Dear Colleagues:

The Robert H. Lurie Comprehensive Cancer Center of Northwestern University is one of only 40 National Cancer Institute-designated comprehensive cancer centers in the nation. The program is noted for its comprehensive research, distinguished and dedicated staff, world-class teaching and ongoing advancements in medical, surgical, radiation, interventional and supportive oncology care.

The Lurie Cancer Center also has focused its strengths in key areas through the establishment of dedicated institutes and programs. The Northwestern Brain Tumor Institute was chartered in 2009, the Maggie Daley Center for Women’s Cancer Care was formally dedicated in 2010 and the Skin Cancer Institute was chartered in 2011. Over the past year, planning has been underway for the Northwestern Institute for Comparative Effectiveness Research in Oncology and the institute was formally established on July 1, 2012. These dedicated areas integrate multidisciplinary faculty and staff, providing a platform for maximizing impact across all mission areas including education, research, patient care and community outreach.

This report highlights exciting advancements in the prevention, diagnosis, treatment, research and supportive care for patients with lung cancer achieved through collaboration among Northwestern Memorial, Northwestern University Feinberg School of Medicine and the Lurie Cancer Center.

A range of community education and outreach programs also is made possible through the Lurie Cancer Center, including a program focusing on adolescent and young adult cancer survivorship that launched in April of 2011.

We congratulate the many accomplishments achieved by faculty and staff this past year and thank them on behalf of all of our patients with cancer and their families.

William Small, Jr., MD
Chair of the Committee on Cancer Northwestern Memorial Hospital

Steven T. Rosen, MD
Director of the Robert H. Lurie Comprehensive Cancer Center of Northwestern University
Advancing the Prevention, Diagnosis and Treatment of Lung Cancer

More than 200,000 Americans were diagnosed with lung cancer in 2011, according to the National Institutes of Health. The disease is the leading cause of cancer death in both men and women, claiming more lives each year than breast, colon and prostate cancer combined.

With advances in early detection, minimally invasive diagnostic procedures, individualized therapies, innovative research and supportive care, collaborative work between Northwestern Memorial Hospital, Northwestern University Feinberg School of Medicine and the Robert H. Lurie Comprehensive Cancer Center of Northwestern University is achieving significant enhancements in survival and quality of life.

“Both the quantity and the quality of life can be improved in every stage of disease,” says Malcolm M. DeCamp, MD, chief of the Division of Thoracic Surgery at Northwestern Memorial and Fowler McCormick Professor of Surgery at Feinberg. “It requires patients to be treated by dedicated thoracic oncology specialists who achieve lower mortality rates, fewer complications, shorter hospital stays and superior outcomes.”

Northwestern Memorial’s multidisciplinary Thoracic Oncology program, made up of surgeons, medical oncologists, radiation oncologists, radiologists, pathologists and interventional pulmonologists, meets weekly to discuss the optimal course of treatment for each patient. “The team meeting is absolutely critical because it gives us a chance to review everything that’s happening with the patient and the treatment plan,” says Maryanne H. Marymont, MD, radiation oncologist on the medical staff at Northwestern Memorial and assistant professor of Radiation Oncology at Feinberg.

Prevention

Lung cancer is the only common malignancy for which there is proof of a cause in the majority of cases: cigarette smoking. Twenty percent of adults in the United States smoke, making smoking cessation of vital importance to prevent lung cancer, says Brian L. Hitsman, PhD, assistant professor of Preventive Medicine and Psychiatry and Behavioral Sciences at Feinberg and a member of the Lurie Cancer Center’s cancer Prevention and Control division.

Through clinical trials, Dr. Hitsman and his team study innovative approaches to help people stop smoking, including using new delivery methods such as offering support by telephone for longer durations, consistent with tobacco use as a chronic condition. Behavioral treatments delivered via online or smart phones, motivational interventions to increase attempts at quitting and the use of multiple medications are all potential keys to improve outcomes. “Our focus is making available treatments more effective and getting more people to enter the quit process,” says Dr. Hitsman. “If a person doesn’t try quitting, they’re certainly not going to succeed.”

Advancements in Early Detection

The earlier lung cancer is found, the better the patient’s chance of survival. But chest X-rays, the most common type of screenings, have not shown a proven benefit in reducing deaths by detecting tumors early. The National Lung Cancer Screening Trial (NLST), concluded in 2011, is the first scientific study to provide clear evidence that another type of scan, the low-dose helical CT, is effective in significantly reducing deaths in adults who are or have been heavy smokers. Data from the NLST, a randomized clinical trial with more than 53,000 participants at 33 sites nationally, showed 20 percent fewer deaths among those screened with a low-dose helical CT scan compared with chest X-ray, says Eric M. Hart, MD, radiologist on the medical staff at Northwestern Memorial and associate professor of Radiology at Feinberg. “For the first time we’ve shown that we can reduce deaths from lung cancer by actively trying to find it,” says Dr. Hart, the principal investigator here, the only NLST site in Chicago. “A lot of people are working on improved therapy. Until we have that, this is our best bet for reducing deaths from lung cancer.”
Diagnosis

Patients with scans showing an indeterminate or suspicious lymph node or nodule in the chest are referred to the Northwestern Pulmonary Nodule Clinic, where physicians determine whether a diagnostic procedure is warranted, says Colin T. Gillespie, MD, inaugural director of Interventional Pulmonary Medicine at Northwestern Memorial and assistant professor of Medicine at Feinberg, who oversees the clinic. For diagnosis and staging, interventional pulmonologists use advanced technologies such as endobronchial ultrasound, performed by inserting a bronchoscope through the nose or mouth to survey the area between the lungs, then biopsy the lymph nodes there. Radial probe ultrasound is used to biopsy nodules that are farther out than a bronchoscope can reach. According to Dr. Gillespie, both techniques are precise, minimally invasive outpatient procedures, considered safer than surgical and transthoracic biopsies. “By improving our ability to localize and biopsy the lesions from inside, our risk of complication drops.”

Top Surgeons

For roughly one in four patients diagnosed with lung cancer, surgery is a viable treatment. At Northwestern Memorial, thoracic surgeons perform 70 percent of all lobectomies and 90 percent of surgeries in patients with Stage 1 disease with a minimally invasive technique called video-assisted thoracic surgery, or VATS. During VATS, a tiny video camera and surgical instruments are inserted through three small incisions in the chest. While viewing the inside of the chest on a video screen, the surgeon dissects out the critical structures, including the lobe of the lung containing the tumor and the nearby lymph nodes and places it all in a bag that is slipped out through one of the incisions. “We’re doing anatomically the exact same operation we would do with open surgery, but through very small incisions that don’t disrupt the muscular or skeletal part of the chest wall,” says Dr. DeCamp. VATS, which is used nationally in about 25 percent of lobectomies, results in a shorter hospital stay, less time on pain medication and the ability for patients to get back to their lives and work much sooner, according to Dr. DeCamp.

Radiation and Chemotherapy

For patients with early-stage disease who are unable to undergo surgery and those with more advanced lung cancer, we offer a variety of state-of-the-art radiological treatment options. Stereotactic body radiosurgery, a painless, nonsurgical outpatient treatment, delivers intense, targeted beams of radiation to destroy small, well-defined tumors while sparing surrounding healthy tissue. “This advanced technique is likely to grow in importance as CT scans turn up more early stage lung cancers among patients who are not candidates for surgery,” says Steven B. Newman, MD, hematologist/oncologist on the medical staff at Northwestern Memorial and associate professor of Hematology/Oncology at Feinberg. The standard of care in patients with locally advanced disease is intensity-modulated radiotherapy, an external beam radiation that delivers a custom tailored dose of radiation based on tumor size, shape and location to maximize the amount of radiation and minimize toxicity to structures in the chest.
Jyoti D. Patel, MD (left)

the tumor off,” says Jyoti D. Patel, MD oncologist on the medical staff at Northwestern Memorial and associate professor of Hematology/Oncology at Feinberg. “With these new drugs, we can see responses within a week.”

Research

Among the Thoracic Oncology program’s goals is to define the molecular signature of every tumor, bank all tumors for future study, correlate the observed biology with treatment response and patient outcome and use the information to design new, personalized therapies. Future research, says Dr. DeCamp, will focus on “our ability to unlock the genetics of lung cancer, which is really not one disease, but a family of diseases. We need more information about what effects our treatments have at the cellular level.”

In 2011, Minesh Mehta, MD, radiation oncologist on the medical staff at Northwestern Memorial and professor of Radiation Oncology at Feinberg investigated ways to treat patients with Stage 3 disease with biologically targeted drugs, typically reserved for patients with metastatic lung cancer. A patient can receive a targeted drug along with a combination of radiation and chemotherapy, then, after a few weeks of treatment, undergo a PET scan to examine the effects of the treatment. “You might see considerable individual variation from patient to patient,” Dr. Mehta says. “The tumor or some portion of it will be not metabolically active in some patients and not in others. This allows us to change our radiation plan two-thirds of the way into treatment. We adapt the radiotherapy to the response of the tumor.”

Qu AL iTy of Lif E A nD Su Rvivo RS hi P

Living with a diagnosis of lung cancer can have a profound effect on a patient’s quality of life. We are a leader in addressing this issue both through the Lurie Cancer Center’s Supportive Oncology Program and research. The program offers psychological, rehabilitation, integrative medicine, palliative care and nutrition services to all patients undergoing cancer treatment, while research efforts include studies that measure quality of life during treatment.

The gathering and reporting of clinical trials data allows physicians and researchers both at Northwestern and beyond “to compare treatments to one another in terms of the impact on a patient’s symptoms and the ability to function well and carry on everyday activities,” says David Cella, PhD, professor and chair in the Department of Medical Social Sciences at Feinberg and an expert on the psychosocial aspects of cancer survivorship. Quality of life results are reported in scientific literature and become a part of cancer treatment guidelines.

David Cella, PhD

Developing better measures of symptoms during treatment, which may include fatigue, nausea, pain and anxiety, also is ongoing here. In one research project, Dr. Cella’s team regularly asks patients a list of questions about their symptoms.

“We can generate a report on symptoms,” says Dr. Cella. “When the physician sees you at your next appointment, he can talk with you about the symptom data too.” The goal is to make the collection and reporting of symptoms a part of routine care for patients here.

“It will enable us to more effectively get this quality of life information into the dialogue about when to treat a patient and how much to treat,” he says. “We’re factoring in the patient’s voice more than ever before.”
Cancer Program Highlights – Fiscal Year 2011

- Annually, the cancer program at Northwestern Memorial has more than 5,000 inpatient admissions and provides comprehensive care in state-of-the-art facilities that include the following:
  - 90 inpatient beds for hematology/oncology patients with a dedicated unit for stem cell transplantation in Northwestern Memorial Hospital's Prentice Women's Hospital.
  - 30 dedicated inpatient surgical oncology beds in the Feinberg Pavilion and 18 dedicated inpatient surgical oncology beds in Prentice.
  - Comprehensive radiation oncology facilities in the Galter Pavilion and Prentice include five linear accelerators, gamma knife Perfexion, brachytherapy, intraoperative radiation therapy, brain and body radiosurgery, image-guided radiation therapy (IGRT), intensity modulated radiation therapy (IMRT), 3-D treatment planning and hyperthermia capabilities. More than 26,000 treatments were delivered to more than 2,200 patients.

- Comprehensive outpatient care services are provided in the Lurie Cancer Center’s two locations on the 21st floor of Galter and the Maggie Daley Center for Women’s Cancer Care in Prentice, serving nearly 10,000 new patients annually. Both locations provide a full range of cancer treatment services and a model program of supportive oncology services including social work, psychology, psychiatry, nutritional support, health education, rehabilitation, integrative medicine and patient navigation services.

- Regular multidisciplinary conferences provided prospective treatment planning for patients in the following areas:
  - Breast cancer
  - Gynecologic oncology
  - Genitourinary cancers
  - Hematologic diseases
  - Head and neck cancers
  - Neurological oncology
  - Hematopoietic stem cell transplant
  - Sarcoma
  - Gastrointestinal oncology
  - Thoracic oncology
  - Palliative care
  - Radiosurgery

- A wide range of education, support and outreach programs include the following:
  - Professional education programs included the 12th annual Lynn Sage Breast Cancer Symposium, sixth annual Radiosurgery Symposium and the 13th annual Oncology Nursing Conference, as well as annual programs in Basic Sciences, Pain and Palliative Care, Lymphoma and ASCO and ASH Reviews.

- A full complement of patient education and support services was offered, including support groups, inpatient case management and comprehensive outpatient supportive oncology services. In addition, a monthly Cancer Connections program provided patients and families the opportunity to learn about health and wellness services from local support organizations.

- Survivorship programs were offered, including a late effects clinic (STAR Program), providing specialty services to adult survivors of pediatric cancer, a program addressing the special survivorship needs of breast cancer patients (SUCCEED); and a new program focused on the adolescent and young adult survivor population.

- Community education and outreach programs were offered, including numerous disease-oriented presentations, the annual Breast Cancer Town Hall Meeting and cancer survivorship initiatives, including the 18th Annual Cancer Survivors’ Celebration and Walk on the Chicago lakefront with nearly 4,000 participants.

- The Lurie Cancer Center also sponsored and helped coordinate community programs focused on cancer health disparities including a Regional Symposium on Minorities, the Medically Underserved and Cancer in conjunction with the Intercultural Cancer Council; a State of the Cancer Union/Minority Report; and an ACS program on The Impact of Health Care Reform in the Latino Community.

- Multiple new faculty recruitments to the clinical and research focus is lymphoma.

- Adam Petrich, MD, was recruited to the Department of Medicine, Division of Hematology/Oncology following completion of his fellowship training at Montefiore Medical Center/Albert Einstein College of Medicine in New York. His clinical and research focus is lymphoma with an emphasis on novel treatments for patients with relapsed and refractory disease as well as special lymphoma populations including immuno-suppressed patients after organ transplantation and those with HIV/AIDS.

- Karl Billimoria, MD, MS, was recruited to the Division of Gastrointestinal and Oncologic Surgery following completion of a fellowship at M.D. Anderson Cancer Center in Houston. Dr. Billimoria’s clinical practice includes melanoma and other skin cancers, sarcoma and soft tissue cancers and breast cancer. His research is focused on healthcare quality measurement and improvement.

- Timothy Pearman, PhD, was recruited from Tulane University to the Department of Medical Social Sciences. In addition to providing clinical psychology services, Dr. Pearman also serves as the director of the Lurie Cancer Center’s Supportive Oncology Program, overseeing a full range of psychosocial care professionals.

- Terrance Peabody, MD, was recruited from the University of Chicago to assume the key leadership role of chairman of the Department of Orthopaedic Surgery. Dr. Peabody is a nationally recognized leader whose clinical and research focus is in the area of musculoskeletal oncology.

The Lurie Cancer Center remains the only Illinois 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 enhancing access to the most advanced treatment options for patients.

The nearly 275 members of the Lurie Cancer Center annually generate $175 million in extramural cancer-relevant research funding. The largest portion of this funding comes from the NIH, including $40 million from the NCI. The center was especially proud to have been awarded an NCI Cancer Center/Minority Institution Partnership Grant with Northeastern Illinois University—a federally designated Hispanic-serving institution—focused on facilitating community-engaged cancer disparities research and encouraging students from diverse groups to pursue careers in science, health and health disparities.

Through the Clinical Research Office (CRO) of the Lurie Cancer Center, a comprehensive clinical trials program is available to patients. Staffed by 59 full-time employees, the CRO conducts and coordinates Phase I through Phase III clinical trials sponsored by federally funded national cooperative groups and the pharmaceutical industry as well as investigator-initiated institutional trials developed by faculty at Feinberg. Physicians affiliated with Northwestern Memorial and the Lurie Cancer Center regularly play leading roles in national cooperative group studies and in working to develop, test and accelerate access to new treatments. In fiscal year 2011, a total of 679 patients at Northwestern Memorial were enrolled in 256 interventional therapeutic and nontherapeutic clinical trials.
Northwestern Memorial Hospital’s Tumor Registry is an integral part of our comprehensive cancer program that collects and maintains pertinent patient data required for reporting to the Illinois State Registry, National Cancer Data Base and the American College of Surgeons. This detailed cancer data is used for evaluation of cancer care, cancer incidence and outcome reporting studies.

The cancer program is accredited by the American College of Surgeons Commission on Cancer. The registry has a reference date of 1992 and follows 53,785 patients yearly.

Top 10 Sites for 2010

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<th>PRIMARY SITE</th>
<th>TOTAL</th>
<th>CLASS</th>
<th>SEX</th>
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<tr>
<td>Oral Cavity</td>
<td>98</td>
<td>92</td>
<td>6</td>
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<tr>
<td>Digestive System</td>
<td>573</td>
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<tr>
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<tr>
<td>Rectum</td>
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<td>93</td>
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<tr>
<td>Pancreas</td>
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<td>56</td>
<td>4</td>
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<tr>
<td>Other</td>
<td>55</td>
<td>52</td>
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Respiratory System          | 293   | 271   | 22  |
Nasal/Sinus                 | 1     | 1     | 0   |
Larynx                     | 20    | 16    | 4   |
Lung/Bronchus               | 269   | 251   | 18  |
Other                      | 3     | 3     | 0   |

Blood and Bone Marrow       | 260   | 197   | 63  |
Leukemia                    | 127   | 97    | 30  |
Multiple Myeloma            | 126   | 96    | 30  |
Other                      | 7     | 4     | 3   |
Bone                       | 11    | 7     | 4   |

Connect/Soft Tissue         | 27    | 21    | 6   |
Skin                        | 321   | 307   | 14  |
Melanoma                    | 305   | 294   | 11  |
Other                      | 16    | 13    | 3   |

Breast                      | 1,003 | 943   | 60  |
Female Genital              | 273   | 259   | 14  |
Cervix Uteri                | 39    | 36    | 3   |
Corpus Uteri                | 156   | 151   | 5   |
Ovary                      | 48    | 43    | 5   |
Vulva                       | 11    | 11    | 0   |
Other                      | 19    | 18    | 1   |

Male Genital                | 583   | 549   | 34  |
Prostate                    | 549   | 518   | 31  |
Testis                      | 29    | 26    | 3   |
Other                      | 5     | 5     | 0   |

Urinary System              | 284   | 261   | 23  |
Bladder                     | 120   | 113   | 7   |
Kidney/Renal                | 150   | 135   | 15  |
Other                      | 14    | 13    | 1   |

Brain and CNS               | 213   | 188   | 25  |
Brain (Benign)              | 22    | 21    | 1   |
Brain (Malignant)           | 121   | 106   | 15  |
Other                      | 70    | 61    | 9   |

Endocrine                   | 174   | 160   | 14  |
Thyroid                     | 147   | 135   | 12  |
Other                      | 27    | 25    | 2   |

Lymphatic System            | 222   | 167   | 55  |
Hodgkin’s Disease           | 47    | 35    | 12  |
Non-Hodgkin’s               | 175   | 132   | 43  |
Unknown Primary             | 18    | 18    | 0   |
Other/Ill-Defined           | 21    | 17    | 4   |

All Sites                   | 4,374 | 3,988 | 386 |

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All Sites                   |       |     |

Since 2006, there has been a 14 percent increase in the number of analytic cases seen at Northwestern Memorial from 3,418 cases in 2006 to 3,988 cases in 2010.