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Eliminating the Suffering and Death Due to Cancer

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IL-12 Shows Promise for the Treatment of AIDS-Related Kaposi's Sarcoma

An early-phase clinical trial of interleukin-12 (IL-12) published online February 28 in *Blood* has shown promising results in patients with AIDS-related Kaposi's sarcoma (KS).

KS involves the abnormal growth of blood vessels and can develop in the skin or internally. Unlike most cancers, KS is caused by a virus—Kaposi's sarcoma-associated herpesvirus (KSHV), also known as human herpesvirus-8. This virus is relatively common in certain countries with a high incidence of KS. In most people, the virus is kept in check by the normal functioning of the immune system. However, patients with severely suppressed immune systems, such as people living with HIV, are vulnerable to the development of KS.

Because IL-12 can act as both an immunostimulator and an anti-angiogenesis agent—a drug that can suppress the growth of new blood vessels—investigators lead by Drs. Robert Yarchoan and Richard Little from NCI's HIV and AIDS Malignancy Branch saw potential for the drug in the treatment of AIDS-related KS.

"We initially became interested in

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Director's Update

Guest Update by Dr. John E. Niederhuber

Strategic Plan Focuses Research Efforts

Today marks the release of a document that's the culmination of a tremendous amount of work and deliberation over the past few years: an NCI Strategic Plan that outlines the strategies for achieving NCI's goal of eliminating the suffering and death due to cancer.

This plan is intended to guide the efforts of the entire cancer community as we strive to remove the barriers to progress and accelerate the delivery of effective interventions that span prevention and early detection to advanced disease.

The strategic plan is a result of many months and hundreds of hours of work by NCI scientists, as well as consultation with advisory committees and the research and advocacy communities.

In 2002 and 2003, NCI leadership worked across the institute to identify strategic priorities, crosscutting research considered instrumental for accelerating progress. In 2004, NCI leadership began

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(IL-12 Shows Promise continued from page 1)
IL-12 with the idea of correcting the immunodeficiency of HIV," explains Dr. Yarchoan. "Then it was reported that it had antiangiogenesis activity, and this stimulated our interest in AIDS-associated KS. Kaposi's is essentially a tumor of endothelial cells, which are important in angiogenesis. Yet another reason for our interest was the idea that we might be able to boost the immune system's ability to fight the KS virus. So we thought that this was a potentially interesting tumor in which to test IL-12."

Their phase I study enrolled 32 patients who had received a stable regimen of antiretroviral therapy for at least 3 months prior to entry and who had worsening KS on this regimen. They chose to test the drug in patients whose KS was no longer kept in check by highly active antiretroviral therapy (HAART) in order to ensure that observed responses were not due to activity of HAART. Cohorts of 3 to 6 patients received IL-12 subcutaneously twice a week at doses of 100, 300, 500, or 625 nanograms per kilogram (ng/kg) of body weight. Additional patients were enrolled on the 500 ng/kg dose when it was established as the maximum tolerated dose of IL-12.

Of the 28 patients from all cohorts who could be evaluated for tumor response, 4 experienced a complete response, and 13 experienced a partial response. The overall response rate was 61 percent. For patients in the 300 and 500 ng/kl dose cohorts, the response rate was 71 percent. Among patients receiving doses of 300 ng/kg or higher who could be evaluated for tumor response, the median progression-free survival was not reached by the end of the study, and the probability of progression-free survival at 4 years was 82 percent.

Most side effects were mild, although some patients did develop more severe toxicities including joint pain, vomiting, and headaches. Interestingly, the investigators also noted a high incidence of depression that was apparently linked to administration of the drug. However, as Dr. Yarchoan noted, a number of the patients had a history of depression, and this had not emerged as a problem in previous studies of IL-12 in other tumors. Nonetheless, he commented, "Depression can be difficult to detect, and investigators need to be on the lookout for it in future studies of IL-12."

IL-12 has been previously tested against various tumors in several phase II trials, but relatively little activity was observed. According to Dr. Little, the KS results suggested that it was worth taking a second look at this drug, especially in tumor types that might respond to improved immunity or be very sensitive to the inhibition of angiogenesis. He also noted that IL-12 was an excellent candidate for a randomized clinical trial in patients with AIDS-related KS that no longer responds to HAART. ◆

(Director's Update continued from page 1)

to develop a strategic plan, using the strategic priorities as the foundation from which we worked.

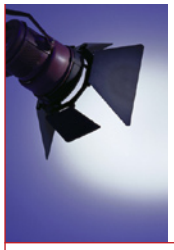
The plan is rooted in two primary aims: preempting cancer at every opportunity and ensuring the best outcomes for all. From there, it lays out the strategies by which we believe we can achieve these aims and the specific research avenues covered by these strategies.

For example, accelerating progress in prevention is one of the cancer preemption strategies. As the plan details, one way we believe this can be accomplished is by developing a transdisciplinary systems approach—research teams that merge expertise in the lab, clinic, and epidemiology—to explore the biology behind cancer prevention.

Simply put, this plan brings the global picture of cancer research—SPOREs, Cancer Centers, individual laboratory and clinical investigators, consortiums, and advanced technologies—into a tight focus. It will direct our efforts and ensure that, regardless of where a research program or project falls in the discovery-development-delivery continuum, it contributes to seamless, integrated, and continuous progress.

The strategic plan is an important new addition to what is now a trilogy of documents that describe the National Cancer Program. The others are the annual *Nation's Progress in Cancer Research* and the *Nation's Investment in Cancer Research*, sometimes called the bypass budget. The first publication provides accountability for our activities, documenting significant milestones in cancer research from the previous year, while the latter lays out the NCI budget request to Congress for the following fiscal year.

It's gratifying to present the NCI Strategic Plan to the cancer community. We believe it will stimulate ongoing deliberation and assessment at NCI and in the research and advocacy communities. I'm confident that it will further integrate and focus the entire National Cancer Program, ushering in an era of unprecedented progress. As with any good strategic plan, we view this one as a work in progress, and we will endeavor to be responsive to changing public health needs and to scientific and technological opportunities that come our way. ◆



Spotlight

Delivering Drugs to the Liver When Colon Cancer Spreads

In the early 1980s, an experimental treatment was developed for patients with advanced colorectal cancer whose disease had invaded the liver. In the treatment, chemotherapy is delivered directly to the liver through a surgically implanted catheter and pump.

A decade ago, after preliminary studies indicated that the treatment—hepatic arterial infusion chemotherapy—might improve survival in an often fatal disease, a randomized clinical trial was launched. The results were published last week.

The study showed that patients who received "pump" chemotherapy lived on average 4 months longer than patients who received essentially the same chemotherapy intravenously (24 versus 20 months).

"There are many new treatments for colorectal cancer, and this is one more option for patients," says lead researcher Dr. Nancy Kemeny of Memorial Sloan-Kettering Cancer Center.

Colorectal cancer spreads to the liver in more than half of the 160,000 patients in the United States who develop advanced disease each year. This is a major cause of death, and most patients do not live beyond 2 years.

A median survival of 24 months for metastatic colorectal cancer is the longest survival in any clinical trial to date. Patients in the pump group received floxuridine, leucovorin, and dexamethasone, while those on systemic therapy received fluorouracil and leucovorin. The researchers note that the drugs used in the systemic arm of the trial have largely been replaced by newer medicines such as irinotecan and oxaliplatin.

Long before the trial was completed, the researchers began to evaluate whether the newer drugs might provide even greater survival increases than the older drugs if delivered to the liver.

In addition, because pump therapy is ineffective against cancer that has spread beyond the liver, Dr. Kemeny and her colleagues are testing the therapy in combination with conventional chemotherapy and as a second-line treatment.

"The treatments of the future will involve combinations of the best systemic agents with hepatic arterial infusion," says Dr. Kemeny.

The ideal candidate for the treatment is someone who has metastatic colon cancer that is confined to the liver and unlikely to spread.

Pump therapy uses higher doses of chemotherapy than are possible with systemic delivery. The drugs are extracted by the liver, so there is typically less systemic toxicity than is associated with conventional chemotherapy.

The treatment begins by having a catheter inserted into the hepatic artery, which provides the blood supply to tumors in the liver. The catheter is then connected to a pump beneath the skin (about the size of a hockey puck) that delivers the drugs.

After recovering from this initial surgery, patients receiving hepatic arterial therapy tend to feel better than patients who have intravenous chemotherapy, the researchers say. This was confirmed by the trial, which included a quality-of-life assessment for both groups.

Overall, patients in the pump group felt better physically than did patients in the intravenous group, particularly during the treatment phases of the trial. This was true at 3 months, 6 months, and 12 months after starting treatment.

"We believe that patients who had pump therapy were physically able to do more things, and that made them feel better," says Dr. Michelle Naughton of Wake Forest University School of Medicine, who led the quality-of-life analysis.

Findings from the multicenter phase III trial, which included 135 patients, were published online February 27 in the *Journal of Clinical Oncology*.

Pump therapy has been administered mainly at cancer centers that have experience installing the devices and monitoring the liver. The treatment has risks associated with the use of devices, such as infection and mechanical failure, as well as liver toxicity if the liver function tests are not monitored carefully.

Some critics of pump therapy have argued that by using the newer medications, doctors can achieve similar survival rates of nearly 24 months without installing a catheter and a pump in someone with advanced cancer.

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Cancer Research Highlights

Rare Form of Cervical Cancer Also Linked to HPV Infection

Infection with human papillomavirus (HPV) was found to be the key risk factor for cervical adenocarcinoma (AC), a type of cervical cancer less common than squamous cell carcinomas (SCC), in an analysis of eight case control studies from Africa, South America, and Southeast Asia published in the March 1 *Journal of the National Cancer Institute (JNCI)*.

Approximately 70 percent of the cases of SCC are attributable to infection with HPV 16 or 18. Results from the study by researchers led by Dr. Xavier Castellsagué of the Institut Català d'Oncologia in Barcelona have now demonstrated that approximately 85 percent of AC cervical cancer can be explained by infection with these two types of HPV. AC accounts for about 20 percent of cervical cancers diagnosed in the United States.

In an editorial, Drs. Allan Hildesheim of NCI's Division of Cancer Epidemiology and Genetics and Amy Berrington de González of Johns Hopkins University, concur with the researchers in noting the implications of the findings in light of the recent successes in clinical trials of vaccines against the two HPV strains. This suggests that "it would not be unrealistic to expect rates of AC to drop in future years, as screening continues to be improved, HPV testing is incorporated into (or in some instances replaces) Pap smear screening programs, and prophylactic HPV 16/18 vaccines become available for broad use," they note.

A New Animal Model for Tumor Angiogenesis

The angiogenic switch, which enables tumor cells to recruit their own vascular system and grow beyond 1 to 2 millimeters, is a key requirement for cancer metastasis. A new study led by investigators from Harvard Medical School published in the March 1 *JNCI* has produced cell lines from a mouse model of spontaneous angiogenesis in tumor xenografts that can be used for in-depth studies of the angiogenic process.

The investigators injected mice with nonangiogenic human breast cancer, osteosarcoma, or glioblastoma cells. When xenograft implants spontaneously became angiogenic, the cells were harvested and cultured into new cell lines. These new cell lines formed palpable tumors within 20 days of injection compared with means of 119, 238, and 226 days for the three nonangiogenic cell lines. No significant differences in cell proliferation rates had been noted between the nonangiogenic and angiogenic cell lines *in vitro*.

They then used this model to analyze the possible role of several proteins in the angiogenic switch, including thrombospondin-1, a known angiogenesis inhibitor. The investigators found that nonangiogenic cells in all three cancer types secreted significantly higher levels of thrombospondin-1 than did their angiogenic counterparts.

"We are learning more and more about these angiogenic factors," says Dr. Giovanna Tosato, an investigator with NCI's Center for Cancer Research (CCR) who authored an accompanying editorial. "There are drugs already approved that inhibit angiogenesis, and there are many more on the horizon. So we may be able to turn or change tumors that have switched and have become 'bad' into others that may 'stay still' for a long time."

Study Links Meat Consumption to Gastric Cancer

A new analysis of participants in a large European cohort study shows a significant association between a type of gastric cancer and meat consumption, but primarily in men and women infected with the bacteria *H. pylori*.

The study, published in the March 1 *JNCI*, involved more than 521,000 men and women in the European Prospective Investigation into Cancer and Nutrition (EPIC) cohort. With a mean follow-up of 6.5 years, there were 330 cases of gastric adenocarcinoma and 65 cases of esophageal adenocarcinoma.

The researchers reported a statistically significant positive association between total meat intake—which includes fresh red meat, processed red meat, and poultry—and cancer in the lower portion of the stomach, called gastric noncardia cancer. Every 150-gram increase in total meat intake showed a 2.5-fold increase in risk. A statistically significant positive association was also seen with red meat intake and processed meat intake.

"All of these associations seemed to be restricted to the *H. pylori*-infected subjects," the researchers, led by Dr. Carlos A. Gonzalez from the Catalan Institute of Oncology in Barcelona, Spain, wrote. There was no such association seen for gastric cardia cancer, which occurs in the top 2 to 3 centimeters of the stomach. There

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also was a nonstatistically significant association between total meat intake or processed red meat intake and esophageal adenocarcinoma, the cancer with the most quickly increasing incidence rate in the United States.

H. pylori infection is considered a risk factor for gastric cancer. But the authors argued that "other, unknown factors must play a role in [gastric] cancer risk because, although the intake of red meat has increased in most European countries during the last decades, the prevalence of *H. pylori* infection and the incidence of gastric noncardia cancer have decreased over the same period."

FDA Approves Erbitux for Head and Neck Cancer

On March 1, the Food and Drug Administration (FDA) announced the approval of Erbitux (cetuximab) for use in combination with radiation therapy to treat patients with unresectable squamous cell cancer of the head and neck. Cetuximab is the first drug approved for this cancer that has shown a survival benefit in this population. Cetuximab was also approved for use alone to treat patients whose head and neck cancer has spread despite the use of standard chemotherapy.

Cetuximab received a priority review and is the first drug approved to treat head and neck cancer since methotrexate became available in the 1950s. Approval of the drug in combination with radiation therapy was based on a study that showed it prolonged survival by 20 months compared with treatment with radiation alone. Approval of cetuximab monotherapy was based on evidence of tumor shrinkage in 13 percent of patients, lasting an average of 6 months. ◆

A Conversation With…Dr. John Niederhuber

How was the NCI Strategic Plan developed?

What is striking to me about this plan is how expansive the input was. About 125 scientists from each division and center worked for 15 months to come up with the long-range NCI Strategic Plan. The process began in 2003, when almost 200 possible strategic goals were identified. From these, the NCI Executive Committee, which includes the directors of each division and center, with feedback from our staff, advisory boards, and members of the advocacy and research communities, pared down and consolidated those suggestions into the eight objectives in the strategic plan.

The community's feedback was essential. Their ideas came from a number of priority-setting efforts, including Progress Review Groups, think tanks in cancer biology, NCI Listens and Learns, and review of the *Nation's Investment in Cancer Research.*

Why is the strategic plan necessary? Why aren't the strategic priorities enough?

The strategic priorities define areas of focus and investment that will generate new data and research tools. The strategic plan builds on those priorities, specifying broad research areas through which we will develop and apply interventions for preventing and controlling cancer. It describes the research that underpins the strategies for improving early detection and diagnosis, for example, or improving the quality of care.

The success of the plan will depend on several things. For example, we must integrate all of our research efforts. What we learn in the clinic not only must be translated into new or better treatments, but must also inform the next generation of discovery and development. We also must leverage our resources. We must forge more partnerships, establish more collaborations, and look for synergies in public and private research efforts.

How will the strategic plan affect how NCI operates?

In several ways. It will serve as a guideline for the development of RFAs and PAs, and help organize how we measure and report progress.

It's already had an impact. The process of developing the strategic plan influenced the creation of an "enterprise fund" of dollars redeployed from the divisions' budgets. That fund will be used to support research projects that cut across all divisions and centers. It also led to the development of the Integration Implementation, or I2, teams, of which there are three so far: advanced imaging, bioinformatics, and lung cancer.

A final point to emphasize is that the strategic plan is a guide. We understand that circumstances change: Opportunities present themselves, research provides new insights that alter how we think about things like diagnosis or treatment. We are committed to being flexible, to taking advantage of opportunities, and to working with the entire cancer research community to achieve 2015. ◆

Funding Opportunities

NCI Competitive Supplements for Pilot Projects for Community Networks Program to Reduce Cancer Health Disparities

Announcement Number: RFA-CA-06-504
Letter of Intent Receipt Date: March 24, 2006.
Application Receipt Date: April 24, 2006.

The purpose of this RFA is to solicit competitive supplements from the NCI Community Network Program awardees for pilot projects in community-based participatory research to reduce health disparities.

This funding opportunity will use the U01 award mechanism. For more information, see http://cri.nci.nih.gov/4abst.cfm?initiativeparfa_id=3347. Inquiries: Dr. Kenneth Chu—kc10d@nih.gov

For comprehensive information about NCI funding priorities and opportunities, go to http://www.cancer.gov/researchandfunding. ◆

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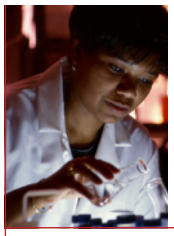
Dr. Elin Sigurdson of the Fox Chase Cancer Center, who has treated patients with pump therapy since the early 1980s and was a co-author of the study, says that liver-directed treatments will always have a role in the disease.

"There will always be a population that will benefit from having the pump put in," says Dr. Sigurdson, noting that the challenge now is to identify that population. "Research on delivering newer drugs directly to the liver is promising and has only just begun," she adds. ◆

By Edward R. Winstead

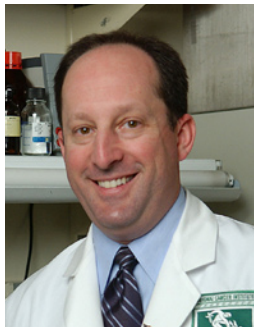


Featured Clinical Trial

Treatment for Metastatic Ocular Melanoma

Name of the Trial
Phase II Randomized Study of Lenalidomide in Patients with Stage IV Ocular Melanoma (NCI-05-C-0095). See the protocol summary at http://cancer.gov/clinicaltrials/NCI-05-C-0095.

Principal Investigator
Dr. Steven Libutti, NCI Center for Cancer Research



Dr. Steven Libutti

Why This Trial Is Important
Ocular melanoma is cancer that forms in melanocytes (cells that produce the pigment melanin) in the eye. It is the most common primary eye cancer in adults. Although surgery and/or radiation therapy may be effective for disease that is limited to the area around the eye, no effective treatment is currently available for ocular melanoma that has spread (metastasized) to other organs (stage IV disease).

In this trial, researchers are testing a new drug called lenalidomide (Revlimid) to see if it can stop or slow the growth of ocular melanoma metastases and help patients live longer. Researchers will compare two different doses of the drug to assess its antitumor activity and possible side effects. Lenalidomide is thought to inhibit the growth of new blood vessels to tumors (a process called angiogenesis), thereby restricting the supply of nutrients needed for tumor growth. It may also possess other antitumor activities, such as stimulating the immune system and promoting tumor cell apoptosis (suicide).

"Lenalidomide is a novel antiangiogenic agent that we hope can help shrink tumors in patients with metastatic ocular melanoma," said Dr. Libutti. "This trial will help us determine whether lenalidomide can produce meaningful inhibition of tumor vasculature and what effects such inhibition has on the growth of these tumors."

Who Can Join This Trial
Researchers seek to enroll up to 38 patients aged 18 or over with metastatic ocular melanoma. See the list of eligibility criteria at http://cancer.gov/clinicaltrials/NCI-05-C-0095.

Study Site and Contact Information
This study is taking place at the NIH Clinical Center in Bethesda, Md. For more information, call the NCI Clinical Studies Support Center (CSSC) at 1-888-NCI-1937. 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

Dr. Robert W. Miller Dies at 84

Dr. Robert Warwick Miller, Scientist Emeritus at NCI, died on February 23 at his home in Bethesda, Md. He was 84 years old. After receiving his M.D. from the University of Pennsylvania, Dr. Miller trained in pediatrics, radiation medicine, and epidemiology, earning a doctorate in public health at the University of Michigan. In 1961, he joined NCI as chief of the Epidemiology Branch, where he carried out pioneering research on childhood cancer. The relationships he discovered between birth defects and certain tumors—such as Wilms' tumor—provided important insights into the genetic mechanisms underpinning cancer. Throughout a distinguished career spanning 45 years at NCI, Dr. Miller stressed the importance of alert clinical observations in providing initial clues to cancer etiology, and the value of interdisciplinary approaches that integrate the epidemiologic, clinical, and basic sciences. A memorial service in honor of Dr. Miller will be held on April 29 at 1:00 p.m. at the NIH Clinical Center, Lipsett Amphitheater. For further information, please contact Mindy Kaufman in the Division of Cancer Epidemiology and Genetics at kaufmanm@mail.nih.gov.

NIH Budget Hearings Slated for March

The House of Representatives hearing on the NIH budget is scheduled for March 16 at 10:00 a.m. NIH Director Dr. Elias Zerhouni is the principal witness. The directors of seven institutes, including NCI, were invited to accompany Dr. Zerhouni to answer any questions relevant to their institute. Rep. Ralph Regula (R-Ohio), chair of the House Appropriations Subcommittee on Labor, HHS, and Education, will conduct the hearing. Additional information is available online at http://appropriations.house.gov/index.cfm?FuseAction=Hearings.Detail&HearingId=670&Month=3&Year=2006.

The Senate hearing on the NIH budget is scheduled for March 29. Dr. Zerhouni is the principal witness, and will be accompanied by the directors of NCI, the National Institute of Allergy and Infectious Diseases, and the National Human Genome Research Institute. The Senate Appropriations Subcommittee on Labor, HHS, and Education, chaired by Sen. Arlen Specter (R-Penn.), will conduct the hearing. For more information, go to http://appropriations.senate.gov/subcommittees/labor/topics.cfm?code=labor.

NCI Director Shares Personal Cancer Story

In the latest issue of *Coping* magazine, NCI Director Dr. Andrew C. von Eschenbach related his personal story of fighting cancer and how those experiences have influenced his life and career.

To read the full article, please visit the Director's Corner Web page at http://www.cancer.gov/aboutnci/FightingCanceronaPersonalLevel.

Advocacy Teleconference Set for March 16

The next in NCI's series of advocacy teleconferences will take place on March 16 at 4:00 p.m., EST. "A Role for Advocates in NCI's Work: The CARRA Program (Consumer Advocates in Research and Related Activities)" is the featured topic. Panel members include Dr. Olivia Bartlett of NCI's Research Programs Review Branch, Louise Cunningham of NCI's Office of Education and Special Initiatives, and Dr. James Omel of the International Myeloma Foundation. Callers will be able to ask questions and participation is free. More information is available online from the Office of Liaison Activities at http://la.cancer.gov/teleconference.html. ◆

CCR Grand Rounds

March 14: Dr. Todd R. Golub, Director, Cancer Genomics, Whitehead/MIT Center for Genome Research; Associate Professor of Pediatrics, Harvard Medical School; Associate Investigator, Dana-Farber Cancer Institute, Boston, Mass. "Genomic Signatures for Cancer Classification and Drug Discovery."

March 21: Dr. Timothy D. Veenstra, Director, Laboratory of Proteomics and Analytical Technologies, SAIC-Frederick, NCI-Frederick. "Clinical Proteomics: From Discovery to Validation."

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. ◆

Community Update

Re-COMMIT to Comprehensive Tobacco Control Policies and Programs, Study Suggests

More than 13 years after its completion, NCI's Community Intervention Trial for Smoking Cessation (COMMIT) continues to be a source of valuable insights for tobacco control research. COMMIT was a major NCI intervention trial that ran from 1988–1993 and sought to accelerate quit rates among smokers aged 25 to 64, especially those who smoked 25 or more cigarettes per day. COMMIT featured 11 matched pairs of intervention and comparison communities in the United States (10) and Canada (1). There were 58 intervention channels in 4 broad categories: media and community-wide events, health care providers, workplaces and other community organizations, and cessation resources.

In the March/April issue of the *American Journal of Health Promotion*, Dr. Andrew Hyland and colleagues at the Roswell Park Cancer Institute, report on a 13-year follow-up study of a sample of smokers in both the intervention and control COMMIT communities. Their purpose was twofold: to measure the long-term impact of the COMMIT intervention and to evaluate the impact of large, state-based tobacco-control program and policy activity on smoker behavior.

The authors found that quit rates were higher in the COMMIT intervention communities during the period when the trial was funded, but were no different than comparison communities 8 years after the program ended. This suggests that tobacco control interventions need sustained funding to continue to have an impact. The authors also observed a trend toward a greater impact of tobacco-control programs among people with lower levels of education; this finding is consistent with earlier research from the COMMIT program.

The authors also found that quit rates were highest in those communities in states with both strong tobacco-control policies and aggressive tobacco-control programs, such as California and Massachusetts. Communities located in states with little tobacco-control activity, such as Iowa, New Mexico, and North Carolina, had lower quit rates. California was a leader among the COMMIT states in adopting aggressive tobacco-control measures, starting in 1989. The state's budget for those activities was $88 million in 2003, or $2.56 per capita. "Between 1988 and 2001, per capita cigarette consumption in California declined by 60 percent compared with a 34-percent decline in the entire nation during the same period," the researchers note.

"This is a very significant study because it provides strong evidence demonstrating the value of comprehensive tobacco control as a way to increase quit rates in a population," noted Bob Vollinger, program director for the Tobacco Research Initiative for State and Community Interventions in NCI's Tobacco Control Research Branch. "We know that quitting smoking will reduce cancer and save lives. This study shows that well-funded tobacco control programs, combined with strong policies, reduce smoking. States that want to get serious about reducing cancer deaths and controlling medical costs should know that tobacco control is one of the best investments they can make." ◆

Featured Meetings and Events

A calendar of scientific meetings and events sponsored by the National Institutes of Health (NIH) is available at http://calendar.nih.gov. ◆

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.