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Time Spent Is a Significant Burden on Cancer Patients

Calculating the burden of cancer is not simple, especially when it comes to nonmedical costs such as patient time lost to cancer care. A study from the January 3 *Journal of the National Cancer Institute (JNCI)* estimated that in 2005 the value of patient time lost to cancer care was nearly $2.3 billion in the first year following diagnosis alone. This estimate was based on just over 1 million newly diagnosed cancer patients in 2005, millions of hours traveling to and from, waiting for, and receiving treatment, and a median wage rate of $15.23 per hour.

"To our knowledge, this study is the first to estimate net patient time costs over the full course of cancer care, for 11 of the most common cancer sites," said the study's lead author, Dr. Robin Yabroff, an epidemiologist in NCI's Division of Cancer Control and Population Sciences (DCCPS). She and her colleagues used a phase-of-care approach, which distinguishes three clinically relevant phases of care: the initial year after diagnosis, the last year of life, and the continuing or monitoring phase, which includes the

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Director's Update

Guest Director's Update by Dr. Brenda K. Edwards

SEER: Research Power in Numbers

NCI's Surveillance Epidemiology and End Results (SEER) Program is a powerful cancer research tool that has served as the basis for thousands of studies. Innovative use of SEER data has produced additional statistics such as cancer prevalence, which is important to national estimates of cancer survivorship.

Dr. Brenda K. Edwards, Associate Director, Surveillance Research Program, NCI

Although many people equate SEER with the *Annual Report to the Nation*, the main reason for its popularity is rooted in the fact that SEER is the most comprehensive, population-based cancer registry in the world. It currently covers 26 percent of the U.S. population, and captures information on patient demographics, primary tumor site and morphology, stage at diagnosis, first course of treatment, and survival.

Since its establishment in 1973, SEER has constantly evolved to become more sophisticated and robust, while still maintaining—and enhancing—data confidentiality. For the past two decades, SEER has worked with the public and private sector, notably the North American Association of Central

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time between the initial year and last year of life.

They found that the amount of patient time in the first year after diagnosis varied by tumor site. Many of the cancers that can be screened for, detected early, and treated effectively—such as breast, prostate, and skin cancer—involved less time than did lung, ovarian, and gastric cancers, which are often diagnosed at later stages of disease. These differences by site persist (though are somewhat smaller) in the last year of life.

"Researchers and policy makers tend to forget that time costs are a very real and very human component of the total economic burden of cancer," wrote Drs. Larry G. Kessler of the Food and Drug Administration and Scott D. Ramsey of the Fred Hutchinson Cancer Center, in an accompanying editorial.

The study used Medicare claims from more than 760,000 cancer patients aged 65 and older in the SEER cancer registry between 1995 and 2001 to establish the amount and type of care patients received, including hospitalizations, imaging procedures, office visits, emergency room visits, chemotherapy, radiation therapy, and ambulatory surgeries. Estimates of the time required for each type of service were also developed, using established measures where possible.

The amount and type of care for each category were also estimated for more than 1 million matched Medicare enrollees without cancer. Subtracting those hours from the hours that cancer patients spent resulted in a picture of the burden attributable to cancer.

However, Dr. Yabroff emphasized, these estimates almost certainly underestimate the actual time patients spend receiving cancer care in the U.S. "We only evaluated care and estimated time in individuals aged 65 and older, which we think underestimates time spent by younger patients," she said.

Drs. Kessler and Ramsey agreed, pointing out that younger patients tend to undergo more intensive therapy, and their relative burden is increased because their healthy counterparts spend less time and money on health care when younger. Also excluded from this analysis were time at home preparing for and recovering from treatments, and time spent by family and caregivers.

"Patient time spent receiving cancer care in the United States is substantial," said Dr. Yabroff. "These estimates represent just one component of the burden of cancer, however. In addition to direct medical costs, other components, such as quality of life and lost productivity due to early cancer death are important to our understanding of cancer burden." ◆

By Addison Greenwood

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Cancer Registries, the American Cancer Society, the Commission on Cancer, and the Centers for Disease Control and Prevention to build a more cohesive national cancer registry system. In addition, the establishment of linkages between SEER data and Medicare records have opened up new avenues of cancer research that focus on treatment, particularly quality, patterns, and cost of care.

Quality control is a cornerstone of the SEER Program. In addition to extensive training courses for cancer registry professionals, Web-based tools are used for distance learning and to conduct reliability studies, the results of which are used to target future training and improve data quality. SEER also is applying contemporary information technology enhancements to improve efficiency, including a modular data management system and sophisticated tools for identifying cancer cases based on electronic capture of information in pathology records.

Such enhancements have helped make SEER a powerful research tool. We often call SEER a population-based laboratory, because it offers a massive population framework from which different types of vital studies can be conducted. The lead story in this week's issue of the *NCI Cancer Bulletin* highlights just such a study, with NCI researchers using SEER data to analyze the nonmedical costs of current cancer care.

In addition, since the 1990s, SEER has worked with the intramural and extramural research teams to conduct Rapid Response Surveillance Studies—investigations that can be performed in a relatively short period of time, typically 1 to 2 years. Numerous papers have been published based on these studies that address important questions about the dissemination of treatment advances in the community and other cancer control efforts that, in the absence of SEER, would take far longer to answer.

And, of course, a unique aspect of SEER that has made it a tremendous gateway for public health information is its public use file, available for analysis to users who agree to maintain confidentiality protections. The SEER Program has been at the forefront of providing access to cancer data for both public health professionals and the advocacy community through user-friendly analytical tools.
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Cancer Research Highlights

Soft-Tissue Sarcoma Risk Increased in Retinoblastoma Survivors

Patients with the hereditary form of retinoblastoma, an extremely rare form of pediatric cancer caused by a germline mutation in the *RB1* gene, are at significantly increased risk of developing soft-tissue sarcomas. Researchers in NCI's Division of Cancer Epidemiology and Genetics (DCEG) estimated the risk for individual histologic subtypes of soft-tissue sarcoma for the first time in these patients. Study results were published in the January 3 *JNCI.*

The study evaluated 963 patients with hereditary retinoblastoma who were diagnosed between 1914 and 1984 and lived at least 1 year after diagnosis. "Because this cohort has been followed longer than most other groups of childhood cancer survivors, we were able to determine risks for several subtypes of soft-tissue sarcoma, especially types that occur later in adulthood," said lead author Ruth Kleinerman.

Researchers found that for these survivors, the risk of leiomyosarcoma, a tumor of the smooth muscle cells, was the highest among all subtypes—up to 400 times higher than the general population—and remained high for decades. Forty-five percent of all soft-tissue sarcomas were diagnosed 30 or more years after the retinoblastoma diagnosis.

Radiotherapy was associated with an increased risk of all subtypes of soft-tissue sarcoma evaluated in the study. "This is important to understand because patients with hereditary retinoblastoma have excellent long-term survival rates," stated senior author and DCEG Director, Dr. Joseph F. Fraumeni, Jr. But he cautioned, "The risks seen in this study reflect treatments commonly used decades ago but no longer used in modern practice."

The authors stressed the importance of continuing surveillance throughout adulthood for survivors of hereditary retinoblastoma and the need to evaluate current treatment regimens that have been designed to have less long-term toxicity.

Molecular Signatures for Lung Cancer Outcomes Identified

The search for molecular signatures that allow more reliable prediction of the risks for recurrence and shortened survival times for lung cancer patients has yielded additional gene-expression profiles for the disease, according to results from two recently published studies. The two described gene signatures, which are different, may prove helpful in identifying patients with early-stage lung cancer who are at increased risk of recurrence and shorter survival times and who might benefit from aggressive postsurgical therapy.

A study from Taiwan, published January 4 in the *New England Journal of Medicine* (*NEJM*), identified 16 genes from 125 patients with non-small-cell lung cancer (NSCLC) who had undergone surgery to treat stage I–III disease. This 16-gene set was further narrowed to a 5-gene signature that was closely associated with relapse-free and overall survival rates among the patients, according to researchers led by Dr. Hsuan-Yu Chen of the National Taiwan University College of Public Health. Using a scoring method, they identified 59 patients with high-risk and 42 patients with low-risk gene signatures. Median overall survival was only 20 months for the high-risk individuals, compared with 40 months for the low-risk patients. The 5-gene signature's predictive accuracy was confirmed with data from other NSCLC patients and published data.

A second study, published on the Public Library of Science (PLoS) Medicine Web site, involved a meta-analysis of data from seven gene-profile studies of patients with stage I NSCLC. The researchers identified a 64-gene signature that was also accurate in identifying high-risk versus low-risk patients with more than 85 percent accuracy.

In an editorial accompanying the *NEJM* article, M.D. Anderson researchers Drs. Roy Herbst and Scott Lippman commented that the Taiwan study "reflects the maturation of the first phase of lung-cancer genomics, which has been based on stored tissue and clinical charts. The field is now poised to begin its

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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_010307/page8. ◆

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next phase—conducting prospective trials of adjuvant chemotherapy in patients with early lung cancer who are selected because they have a high risk of relapse or metastasis according to the molecular signature identified by Chen *et al* or others."

ASCO/CAP Publish Guidelines on HER2 Testing in Breast Cancer

An expert panel convened by the American Society of Clinical Oncology (ASCO) and the College of American Pathologists (CAP) has released new guideline recommendations on testing for human epidermal growth factor receptor 2 (HER2) in women with breast cancer.

HER2 status has important implications for prognosis, response to therapy, and selection of therapy, the panel wrote in the January 1 *Journal of Clinical Oncology*. This includes the use of the targeted therapy trastuzumab (Herceptin), which has proven in randomized clinical trials to improve response rates, time to progression, and survival in women with early-stage and metastatic breast cancer whose tumors overexpress HER2.

Yet, the available evidence suggests that a significant portion of HER2 testing results may be wrong, the panel explained. They highlighted, for instance, two prospective substudies of randomized clinical trials investigating the adjuvant use of trastuzumab which found that "20 percent of HER2 assays performed in the field … were incorrect when the same specimen was re-evaluated in a high-volume, central laboratory. Such a disorganized practice and high rate of inaccuracy, for such an important test that dictates a critically effective yet potentially life-threatening and expensive treatment, is not acceptable."

The recommendations, based on a systematic and thorough review of the available literature, lay out an optimal algorithm for HER2 testing, as well as requirements for the two primary techniques by which such testing is performed, fluorescent *in situ* hybridization, or FISH, and immunohistochemistry, or IHC. It also includes recommendations on optimal tissue handling, internal validation and quality assurance procedures, external proficiency assessment, and laboratory accreditation.

Study Shows How Arsenic Treatment Kills Rare Leukemia Cells

A new study from researchers at Dartmouth Medical School has shown how arsenic treatment for acute promyelocytic leukemia (APL), a rare form of myelocytic leukemia, destabilizes lysosomes in APL cells. It also induces the degradation of an oncogenic protein resulting from the fusion of the promyelocytic leukemia (PLM) protein and the retinoic acid receptor α (RAR-α), which can lead to apoptosis of APL cells, according to results published in the January 3 *JNCI*.

Dr. Sutisak Kitareewan and colleagues treated three APL cell lines with sodium arsenite to induce lysosomal destabilization. The researchers detected and measured activity of lysosomal protease cathepsin L and conducted *in vitro* degradation assays of PML/RAR-α in cell lysates with and without protease inhibitors.

The study found that arsenite treatment destabilized lysosomes in APL cells. These arsenite-treated APL cells showed an increase in lysosomal cathepsin L activity, and the lysates from the treated cells induced PML/RAR-α degradation, leading to cell death, or apoptosis.

The researchers concluded, "Future studies should be directed toward elucidating the mechanism of arsenite-induced release of lysosomal enzymes and determining whether arsenite treatment of nonhematopoietic tumor cells as well as other hematopoietic tumor cells act through a similar mechanism." ◆

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These are just a taste of the scope of the SEER Program and the vital research it supports. SEER continues to be an important resource for the public health community, using population-based science to have a significant impact on measuring our nation's progress in cancer prevention and treatment and guiding future directions for cancer research. ◆

Featured Clinical Trial

The Featured Clinical Trial for this week's *NCI Cancer Bulletin*, "Phase II Randomized Study of Erlotinib with or without Carboplatin and Paclitaxel in Patients with Chemotherapy-Naïve Select Stage IIIB or Stage IV Non-Small-Cell Lung Cancer," appears in the HTML version of the issue. Please go to http://www.cancer.gov/ncicancerbulltin/NCI_Cancer_Bulletin_010906/page5. ◆

Spotlight

More Data Needed on Hormone Use and Breast Cancer Rates

Cancer registries around the country are sending NCI their most recent statistics, and all eyes will be watching to see whether the incidence of breast cancer declined in 2004 for a third straight year, ending a rise that began in the early 1980s.

Epidemiologists noted last year in the *Annual Report to the Nation* on cancer that incidence rates leveled off in 2002 and 2003, but they wanted another year of data before deciding whether the change was a true reversal of a trend or a random fluctuation.

"We look at trends, and in general we like to see 3 consecutive years," says Dr. Brenda K. Edwards of NCI's Division of Cancer Control and Population Sciences (DCCPS), the senior author of the *Report*. "2004 will give us what we need."

If the decline persists (an answer is expected in April), Dr. Edwards and many others will be asking why the rates went down. The likely answer is multiple reasons, including screening and prevention programs.

But a growing number of researchers are now considering the declining use of hormone replacement therapy as a factor in breast cancer incidence.

Millions of women stopped taking the drugs to treat menopausal symptoms after a large national study, the Women's Health Initiative (WHI), reported in July 2002 that certain hormones increased the risk of breast cancer and also heart disease.

Many clinicians have wondered whether the declining use of hormones might eventually influence breast cancer rates.

Last month at the San Antonio Breast Cancer Symposium, researchers said the answer was yes. They presented a new analysis of incidence data that showed a dramatic overall decline of 7 percent between 2002 and 2003.

The largest decline—12 percent—occurred in women who had estrogen receptor-positive breast cancer. This type of cancer may depend on hormones for continued growth.

The only plausible explanation for the results was a decrease in the use of hormone therapy that happened at about the same time, the researchers said.

Dr. Peter Ravdin of the University of Texas M.D. Anderson Cancer Center presented the results and a scientific abstract (a study has not yet been published).

"When we saw that breast cancer rates had gone down, we looked at various risk factors and the role of screening, but hormone therapy stood out," says Dr. Kathy Cronin, a mathematical statistician in NCI's DCCPS and co-author of the abstract.

"Screening might still play a role as well, and of course we're waiting for the 2004 data," Dr. Cronin adds.

The researchers caution that epidemiological data cannot show cause and effect.

Their hypothesis is that the effect of taking away the hormones was to slow the growth of some tumors so that many small tumors went undetected when women went in for their mammograms.

"No one thinks stopping hormone therapy is preventing the initiation of breast cancer, but everyone feels that it is slowing the growth of tumors by taking away some of their fuel," says Dr. Donald Berry of M.D. Anderson, who led the research.

"All we've seen so far is this precipitous drop in incidence," Dr. Berry adds. It is possible that small tumors not detected in 2003 might eventually grow and be detected later.

He believes the future incidence data will offer clues about what happens biologically when hormones are stopped—whether the effect is to slow tumor growth, to stop growth, or potentially even to cause tumors to regress.

If incidence rates remain low for several years, that is pretty good evidence of a substantial slowing of tumor growth and maybe even stopping, says Dr. Berry.

If, on the other hand, rates go back up and other risk factors remain constant, then stopping the hormones is probably only slowing growth.

In the coming months, the researchers will use statistical modeling to assess the relative contributions of hormone therapy, screening, and other factors on sharp declines in incidence rates. "That's what we can do right now," says Dr. Cronin.

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The modeling can simulate the effects of stopping hormone therapy for the population, and a resurgence of hormone use could be factored in, should one occur.

Modeling could also address the fact that after hormone therapy is stopped, a woman's breast density changes, and small tumors are easier to detect by mammography.

The effects on mortality, if there are any, would not be seen for many years and would be difficult to assess given the complexity of the disease, says Dr. Berry.

"This is an intriguing hypothesis, and I would guess that the declining use of estrogen plus progestin certainly plays a role," says Dr. Leslie Ford, associate director for clinical research in NCI's Division of Cancer Prevention (DCP).

"But I don't think we can totally rule out other factors such as screening and the preventative effects of tamoxifen and raloxifene," says Dr. Ford. "It would be too neat a story to say that we announced the results of WHI and breast cancer went away. It's just not that simple."

The picture is certainly complicated. Some women, for instance, may have gone off hormones and then come back on later, but at a different dosage.

Furthermore, any analysis would have to focus solely on estrogen-plus-progestin therapy because estrogen-alone therapy is not associated with an increased breast cancer risk.

Prescription rates for both types of hormone therapy fell rapidly after the WHI results appeared. The new analysis suggests that incidence rates were affected almost immediately.

The short time frame is surprising but may be consistent with what epidemiological studies have shown, according to Dr. Christine Berg of NCI's DCP, who has been treating women and studying the effects of hormones on breast cancer for 25 years.

She points to a study, published in *The Lancet* in 1997, that says the risks of hormone therapy decline within 1 to 4 years after the therapy is stopped. By the fifth year after stopping, the risk is back to where it was before the hormone use began.

Given the preponderance of evidence on the adverse effects of hormones on breast cancer and also vascular disease, women who are still taking hormones should consider stopping them, says Dr. Berg.

"Physicians need to discuss this increasing body of evidence with their patients," she says.

The message for women is to avoid estrogen-plus-progesterone replacement therapy, adds Dr. Jo Anne Zujewski, who oversees breast cancer trials for NCI's Cancer Therapy Evaluation Program.

"We have made this recommendation before because there are serious risks and there are not long-term benefits," says Dr. Zujewski. If hormone therapy is recommended for debilitating menopausal symptoms, the duration of use should be limited, she says.

Several weeks before the San Antonio meeting, researchers in California published their state's incidence statistics for 2004 in the *Journal of Clinical Oncology* after the data were finalized early.

At least in California, the decline in 2003 rates persisted for another year and could not be explained by variables such as screening.

"Since the national data won't be released until later this spring, we thought it was important to show that in California the drop continued in 2004," says Dr. Christina Clarke of the Greater Bay Area Cancer Registry and Stanford Comprehensive Cancer Center.

Her team looked at data on mammography rates from Kaiser Permanente to see if this might explain the drop, but screening rates were stable "any way you look at it," she says.

"I don't think there's a study design that will allow us to look at this phenomenon and answer the question of causation," says Dr. Clarke. "We're going to continue to watch the trend and think about it and rule out possible factors as we can."

Dr. Berry predicts that the national data for 2004 will show a plateau, and he is more interested in what might be learned from 2005 and 2006 data. But he has confidence in the current hypothesis.

"People say that now we have to wait and see what happens, but that's not necessary in my view," says Dr. Berry. "We have very compelling information that withdrawing the hormones is causing the lion's share of the effect."

"The future information will tell us about the biology of the effect, but the effect itself is very clear," he adds.

Dramatic shifts in cancer trends are rare, but they do occur and can be triggered by a single event, such as a public figure's diagnosis with cancer.

"We've seen this before when Betty Ford got breast cancer and when Ronald Reagan was diagnosed with colon cancer," says Dr. Edwards. "These events have an impact on people's behavior, and in this case it would be the WHI results." ◆

By Edward R. Winstead

Notes

Fraumeni Receives Alan Rabson Award

Dr. Joseph F. Fraumeni, Jr., director of NCI's Division of Cancer Epidemiology and Genetics, delivered the Third Annual Alan S. Rabson Award Lecture for Intramural Research, "Genes and the Environment in Cancer Causation," earlier today during the 2007 Intramural Scientific Retreat in Bethesda, MD. The Rabson Award was created in recognition of Dr. Rabson's dedication and enthusiasm for NCI and its intramural program during his 50-year tenure at NCI. Past recipients include Dr. Susan Gottesman of CCR's Laboratory of Molecular Biology and Dr. Steven Rosenberg, chief of NCI's Surgery Branch.

Susan Hubbard Dies at 60

Susan Molloy Hubbard died on December 11, 2006, at her home in Potomac, MD. Ms. Hubbard was an honors graduate of the University of Connecticut with a degree in nursing, and began her career in the late 1960s as a cancer-unit nurse at Yale-New Haven Hospital. In 1979, she became an oncology research nurse at the NIH, and later served as chief of NCI's Scientific Information Branch in the Division of Cancer Treatment. She retired in 2002 as director of NCI's International Cancer Information Center. At the time of her retirement, she had served 22 years in the U.S. Public Health Service and had achieved the rank of captain.

Ms. Hubbard was instrumental in creating NCI's PDQ cancer information database and the CancerNet Web site, which was later integrated into the redesigned NCI Web site, www.cancer.gov. She received many awards, including the University of Connecticut's first Outstanding Alumni Award for Leadership in Nursing, the U.S. Public Health Service's Distinguished Service Medal, the NIH Director's Award, and the Good Housekeeping Award for Women in Government. She authored or contributed to more than 170 articles in medical journals and textbooks. She also earned a master's degree in public administration from American University.

Guidelines Released for Accessing PCPT Biorepository Samples

Biorepository samples from the Prostate Cancer Prevention Trial (PCPT) are available to researchers. Specimens include serum, white blood cells, and prostate biopsy tissues.

Guidelines on how to access the PCPT biospecimens were recently released by the Southwest Oncology Group (SWOG), the research network in charge of the trial, and are posted on the SWOG Web site and linked from the NCI PCPT Web page.

PCPT was a study designed to see whether the drug finasteride (Proscar) could prevent prostate cancer in men ages 55 and older. The trial began in October 1993 and was stopped in June 2003 because of a clear finding that finasteride reduced the incidence of prostate cancer. Trial participants had annual PSA exams and most had prostate biopsies at the end of the trial.

NCI Marks 70 Years of Excellence in Cancer Research

Throughout 2007, NCI will celebrate the 70th anniversary of the National Cancer Institute Act. Readers can learn more about the birth of the Institute and its strides in research by visiting http://www.cancer.gov/aboutnci/ncia. The site features links to NCI-related legislation and background on NCI's leadership of the National Cancer Program. Other features include the Cancer Advances in Focus, a collection of fact sheets outlining research progress against specific diseases and plans for the future, and the *100 Years of Advances Against Cancer* slide show, showcasing important research breakthroughs and historic photographs throughout the years.

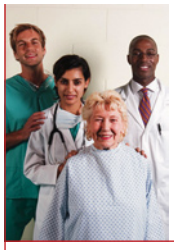
To help commemorate this important event, look for notes in the *NCI Cancer Bulletin* throughout the year. ◆

CCR Grand Rounds

January 16: Dr. Carole A. Parent, Senior Investigator, Laboratory of Cellular and Molecular Biology, CCR, NCI. "Gradient Sensing and Signal Relay During Chemotaxis."

January 23: Dr. Margaret Shipp, Associate Professor of Medicine; Director, Lymphoma Program, Dana-Farber Cancer Institute. "Molecular Heterogeneity of Large B-cell Lymphoma: Identification of Rational Treatment Targets."

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. ◆



Cancer Center Profile

Fox Chase Cancer Center

President: Dr. Robert C. Young • 333 Cottman Avenue, Philadelphia, PA 19111
http://www.fccc.edu • 1-888-FOX CHASE

Background

Fox Chase Cancer Center in Philadelphia was one of the first comprehensive cancer centers designated by NCI in 1974. It was formed by the union of two older Philadelphia institutions: the American Oncologic Hospital (established in 1904) and the Institute for Cancer Research (founded in 1927). Presently, research is conducted in more than 80 laboratories by a staff of more than 325 physicians and scientists, and supported by 2,500 employees.

Fox Chase will break ground in March 2007 for its Cancer Research Pavilion (CRP); the first phase of a planned 25-year expansion. One novel aspect of the CRP is the Center for Women's Cancer, which brings together Fox Chase's clinical and laboratory research expertise in breast and gynecologic cancers. The CRP will also house additional research laboratories, increase outpatient care facilities, and expand the radiation therapy department, adding 1.5 million square feet of research and treatment space to Fox Chase's current 1 million-square-foot campus.

Patient Care

Fox Chase's 100-bed hospital is devoted entirely to cancer care. Annual hospital admissions exceed 4,000 and outpatient visits to physicians total more than 68,700 a year. About 170 clinical trials of new prevention, diagnostic, and treatment techniques are under way at any one time. Almost 800 patients each year participate in research studies.

The Research Institute for Cancer Prevention, the first comprehensive program of its kind in the nation, was dedicated in 2000 and offers prevention-related services for people with family histories of cancer or other specific risks of breast and ovarian cancer, gastrointestinal cancers, melanoma, and prostate cancer.

Research Activities

Fox Chase research encompasses three main areas: medical science, which provides patient care and conducts a broad-based program of clinical research; basic science, which focuses on understanding both normal and abnormal cell growth and development; and population science, which identifies people at high risk of cancer and develops strategies to reduce these risks through programs of prevention and early detection. Fox Chase is recognized as a world leader in ovarian cancer research and has a corresponding Specialized Program of Research Excellence (SPORE) grant from NCI. Fox Chase's work in breast cancer was recently recognized by the Department of Defense with the award of an $11 million grant establishing Fox Chase as a Breast Cancer Center of Excellence.

Other Notable Programs

In 1986, Fox Chase established its Cancer Center Partners program with community hospitals in the Philadelphia region. The partnership now includes 30 hospitals in Pennsylvania and New Jersey, increasing the quality of cancer care in the community and the number of patients enrolled in clinical trials. Fox Chase also is a founding member of the National Comprehensive Cancer Network, an alliance of 20 of the nation's leading academic cancer centers. In 2000, the hospital became the nation's first comprehensive cancer center and Pennsylvania's first hospital to receive magnet status for nursing excellence from the American Nurses Credentialing Center, which renewed this honor in 2004. ◆

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.

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