NATIONAL CANCER INSTITUTE

NCI Cancer Bulletin

Eliminating the Suffering and Death Due to Cancer

June 27, 2006
Volume 3 | Number 26

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Surgeon General's report on secondhand smoke released today. See page 7.

A Publication of the
National Cancer Institute
U.S. DEPARTMENT OF
HEALTH AND HUMAN SERVICES
National Institutes of Health
NIH Publication No. 05-5498

http://www.cancer.gov

Urologist Often Determines Use of Hormone Therapy for Prostate Cancer

Which urologist a patient with prostate cancer chooses may be more important in determining whether he receives hormone therapy than other factors such as his age or type of tumor, a new study reports.

"The urologist seems to play a role that is at least as important, if not more important, than tumor grade and patient characteristics," says lead researcher Dr. Vahakn B. Shahinian of the University of Texas Medical Branch in Galveston.

The findings suggest that a patient could go to two urologists and receive different opinions about whether to have the treatment, called androgen deprivation therapy because it blocks androgen hormones such as testosterone.

"This scenario is cause for concern because patients might be getting therapy that may not be in their best interest," says Dr. Shahinian.

Approximately half of all prostate cancer patients receive the therapy over the course of their disease. When given with radiation, the therapy can extend the survival of patients with locally advanced disease.

But there are not clear data for urolo-

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Director's Update

NCI's Advocacy Summit Educates and Inspires

The dedication and enthusiasm of the advocacy community were palpable last week on the NIH campus. The occasion was the inaugural NCI advocacy summit, *Listening and Learning Together: Building a Bridge of Trust,* hosted by the NCI Director's Consumer Liaison Group (DCLG) and cosponsored by the NCI Office of Liaison Activities (OLA) and the Foundation for the NIH.

An idea that originated from the results of a survey of the advocacy community conducted in 2003, the summit was an exciting gathering of some 250 patient advocates from all across the country. Attendees represented local and national organizations, all dedicated to activities such as increasing awareness about specific cancers; raising money to support cancer research; and providing services to patients, survivors, and caregivers.

I had the privilege of speaking at the summit's opening plenary session and again at the closing ceremony. Talking with advocates is one of the most rewarding aspects of being part of NCI leadership. After all, these are dedicated people who log many hours as volunteers not only for their own organizations but also in various

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gists to follow about when androgen deprivation therapy should be used for other patients. The treatment is expensive and potentially toxic, with side effects such as an increased risk of fractures and loss of sexual function.

During the 1990s, there was a dramatic increase in the use of androgen deprivation therapy for prostate cancer, even in cases where its benefit was unproven or highly improbable. This in part led to the new study.

The researchers linked the Surveillance, Epidemiology, and End Results (SEER) and Medicare databases to identify 1,800 urologists who treated 61,000 men diagnosed with prostate cancer at age 65 years or older. The most recent data were from 1999.

The urologist was responsible for about 20 percent of the variation in the use of hormone therapy, versus 10 percent for tumor grade and stage, and 4 percent for patient characteristics, according to findings in the June 21 *Journal of the National Cancer Institute (JNCI)*.

Dr. Shahinian and his colleagues have begun to try to identify the characteristics of urologists that cause them to select the treatment.

A limitation of the study was the lack of information about prostate-specific antigen (PSA) levels in participants. Rising PSA levels can be an indication for the therapy, so some patients might have received it based on evidence rather than physician judgment.

Nonetheless, the study shows that a powerful anticancer therapy is often selected based on a physician's intuition rather than on hard facts or evidence-based medicine, says Dr. Paul Schellhammer of Eastern Virginia Medical School, who wrote an editorial in *JNCI*.

Prostate cancer is an extraordinarily heterogeneous disease, and many cancers are diagnosed that will not affect the length or the quality of a man's life. "But hormone therapy represents a powerful remedy for patients who have progressive disease," Dr. Schellhammer adds.

The challenge for physicians, he suggests, is to offer androgen deprivation therapy to men with high-risk, potentially lethal prostate cancer early in their course of treatment and to withhold it from men with low-risk disease, thereby avoiding unnecessary risks.

Clinical trials are under way to clarify the picture of how and when the therapy should be used. Dr. Schellhammer predicts that a day will come when the treatment's use is guided by physicians but based on evidence rather than directed by physicians, as it is today. ◆

By Edward R. Winstead

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volunteer capacities for NCI and their local cancer centers. Their desire to learn as much as they can about NCI and cancer—all in an effort to more effectively promote their cause—always amazes me.

And that's what much of this summit was about: communication, education, and trust. There were breakout sessions focused on best practices, as well as NCI outreach and educational opportunities. Virgil Simons from Prostate Net, for example, discussed the success of his organization's partnership in 2004 with MGM Studios to promote prostate cancer screening in barbershops nationwide, using the movie *BarberShop 2* as the campaign's hook.

At a town hall meeting, DCLG members had the opportunity to hear directly from summit attendees about the most pressing issues and concerns in their communities. A recurring theme was finding effective ways for individual organizations to raise funds.

The hit of the meeting, however, was the poster picnic. The picnic allowed both advocates and NCI staff to gather informally during lunch to share best practices, or learn about new tools and resources. The picnic was a rare opportunity for NCI staff involved in a broad array of programs and initiatives to get "face time" with advocates. Staff from NCI's The Cancer Genome Atlas project, for instance, talked about the rationale behind this important initiative and what they hope to achieve.

At the closing ceremony, I had an important message for summit attendees: They are our voice when it matters most. Advocates are the strong voice of cancer patients here at NCI and in all government forums—and the need for that voice is as great now as it has ever been.

For those who couldn't attend the summit, you can watch it on the NIH Web site. In addition, there is an abundance of information for advocates on the newly revamped OLA Web site, as well as the sister sites for NCI's DCLG and Consumer Advocates in Research and Related Activities program.

It's often said that everybody has been touched by cancer in some way. This summit is the embodiment of that statement. It was truly inspirational, and I am honored to have been a part of it. ◆

Dr. John E. Niederhuber
Acting Director
National Cancer Institute

Spotlight

A New "Target" for Chemotherapy?

Although not typically considered a "targeted therapy" along the lines of drugs like trastuzumab (Herceptin) or gefitinib (Iressa), most chemotherapy does have a general target: rapidly dividing cells. This description applies well to cancer cells but, unfortunately, also describes some healthy cells, such as those in the bone marrow or gut, which also draw chemotherapy's wrath.

But chemotherapy drugs also have another target: endothelial cells that form the lining of newly formed blood vessels, such as those whose creation is orchestrated by tumors to fuel their growth. There is a considerable body of evidence that even very low, nontoxic doses of chemotherapy drugs, when delivered frequently for a prolonged period of time, can retard tumor blood vessel growth (or angiogenesis) by destroying endothelial cells.

Treatment approaches along these lines are now being tested in clinical trials, and they've been coined metronomic chemotherapy.

"The definition of metronomic chemotherapy varies, but generally it refers to repetitive, low doses of chemotherapy drugs designed to minimize toxicity and target the endothelium or tumor stroma as opposed to targeting the tumor," says Dr. Harold J. Burstein of the Dana-Farber Cancer Institute, who has led several early-stage trials of metronomic chemotherapy in women with breast cancer.

"It's definitely an interesting approach that opens up the possibility of using chemotherapy differently than we have traditionally considered," says Dr. Burstein.

The metronomic approach was initially proposed and tested in animal models by Dr. Timothy Browder in Dr. Judah Folkman's lab at Harvard Medical School. In the studies, standard maximum-tolerated dose (MTD) chemotherapy regimens caused cell death of endothelial cells in the blood vessels feeding to the tumor first, followed by tumor cells. But the long breaks needed between the MTD regimens allowed the damaged blood vessels, and thus the tumor, to recover.

But significantly lower doses given more frequently on a prolonged schedule proved to be far more effective, including complete tumor regressions, even in mice that were resistant to the same drug when used in a standard MTD regimen.

Since then, several research groups have confirmed these findings. And studies conducted in cell lines and animal models have also suggested that combining metronomic chemotherapy with targeted anti-angiogenesis agents is more effective than metronomic chemotherapy alone.

"I think the preclinical data together with the clinical trial results seen so far make a strong argument for testing metronomic chemotherapy more aggressively in larger trials, including trials where it's combined with different targeted agents," argues Dr. Robert Kerbel, of Sunnybrook Health Sciences Centre in Toronto, who has led many preclinical studies of metronomic chemotherapy.

A true metronomic regimen of frequent, low-dose chemotherapy over a longer period has yet to be tested in any phase III trials in the United States. A number of phase I and II trials have been conducted, however, yielding some provocative, if not altogether convincing, results.

Dr. Burstein presented data last December from a phase II clinical trial comparing a common metronomic regimen—a daily low dose of oral cyclophosphamide and a low dose of methotrexate twice a week—with or without the targeted anti-angiogenesis drug bevacizumab. The combination approach was superior to metronomic chemotherapy alone in delaying disease progression, but was not necessarily an improvement upon the results typically seen in similar patient populations treated with a standard MTD regimen.

Concerns about the toxic effects of conventional cancer treatments on pediatric patients also has prompted pediatric oncology researchers to investigate metronomic-like approaches to treatment. Some promising early results have been reported.

Based on the available clinical evidence, says Dr. Burstein, it's unclear in what setting metronomic chemotherapy might prove most useful.

"Those who are enthusiastic about it think it can be used anywhere," he says. "I think it's most likely to be used to treat more indolent, less threatening tumors because it may not work fast enough for those…with more aggressive disease."

Researchers like Dr. Kerbel, meanwhile, are making some headway on better

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Cancer Research Highlights

Fertility Preservation Guidelines Issued by ASCO

Fertility preservation options should be addressed by oncologists and physicians as part of standard care for cancer patients who are in their reproductive years, according to guidelines developed by the American Society of Clinical Oncology (ASCO) and published in the June 20 *Journal of Clinical Oncology*.

"As part of education and informed consent before cancer therapy, oncologists should address the possibility of infertility with patients treated during their reproductive years and be prepared to discuss possible fertility preservation options or refer appropriate and interested patients to reproductive specialists," the authors noted. "Clinician judgment should be employed in the timing of raising this issue, but discussion at the earliest possible opportunity is encouraged."

ASCO convened an expert panel on the issue in light of evidence that many oncologists either do not discuss the possibility of treatment-related infertility "or do so suboptimally." The panel reviewed medical literature and databases spanning 1997 to 2005, and found evidence that fertility preservation is of great importance to many patients and properly addressing the issue "was a positive factor in patients coping emotionally with cancer."

Sperm and embryo cryopreservation are considered standard practice and are widely available, the guidelines state. Other available fertility preservation methods—such as ovarian tissue preservation—"should be considered investigational and be performed in centers with the necessary expertise."

The expert panel, noting the "paucity" of large, randomized trials of fertility methods, "encourages additional well-designed studies evaluating methods of fertility preservation in people with cancer to help answer these questions."

Loss of Gene Function Indicated in Familial Juvenile Polyposis

People with a genetic disorder called familial juvenile polyposis (FJP) are predisposed to development of both noncancerous gastrointestinal polyps and gastrointestinal cancer. The human tumor-suppressor gene *SMAD4* is thought to contribute to tumorigenesis in patients with this disorder. A new study from the NCI Center for Cancer Research's Laboratory of Cell Regulation and Carcinogenesis published in the June 22 *Nature* implicates loss of the SMAD4 protein-dependent signaling in T cells as a cause of tumor formation in patients with FJP.

The investigators developed mouse models with the *Smad4* gene deleted either in T cells or in epithelial cells. Mice lacking the Smad4 protein in their T cells developed gastrointestinal abnormalities like those found in FJP, including a thickening of the mucosal surface and the infiltration of plasma cells (antibody-producing immune cells) into the inner layer of the intestines. Mice lacking Smad4 protein expression in epithelial cells did not develop gastrointestinal abnormalities. Epithelial cancers were found in 94 to 100 percent of mice from model lines lacking the *Smad4* gene in their T cells, but not in mice from model lines lacking *Smad4* in their epithelial cells.

Further *in vitro* studies suggested that loss of Smad4-dependent signaling in mouse T cells led to an increased production of certain cytokines, substances produced by the immune system that cause an increase in the number of plasma cells and stromal (connective tissue) cells. Altogether, state the investigators, their data "implicate defects in SMAD4-mediated signaling in T cells in the pathogenesis of FJP…Therapeutic strategies that target the activation and function of T cells may represent an effective form of preventive therapy that will potentially delay or obviate the need for aggressive surgical intervention."

Reducing Risk of HPV Infection in Young Women

Researchers, reporting in the June 22 *New England Journal of Medicine* on a small prospective study designed to test the impact of condom use by partners of women new to sexual intercourse, found a 70 percent risk reduction for HPV infection. The effect was found in women whose partners used condoms 100 percent of the time 8 months prior to the study, compared with those using condoms less than 5 percent of the time. Fourteen women in that group developed cervical squamous intraepithelial lesions, compared with none in the 100 percent condom-

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use group. Lead author Dr. Rachel L. Winer and colleagues, of the University of Washington, conclude that "the association was strong and increased with the increasing frequency of condom use, suggesting a causal, protective effect."

Gene Suppresses Non-Small-Cell Lung Cancer Tumors

Scientists have identified several dozen tumor suppressor genes (such as *p53* in many tumor types and *BRCA1/BRCA2* in breast cancer) which, when active, block the proliferation of cells. Results in the June 21 *JNCI* suggest that a recently discovered DnaJ-like heat shock protein known as HLJ1 (also known as DNAJB4) belongs on the list due to its inhibitory effects on the development of non-small-cell lung cancer (NSCLC).

Dr. Meng-Feng Tsai, of the National Taiwan University Hospital in Taipei, Taiwan, and colleagues previously identified HLJ1 as a member of the heat shock protein 40 family that helps cells survive stresses such as chemotherapy. The current study was designed to demonstrate the impact of HLJ1 on NSCLC, using multiple and converging lines of evidence from cellular, genetic, and clinical tests.

The researchers restored HLJ1 expression to NSCLC cells *in vitro* and found that cell proliferation, anchorage-independent growth, tumorigenesis, cell motility, and invasion were all inhibited. With microarray and downstream pathway analysis, they identified a novel and plausible tumor suppressor mechanism. They also looked at the biopsied tissue of 71 Chinese NSCLC patients, 55 of whom had lower HLJ1 expression within the tumor than in surrounding tissue. These patients were followed, and the group with higher HLJ1 expression in their tumors had 53 percent less risk of recurrence and 62 percent better survival.

In an accompanying editorial, Drs. Adriana Albini and Ulrich Pfeffer, of the National Cancer Research Institute in Genoa, Italy, noted "Tumor suppressor genes for NSCLC are eagerly sought for both our understanding of lung cancer biology and the need of a prognostic marker." ◆

FDA Update

FDA Approves First Drug Treatment for Late-Stage Cervical Cancer

Topotecan hydrochloride (Hycamtin) was approved by the Food and Drug Administration (FDA) for use in combination with cisplatin for Stage IVB, recurrent, or persistent cancer of the cervix. This chemotherapy treatment improved survival in clinical trials by about 50 percent over cisplatin alone, from 6.5 to 9.4 months, and "is a potentially life-prolonging option for thousands of women," said Acting FDA Commissioner Dr. Andrew von Eschenbach.

The drug's side effects are serious, however, including a drop in white blood cells and platelets. The approval also stipulates that a patient's physician must determine that surgery or radiation therapy is not likely to be effective. Produced by GlaxoSmithKline, the drug is already approved for ovarian and small-cell lung cancers. ◆

(Spotlight continued from page 3)
understanding the nuts and bolts of metronomic chemotherapy, such as how to determine the lowest dose that can provide a potent benefit—the so-called optimal biological dose—and identifying biological markers that demonstrate whether the approach is having an anti-angiogenic effect.

Then there's this question: Can chemotherapy be delivered more frequently, even daily, at significantly higher doses than those used in most metronomic regimens but less than in MTD regimens? The toxicity might be greater than a "traditional" metronomic regimen, but so might the effectiveness, including in comparison with standard MTD regimens.

That's exactly what was shown in a phase III clinical trial presented earlier this month at the ASCO annual meeting. In women with locally advanced or inflammatory breast cancer, a presurgical (or neoadjuvant), metronomic-like regimen—using higher doses of cyclophosphamide, given daily; doxorubicin; and growth factor support to ensure the continued production of white blood cells—was superior to a standard MTD regimen at eliminating evidence of invasive cancer at the time of surgery. This outcome, explains Dr. Robert Livingston, a co-investigator on the Southwest Oncology Group-led trial, generally has been found to predict superior long-term outcome in patients.

The idea, according to Dr. Livingston, is to try to expose tumor cells to minimum concentrations of chemotherapy drugs for as long as possible.

"I think it's fair to call the regimen we have developed a hybrid," he says. "It can destroy tumor cells and, at the same time, the continuous exposure, particularly to cyclophosphamide, is having an anti-angiogenic effect." ◆

By Carmen Phillips

Funding Opportunities

Quick-Trials for Novel Cancer Therapies: Exploratory Grants

Announcement Number: PAR-06-451
Application Receipt Dates: Aug. 9 and Dec. 9, 2006; Apr. 9, Aug. 9, and Dec. 9, 2007

This is a renewal of PAR-04-155 and will use the R21 award mechanism. For more information, see http://cri.nci.nih.gov/4abst.cfm?initiativeparfa_id=3485. Inquiries: Dr. Roy Wu—wur@ctep.nci.nih.gov

Cancer Research Network

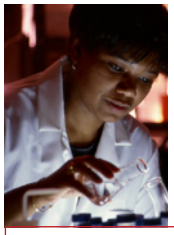
Announcement Number: RFA-CA-06-505
Application Receipt Date: Aug. 16, 2006

This is a renewal of RFA-CA-02-507 and will use the U19 award mechanism. For more information, see http://cri.nci.nih.gov/4abst.cfm?initiativeparfa_id=3489. Inquiries: Dr. Martin L. Brown—mb53o@nih.gov

Bioengineering Research Partnerships

Announcement Number: PAR-06-459
Letter of Intent Receipt Dates: Aug. 20 and Dec. 20, 2006
Application Receipt Dates: Sept. 20, 2006 and Jan. 22, 2007

This is a renewal of PAR-04-023 and will use the R01 award mechanism. For more information, see http://cri.nci.nih.gov/4abst.cfm?initiativeparfa_id=3488. Inquiries: Dr. Houston Baker—bakerhou@mail.nih.gov ◆



Featured Clinical Trial

Adjuvant Therapy for Kidney Cancer

Name of the Trial
Phase III Randomized Study of Adjuvant Sunitinib Malate Versus Sorafenib in Patients with Resected Renal Cell Carcinoma (ECOG-E2805). See the protocol summary at http://cancer.gov/clinicaltrials/ECOG-E2805.

Principal Investigators
Drs. Naomi B. Haas, Robert Uzzo, and Keith Flaherty, ECOG; Dr. Christopher Kane, CALGB; Dr. Christopher Wood, SWOG; and Dr. Michael Jewett, National Cancer Institute of Canada Clinical Trials Group

Dr. Naomi B. Haas

Why This Trial Is Important
More than 30,000 Americans are expected to be diagnosed with kidney cancer (renal cell carcinoma) in 2006. Surgery is the primary treatment for most cases of kidney cancer. While surgery alone often cures patients with early-stage disease, individuals with more advanced disease have an increased risk of cancer recurrence after surgery.

In this trial, patients who have tumors that can be surgically removed and who are at high risk for recurrence will be given sunitinib (Sutent), sorafenib (Nexavar), or a placebo as postoperative (adjuvant) therapy. Patients given the placebo will receive the current standard of care for their condition, which is no adjuvant therapy.

Sunitinib and sorafenib are targeted therapies that block cell proliferation and angiogenesis. Angiogenesis is important for the growth and spread of malignant kidney tumors, and blocking it may help prevent the growth of cancer cells that remain after surgery.

"Both sunitinib and sorafenib were approved recently by the FDA to treat metastatic kidney cancer," said Dr. Haas. "If either of these agents helps improve disease-free survival following complete surgical removal of the tumors in patients who are at high risk for recurrence, it will lead to a change in clinical practice."

Who Can Join This Trial
Researchers seek to enroll 1,332 patients aged 18 and over with renal cell carcinoma that can be surgically removed and who are determined to be at high risk for recurrence. See the list of eligibility criteria at http://cancer.gov/clinicaltrials/ECOG-E2805.

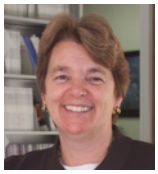
Study Sites and Contact Information
Study sites in the United States are recruiting patients for this trial. See the list of study contacts at http://cancer.gov/clinicaltrials/ECOG-E2805, or call NCI's Cancer Information Service at 1-800-4-CANCER (1-800-422-6237) for more information. The toll-free call is confidential. ◆

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

Notes

Hoover and Hartge Receive Awards at ACE's Annual Meeting

Dr. Robert Hoover, director of the Epidemiology and Biostatistics Program in NCI's Division of Cancer Epidemiology and Genetics (DCEG), received the 2005 Lilienfeld Award from the American College of Epidemiology (ACE) during its 2006 annual meeting June 21–24. Because the 2005 ACE annual meeting was canceled due to Hurricane Katrina, the College recognized the 2005 awardees at this year's meeting. The Lilienfeld Award, ACE's most prestigious tribute, is presented to an individual for excellence in epidemiology and named in honor of outstanding teacher, scholar, and founder of ACE, Abraham Lilienfeld.



Dr. Patricia Hartge, a senior scientist at DCEG, also was recognized at ACE's 2006 annual meeting. She received the Distinguished Epidemiologist Award, which is given jointly by the Society for Epidemiologic Research, the American Public Health Association, and ACE. The award is presented every 5 years to honor major accomplishments and contributions to the field of epidemiology.

Strete to Retire in July

Dr. Carolyn Strete, chief of the NCI Cancer Training Branch (CTB), is retiring on July 1, having served at NCI from 1982 to 1992 and again from 2001 to present. Dr. Strete received her Ph.D. in clinical psychology from State University of New York at Stony Brook and in 1984 was commissioned to the U.S. Public Health Service Commissioned Corps, where she holds the rank of captain.

Prior to her second stint at NCI, Dr. Strete held several key positions at the National Institute of Mental Health, both in peer review administration and scientific program management.

During her earlier years at NCI, Dr. Strete served as chief of the Prevention, Epidemiology and Cancer Control Peer Review Section and was scientific review administrator of the Cancer Control Grants Review Committee. More recently, in her role as chief of CTB, Dr. Strete chaired an NCI-wide Training Inventory Committee to assess the active training programs in the intramural and extramural programs, resulting in a report that can be found at http://www.cancer.gov/about-nci/training-career-development. ◆

HHS News

U.S. Surgeon General Releases Report on the Effects of Secondhand Smoke

U.S. Surgeon General Dr. Richard H. Carmona issued a comprehensive scientific report today that concludes there is no risk-free level of exposure to secondhand smoke. This finding is a major public health concern since nearly half of all nonsmoking Americans are still regularly exposed to secondhand smoke.

According to the report, nonsmokers exposed to secondhand smoke at home or work have a 25 to 30 percent increased risk of developing heart disease and a 20 to 30 percent increased risk for lung cancer. The report, *The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General,* finds that even brief secondhand smoke exposure can cause immediate harm to people's health. The report notes that the only way to fully protect nonsmokers from the dangerous chemicals in secondhand smoke is to eliminate smoking indoors.

"The good news is that, unlike some public health hazards, secondhand smoke exposure is easily prevented," Dr. Carmona said. "Smoke-free indoor environments are proven, simple approaches that prevent exposure and harm." The Surgeon General noted that levels of cotinine—a biological marker for secondhand smoke exposure—measured in nonsmokers have fallen by 70 percent since the late 1980s, and the proportion of nonsmokers with detectable cotinine levels has been halved from 88 percent 1988 to 1991 to 43 percent 2001 to 2002.

Dr. Carmona emphasized, however, that sustained efforts are required to protect the more than 126 million Americans who continue to be regularly exposed to secondhand smoke in the home, at work, and in other enclosed spaces, including automobiles. ◆

Community Update

Healing Garden Grows at Massey Cancer Center

The new healing garden at Virginia Commonwealth University's (VCU's) Massey Cancer Center offers patients, family members, and medical staff a chance to be around nature and to escape, if for only a little while, the stress and stimulation of a clinical environment.

"The garden was created to nourish and to inspire those who use it," says Becky Massey, a member of the cancer center's advisory board who came up with the idea of the garden and led the fund-raising.

Last month, the garden, which features curved pathways and raised planters, opened as part of an addition that includes a state-of-the-art research facility.

"The garden offers another aspect of healing that goes along with medicine but is different from medicine," says Ms. Massey. "These are the benefits of nature that come from plants and wonderful light and the trickling of water."

The restorative power of gardens is an ancient idea that has recently come into vogue. Last year, new gardens designed to promote health and well being opened at Massachusetts General Hospital, at the Fred Hutchinson Cancer Research Center, and at the NIH Clinical Center.

The Massey Healing Garden, in Richmond, Va., is growing shade

Photo courtesy of VCU Massey Cancer Center

trees, perennials, evergreens, shrubs, vines, and groundcovers. Water sculptures and a tranquil pool add to the atmosphere.

Views from the garden are framed by bronze screens that borrow design elements such as birds and reeds from the nearby Egyptian Building, which was the original medical school built in 1845.

Though at street level, the garden is actually built on the roof of an underground parking garage. The planters are at different heights to accommodate the roof's piping and the garden's irrigation system.

Situated between new laboratories and a clinical center, the garden is a symbolic link between research and treatment. The connection is appropriate given the role of plants in developing some cancer medicines.

The garden has plants with anticancer properties, including the yew tree, which was the original source of the drug paclitaxel; Madagascar periwinkle, which is used to make the drug vinblastine; and autumn crocus, which makes a substance tested against leukemia.

But most of the plants come from everyday life, and the healing aspect is intended to come from this very familiarity.

"The focus is on life rather than illness," says Ms. Massey, adding that plants with strong scents are absent because some cancer treatments increase sensitivity to them.

In nice weather, support groups have met in the garden because the setting is much more relaxing than a conference room.

Another use might be as a waiting room. Several oncology nurses recently came up with the idea of giving patients electronic buzzers like those used at restaurants. Administrators are exploring this possibility.

In the meantime, for a sick patient, a stressed relative, or a tired nurse, the garden will be a temporary "place of peace" in the midst of dealing with illness and pain, Ms. Massey wrote recently in the *Richmond Times-Dispatch*.

"Perhaps it will mean the difference between a bad day and a hopeful day," she wrote. ◆

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. Contact the *NCI Cancer Bulletin* staff at ncicancerbulletin@mail.nih.gov.