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Eliminating the Suffering and Death Due to Cancer

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Study Forecasts Major Oncologist Shortage by 2020

An estimated doubling of the number of people over age 65 over the next two decades and simultaneous increases in cancer incidence, prevalence, and survivorship are expected to create a situation where the number of cancer patients far outstrips the number of oncologists available to treat them, according to a new report released last week.

Developed for the American Society of Clinical Oncology (ASCO) by the Association of American Medical Colleges (AAMC), the report estimates that by 2020 visits to oncologists will increase by 48 percent, while the projected supply of oncologists is expected to grow by only 14 percent over the same time period. The result: A shortfall of 9.4 to 15.1 million visits annually.

"We think this is a very serious situation that deserves a response sooner rather than later," said study co-author Dr. Edward Salsberg, director of the AAMC Center for Workforce Studies.

"The whole force of the medical care delivery system is going to really be challenged 10, 15 years from now to meet what we see is a greatly increased demand [for oncology services]," added Dr. Michael Goldstein,

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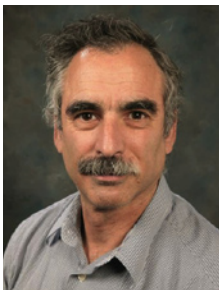
Director's Update



Dr. Martin Brown
Chief, Health Services and Economics Branch, DCCPS

Guest Director's Update by Dr. Martin Brown

NCI Surveillance Program Helped Project Oncologist Shortage

The leadership of ASCO should be commended for sponsoring the AAMC report on the U.S. oncology work force. The conclusions they reach are clearly concerning: A potential shortage of 2,550 to 4,080 oncologists in the United States by 2020.

In many respects, the fact that a shortage is being projected is not surprising. We have known for some time that the population is aging and that, as a result, cancer incidence and prevalence are likely to increase. Using data from SEER and the SEER-Medicare Linked Database, NCI was able to generate specific projections of cancer prevalence and of the demand for oncology services through 2020. These data, combined with information on medical school graduation rates and reports from other specialty medicine groups about work force availability, raise concerns that there may be a shortage of oncologists over the next two decades.

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(Oncologist Shortage continued from page 1)
a study co-author from Beth Israel Deaconess Medical Center in Boston and chair of the ASCO Task Force on the Oncology Workforce.

To develop its work force supply estimates, AAMC used new and existing surveys of current oncology fellows, directors of oncology fellowship programs, and 4,000 practicing oncologists from across the country. The demand component of the study relied on incidence and prevalence estimates and oncologist visit rates developed by NCI staff from the Health Services and Economics Branch and the Statistical Research and Applications Branch in the Division of Cancer Control and Population Sciences (DCCPS), using data from the Surveillance, Epidemiology and End Results (SEER) program and the SEER-Medicare Linked Database (see the Director's Update for more details).

A number of specialty physician organizations and other groups have released similar forecasts over the past few years, including projections of shortfalls in cardiology, critical/emergency care, and primary care.

For specialties like cardiology and oncology, the "graying" population is particularly concerning, because both heart disease and cancer are closely associated with older age. In addition, the available data suggest the physician pipeline isn't robust enough to satisfy future demand. For example, according to a study published last year in *Academic Medicine*, the number of physicians retiring annually will swell from 9,000 in 2000 to more than 22,000 by 2020, with no expected corresponding growth in medical school graduates. And, Dr. Goldstein explained, based on the survey responses from oncology fellowship program directors, funding issues will limit any increase in the number of oncology fellowship slots to an estimated 8 percent by 2010-11.

In the ASCO/AAMC study, the baseline supply/demand analysis was performed assuming that current physician practices (number of patient visits, use of physician assistants and nurse practitioners) and care delivery patterns would remain the same. However, different scenarios were modeled to account for potential changes that could affect both supply and demand, including greater use of electronic medical records (EMRs), delaying retirement of existing physicians, and greater reliance on primary care physicians during certain care periods.

Some changes made the work force shortfall less severe, particularly expanded use of EMRs and creating more oncology fellowship positions. But no single measure or combination was a panacea, and there were also factors that could exacerbate the shortfall.

"The bottom line is that no matter which scenario we looked at, it is likely the shortage will continue," Dr. Salsberg said.

ASCO has assembled an implementation group with expertise in clinical practice, cancer education, research, and oncology training to develop recommendations to address the projected shortfall. The recommendations, which are expected by the end of the year, will initially focus on areas like joint initiatives with non-physician oncology professionals and general practice physicians, modifications to oncology fellowship training programs, and guidance from ASCO on how oncology practices can improve efficiency. ◆

By Carmen Phillips

(Director's Update continued from page 1)
With this new report, we now have a credible analysis from which the cancer and medical communities can begin to work together to address a serious situation, something ASCO is already doing with the assembly of an expert Workforce Implementation Group.

NCI's contribution to this report was important, because it helped to quantify in the most accurate way possible the demand component of the analysis. We were able to do this because of NCI's commitment to cancer surveillance research resources and personnel.

Dr. Angela Mariotto and colleagues from the Statistical Research Applications Branch in DCCPS used SEER data from 2000 to 2002 and applied it to the most recent U.S. Census Bureau population projections to develop a rigorous method for projecting incidence and prevalence for all cancers from 2000 through 2020. That work led to a forecast of a 48-percent increase in cancer incidence and an 81-percent increase in people living with or surviving cancer over this time period.

Dr. Joan Warren and colleagues from the Health Services and Economics Branch in DCCPS used data from the SEER-Medicare database to construct a model that separated out oncologist visit rates by patient sex, age, and time of diagnosis during patients' first 12 months after diagnosis, last 12 months of life, and the period in between.

These analyses made it possible for the ASCO/AAMC study team to develop a clearer picture of important trends in cancer care, particularly the influence of increased cancer survivorship. These analyses revealed that two-thirds of the projected visits to oncologists in 2020 will be made by

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Cancer Research Highlights

New Molecular Imaging Compound Pinpoints Metastases in Mice

Researchers have created a new imaging compound that fluoresces only when processed by cancer cells. Use of this compound allowed scientists to visualize 92 percent of the very small tumors in the peritoneum—the tissue that lines the wall of the abdomen—in mice with ovarian cancer. The results were published in the March 15 *Cancer Research*.

The team led by Dr. Hisataka Kobayashi from the Molecular Imaging Program in NCI's Center for Cancer Research (CCR) created a compound consisting of the protein avidin, which binds to a protein commonly found on cancer cells that have spread to the peritoneum, joined to three molecules of the fluorescent compound rhodamine X. This complex, called Av-3ROX, is taken up by a cancer cell after binding to its surface and is subsequently broken down in the lysosome. When enzymes in the lysosome break the molecule into smaller pieces, the fluorescence from rhodamine X is released, enabling the cancer cell to be detected using imaging techniques.

To verify that Av-3ROX was specifically internalized into tumor cells, the investigators used cells that carried the gene for red fluorescent protein (RFP) to induce tumors and peritoneal metastases in mice. The investigators injected Av-3ROX into the peritoneum of the mice, captured fluorescent images of both Av-3ROX and RFP, and compared the number of metastases identified using both compounds. They found that Av3-ROX had 92 percent sensitivity and 98 percent specificity for the cancer cells.

Because Av-3ROX would cause an immune system reaction in humans, the researchers are now working on a second-generation compound that joins the binding site of avidin—the part that recognizes the cancer cells—to human serum albumin. The authors believe that this approach to molecular imaging "holds promise as a method of optically enhancing surgical or endoscopic procedures," and may allow for more complete surgical removal of metastatic disease.

Many Protein Kinase Genes Linked to Cancer

Researchers have cataloged the mutations in genes that produce protein kinases, which are enzymes that regulate other proteins and play a role in some cancers. Using DNA from 210 diverse human cancers, the researchers sequenced 518 protein kinase genes. Approximately 120 of the genes carried a mutation related to cancer development and may function as cancer genes, the researchers reported in the March 8 *Nature*.

Drs. Andrew Futreal and Michael Stratton of the Wellcome Trust Sanger Institute in Cambridge, U.K., and their colleagues identified more than 1,000 mutations in the gene family, but only some of these are so-called "driver" mutations that drive the cancer. The others are "passenger" mutations, which are present in tumors but may not contribute to disease. Their results suggest that most mutations in cancer cells are likely to be passenger mutations.

Mutations were relatively common in cancers of the lung, stomach, ovary, colon, and kidney, and rare in cancers of the testis and breast. "Given that we have studied only 518 genes and limited numbers of each cancer type, it seems likely that the repertoire of mutated human cancer genes is larger than previously envisaged," the researchers wrote.

Together with another large-scale sequencing study published in September 2006, this study presents a largely unbiased overview of the spectrum of mutations in human cancers, noted an editorial by Drs. Daniel Haber and Jeff Settleman of Massachusetts General Hospital. These studies suggest that "each cancer genome carries many unique abnormalities, and not all mutations identified contribute equally to the manifestation of the associated cancers," they wrote.

Study Compares Two-Transplant Treatments

An Italian clinical trial has shown that patients with newly diagnosed multiple myeloma (MM) who received a transplant of their own stem cells (an autologous stem cell transplant) and a second stem cell transplant from an "HLA-matched" sibling (an allogeneic stem cell transplant) had superior survival outcomes compared to patients who received two autologous stem cell transplants.

Published in the March 15 *New England Journal of Medicine*, the trial involved 162 consecutive patients with newly diagnosed MM who were under age 65 and had at least 1

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(Highlights continued from page 3)
sibling. Patients with a sibling whose blood cells expressed genetically identical surface antigens, human-leukocyte antigens—known as an HLA match—were offered the option of the autologous-allogeneic treatment regimen. The chances of a sibling being an HLA match are one in four.

Both patient groups received the same initial chemotherapy regimen at conventional dosing followed by high-dose myeloablative chemotherapy and an autologous stem cell transplant. Those with an HLA-matched sibling received radiation and an allogeneic stem cell transplant using the siblings' cells (60 patients); those without an HLA-identical sibling received another round of high-dose chemotherapy and a second autologous stem cell transplant (59 patients). Of these patients, 58 receiving allogeneic transplant and 46 receiving double autologous transplants completed treatment.

Allogeneic stem cell transplants, while they are considered to have greater curative potential because they have a stronger antitumor cell effect, have been associated with high treatment-related mortality rates. Combined regimens like the one used in the Italian trial that employ "reduced-intensity" chemotherapy or radiation before the allogeneic transplant "have lowered transplant-related mortality to approximately 15 percent," lead author Dr. Benedetto Bruno of the University of Turin and colleagues explained. But it has been unclear whether they offer a survival advantage.

In the trial, there was little difference in treatment-related mortality between the two groups; however, survival outcomes clearly favored those in the autologous-allogeneic transplant group—a 67-percent improvement in overall survival and a 53-percent improvement in event-free survival.

African Americans' Prostate Mortality Rooted in Class

Prostate cancer mortality is twice as high in African American men compared with white men, a fact often attributed to poor education, lack of awareness of the threat, and undiscovered genetic factors.

In fact, according to a study published online March 12 in *Cancer*, screening, treatment choices, and health behavior are all affected by barriers that "arise directly from the racial disparity in socioeconomic position, not reduced information or culturally based misunderstandings sometimes presumed to arise in its wake."

Dr. James A. Talcott of the Center for Outcomes Research at Harvard Medical School and colleagues surveyed 207 African American men and 348 white men from North Carolina who were recently diagnosed with prostate cancer. The disparities they found, generally attributed to lower social position, translate "into disadvantages in their medical care that may escape notice in studies that collect less detailed information than ours," wrote the authors.

For example, the researchers found that African Americans were more aware than white men of their prostate cancer risk and the responsibility to get screened. Yet they were less able to access good medical care because of less convenient health care settings, less public and private insurance coverage, and less flexible work circumstances.

Distrust of their physicians was also rooted in African Americans' health care experiences. Their lower income, educational level, and social status make them more likely to use public clinics and emergency rooms and less likely to receive continuity of care. They were also less likely to establish ongoing ties with a primary physician, had less frequent regular physical exams, and less follow-up on significant medical complaints. These findings led researchers to conclude that African Americans "are simply less likely to know their physicians and other providers well enough to develop trust." ◆

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patients who are more than 1 year post-diagnosis.

That is likely due, in part, to the benefits being seen with adjuvant chemotherapy in breast and other cancers, and it means that, moving forward, oncologists will be involved in direct patient care with individual patients over longer periods of time. As a result, they may need to depend more on physician assistants and nurse practitioners and consult more closely with patients' primary care physicians. Physician-patient communication and coordination of care, already topics of concern for U.S. health care delivery, will become even more important. Surveillance of such trends will be critical to a better understanding of the quality of cancer care and where, perhaps, efficiencies in care can be gained.

NCI staff are currently working on a paper for publication that will provide the technical details of how the demand projections that contributed to this important work force study were generated. In the interim, it's gratifying to yet again witness the power of our surveillance program and contribute to an important new study that will help shape cancer care. ◆

Spotlight

Improving Mammography Quality, Expanding Screening Research

In passing the Mammography Quality Standards Act (MQSA) of 1992, Congress mandated efforts by the medical practice, research, and regulatory communities to improve the performance, quality assurance, and oversight of screening mammography in the United States. The Act authorized the Secretary of Health and Human Services to fund research establishing a breast cancer surveillance system that could assess more extensively mammography performance in clinical practice. Dr. Rachel Ballard-Barbash, associate director of DCCPS' Applied Research Program, explains that "NCI was assigned the mandate for supporting this research and in response to the Act established the Breast Cancer Surveillance Consortium."

Founded in 1994, BCSC originally consisted of independent centers studying the practice of breast cancer screening in their individual communities. However, it proved difficult to draw conclusive results from comparisons of similar but heterogenous data. NCI realized the potential of establishing an ongoing centralized database on women undergoing mammography, and increased the standardization of data collection and created a central pooled data resource from all of the centers. BCSC currently consists of five main research sites, two affiliated sites, and a statistical coordinating center located in Seattle, Washington.

"Because of the effort to create a pooled central research data resource, we now have data on over 5.5 million mammograms, representing over 2 million women. More than 52,000 cases of breast cancer have been diagnosed [at participating sites] over the 10 years that BCSC has been in operation," says Dr. Ballard-Barbash.

This large, standardized dataset presents a unique opportunity for investigators throughout the country to study how mammography screening performance may be improved and how breast cancer screening relates to changes in disease stage at diagnosis, survival, and mortality. In addition, investigators have used BCSC to study disparities in screening and risk factors for breast cancer. It has also been used as a resource for new investigator-initiated studies. Researchers from any organization can apply to use BCSC data for their projects.

"This work produced to date includes more than 235 peer-reviewed publications on a variety of issues, including factors that affect the quality of mammography interpretation and breast characteristics, like density, that affect the likelihood of both cancer occurrence and detection," says Dr. Stephen Taplin, project director of BCSC.

That breast density is a risk factor for breast cancer has become more widely known over the past several years, and this knowledge has been incorporated into several models for estimating an individual woman's risk. A new study using BCSC data published in the March 7 *Journal of the National Cancer Institute* now adds an important piece of information on the use of breast density in calculating risk—that two or more measurements of density over time may be better at predicting risk than a single measurement.

The investigators, led by Dr. Karla Kerlikowske from the University of California, San Francisco, used prospectively collected data from 301,955 women aged 30 or older, who were not taking hormone-replacement therapy and had undergone at least two mammograms at a BCSC center. Breast density was scored on a scale of 1 to 4, in order of increasing density, by the American College of Radiology Breast Imaging Reporting and Data Systems (BI-RADS) criteria.

By linking BCSC records to cancer registry data, a capability built into BCSC data collection methods, the investigators identified 2,639 incidences of breast cancer in the group. Women diagnosed with breast cancer were more likely to have received a breast density score of 3 or 4 on their first and last mammogram than women without cancer. Overall, a high breast density score assigned on the first or last mammogram was associated with an increased likelihood of breast cancer.

Importantly, the rate of breast cancer diagnosis increased for women whose breast density score increased from first to last mammogram, and con-

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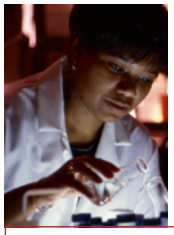
versely decreased for most women whose breast density score decreased from first to last mammogram, with the exception that risk remained high for women with a breast density score of 4 on their first mammogram.

These results show "that breast density is a very important risk factor for breast cancer, and that because density can change over time, one measure at one point in time may not accurately reflect how breast density affects a woman's risk of breast cancer," explains Dr. Kerlikowske. "If you have two measurements over time, those two measurements together are more likely to give you a better idea of how density increases your risk."

Dr. Kerlikowske and colleagues are now working on identifying the best time to measure a woman's breast density for use in a risk model. This work and other BCSC collaborations, including projects in partnership with NCI's Cancer Intervention and Surveillance Modeling Network and the American Cancer Society, will further leverage BCSC data to answer pressing questions about how best to use breast screening to help predict risk and reduce mortality, and how to improve mammography practices nationwide. ◆

FDA Update

Please see the HTML version of today's *NCI Cancer Bulletin* for news on two recent actions by the U.S. Food and Drug Administration. The story can be accessed at http://www.cancer.gov/ncicancerbulletin/NCI_Cancer_Bulletin_032007/page6. ◆



Featured Clinical Trial

Preventing Mucositis in Head and Neck Cancer Patients

Name of the Trial

Phase III Randomized Study of Palifermin for Reducing Oral Mucositis in Patients with Locally Advanced Squamous Cell Carcinoma of the Oral Cavity, Oropharynx, Hypopharynx, or Larynx Undergoing Concurrent Radiotherapy and Chemotherapy (RTOG-0435). See the protocol summary at http://cancer.gov/clinicaltrials/RTOG-0435.

Principal Investigator

Dr. David I. Rosenthal, Radiation Therapy Oncology Group

Dr. David I. Rosenthal

Why This Trial Is Important

Nonsurgical treatment of locally advanced head and neck cancer usually involves a combination of radiotherapy and chemotherapy (chemoradiotherapy). Unfortunately, both the disease and its treatment are associated with serious oral complications. A common side effect of chemoradiotherapy is oral mucositis, inflammation of the mucous membranes in the mouth and throat that can cause painful sores. Severe oral mucositis can lead to delays in treatment, difficulty in eating and speaking, and life-threatening infections.

Palifermin has been approved by the FDA to prevent and treat mucositis in patients undergoing high-dose chemotherapy and radiotherapy for leukemia or lymphoma. It promotes the growth of mucosal cells lining the mouth and gastrointestinal tract and helps replace cells damaged by cancer treatment.

In this trial, patients undergoing chemoradiotherapy for advanced head and neck cancer will receive intravenous palifermin or placebo before and during cancer treatment.

"Chemoradiotherapy for head and neck cancer has led to significant improvements in survival, but those improvements have come at the cost of greater incidence of oropharyngeal mucositis, the most common reason for unplanned treatment interruptions," said Dr. Rosenthal. "Based on preclinical data and its proven efficacy in leukemia and lymphoma, palifermin is the most promising agent for reducing the burden of mucositis for head and neck cancer patients."

Who Can Join This Trial

Researchers will enroll 298 patients with stage III or IV squamous cell carcinoma of the oral cavity, oropharynx, hypopharynx, or larynx. See the list of eligibility criteria at http://cancer.gov/clinicaltrials/RTOG-0435.

Study Sites and Contact Information

Study sites in the United States are recruiting patients for this trial. See the list of study contacts at http://www.cancer.gov/clinicaltrials/RTOG-0435 or call the NCI's Cancer Information Service at 1-800-4-CANCER (1-800-422-6237) for more information. The toll-free call is confidential. ◆

An archive of "Featured Clinical Trial" columns is available at http://cancer.gov/clinicaltrials/ft-all-featured-trials.

Notes

Breast Cancer Conference Scheduled for Next Week

On March 26 and 27, leading breast cancer clinicians and scientists will discuss "Preoperative Therapy in Invasive Breast Cancer: Reviewing the State of the Science and Exploring New Research Directions" in the Natcher Conference Center on the NIH campus. The meeting is sponsored by the Cancer Therapy Evaluation Program in NCI's Division of Cancer Treatment and Diagnosis. The conference will seek to determine the state of the science of preoperative therapy in breast cancer, as well as identify future research agendas.

There is no charge for this meeting, but preregistration is requested. The proceedings will be webcast at http://videocast.nih.gov and archived for later viewing. The meeting will also be available as a podcast. Information about registration and Continuing Medical Education credit, the agenda, and the faculty list are available at http://ctep.cancer.gov/bcmeeting.

New Cancer Health Disparities Web Portal Launched

NCI has just launched a Web portal on Cancer.gov to highlight the Institute's efforts to reduce and ultimately eliminate cancer health disparities. The portal includes links to information about the NCI Center to Reduce Cancer Health Disparities, as well as information about training opportunities, statistics, and research resources and results. To view the portal, go to http://www.cancer.gov/health-disparities. ◆

CCR Grand Rounds

March 27: Dr. William G. Nelson, Director, Molecular Pharmacology Laboratory; Professor of Oncology, Urology, Pharmacology, Medicine, Pathology & Radiation Oncology, The Johns Hopkins School of Medicine. "5-Me-CpG-Binding Domain Proteins and Prostate Cancer Detection, Diagnosis, Prevention, and Treatment."

April 3: Dr. Katherine A. Jones, Professor, The Salk Institute for Biological Studies. "Mechanistic Studies of RNAPII Transcription Elongation."

CCR Grand Rounds are held 8:30 to 9:30 a.m. at the NIH campus in Bethesda, MD, in the Clinical Center's Lipsett Amphitheater. ◆

Funding Opportunities

For a complete listing of current NCI funding opportunities, please go to the HTML version of today's *NCI Cancer Bulletin* at http://www.cancer.gov/ncicancerbulletin/NCI_Cancer_Bulletin_032007/page9. ◆

70 YEARS OF EXCELLENCE IN CANCER RESEARCH

If Memory Serves…

NCI's first director was Dr. Carl Voegtlin, who served in this role from 1938 to 1943. He was born in Switzerland and received his Ph.D. from the University of Frieberg before coming to the United States in 1905. (Read more) ◆

For more information about the birth of NCI, go to http://www.cancer.gov/aboutnci/ncia.

A Message to Our Readers

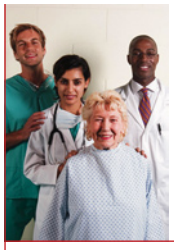
Dear *NCI Cancer Bulletin* Subscribers:

Beginning April 3, 2007, the *NCI Cancer Bulletin* will reduce its publication frequency to once every other week (or 24 issues per calendar year). This decision was reached following lengthy deliberations by the recently formed *NCI Cancer Bulletin* Executive Editorial Committee (EEC), which is composed of senior NCI scientists and leaders. The EEC is responsible for providing scientific advice and guidance on the newsletter's content.

This new schedule will give us the chance to create more in-depth articles and provide more perspective about the latest developments in cancer research. We on the *NCI Cancer Bulletin* staff are confident that readers will continue to find the same straightforward, high-quality science writing they have come to expect, as well as the latest cancer research news and information from NCI and other research organizations.

In just 3 years, our circulation has increased to nearly 30,000 subscriptions—with more than 500 new readers signing up each month. We appreciate this growing interest in the *NCI Cancer Bulletin* and will continue to strive to meet the needs of old and new readers alike. ◆

—The Editors



Cancer Center Profile

H. Lee Moffitt Cancer Center & Research Institute

Center Director: Dr. William S. Dalton • 12902 Magnolia Drive, Tampa, Florida 33612 • http://www.moffitt.org 1-888-MOFFITT

Background

H. Lee Moffitt Cancer Center & Research Institute in Tampa, Florida, is one of the fastest growing cancer centers in the United States. Only 20 years old, it achieved NCI designation in 1998 and NCI Comprehensive Cancer Center status in 2001. Its sole mission is "to contribute to the prevention and cure of cancer."

Funding for original construction came from the state's cigarette tax, while the momentum to create the Center came from a cadre of legislators, physicians, educators, and business leaders who envisioned a new generation of cancer care and research.

A not-for-profit corporation located at the University of South Florida in Tampa, Moffitt is best known for its translational research, forging new discoveries out of the convergence of basic science, clinical trials, and patient care.

Today, Moffitt devotes more than 1.4 million square feet to research and patient care. New patients to the Cancer Center totaled about 15,200 in 2006, with more than 232,000 outpatient visits recorded.

Patient Care

Moffitt uses an interdisciplinary approach to evaluate and treat cancer patients. In support of this philosophy, academic and clinical services are organized into 14 disease-oriented programs. Each program consists of a team that includes medical oncologists, surgeons, radiation oncologists, nurses, social workers, pharmacists, dietitians, clinical research managers, and other support personnel.

A new focus at Moffitt is Total Cancer Care (TCC), an all-encompassing approach to treating cancer patients combining information technology, science, and clinical treatment to provide evidence-based guidelines that will improve care and outcomes. TCC involves studies of genetic predisposition, the impact of healthy lifestyles, quality improvement, survivorship, and molecular profiling—incorporating translational research at every step along the continuum. It will follow patients prospectively through screening, diagnosis, and treatment of cancer.

Research Activities

Scientists at Moffitt are dedicated to discovering, translating, and delivering personalized cancer care through basic science, clinical, and translational research, as well as population studies.

Moffitt participates in more than 500 clinical trials in the areas of diagnosis, prevention, and treatment. Grant support totals more than $54 million with peer-reviewed grants representing more than $42 million of this total.

One of Moffitt's newest research initiatives will develop one of the largest tissue biorepositories and relational databases in the country. The result of this combined molecular profiling and clinical response database will be to improve cancer prevention and treatment by using molecular technology to enhance the ability to diagnose and treat patients.

Another Notable Program

In 1999, Moffitt developed the Affiliate Network Program, a professional partnership involving strategic affiliations with community physicians and health care facilities throughout Florida and beyond. With a mandate from the state to reach the citizens of Florida, Moffitt works with its partners to offer clinical expertise and research trials found only at an NCI Comprehensive Cancer Center. Moffitt reaches about 20 percent of the cancer patient population in Florida through these relationships. ◆

The *NCI Cancer Bulletin* is produced by the National Cancer Institute (NCI). NCI, which was established in 1937, leads the national effort to eliminate the suffering and death due to cancer. Through basic, clinical, and population-based biomedical research and training, NCI conducts and supports research that will lead to a future in which we can identify the environmental and genetic causes of cancer, prevent cancer before it starts, identify cancers that do develop at the earliest stage, eliminate cancers through innovative treatment interventions, and biologically control those cancers that we cannot eliminate so they become manageable, chronic diseases.

For more information on cancer, call 1-800-4-CANCER or visit http://www.cancer.gov.

NCI Cancer Bulletin staff can be reached at ncicancerbulletin@mail.nih.gov.