested and counseled and more than 100 of them have tested positive for the BRCA gene mutation, often associated with hereditary breast and ovarian cancers.

Some 13.2 percent of women in the general population will develop breast cancer at some point in their lifetime, compared with 36 to 85 percent of women who carry the BRCA gene mutation, the NIH has reported. Physicians now use targeted therapies that suppress the formation of estrogen in the breasts of women who carry the mutated BRCA gene. Increasingly, physicians are focusing on the possibility that women who carry the mutated BRCA1 gene could benefit from taking aromatase inhibitors (estrogen suppressors) even though they are cancer free.

Dr. Pasche also is studying women from families with a history of colon cancer for a genetic condition known as Lynch Syndrome, which predisposes women to uterine cancer. His research has focused on the identification of novel breast



Boris Pasche, MD, PhD, studies the BRCA gene as part of his research on potential genetic links to breast cancer.

susceptibility genes. His group's efforts have led to the identification and characterization of TGFBR1\*6A as a low penetrance breast cancer gene and also have found that variants of the Adiponectin gene contribute to breast cancer risk.

### Breast Surgery

Surgeons are focusing on new forms of breast reconstruction surgery that can result in improved patient outcomes. The traditional TRAM flap procedure involves transferring muscle and fat from the abdomen to the breast. In the new DIEP flap procedure, no muscle tissue is removed from the abdomen. "This doesn't leave the abdomen as weak and it's particularly preferable for women with chronic back pain," says Nora Hansen, MD, director of the Lynn Sage Comprehensive Breast Center at Northwestern Memorial and associate professor of Surgery at the Feinberg School.



Nora Hansen, MD, performs a new type of breast reconstruction that offers advantages over the TRAM flap procedure.

The breast center also has created a bank of cancerous tissue donated by patients undergoing biopsies and surgeries. "That is a vital component of our research program," Dr. Hansen says. "More than 99 percent of our patients consent to a donation, which is of tremendous help to scientists and surgeons."

Other research here involves studying breast cancer cells for tumor markers and examining nipple fluid in patients who have one healthy breast and one in which cancer has been diagnosed. The nipple fluid study is conducted by lead investigator Seema Khan, MD, a surgeon on the medical staff at Northwestern Memorial and professor of Surgery

and Surgical Oncology at the Feinberg School. Dr. Hansen explains, "We are trying to determine whether there are any differences in the cancerous breast that make it more susceptible to cancer."

Physicians also are studying new mastectomy techniques that allow surgeons to save a patient's nipple for cosmetic purposes. In the past, surgeons have avoided this technique because the presence of residual breast ducts was thought to leave the patient more susceptible to cancer.

"We are using the new procedure in limited circumstances, for example, on women who are cancer-free but may have tested positive for the BRCA mutation and are having a prophylactic surgery to remove the breasts," says Kevin Bethke,



Kevin Bethke, MD, studies breast reconstruction improvements.

MD, a surgical oncologist on the medical staff at Northwestern Memorial and assistant professor of Clinical Surgery at the Feinberg School. "This surgery also may present an acceptable risk level for women with a fairly small mass of cancerous tissue located far away from the nipple area. When this surgery is indicated, the patients tend to be very pleased with the results."

### Breast Medical Oncology

"It is essential to take a broad perspective in the study and treatment of cancer," says Jonathan D. Licht, MD, chief of Hematology/Oncology at

Northwestern Memorial, Johanna Dobe Professor and chief of Hematology/Oncology at the Feinberg School and associate director for Clinical Sciences Research at the Lurie Cancer Center. "Breast cancer, in particular, is one of those diseases where there are many different variations and as a result, many different causes and treatments."

Dr. Licht and other researchers are studying genetic abnormalities that underlie the origin of breast cancer with the intent of identifying new pathways for therapy. Dr. Licht is focusing on a gene known as "Sprouty." He has found that deletion of this gene leads to excessive growth of the developing breast in mice. Other studies showed that the Sprouty gene is silenced in breast cancer and through animal models, Dr. Licht will determine if this could be a causative factor for breast cancer.

The mechanisms that control the cell division cycle and how they can contribute to tumorigenesis in mice are the focus of Alexander C. Minella, MD, an oncologist on the medical staff at Northwestern Memorial and an assistant professor of Medicine at the Feinberg School. By identifying the molecular pathways spurring abnormal cell division, Dr. Minella hopes to identify potential opportunities to develop therapies that block the process, such as pharmacological interventions or genetic manipulations. Also, Chonghui Cheng, MD, assistant professor of Medicine at the Feinberg School, examines a natural phenomenon known as gene splicing in which one gene produces a variety of proteins, or protein isoforms. She has found that this process is

aberrant in breast cancer patients, producing multiple protein isoforms that may be involved in cancer development. She is studying ways in which this phenomenon may be triggered by environmental cues and potential opportunities to disrupt the process.

**“It is essential to take a broad perspective in the study and treatment of cancer.”**

—Jonathan D. Licht, MD

Also pursuing the potential genetic links to cancer is William Gradishar, MD, an oncologist on the medical staff at Northwestern Memorial, professor of Medicine at the Feinberg School and director of Breast Medical Oncology at the Lurie Cancer Center. He also serves as associate director of the Lynn Sage Comprehensive Breast Center and program director of Northwestern University’s Hematology/Oncology Fellowship Training Program.

“We are determining new methods of evaluating ‘gene signatures’ on tumor samples so we can better determine patient prognosis, as well as determine who is likely to benefit from adjuvant chemotherapy. In this research, we are looking for molecular markers,” says Dr. Gradishar. He adds that traditional chemotherapy is improving in terms of efficacy and tolerability. Additionally new targeted therapies have been introduced, including TYKERB,<sup>®</sup> a successor drug used for advanced disease when Herceptin<sup>®</sup> has become ineffective.

### Brachytherapy

Researchers performed the first study to assess the use of ultrasound in catheter placement for brachytherapy, a form of partial breast irradiation therapy. In breast brachytherapy, the cancerous breast lump is surgically removed and a balloon catheter is used to direct radiation only to the portion of the breast surrounding the lumpectomy site. This approach reduces the risk of damaging healthy tissue far from the tumor site and allows for a shorter treatment regime.

In the past, in preparation for brachytherapy, balloon catheters sometimes were placed in the breast during lumpectomies or a surgical incision was reopened to insert the catheter. Often, the catheter was placed unnecessarily because later findings revealed that brachytherapy was not indicated. Research here has

shown that radiologists can wait until receiving the final pathology report, then safely and efficiently use ultrasound to guide and insert the catheter immediately before the patient begins brachytherapy. This new protocol allows time to determine if brachytherapy is appropriate and allows the patient and physician to consider the benefits of various treatment options.

Additional studies are underway to determine whether brachytherapy is effective in killing breast cancer tumors that have spread to the liver. Researchers also are focusing on studies that explore the use of nanoparticles in cancer imaging and treatment, as well as a randomized trial of partial-breast radiotherapy as opposed to whole-breast radiotherapy.

### Gynecologic Oncology

Northwestern Memorial is a leader among Illinois hospitals in establishing a program dedicated to robotic gynecologic oncology surgery, an innovative surgical treatment for uterine, cervical and some ovarian cancers. The use of a robotic surgical system provides improved visualization, dexterity and precision over current conventional laparoscopic techniques and expands the range of surgical options for many patients.

“Robotic surgery offers patients similar survival rates to those of traditional surgery with the added benefits of a shorter hospital stay, quicker recovery, decreased blood loss during surgery and decreased pain. In addition, patients experience less scarring and reduced incidence of infection,” says Julian C. Schink, MD, chief of Gynecologic Oncology at Northwestern Memorial, professor of Obstetrics and Gynecology at the Feinberg School and medical director of the Lurie Cancer Center.



Under the guidance of Julian C. Schink, MD, Northwestern Memorial has expanded its use of robotic gynecologic oncology.

Additional therapies used to treat patients with gynecological cancers include intraperitoneal chemotherapy, which greatly increases the effectiveness of chemotherapy by reaching tumors in sites not easily accessible through traditional IV chemotherapy, such as the abdominal cavity.

## Oncofertility

Women diagnosed with gynecological cancer while they are still fertile may benefit from a new study that involves cryopreservation of egg cells. The study, a collaboration among Northwestern Memorial, the Feinberg School and the Lurie Cancer Center, focuses on ways to remove immature eggs from ovarian tissue and mature them in the laboratory so they can potentially be fertilized. Once it is determined that a method works, it may be possible to use cryopreserved ovarian tissue or immature eggs to initiate pregnancies after cancer treatment has been completed and the patient has recovered.

As the national leader in this growing area of scientific inquiry and research, Northwestern Memorial, the Feinberg School and the Lurie Cancer Center have created a consortium of experts that includes biophysicists, biomaterials biologists, clinical oncologists, reproductive biologists, psychologists, ethicists and legal scholars. Last July, the NIH announced a \$21 million grant to help fund the consortium's studies of the impact of cancer treatment on fertility, new technologies that may preserve fertility and the psychosocial role fertility has on survivorship.

It may be possible to use cryopreserved ovarian tissue or immature eggs to initiate pregnancies after cancer treatment has been completed and the patient has recovered.

Currently, 14 women are enrolled in the research study on the cryopreservation of egg cells. The consortium is part of a cooperative with hospitals and universities across the country committed to fertility preservation. Patients anywhere can participate in the study. So far, researchers have succeeded in creating pregnancies in laboratory mice and hope soon to try the same process with monkeys.

Many women have utilized emergency in-vitro fertilization with the freezing of their embryos prior to the start of cancer treatment. Northwestern Memorial offers a full array of fertility preservation options for women and for men, such as the freezing of embryos, sperm and testicular tissue.

## Image-Guided Radiation Therapy

Northwestern Memorial now has the capability to provide state-of-the-art radiation treatment with its new linear accelerator, which is located in the lower

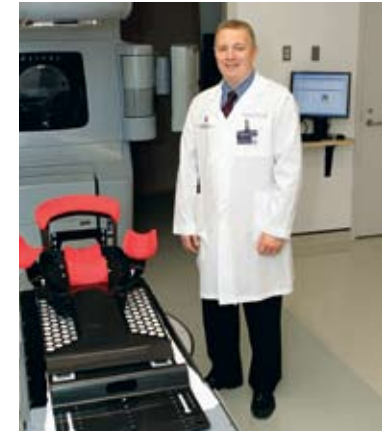
concourse of Prentice Women's Hospital. The machine delivers radiation to tumor sites with a precision previously unavailable in traditional radiation technology. The linear accelerator also has the advantage of an attached CT scanner, which can be used before each treatment to align the radiation field more precisely.

"We start by doing a planning CT simulation, a CT of the patient performed for treatment planning purposes," explains William Small, Jr., MD, a radiation oncologist on the medical staff at Northwestern Memorial and professor of Radiation Oncology at the Feinberg School. "Before each treatment, we obtain an onboard CT scan or plain kV X-rays and precisely match these images to the original planning images to ensure the patient is correctly positioned."

This new protocol is not used in all patients but does have the capability to improve the safety margin employed in typical radiotherapy treatments by reducing the area radiated. "Any new technology that tightens our margins is an improvement," says Dr. Small. "It can mean the difference between a post-treatment complication and no complication."

Northwestern Memorial, the Feinberg School and the Lurie Cancer Center also are taking part in an international randomized trial studying the effects of hyperthermia, or heat treatments, on cervical cancer. The trial involves adding hyperthermia to standard radiation treatments as a potential radiosensitizer. Past studies in the United States, Norway and the Netherlands have suggested that this dual treatment regimen improves the survival rates for patients diagnosed with cervical cancer.

Another research trial explores the use of bevacizumab (Avastin®), a monoclonal antibody against vascular endothelial growth factor. It is used in treatment for metastatic colon cancer and metastatic non-small cell lung cancer. Researchers theorize that it inhibits tumor growth with its ability to block angiogenesis. "Another theory is that it creates a more normalized blood flow and



William Small, Jr., MD, explains the targeting precision available with Northwestern Memorial's sophisticated linear accelerator with CT scanning capabilities.

a better delivery of chemotherapy to the tumor and sensitization of radiotherapy,” Dr. Small says. Researchers are studying its effects in patients undergoing combined chemotherapy and radiotherapy for cervical cancer.

### Supportive Care

As new treatments extend the life span of cancer patients, the management of symptoms and treatment of side effects become increasingly important. Our supportive care team provides a multidisciplinary approach to support for hospice patients that includes symptom management consultation, massage therapists, art and recreational therapists, psychological services, pastoral counselors, geriatric nurses and other specialized care. In 2007, the Feinberg School was one of six medical schools nationwide chosen by the Medical College of Wisconsin to receive a grant funded by the Robert Wood Johnson Foundation to advance palliative care efforts and related studies within the Feinberg School. Starting in July, third-year medical students will be required to participate in an experience in palliative care, studying issues such as pain management and “whole patient” treatment plans that take into account patient finances and family support. The Feinberg School also is developing palliative care seminars for hospitalists, physicians who specialize in hospital care, and has enhanced the elective palliative care rotation which is open to third- and fourth-year medical students, residents and fellows.

“The intent of this project is to integrate this rotation as a permanent component of the curriculum for medical school students,” says Jamie Von Roenn, MD, an oncologist on the medical staff at Northwestern Memorial, medical director of the Palliative Care Program at Northwestern Memorial and professor of Medicine at the Feinberg School. “Palliative care recently became an approved subspecialty by the American Board of Medical Specialists. It now is considered mainstream medicine. Healthcare providers recognize that alleviating stress and suffering can be complex and the most effective approaches involve multidisciplinary treatment of the patient rather than simply treating a disease. Excellent training in the principles and practice of palliative care can lead to decreased suffering for patients and their families.”

### NEW TREATMENT SPACE FOR INPATIENT CANCER CARE

When the new Prentice Women’s Hospital opened in October of 2007, it welcomed more than 50 oncology patients to the new 72-bed inpatient care unit of the Robert H. Lurie Comprehensive Cancer Center of Northwestern University at Northwestern Memorial Hospital.

The Lurie Cancer Center, along with the Lynn Sage Comprehensive Breast Center and an expanded radiation oncology unit, are available for patients at Prentice. Medical oncology and hematology patients, along with women receiving treatment for breast and gynecologic cancers, continue to benefit from advanced care from their physicians through the Lurie Cancer Center.

The 15th and 16th floors of Prentice are specially designed for medical oncology and hematology patients, including those receiving stem cell transplants, with features and amenities including:

- Building materials and systems that help reduce the risk of infection
- On-demand room service that supports individual nutrition plans and flexible meal delivery to accommodate diagnostic and treatment appointments
- An on-site rehabilitation gym created for patient use and designed to promote strength, flexibility and endurance during treatment and recovery
- Flat-screen televisions in patient rooms for easy access to hospital information, health education, the Internet, room service menus, television, movies and games
- A dental office on the 16th floor to address the dental needs of hospitalized cancer patients, who sometimes need dental care before cancer treatment can begin
- An examination room equipped for patients with head and neck cancer or other clinical issues requiring ear, nose and throat exams

This relocation reflects Northwestern Memorial’s strategy to offer opportunities for greater collaboration and cross-training among physicians, researchers and staff in support of comprehensive care and quality treatment. It also allows Northwestern Memorial to address capacity issues by increasing treatment space for inpatient care throughout its facilities.



A leading-edge dental clinic provides convenient treatment for hospitalized cancer patients who may need dental care.

## Cancer Review Highlights – Fiscal Year 2007

- **Cancer treatment facilities were enhanced significantly with the relocation to the new Prentice Women’s Hospital.**

- Hematology and medical oncology inpatient beds relocated to the new facility; 72 private patient rooms on the 15th and 16th floors are complemented by numerous specialty facilities designed to meet the unique needs of cancer patients.
- The 14th floor is dedicated to gynecologic surgery including gynecologic oncology.
- An expanded Lynn Sage Comprehensive Breast Center is located in Prentice, providing a full range of imaging and breast surgical oncology services. In 2008, facility development is anticipated to include relocation of breast medical oncology services and gynecologic oncology outpatient services to space adjacent to the breast center, supporting a comprehensive women’s cancer program in a single location.
- A Radiation Oncology satellite facility now is located on the lower concourse of the new Prentice building to facilitate and streamline treatment for inpatients. In addition, common radiology procedures, including CT scanning, are available.

- **The Robert H. Lurie Comprehensive Cancer Center of Northwestern University was awarded a five-year renewal for its National Cancer Institute Cancer Center Support Grant (NCI CCSG). The Lurie Cancer Center remains the only Illinois center with the highly-coveted “comprehensive” designation. The CCSG supports essential infrastructure and facilities that foster collaborative research and innovation. Despite a highly competitive extramural funding environment, the Lurie Cancer Center was awarded a significant increase in funding and now receives \$5.03 million annually from the CCSG.**

- **The cancer program received a three-year accreditation renewal with commendation by the American College of Surgeons in October of 2006. The program was evaluated according to new criteria established for NCI-designated cancer centers.**

- **The Lurie Cancer Center maintained its position as the only Illinois member of the National Comprehensive Cancer Network, a consortium of 21 of the nation’s leading cancer centers committed to the development of cancer treatment guidelines and enhanced access to the most advanced treatment options for patients.**

- **Regular multidisciplinary conferences provided prospective treatment planning for patients in the following areas:**

Breast Cancer	Melanoma
Gynecologic Oncology	Sarcoma
Genitourinary Cancers	Thoracic Oncology
Hematologic Diseases	Hematopoietic Stem Cell Transplant
Head and Neck Cancers	Gastrointestinal Oncology
Neurological Oncology	Palliative Care

- **Through the Clinical Research Office of the Lurie Cancer Center, a comprehensive clinical trials program continued to be available to patients. Under the direction of Timothy Kuzel, MD, hematologist/oncologist on the medical staff at Northwestern Memorial and professor of Medicine at the Feinberg School, the research office is staffed with nearly 50 full-time employees. It conducts and coordinates Phase I through Phase IV clinical trials sponsored by federally-funded national cooperative groups and the pharmaceutical industry as well as investigator-initiated institutional trials developed by faculty at the Feinberg School. Physicians regularly play leading roles in national cooperative group studies and in working to develop, test and accelerate**

access to new treatments. In fiscal year 2007, a total of 646 patients at Northwestern Memorial were enrolled in 218 interventional therapeutic and non-therapeutic clinical trials. Several hundred additional patients were accrued to non-interventional ancillary/correlative studies or observation/outcomes studies.

- **A variety of education, support and outreach programs were available:**

- Professional education was provided through the Lurie Cancer Center including the ninth annual Lynn Sage Breast Cancer Symposium and the ninth annual Oncology Nursing Conference as well as annual programs in basic sciences, gastrointestinal oncology and an American Society of Clinical Oncology Review. Monthly Schwartz Center Rounds also were conducted to support intramural education.
- Weekly patient education and support groups, inpatient case management, an outpatient psychosocial oncology team, American Cancer Society Patient Navigation Service, a late-effects clinic and gero-oncology consultation service continue to be provided.
- A Health Learning Center satellite, staffed by a full-time patient educator, was established in the Lurie Cancer Center on the 21st floor of the Galter Pavilion to support and enhance comprehensive cancer care.
- A wide range of community education programs were offered, including the Lynn Sage Breast Cancer Town Hall meeting with nearly 400 in attendance and cancer survivorship initiatives including the 14th Annual Cancer Survivors’ Celebration and Walk on the Chicago lake-front in June with 3,500 participants.

- **Neuro-oncology was strengthened during fiscal year 2007 with the recruitment of Markus Bredel, MD, PhD, from Stanford University. Dr. Bredel is a laboratory-based researcher and is an assistant professor at the Feinberg School and director of the Northwestern Brain Tumor Institute Research Program.**

## 2006 Registry Report

Northwestern Memorial Hospital's Tumor Registry is under the direction of the Committee on Cancer. In 2006, the cancer program received a three-year accreditation with commendation award from the American College of Surgeons Commission on Cancer.

The registry collects and maintains detailed information on reportable cancers and selected benign neoplasms diagnosed and or treated at Northwestern Memorial. This information guides patient care by helping to determine the effectiveness of current therapeutic interventions and provides direction for future therapies. The registry data is sent to the Illinois State Cancer Registry, the National Cancer Data Base and the American Cancer Society for reporting and survival statistics.

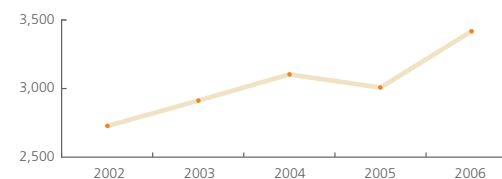
Northwestern Memorial's Tumor Registry database has a reference date of January 1, 1992, and currently follows 39,550 patients yearly.

### Top 10 Sites 2006

MALE AND FEMALE	Northwestern Memorial Hospital (n=2,582)	United States* (n=1,062,950)
<b>BREAST</b>	<b>28%</b>	<b>20%</b>
<b>PROSTATE</b>	<b>23%</b>	<b>22%</b>
<b>COLON/RECTUM</b>	<b>9%</b>	<b>14%</b>
<b>LUNG</b>	<b>8%</b>	<b>16%</b>
<b>LYMPHOMA</b>	<b>7%</b>	<b>6%</b>
<b>KIDNEY</b>	<b>6%</b>	<b>4%</b>
<b>BLOOD AND BONE MARROW</b>	<b>5%</b>	<b>5%</b>
<b>THYROID</b>	<b>5%</b>	<b>3%</b>
<b>MELANOMA</b>	<b>5%</b>	<b>6%</b>
<b>CORPUS UTERI</b>	<b>4%</b>	<b>4%</b>

\* American Cancer Society Facts and Figures 2006

### Total Analytic Cases 2002 to 2006



Since 2002, there has been a 20% increase in the total number of analytic cases seen at Northwestern Memorial, from 2,727 cases in 2002, to 3,418 in 2006.

### 2006 Registry Activities and Accomplishments

- Added 3,418 new cases to the registry
- Achieved 92 percent follow-up with cases diagnosed within the past five years
- Completed 47 requests for data to monitor, improve and evaluate patient care and survival trends

### Primary Site Tabulation for 2006

PRIMARY SITE	TOTAL	A*	N-A**	MALE	FEMALE	% OF CASES	PRIMARY SITE	TOTAL	A*	N-A**	MALE	FEMALE	% OF CASES	PRIMARY SITE	TOTAL	A*	N-A**	MALE	FEMALE	% OF CASES
<b>Oral Cavity</b>	<b>55</b>	<b>51</b>	<b>4</b>	<b>33</b>	<b>22</b>	<b>1.5</b>	<b>Bone</b>	<b>11</b>	<b>6</b>	<b>5</b>	<b>7</b>	<b>4</b>	<b>0.3</b>	<b>Urinary System</b>	<b>280</b>	<b>256</b>	<b>24</b>	<b>190</b>	<b>90</b>	<b>7.3</b>
<b>Digestive System</b>	<b>598</b>	<b>539</b>	<b>59</b>	<b>326</b>	<b>272</b>	<b>15.6</b>	<b>Connect/Soft Tissue</b>	<b>27</b>	<b>24</b>	<b>3</b>	<b>14</b>	<b>13</b>	<b>0.7</b>	Bladder	100	86	14	74	26	
Esophagus	34	34	0	29	5		<b>Skin</b>	<b>151</b>	<b>136</b>	<b>15</b>	<b>72</b>	<b>79</b>	<b>4</b>	Kidney/Renal	170	161	9	110	60	
Stomach	43	38	5	24	19		Melanoma	142	127	15	66	76		Other	10	9	1	6	4	
Colon	178	155	23	84	94		Other	9	9	0	6	3	<b>Brain and CNS</b>	<b>149</b>	<b>127</b>	<b>22</b>	<b>66</b>	<b>83</b>	<b>3.9</b>	
Rectum	92	81	11	48	44		<b>Breast</b>	<b>773</b>	<b>727</b>	<b>46</b>	<b>8</b>	<b>765</b>	<b>20.2</b>	Brain (Benign)	30	27	3	8	22	
Anus/Anal Canal	18	16	2	6	12		<b>Female Genital</b>	<b>233</b>	<b>219</b>	<b>14</b>	<b>0</b>	<b>233</b>	<b>6.1</b>	Brain (Malignant)	70	62	8	45	25	
Liver	78	72	6	59	19		Cervix Uteri	30	28	2	0	30		Other	49	38	11	13	36	
Pancreas	92	85	7	46	46		Corpus Uteri	117	109	8	0	117		<b>Endocrine</b>	<b>166</b>	<b>156</b>	<b>10</b>	<b>55</b>	<b>111</b>	<b>4.3</b>
Other	63	58	5	30	33		Ovary	65	61	4	0	65		Thyroid	137	132	5	37	100	
<b>Respiratory System</b>	<b>247</b>	<b>227</b>	<b>20</b>	<b>113</b>	<b>134</b>	<b>6.5</b>	Vulva	13	13	0	0	13		Other	29	24	5	18	11	
Nasal/Sinus	1	1	0	1	0		Other	8	8	0	0	8		<b>Lymphatic System</b>	<b>244</b>	<b>166</b>	<b>78</b>	<b>143</b>	<b>101</b>	<b>6.4</b>
Larynx	15	13	2	14	1		<b>Male Genital</b>	<b>645</b>	<b>605</b>	<b>40</b>	<b>645</b>	<b>0</b>	<b>16.9</b>	Hodgkin's Disease	39	28	11	23	16	
Lung/Bronchus	226	208	18	94	132		Prostate	617	579	38	617	0		Non-Hodgkin's	205	138	67	120	85	
Other	5	5	0	4	1		Testis	26	24	2	26	0		<b>Unknown Primary</b>	<b>20</b>	<b>19</b>	<b>1</b>	<b>13</b>	<b>7</b>	<b>0.5</b>
<b>Blood and Bone Marrow</b>	<b>200</b>	<b>137</b>	<b>63</b>	<b>108</b>	<b>92</b>	<b>5.2</b>	Other	2	2	0	2	0		<b>Other/III-Defined</b>	<b>24</b>	<b>23</b>	<b>1</b>	<b>10</b>	<b>14</b>	<b>0.6</b>
Leukemia	104	74	30	60	44		<b>All Sites</b>	<b>3,823</b>	<b>3,418</b>	<b>405</b>	<b>1,803</b>	<b>2,020</b>	<b>100</b>							
Multiple Myeloma	84	55	29	42	42															
Other	12	8	4	6	6															

\* Analytic (a) are newly diagnosed cases that have received part or all of first course of treatment at Northwestern Memorial.

\*\* Non-analytic (n-a) are cases that received all first course of treatment elsewhere and came to Northwestern Memorial for subsequent treatment. No cases are excluded.

This report excludes carcinoma in-situ cervix, squamous and basal cell skin cases and intraepithelial neoplasia cases.

## Clinical Trials

### Breast Oncology

**NU 05B4:** Facilitating Caring Communication for People with Cancer: The Case of Breast Cancer

**NCI 05B3:** Prolactin Receptor Complex in Breast Cancer

**NU 05B5:** A Phase I, Open-Label Study of the Safety, Tolerability, and Pharmacokinetics of Lapatinib in Combination with Liposomal Doxorubicin in Patients with Metastatic Breast Cancer

**NU 05B2:** Pilot Neoadjuvant Trial in Breast Cancer with Combination of ABI-007 (Abraxane) and GW572016 (Lapatinib)

**ECOG 2Z04:** Quality of Life in Younger Breast Cancer Survivors

**NU 07B1:** A Double-Blind, Randomized Phase 2b Study Evaluating the Efficacy and Safety of Sorafenib Compared to Placebo when Administered in Combination with Paclitaxel in Patients with Locally Recurrent or Metastatic Breast Cancer

**NU 03B2-PT:** The Effect of an Upper Extremity Endurance Weight Training Program on Arm Volume and Quality of Life in Breast Cancer Survivors

**NU 06CC11:** Does Chemotherapy Induced Neuropathy Cause Spinal Cord Injury?

**NU 06CC2:** Incidence and Risk Factors Associated with Paclitaxel-Induced Peripheral Neuropathy in Breast Cancer Patients

**NU 06CC3:** Communication and Decision-Making About Breast Cancer: An Observational Study About Transition

**NU 07B5:** Influences on Physical Activity and Exercise Behaviors Among Breast Cancer Survivors

**NU 07B2:** Cathepsin D Activity in the Screening and Surveillance of Breast Cancer

**NU 02B6:** Clinical Study to Evaluate Partial Breast Radiation with the MammoSite Treatment Device

**NCI 07B4:** Communication Needs and Decision-Making Among Women with Breast Cancer

**NU 07B11:** Incorporating Literacy and Language into Breast Cancer Tools for Patients

**NU 07B6:** Understanding Treatment Decision-Making in Multi-ethnic Women with Breast Cancer

**ACSOG Z1031:** A Randomized Phase III Trial Comparing 16 to 18 Weeks of Neoadjuvant Exemestane (25 mg daily), Letrozole (2.5 mg), or Anastrozole (1 mg) in Postmenopausal Women with Clinical Stage II and III Estrogen Receptor Positive Breast Cancer

**NCI 05B1:** Endocrine Markers of Breast Tissue Cancer Risk and Selection of Prevention Strategies

**NCI 06B1:** Nipple Fluid Hormone Levels and Breast Cancer Risk

**NCI 06B2:** Steroidogenic Gene Expression Normal, High-Risk Breast and Hormone Receptor Status of Breast Cancer

**NU 06B4:** Potential Markers of Estrogen Receptor Positive Breast Cancer Risk in Women Undergoing Benign Breast Biopsy

**NU 07B7:** Multi-Institutional Breast Cancer Outcomes Project within the National Comprehensive Cancer Network

**NU 07B3:** Translating the Gene Signature of Breast Cancer Stem Cells into Improved Predictive Markers and Targeted Therapies

**DRUG CA180004:** A Phase I Study of Dasatinib (BMS-354825) and Capecitabine for Advanced Breast Cancer

**DRUG CZOL446E2352:** A Prospective, Randomized, Double-Blind, Stratified, Placebo-Controlled, Multi-Center, Three-Arm Trial of the Continued Efficacy and Safety of Zometa (Every Four Weeks Versus Every 12 Weeks Verses Placebo) in Patients with Documented Bone Metastases from Breast Cancer

**ECOG PACCT-1:** Program for the Assessment of Clinical Cancer Tests (PACCT- 1): Trial Assigning Individualized Options for Treatment: The TAILORx Trial

**RTOG 0413:** A Randomized Phase III Study of Conventional Whole Breast Irradiation (WBI) Versus Partial Breast Irradiation (PBI) for Women with Stage 0, I, or II Breast Cancer

**NCI 04B3:** Phase IIb Trial of G-2535 (Unconjugated Isoflavones-100) in Women at High Risk for Breast Cancer

**NU 06B3:** Quality of Life in Breast Cancer Patients with Previous Augmentation Mammoplasty

**NU 04CC4:** Readiness for Breast and Ovarian Cancer Genetic Counseling: A Focus on Family Dynamics

**NU 05B6:** Nipple Aspiration Fluid and Endocrine Markers of Breast Cancer Risk

**ACRIN 6666:** Screening Breast Ultrasound in High-Risk Women, in Development in Breast Imaging Section, Department of Radiology: Automated Breast Ultrasound System for Breast Cancer Screening (Corporate Collaboration; U-Systems, San Jose, CA)

**CLINICAL STUDY:** Computer-Aided Diagnosis for Breast Ultrasound (Corporate Collaboration, Medipattern Inc., Toronto)

**CLINICAL STUDY:** Management of Probably Benign Palpable Masses Following Bilateral Ultrasound Examination

### Gynecologic Oncology

**NU D03G1:** An International Multi-Center Phase III Study of Chemoradiotherapy Versus Chemoradiotherapy Plus Hyperthermia for Locally Advanced Cervical Cancer

**RTOG 0417:** A Phase II Study of Bevacizumab in Combination with Definitive Radiotherapy and Cisplatin Chemotherapy in Untreated Patients with Locally Advanced Cervical Carcinoma

**NU 06I3:** Prospective Evaluation of Colonic Abnormalities in Patients with Microsatellite Instability-Positive Endometrial Carcinoma

## CLINICAL TRIALS CONTINUED

**GOG 0087M:** A Phase II Evaluation of Trabectedin (Yondelis, R279741, IND #75,111) in the Treatment of Advanced, Persistent, or Recurrent Uterine Leiomyosarcomas

**GOG 0188:** Phase II Study of Faslodex in Recurrent/Metastatic Endometrial Cancer

**GOG 0209:** Randomized Phase III Trial of Doxorubicin/ Cisplatin/Paclitaxel and G-CSF versus Carboplatin/Paclitaxel in Patients with Stage III and IV or Recurrent Endometrial Cancer

**GOG 0242:** A Phase II Study to Determine the Response to Second Curettage as Initial Management for Persistent Low-Risk, Non-Metastatic Gestational Trophoblastic Neoplasia

**GOG 230B:** A Phase II Evaluation of Thalidomide (NSC #66847, IND #48832) in the Treatment of Persistent or Recurrent Carcinosarcoma of the Uterus

**NCI 05G1:** Progesterone Receptor in Endometrial Cancer: Identification of Target Genes

**RTOG 0418:** A Phase II Study of Intensity Modulated Radiation Therapy (IMRT) to the Pelvis +/- Chemotherapy for Post-Operative Patients with Either Endometrial or Cervical Carcinoma

**NU 0213:** Evaluation of Colon Cancer Screening in Patients with Endometrial Cancer Diagnosed Before Age 50

**GOG 0210:** A Molecular Staging Study of Endometrial Cancer

**NU 99G8:** Northwestern Ovarian Cancer Early Detection and Prevention Program

**GOG 01460:** A Phase II Evaluation of Irofulven (IND#55804, NSC#683863) in the Treatment of Recurrent or Persistent Platinum-Sensitive Ovarian or Primary Peritoneal Cancer

**GOG 0212:** A Randomized Phase III Trial of Maintenance Chemotherapy Comparing 12 Monthly Cycles of Single Agent Paclitaxel or Xyotax (CT-2103)(IND# 70177), Versus No Treatment Until Documented Relapse in Women with Advanced Ovarian or Primary Peritoneal Cancer Who Achieve a Complete Clinical Response to Primary Platinum/Taxane Chemotherapy

**GOG 0218:** A Phase III Trial of Carboplatin and Paclitaxel Plus Placebo versus Carboplatin and Paclitaxel Plus Concurrent Bevacizumab (NSC #704865, IND #7921) Followed by Placebo, Versus Carboplatin and Paclitaxel Plus Concurrent and Extended Bevacizumab, in Women with Newly Diagnosed, Previously Untreated, Stage III (Suboptimal) and All Stage IV, Epithelial Ovarian or Primary Peritoneal Cancer

**NCI 05G2:** Development of Barcode Assays for the Detection of Ovarian Cancer

**NU 06G2:** Increasing Awareness About Prevention and Diagnosis of Ovarian Cancer in Jewish Women: A Pilot Study

**NU UPT02G1:** Ovarian Cancer Risk and Survival in High-Risk Women

**NU UT01V1:** A Prospective Study of Risk Factors in BRCA1 and BRCA2 Mutation Carriers

### Genetics

**NCI 03Z2:** Ascertainment of Peripheral Blood Samples for Genetic Epidemiology Studies of Familial and Hereditary Colon Cancer

**NU 0212:** Center for Hereditary Colon Cancer Syndromes, The Robert H. Lurie Comprehensive Cancer Center of Northwestern University

**NU 03U6:** Genetics of Prostate Cancer Study

**NU 07H5:** Genetics of Acute Myeloid Leukemia (AML), Myelodysplastic Syndrome (MDS) and Myeloproliferative Disease (MPD)

**NCI 03Z1:** Ascertainment of Peripheral Blood Samples for Genetic Epidemiology Studies of Familial Breast and Ovarian Cancer

**ECOG 1Y03:** Master Protocol for Pharmacogenetic and Genomic Studies

**NU 02V1:** Mutations of the TGF-beta Signaling Pathway and Other Genetic and Molecular Markers as Risk and Prognostic Factors in Patients with Aerodigestive Malignancies

**NU 03Z1:** Expression of the Genome in Cutaneous Lymphoid Malignancies: A Pilot Study of DNA Microarrays in Cutaneous B-Cell Lymphoma

**NU 02U2:** Genetic Studies of the SOX3 Gene in Patients with Testicular Germ-Cell Tumors (TGCT)

### Oncofertility

**NCI 07G1:** Center for Reproductive Research at Northwestern University: Ovarian Tissue Freezing Prior to Cancer Therapy

**NCI 07CC1:** An Interdisciplinary Perspective: A Social Science Examination of Oncofertility: Cancer Patients' Concerns Regarding Fertility: Comparison by Social Statuses

**NCI 07G3:** Oncofertility Consortium: Assessing the Risk of Impending Premature Ovarian Failure (RIPOF) in Female Cancer Patients

**NU 05CC3:** Center for Families After Cancer

**NU 00G5:** Ovarian Tissue Freezing Prior to Chemotherapy or Radiation Therapy

**NU 05CC4:** Center for Families After Cancer: Oocyte Cryopreservation Prior to Chemotherapy or Radiation Therapy

**NCI 05G3:** Use of Cumulus Cell Gene Expression as a Supplementary Criterion for Selecting Embryos for Transfer

**NCI 03G3:** Ovarian-Mimetic Polymeric Scaffolds for the Culture of Primary Ovarian Follicles

**Pilot:** Sperm Alginite Study/SPARE

**2138-003:** Oncofertility Consortium: A Novel Approach to Assess Direct and Estradiol-Mediated Effects of Ovulation Induction Regimens and Breast Cancer Development

For more information about  
clinical trials, please visit  
[www.cancer.northwestern.edu](http://www.cancer.northwestern.edu).

## Committee on Cancer

### Medical Staff Members

#### COMMITTEE CHAIR

**William Small, Jr., MD**  
Radiation Oncology

#### SURGERY

**Matthew G. Blum, MD**  
Cardiothoracic Surgery

**James P. Chandler, MD**  
Neurological Surgery

**Jose Carlos Dutra, MD**  
Otolaryngology/Head and Neck Surgery

**James M. Kozlowski, MD**  
Urology

**Harold J. Pelzer, MD**  
Otolaryngology/Head and Neck Surgery

**Jeffery J. Raizer, MD**  
Neurology

**Diljeet K. Singh, MD**  
Gynecologic Oncology

#### CANCER LIAISON PHYSICIAN

**Steven J. Stryker, MD**  
Surgical Oncology

#### MEDICAL ONCOLOGY

**Jonathan D. Licht, MD**  
Medicine, Hematology/Oncology

**Steven T. Rosen, MD**  
Medicine, Hematology/Oncology

**Jamie H. Von Roenn, MD**  
Medicine, Hematology/Oncology

#### PATHOLOGY

**William B. Laskin, MD**  
Pathology

#### DIAGNOSTIC RADIOLOGY

**Yolanda T. Adler, MD**  
Radiology

**Riad Salem, MD, MBA**  
Radiology

#### PSYCHIATRY

**Joshua L. Strauss, MD**  
Psychiatry/Consultation/Liaison

#### ADMINISTRATIVE MEMBERS

**Julie Bryant, RHIA**  
Medical Records/Information Systems

**Michael Childers, CTR**  
Tumor Registry

**Jayne Leunicka, RHIA, CTR**  
Tumor Registry

**Susan R. Kasper, RHIT, CTR**  
Medical Records

**Desi Kotis, RPh**  
Pharmacy

**Matthew Mickelson, RN**  
Hematology/Oncology

**Denise Morley, RN**  
Clinical Quality Management

**Elaine Miller, LCSW**  
Social Services

**Patricia Murphy, RN, MSN, MBA**  
Oncology Services

**Judith Paice, RN, PhD**  
Pain Management, Hematology/Oncology

**Alfred Rademaker, PhD**  
Preventive Medicine/Biostatistics

**Nick Rave**  
Professional Services

**Alex Zafirovski**  
Radiation Oncology

**William Small, Jr., MD**  
Chair, Committee on Cancer

**Patricia Murphy, RN, MSN, MBA**  
Director, Oncology Services

**Susanne Kessler, RHIT, CTR**  
Manager, Medical Records

#### UNDER THE ADMINISTRATION OF:

**Michelle A. Janney, RN, PhD, CNNA, BC**  
Senior Vice President and Chief Nurse Executive  
Northwestern Memorial Hospital

**David L. Wood**  
Vice President of Operations  
Northwestern Memorial Hospital

**Timothy R. Zoph**  
Vice President and Chief Information Officer  
Northwestern Memorial Hospital

## Contact Information

**Robert H. Lurie Comprehensive Cancer Center of Northwestern University at Northwestern Memorial Hospital**  
Prentice Women's Hospital  
250 E. Superior St., Floors 15 and 16  
Chicago, IL 60611

**Main Hospital Number**  
312-926-2000

**Cancer Program**  
312-695-0990

**Clinical Research Center**  
312-926-3192

**Physician Access Line**  
800-638-3737

**Tumor Registry**  
312-926-0379

**Web Site**  
[www.nmh.org](http://www.nmh.org)

**Robert H. Lurie Comprehensive Cancer Center of Northwestern University**  
303 E. Superior St., Suite 3-125  
Chicago, IL 60611

**Administrative Office**  
312-908-5250

**Clinical Research Office**  
312-695-1301

**Health Learning Center Satellite**  
312-926-7377

**Web Site**  
[www.cancer.northwestern.edu](http://www.cancer.northwestern.edu)

**Lynn Sage Comprehensive Breast Center**  
Prentice Women's Hospital  
250 E. Superior St., Fourth Floor  
Chicago, IL 60611

**Scheduling Number**  
312-926-5522

Do NOT USE THIS PAGE, SEE OTHER DESIGN FILE.

*Para asistencia en español, por favor llamar a el departamento de representantes para pacientes al 312-926-3112.*

Northwestern Memorial is an equal opportunity employer that welcomes, respects and serves with dignity all people and does not discriminate, including in hiring, or employment, or admission, or access to, or treatment in its programs or activities on the basis of race, color, gender, national origin, religion, disability, handicap, age, Vietnam or other veteran status, sexual orientation or any other status protected by relevant law. To arrange for TDD/TTY, auxiliary aids and foreign language interpretation services, call the Patient Representative department at 312-926-3112, TDD number 711 or 800-526-0867. Issues related to the Rehabilitation Act of 1973 should be directed to the director of Employee Relations or designee at 312-926-7297.