Yale Medicine

Summer 2001

What the needles said

Yale scientists couldn't test drug users for HIV so they followed the hypodermics instead—and proved the worth of one of the nation's first legal needle exchanges. A decade later, countless lives have been saved as a result. > > >

On the cover
In 1990 a New Haven Health Department van began to carry outreach workers throughout the city as part of a new plan to reduce transmission of HIV. They offered drug users up to five clean syringes in a one-for-one exchange of used needles for new ones. A drug user who had just turned in needles stood outside the van.

Cover Photographs
Color image: Michael McAndrews/*The Hartford Courant*
Black and white image: Kathleen Cei

CONTENTS

Yale Medicine
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From Kosovo to college, with a detour near Cedar Street

MICHAEL FITZSOUSA

With help from Yale medical students and administrators, the Loomis Chaffee School and an emergency physician in Ohio, two brothers from Kosovo spent the past year in Connecticut preparing for college. Bafti, left in top photo, and Irfan Baftiu are now headed for Oakland Community College in Michigan. Above: Bafti with Yale student Vivian Lombillo two years ago in the refugee camp in Senekos, Macedonia.

Two years ago, when a group of Yale medical students volunteered at a camp for Kosovo refugees, second-years Aaron Covey and Seth Goldbarg found themselves working triage in the camp hospital. As new arrivals stepped off the buses at Senekos, a makeshift city of white tents in neighboring Macedonia, the students assessed the refugees and directed those who were ill to medical care.

When they met 18-year-old Irfan Baftiu, who had been in the camp for several days and had come to the triage center simply to make himself useful, there was a little confusion. "I kept trying to help," Irfan recalled, "and Aaron kept trying to give me water."

But soon Irfan and his younger brother, Bafti, then 15, were close to indispensable. "They helped us with every project we did in the camp," said Margaret Bourdeaux, another of the six Yale students who were assisting the camp's medical staff ("Kosovo Journal," Summer 1999). Irfan and Bafti, who had learned English from watching American television and movies, translated for patients and doctors, worked on a tent-to-tent health survey and a nutritional assessment of the children in the camp, and helped organize a soccer tournament and a theatrical production. "From the minute we met them," said Covey, "we realized they were incredibly bright, with so much potential and such a desire to help."

A year later, the two boys were a world away from battered Kosovo, enrolled at a New England boarding school and living less than an hour's drive from their medical-student mentors in New Haven. The combined efforts of many—the boys' American sponsor (an emergency physician from Ohio whom they met in the camp), the medical school dean's office, the Loomis Chaffee School in nearby Windsor, Conn., and the medical students—resulted in student visas for Irfan and Bafti and a year of study to help them prepare for college. Loomis Chaffee provided full scholarships with room and board for the boys to attend a summer program as well as their final year of high school.

This summer the brothers moved to Cleveland and the home of their sponsor, Pamela Grim, M.D. In the fall, they will study at Oakland Community College in Michigan, work on their written English skills and think about the future. Bafti, who had a good year in math, is thinking about business.

His brother hopes to become a physician. "I saw a lot of things in Kosovo and in the camp that are pushing me in that direction," Irfan said in April. "I saw victims of land mines. I saw the operating room and what they could do for them. And I know that I really want to help people."

Emergency Department opens its doors for Learning Channel documentary

When a 37-year-old New Haven man leaped from the third story of a burning building and was rushed to Yale-New Haven Hospital, filmmakers from The Learning Channel met him at the E.R. door alongside the trauma team.

The story of the injured man was among dozens of trauma and emergency room cases followed by "shooters" from TLC's reality TV show, *Trauma: Life in the E.R.*

To gather raw footage for the show, a producer and three video journalists endured schedules to rival a resident's, recording life in the Emergency Department 24 hours a day, seven days a week, for a month this spring.

From 250 hours of videotape recorded on hand-held cameras, producer Penny Fearon will distill two 47-minute documentaries, one to be aired this fall and the other sometime in 2002. The award-winning show attracts an average audience of 1.5 million on Tuesday nights at 8 p.m., according to Nielsen Media Research.

Yale-New Haven Hospital will be the first in New England to be featured on the five-year-old show. Series producer Brian Seligson said Yale-New Haven appealed to him because of the contrasts afforded—"on the one hand, Yale University and everything it represents, and on the other hand, the fact that it's an inner-city hospital dealing with an inner-city population."

How the film will be edited, and consequently how the hospital will be portrayed, is in the hands of The Learning Channel, said Reuven Rabinovici, M.D., professor of surgery and chief of the section of trauma and surgical critical care. The confluence of The Learning Channel's real-life depiction of the trauma world and his team's ability to provide cutting-edge trauma care leaves him confident the team will come across positively.

"To care for a trauma patient, you need to have an endogenous sense of mission and responsibility, because it's very intense. The people involved are doing their best to provide optimal care, whether they are on camera or off."

Producer Fearon will choose a few people to follow—physicians, nurses, patients—to create two shows with recognizable characters and coherent plot lines. She said the "shooting ratio" of tape to finished product is luxurious, at more than 150 hours to 1 compared to the 50-to-1 ratio typical for reality TV documentaries. One show will document the story of the man who jumped from the building, following him as he is treated for smoke inhalation and through surgery for a broken femur and heel until, after three weeks at Yale-New Haven, he heads out the door.

Clinical development fund makes first round of awards

Two years ago, when Yale University and the Yale New Haven Health System signed their first formal affiliation agreement, one of its provisions was a fund to expand the joint clinical programs of the School of Medicine and Yale-New Haven Hospital.

In May, the two institutions announced the first awards from this new Clinical Program Development Fund, directing $17.6 million this year to 11 programs in brain disorders, cancer, cardiovascular disease, developmental disorders and organ transplantation. These areas have been designated clinical priorities by the school and hospital.

"We want to position the medical center at the top of the field in as many target areas as possible," said Richard L. Edelson, M.D. '70, co-chair of the fund and deputy dean for clinical affairs. "[This investment] is intended to allow these programs to push the envelope and, in some cases, to define the frontier."

The funded proposals and investigators include:

Brain Disorders

- Clinical Neuroscience Center for Epilepsy and Neurovascular Diseases, Dennis Spencer, M.D.
- Yale-New Haven Medical Center Brain Tumor Center, Joseph Piepmeier, M.D., HS '82.

Cancer

- Transimmunization: A New Method for Treatment of Graft vs. Host Disease, Prevention of Graft Rejection and Immunization against Tumor Antigens, Michael Girardi, M.D. '92.
- Expansion of the Yale Cancer Center Clinical Trials Office, Leonard Farber, M.D.
- New Infrastructure and Organization for the NCI-Approved Yale Comprehensive Cancer Center, Vincent DeVita Jr., M.D., HS '66.
- Innovations of Head and Neck Management, Clarence Sasaki, M.D. '66, HS '73.

Cardiovascular Disease

- Yale-New Haven Medical Center Endovascular Center, Bauer Sumpio, M.D., HS '86.
- Integrated Program for the Treatment of End-Stage Heart Disease, Barry Zaret, M.D.
- Endovascular Brachytherapy, Kenneth Roberts, M.D.

Developmental Disorders

- Yale-New Haven Medical Center Oncofertility Center, Steven Palter, M.D.

Organ Replacement

- Transplantation, Marc Lorber, M.D.

The fund received 23 proposals in the first round with requests totaling $69.1 million and awarded $17.6 of the $18 million available. Two committees, co-chaired by Edelson and Peter Herbert, M.D. '67, HS '69, chief of staff at Yale-New Haven Hospital, are now reviewing a second round of applications for $11.5 million in support.

et cetera . . .

THREE JOIN NATIONAL ACADEMY OF SCIENCES Three School of Medicine faculty members were elected to the National Academy of Sciences (NAS) in May, bringing the total for the school to 28. The new members are Peter Cresswell, Ph.D., professor of immunobiology and dermatology; Pietro De Camilli, M.D., professor of cell biology; and Richard P. Lifton, M.D., Ph.D., professor of genetics, medicine, and molecular biophysics and biochemistry, and chair of the Department of Genetics. All three are Howard Hughes Medical Institute investigators. Election to the NAS, which was established in 1863 by congressional charter, is one of the nation's highest scientific honors. The academy has 1,874 active members and 325 foreign associates.

YALE 300 HITS THE HOME STRETCH Yale's observance of its 300th year began last October with a weekend focused on the University's ever-stronger ties with New Haven ["Med School Invites Neighbors to Join in Tercentennial Celebration," Fall 2000|Winter 2001] and continued this spring with a two-day program exploring "300 Years of Creativity and Discovery." The April convocation featured a dozen medical school faculty members, who led seminars on topics from biotechnology to global health to child development to cancer research. They were in good company; other sessions spotlighted the experiences and contributions of returning alumni, including former President George H.W. Bush, former Treasury Secretary Robert Rubin, Carnegie Institution President Maxine F. Singer, Palm Computing and Handspring co-founder Donna Dubinsky, novelist Tom Wolfe and cartoonist Garry Trudeau. The Tercentennial year will culminate Oct. 5 and 6 with an academic convocation on Old Campus and a public celebration in the Yale Bowl. For updates, visit www.yale.edu/yale300.

The Giff tackles "retirement"

A former dean spends his days teaching science to grade-schoolers in New Haven's Hill neighborhood

On a Wednesday morning in early January, Robert H. Gifford, M.D., HS '67, took nine of his eighth-grade students out onto New Haven's Columbus Avenue for an experiment. Braving a wind chill of 4 degrees, they measured the length of the block in front of Sacred Heart/St. Peter School and prepared to calculate the speed of passing cars. The parochial school is the last of several serving the Hill neighborhood, which borders the medical school campus to the south and west, and Gifford, the former deputy dean of education at Yale, is the school's new science teacher. In fact, he is its only full-time science teacher.

The hours are long, the work is challenging and the pay is modest. (Gifford, who volunteered his services during his first semester at the school, now receives a small salary.) But it fulfills the goal he set several years before his retirement in 1999 ["Goodbye, Dr. Gifford," Fall 1999|Winter 2000] of teaching science to children in New Haven's inner city. The lack of a required state teaching certificate thwarted Gifford's original plan to teach in city public schools. But his name came to the attention of Geraldine Giaimo, M.S., the principal of Sacred Heart/St. Peter, who was looking for a way to offer students more science than the classroom teachers could incorporate into their lessons.

Although Sacred Heart/St. Peter is a parochial school, only about 30 percent of its students are Roman Catholic. Of the 224 students enrolled, 96 percent are African-American or Latino and 62 percent meet federal guidelines for free or reduced-rate breakfasts and lunches at the school. "We were actually in tears when [Gifford] said he would come here," said Giaimo, herself an alumna of Sacred Heart, which merged with St. Peter School in 1994. "He's not just the science teacher. He's the science department."

Both Gifford and his students, who are in grades four through eight, have made some adjustments. For Gifford, Giaimo said, "It's very challenging dealing with young people." And for the students? "The work is hard," she said. "He expects a lot from them."

Gifford's main teaching tool is a multimedia computer that allows him to project Web pages onto a screen. His curriculum, which he wrote last summer, is based on national standards for science education and has no textbook. "This way I can go in any direction I really want to," he said. The direction usually involves an experiment, because he wants the students to learn by doing and thinking. The program's objective, he wrote in his curriculum, is for students to develop an enthusiasm for the natural world and an appreciation of scientific thought. With donated funds, he bought science kits that allow the students to carry out the experiments that underpin his teaching.

JOHN CURTIS

In January, Robert Gifford and his students measured the speed of passing cars on New Haven's Columbus Avenue to test a hypothesis.

Which explains why Gifford and nine students were freezing outside the school, armed with notepads, stopwatches and a tape measure. Their hypothesis was that few drivers passing the school adhered to the posted 25-mile-per-hour speed limit. The students further hypothesized that men were more likely to disregard the limit than women.

Before leaving the warmth of the classroom, Gifford reviewed the required math, leading them through the calculations necessary to translate feet per second into miles per hour. "Tomorrow," said Gifford, "we're going to construct a graph that will allow us to *know*, so we don't have to calculate it all the time." After measuring the speed of three cars, Gifford and the students gave in to the cold and went inside, vowing to return another day to collect more data. "No one's going the speed limit, that's for sure," Gifford said, noting that a much larger sample was needed for the study.

"We need a lot of cars. We need well over 100 cars."

At a school science fair in February, the students presented their results. They surveyed 206 cars and found that 81 percent exceeded the speed limit, that 85 percent of female drivers and 79 percent of male drivers exceeded the limit, that all westbound cars and 91 percent of eastbound drivers were speeding and that the average speed was 35 miles per hour.

At Sacred Heart/St. Peter, his last class is over by 12:35 p.m., but Gifford often spends afternoons at the school. He arranges for after-school tutoring for students who need it. He recently offered his fellow teachers in-service training on classroom applications of the Internet. And he's working with K–3 teachers to develop a science curriculum they can use in the classroom. "I felt I could bring something to the school they didn't have," Gifford said, explaining his decision to volunteer as a teacher. "It was an opportunity." Giaimo couldn't agree more. "He is laying a foundation," she said, "in a way that I don't think anyone else could."

Smart cards for health care's future?

Before the end of the decade, patients may be arriving at the doctor's office with their personal genetic information encoded on a smart card to help their physicians tailor their treatment. But who else will have access to that personal information? Those were among the visions and concerns for the future of health care presented at the fourth annual Pharmacogenetics and Medicine Lectures at the School of Medicine in early April. The conference brought together experts in genomics, medicine and policy to discuss the changes in medicine resulting from emerging information about the relationship between an individual's genetic makeup and both the health benefits and detrimental side effects of medications.

Pharmacogenetics is the rapidly developing field that applies new tools based on genetic differences to drug development and, eventually, to choosing the best treatments for patients. The morning-long event in Harkness Auditorium drew nearly 200 attendees from the medical school and from biotechnology, pharmaceutical and venture capital firms around the Northeast.

Gualberto Ruaño, PH.D. '92, M.D. '97, is chief executive officer of the conference sponsor, Genaissance Pharmaceuticals, a New Haven firm that is discovering the associations between genetic variations and clinical outcomes that will make those smart cards possible. He predicted that within the next five to six years smart cards will begin to be a part of health care practices and will quickly become standard medical technology for prescribing medications. Genomics, he said, can be predictive. "At the end of the day, our purpose is to create a genetic *PDR*," the equivalent of the *Physician's Desk Reference* used by doctors for guidance in prescribing medications.

Gail Wilensky, PH.D., is a senior fellow at the Center for Health Affairs/Project HOPE, an international health foundation, and chair of the Medicare Payment Advisory Commission, which advises Congress on Medicare issues. She pointed out that there is a great deal of skepticism about the current value of health care relative to costs,

David Feigal Jr., director of the FDA's Center for Devices and Radiological Health, was among the speakers at the fourth annual Pharmacogenetics and Medicine Lectures at the School of Medicine.

BOB FEATHER

but was optimistic that pharmacogenetics will receive support. "The promise of better targeting of pharmaceuticals," she said, is "better value for our money."

Medical ethicist and Professor of Medicine Robert J. Levine, M.D., HS '63, noted the importance of maintaining patient privacy and making improvements in health care as a result of pharmacogenetic advances becoming widely accessible. Without dealing with public fears, achieving personalized medicine may not be so easy, warned Alan McGowen, president of the Gene Media Forum, a public information organization that focuses on biomedical science. "We can avoid the pitfalls," he said, "if we take a very strong stance in educating the public about the benefits and are honest about the risks in this research."

JOHN CURTIS

Talking about health

Students from Yale's health professions joined with city and state health officials for *Spring Into Health Fair* on Communiversity Day in April. At tables set out on the University's Old Campus, students in medicine, public health, nursing and the Physician Associate Program offered information about a variety of health topics including smoking prevention and cessation, asthma and dental health. They also provided information about nutrition and health insurance as well as blood pressure screenings. Among the hands-on events was a chance to learn CPR with a mannequin. Organizers hope this will become an annual event and timed it to coincide with Communiversity Day on April 7. "Given that there are going to be hundreds of people here, it's an incredible public health opportunity," said Sara Schulman, M.P.H. '01, co-chair of the event with second-year medical student Grace Suh.

et cetera . . .

A CALL TO ARMS ON AIDS **Yale students who previously campaigned for price and patent relief for an AIDS drug developed here turned their attention this spring to the United Nations General Assembly's Special Session on HIV/AIDS. The students called on the United States to contribute up to a quarter of the $7 to $10 billion sought by UN Secretary-General Kofi Annan for a Global Fund for HIV/AIDS. The United States has offered $200 million. "If that's how much we give, the fund will fail," said medical student Kyeen Mesesan, one of the authors of a petition circulated by students of medicine, public health, divinity and law. Signed by more than 150 faculty members and students, the petition asked President Bush to take the lead not only in funding, but in seeking a strengthened declaration of principles that links treatment and prevention and affirms respect for human rights as "a necessary part of the response to the HIV/AIDS pandemic."**

HOPE SPRINGS FROM UN CONFERENCE **One of the participants at the UN's special session in June was an AIDS-conference veteran who believes that too few of the previous international gatherings have led to action. Michael H. Merson, M.D., dean of public health at Yale and a former director of the World Health Organization's Global Programme on AIDS, said, "I watched leader after leader sign a declaration in Paris [in 1994] and go home, and nothing changed." This time, however, he saw reason for hope. "What is different now is that you have a conference being held at the UN and you have a secretary-general providing leadership, putting himself in charge of mobilizing an international effort. You have many more years of experience and excellent examples of success with prevention. And you have an opportunity to offer treatment to millions of persons infected with the virus. We need to see this as a new beginning, no doubt the best chance we have ever had to control this devastating pandemic."**

ILLUSTRATION BY SARAH CURTIS, SECOND GRADE, WORTHINGTON HOOKER SCHOOL

Nearly 600 New Haven-area children took part in a study gauging the efficacy of the chickenpox vaccine, which was shown to be 85 percent effective. The vaccine also eased the symptoms of those who did develop the disease.

Vaccine may spell the end of chickenpox

When the new vaccine against varicella infection, or chickenpox, was approved by the U.S. Food and Drug Administration in 1995, many wondered how effective it would be. According to the largest study to date, Yale researchers have found that it prevents the disease 85 percent of the time, and even in those who develop the disease, symptoms are almost always very mild. If most children get the vaccine, the investigators believe that it could one day wipe out chickenpox altogether.

The study, published in the March 29 issue of *The New England Journal of Medicine,* surveyed 591 children at pediatric practices in New Haven. The study showed that the vaccine worked as well as predicted and was especially effective—97 percent—at eliminating severe cases of the disease, which formerly caused 11,000 hospitalizations and some 100 deaths each year.

According to study director Marietta Vazquez, M.D., a postdoctoral fellow in pediatric infectious diseases, "The effectiveness of the vaccine as it is used in actual practice is excellent, at least in the short term. If its use is fairly widespread, the potential is there for complete eradication of the disease." She notes that some questions remain about what will happen as the prevalence of the disease wanes. "Exposure to chickenpox tends to boost immunity against chickenpox."

She said that it may be too soon to assess the long-term effectiveness of the vaccine. Vazquez and her colleagues plan to continue their study to determine whether the vaccine will continue to work as well over time. For now, she said, "I recommend that every healthy child a year or older, as well as adults with no previous history of chickenpox, receive the vaccine."

Depression hastens death for women with HIV

For women with HIV, depression can be deadly. A Yale study of women with the AIDS virus found that death rates for those with chronic depressive symptoms were two times higher than for those with no depressive symptoms. Chronic depression was also associated with significantly greater decline in CD4+ count, an important measure of immune function.

Clinical levels of depression have been reported by 30 to 60 percent of women with HIV. In the first study to look at the association between depression and the course of AIDS in women, 765 women from four regions of the United States were followed over a period of seven years as part of the HIV Epidemiological Research Study. The findings were published in the March 21 issue of *JAMA: The Journal of the American Medical Association.* The study leader, Jeannette R. Ickovics, PH.D., associate professor of epidemiology and public health, said that "although the mechanism for this effect is not fully understood, it is clear that depression causes more advanced disease progression. We saw such high rates that either these women were not getting treatment or the treatment they received was inadequate. Yet depression is a treatable chronic disease. If we identify and treat depression among women with HIV, we have the opportunity to enhance their emotional well-being as well as extend their years of life."

Women in the general population have higher rates of depression than men, and women with advanced HIV were found to be particularly vulnerable to the effects of depression, according to the new study. The findings show that "mental health services should be routinely integrated with primary care for HIV," Ickovics said.

Linking genes to addiction

Investigators have long known that genetic inheritance makes a contribution both to the likelihood that someone who takes cocaine, heroin, other opiate drugs and tobacco will become addicted and to whether a person will try the drug in the first place. Recent advances in genomics have made it possible to begin to track down the genes responsible for the increased risk of addiction. From there, scientists hope to be better positioned to develop new and more effective treatments for drug abuse. Two recent, separate grants to Yale totaling $9 million from the National Institute of Drug Abuse (NIDA) are supporting the first-ever large-scale, multicenter study to identify those genes.

NIDA gave Yale $6 million in 1999 and then an additional $3 million last August to study opioid addictions. Tobacco addiction will also be studied because of the high frequency with which it can occur with abuse of the other drugs. According to the studies' principal investigator, Joel E. Gelernter, M.D., associate professor of psychiatry, the project represents a landmark opportunity to find the genetic basis for the addictions. "The fact," he said, "that the genetic contribution [to drug addiction] is so high means that the odds of us finding something in terms of specific genes are very good."

To make such a finding, however, requires recruitment of some 750 families at several different sites around the country. The goal is to recruit addicted sibling pairs and type markers throughout the entire genome. This will give the investigators a good chance to identify the more important genes that influence risk for drug dependence.

Eventually, the study should result in a better understanding of the physiological basis of addiction. "The fantasy," said Gelernter, "would be that we could do a simple DNA test of someone whom we thought was at risk early on, and then do some type of modification of the environment that might be protective. Or we could put the person on some type of medication before he or she was ever exposed to cocaine to modify what the risk would be." One such medication based on the work of Yale scientists, a vaccine that can prevent cocaine from getting the user high, is currently being studied in clinical trials.

Coming soon to an operating room near you: HDTV

Most people think of high-definition television (HDTV) as a technology that will make their favorite programs appear sharper and more realistic looking, but an emerging medical use for an HDTV camera system could have a revolutionary impact on surgery.

JOHN CURTIS

Steven Palter is studying the value of high-definition television technology in endoscopic surgery.

Steven F. Palter, M.D., assistant professor of obstetrics and gynecology, used a prototype, miniaturized HDTV system during a pilot study in five endoscopic procedures. He said it was "like looking through a window when looking at the monitor. The image was as good as looking directly in the incision as opposed to through the endoscope in the incision." He believes the benefits of the new system will be felt in many medical specialties.

HDTV has two to three times the normal number of lines on the screen and two to three times the resolution of video equipment currently used in endoscopic surgeries. Until the development of the prototype system, however, the HDTV camera was not sufficiently small or affordable to be useful in endoscopic procedures. The new system's developer, the JVC company, expects to bring it to market sometime this year.

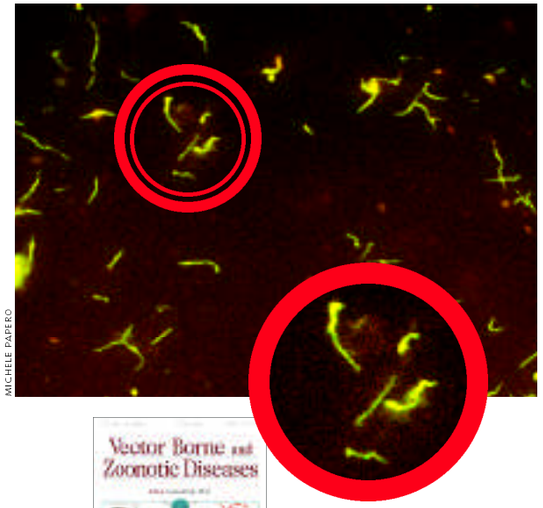
Palter believes the value of using HDTV will go well beyond the sharper image. He is currently doing a larger, follow-up study to see whether the system has benefits of increased accuracy, reduced surgeon fatigue and better visualization of disease. He says, "It is not just the next phase in technology. It will become the standard for all kinds of endoscopic surgery."

et cetera . . .

DRUG-COATED STENT APPEARS PROMISING Physicians at Yale and other medical centers have begun testing a new stent coated with a drug to help prevent scar tissue from forming in blocked blood vessels that have been reopened through angioplasty. Reclogging of the vessel by scar tissue occurs following about 20 percent of the 500,000 procedures performed in this country each year. "The initial data is just amazing," Michael W. Cleman, M.D., professor of medicine (cardiology), told *The Hartford Courant* in April. "If this tends to work out, I would anticipate that we'd be looking at a whole new era of stenting." The clinical trial looks at the effectiveness of stents that have been coated with Sirolimus, a drug already being used to help prevent kidney transplant rejection. So far, the medication appears to keep scar tissue from forming around the implanted stent and to reduce the frequency with which vessels become blocked again.

RAISING BLOOD PRESSURE TO SAVE LIVES Severe low blood pressure affects as many as half of kidney disease sufferers undergoing dialysis. Their intradialytic hypotension (IDH), or very low blood pressure, can become so serious that it causes life-threatening symptoms, such as abnormal heart function and low blood supply to the brain, and it leads some patients to prematurely end their life-prolonging treatments. In studies presented at the National Kidney Foundation Meeting in Orlando in April and published in the *American Journal of Kidney Diseases*, Mark A. Perazella, M.D., associate professor of medicine and director of the Acute Dialysis Services, found that midodrine hydrochloride could significantly and safely reduce IDH among dialysis patients, even among those who did not respond to other treatments.

A new threat from Lyme-disease ticks



MICHELE PAPERO

The newly discovered spirochete, above, was identified in deer ticks that also carry the infectious agent for Lyme disease. It is not known what symptoms, if any, the bacterium might cause in humans.

The small, unobtrusive tick called *Ixodes scapularis* received worldwide medical attention almost 20 years ago, when it was found to play a crucial role in the transmission of Lyme disease. Although the ticks themselves pose no great threat to humans, they carry the disease-causing spirochete *Borrelia burgdorferi* and provide the route of human infection through their bites.

But their culpability doesn't end there. In the inaugural issue of the journal *Vector Borne and Zoonotic Diseases,* Durland Fish, PH.D., and several colleagues describe a spirochete from *I. scapularis* that closely resembles *B. burgdorferi* but does not match it in highly sensitive DNA tests carried out by polymerase chain reaction. The new species of *Borrelia* was discovered in *I. scapularis* nymphs that had previously been fed on mice known to be free of *B. burgdorferi* infection. The yet-unnamed spirochete may infect humans as well, since "all the other organisms that this tick transmits to mice can also infect people," according to Fish, an associate professor of epidemiology. It is not known what symptoms, if any, such an infection would cause in humans.

"Our sampling of *I. scapularis* … from the field suggests that this novel *Borrelia* is widely distributed in nature," the study's authors wrote, and its prevalence is "surprisingly high in proportion to the total number of *Borrelia* species found in these ticks." They concluded, "These data suggest that a significant proportion of spirochete-positive ticks previously thought to be *B. burgdorferi* by microscopy is instead this novel *Borrelia.*" Infection with *B. burgdorferi* is responsible for more than 15,000 cases of Lyme disease each year. Infection with the new *Borrelia* organism cannot be found by current Lyme-disease diagnostics—Yale scientists are now working on a specific test—but it might well respond to the same treatments as Lyme disease.

Chronic cocaine use may dull responsiveness to brain signals

In a study measuring the brain's degree of excitability, the brains of cocaine-dependent people show an abnormally low response to signals in the region responsible for muscle movement, according to a recent article in *Biological Psychiatry.* The authors, led by Nashatt N. Boutros, M.D., associate professor of psychiatry, reported that cocaine addicts and longtime users require significantly more stimulus to the motor cortex in order to cause the muscles of their fingers and hands to move. The signals in this study were delivered on the scalp in the form of transcranial magnetic stimulation, rapid magnetic pulses from a handheld coil. The motor threshold, the minimum amount of stimulation needed to produce movement, ran at a mean of about 41 percent in normal subjects but about 65 percent in chronic cocaine users.

Cocaine itself is well known as a drug that excites the brain's signaling pathways rather than impeding them, so one might expect that longtime users of the drug would have the most signal-sensitive brains of all. Boutros and his colleagues offered two possible explanations for the higher motor threshold seen in cocaine-dependent brains. It may reflect either "an adaptation to those effects of cocaine intoxication that promote cortical excitability and seizures," they said, or else tissue damage that has left this brain region less responsive. In other words, by becoming less sensitive to signals or less well able to respond to them, the brain may be attempting to balance out the dangerous hyperresponsiveness that comes with cocaine use. The next step, said Boutros, will be to replicate these results in additional cocaine-dependent subjects, using several different measures of cortical responsiveness.

Des Jarlais

Moreno

Lederberg

Snyderman

JOHN CURTIS (4)

Patterns of the AIDS epidemic

With globalization of the world's economy making the transfer of money, people and products easier, drugs and disease are also crossing international borders, said **Don Des Jarlais**, PH.D., director of research at the Chemical Dependency Institute at Beth Israel Medical Center in New York. In a talk to researchers at the Yale AIDS Colloquium Series, Des Jarlais noted that an estimated 10 percent of all international trade is in illicit psychoactive drugs. "We are not going to be able to return to the '50s, '40s or '30s or some other age of innocence when illegal drugs were hard to find," he said. "We are clearly not moving towards a drug-free world. We are clearly not moving towards an AIDS-free world. Both of these are expanding rapidly."

Cold War qualms spawned bioethics

When Nazi war criminals were put on trial in Nuremberg for performing medical experiments on concentration camp prisoners, they pointed in their defense to the United States, where prison inmates had been exposed to mosquitoes to test antimalaria drugs. The Nazi experiments had a military purpose—to gauge the effects of low atmospheric pressure and freezing water on pilots. But there was a moral difference, according to **Jonathan D. Moreno**, PH.D., director of the Center for Biomedical Ethics at the University of Virginia. "Death was not an acceptable outcome in the U.S. experiments," Moreno said in an April talk titled "Secret State Experiments on Humans" for the Bioethics and Public Policy Seminar Series at Yale. Nevertheless, American officials engaged in questionable practices following World War II. They deliberately released radioactivity into the atmosphere, injected plutonium into people and spiked the drinks of unsuspecting victims with LSD, activities that caused unease among some Pentagon officials. "The prehistory of bioethics is deeply related to activities undertaken during the Cold War, often in secret," Moreno said.

Nimble bugs outmaneuver slow-moving humans

In the battle against infectious disease, microbes have the upper hand, said **Joshua Lederberg**, PH.D. '47, who shared the 1958 Nobel Prize in Physiology or Medicine for his studies of bacterial genetics. In an address to the Associates of the Cushing/Whitney Medical Library in April, Lederberg noted that while the human immune system was set in stone between 50 and 100 million years ago, bacteria can evolve every few years. "The pace of microbial evolution vastly outstrips that of large, ponderous, slow-reproducing multicellular organisms like ourselves," he said. Humans, he continued, must find a way to coexist in "domesticated equilibrium" with microbes. "We ought to be looking at the world from the bug's eye view if we want to figure out how to live with them."

When physicians meet the press

"With added [academic] degrees, something happens to one's ability to speak English," said **Nancy L. Snyderman**, M.D., who, as a practicing surgeon and medical correspondent for ABC News, straddles the line between medicine and the media. Speaking to doctors and residents at medical grand rounds in March, she offered some basic advice for dealing with the press: "Keep it simple." On a video screen she showed a clip of an M.D./PH.D. who was unable to shed the jargon of her work throughout an hour-long interview. "She's brilliant," Snyderman said. "She never made it on television." In our sound-bite society, the average news piece is 90 seconds. Snyderman's recommendation: "You should know in your head the three things you want to get out. If there are things that you really have to explain for someone to get it, skip it. It is either going to get reported incorrectly or it will take you down the wrong path."

What the needles said > > >

By John Curtis

> > > On a balmy day in November 1990, a battered van that once delivered loaves of bread to Yale University dining halls set off on a voyage through New Haven's inner-city neighborhoods. Its cargo? Clean syringes for the city's drug users. No one knew whether needle exchange would do what was expected of it—slow the spread of AIDS—because supporters lacked the scientific evidence to confirm what intuitively made sense, that clean needles were less likely to spread disease. What they did know was that other approaches had fallen short. They'd been handing out condoms, bleach kits for cleaning needles, and brochures with advice on preventing HIV infection. But drug users who used needles still made up 80 percent of the AIDS cases in New Haven.

A lot was riding on the program. It had taken three years of coalition and consensus building to persuade a wary state legislature to pass a bill exempting the program from laws that made needle possession a crime. Scientific data on the efficacy of clean needles were scarce and weak, and distributing clean needles was a political minefield. To succeed, the needle exchange had to win the trust of New Haven's drug users. That's why the outreach workers on the van were elated that day, November 13, as they reached their first stop on Congress Avenue in the Hill neighborhood. "We had people waiting for us," remembered Dominick Maldonado, one of the city's first AIDS outreach workers. Kaveh Khoshnood, Ph.D., assistant professor of epidemiology, then a graduate student in public health, was also on the van. "We had no idea whether people were going to come to this official program but, indeed, they came," he recalled. "The word got out rather quickly that this program was legit, that you wouldn't get arrested by the cops. It was reassuring to know that people trusted the program and trusted the staff."

Before a year had passed, needle exchange proponents would have more cause for elation. A study by Yale faculty would prove that the program reduced the incidence of new HIV infections by a third. The study would be a watershed in the history not only of needle exchange, but also of public health—the first that addressed the key question of whether clean needles would prevent AIDS. Other communities across the country would follow New Haven's example. The reaction would not be entirely positive. The coalition that came together around needle exchange—local politicians, local health officials and Yale students and faculty—would withstand pressure from federal officials who felt that distributing syringes encouraged drug use.

Last November, city officials and Health Department staff joined Yale faculty to celebrate 10 years of New Haven's needle exchange program. Over the past decade the rate of infected needles in the city has dropped from 65 percent to below 40 percent. More than 1,000 drug users have found their way into treatment through the needle exchange program. And the drop in the number of new AIDS cases, from 121 in 1991 to 38 in the fiscal year ending July 2000, is due in large part to programs such as the needle exchange. New Haven's needle exchange van still plies the streets of the city, offering syringes on its regular route. Nationally, the number of needle exchange programs has grown to more than 150, according to the North American Syringe Exchange Network, a support organization based in Tacoma, Wash.

The New Haven program's beginnings go back to the mid-1980s. "Very little was being done to educate the drug users on the street about the dangers of HIV," said Maldonado, then a drug counselor. At the urging of Alvin Novick, M.D., a Yale professor of biology, then-Mayor Biagio DiLieto created the Mayor's Task Force on AIDS in 1986. He provided funding and a full-time coordinator. Soon the city health department hired three full-time outreach workers to work with drug users, one of whom was Maldonado. "Immediately we hit the streets," Maldonado said. "At the time we just had the bleach, the water, the pamphlets and the condoms." But the health workers had begun to think about needle exchange. "We were called crazy," Maldonado said. "We were told it was political suicide, that this would never happen in Connecticut."

The model for needle exchange came in 1984 from Amsterdam, a city known for its tolerant attitude toward drug use. When an inner-city pharmacist stopped selling syringes, the city's Junkie Union, worried about hepatitis B infection, organized its own syringe exchange. Two years later needle exchange remained a radical idea in the United States, and only one such program was operating here. The AIDS Brigade, the nation's first needle exchange, was a rag-tag, underground operation run by a Yale student of public health. And it was based in New Haven.

Jon Stuen-Parker is a testament to the eclectic admissions policies of the School of Medicine. In his self-published autobiography, *From Jail to Yale*, he describes his transformation from an addict who broke into pharmacies to steal drugs, to convict, to medical student. His tenure at Yale was anything but conventional. He started in 1980, and by 1983 he and fellow medical students had begun educational outreach to drug users. In his hometown of Boston, Stuen-Parker had begun another outreach program, again trying to educate drug users about the dangers of AIDS. The spark to his activism, he said, was a guest speaker at the medical school who angered him by saying, "Don't waste your time trying to educate the addicts. They'll never change their behavior."

By 1986 Stuen-Parker and some of his classmates had opened a storefront outreach center for drug users on York Street in New Haven. Later that year Stuen-Parker was asked to leave the medical school after failing Step I of the medical boards three times. He attributed his failure to dyslexia, but school officials recommended that he spend more time hitting the books and less time on his outside activities. Stuen-Parker said that before his expulsion, he refused a request from school officials to shut down his outreach center. He continued his studies toward a public health degree, which he received in 1992. He also continued his outreach until a Boston drug user's act of generosity showed him another approach to harm reduction. At an outreach meeting the drug user handed out seven clean syringes. "They were going for $5 apiece, but he felt he wanted to give something back," said Stuen-Parker. Soon Stuen-Parker was using his earnings as a Boston cabbie to buy syringes legally in Vermont and exchange them in Boston and New Haven shooting galleries. "You'd walk in the door and people would be sitting there with needles in their arms," Stuen-Parker said.

Khoshnood, then a public health student interested in AIDS prevention, recalled meeting Stuen-Parker on a Friday night in 1988 at the corner of Chapel and College streets to discuss needle exchange. "I wasn't ready to go out on the street. I just wanted information, but Jon wasn't going to spend a lot of time explaining things to me," Khoshnood said. Instead, Stuen-Parker took Khoshnood to a housing project on Dixwell Avenue, where Stuen-Parker handed out clean needles and collected dirty syringes in a bucket. The bucketful of needles sat in a corner of the storefront outreach center on York Street. "We weren't that careful, now that I think back," Khoshnood said. "We did start using thick gloves." Much later those needles would play a role in the government-sanctioned needle exchange program.

City health officials were aware of the underground exchange, but were taking a different course. Where Stuen-Parker could be provocative—he courted arrest by handing out needles in sight of police officers—the city's AIDS workers wanted to build support for needle exchange. To those promoting needle exchange, Stuen-Parker was a mixed blessing. "He took chances before we did," said Maldonado. "But Jon became very possessive of needle exchange. He felt no one could do it but him." Stuen-Parker, however, said his AIDS Brigade was always open to working with others. "We hoped our actions would create a green light for others to do needle exchange," he said. "We wanted to get others involved." But he felt the New Haven outreach workers weren't doing enough, that they seldom appeared in the drug-using community.

When it came time to approach the state legislature for permission to embark on a needle exchange program, city officials kept Stuen-Parker at arm's length. "We weren't about to be extolling the virtues of the underground exchange," said Elaine O'Keefe, who headed the city Health Department's AIDS division and is now health director for the town of Stratford. "Even if we felt their work had public health merit, aligning with the radical fringe would have diminished our credibility in the state legislature and with other decision makers whose support was critical." Tensions persisted between Stuen-Parker and the city's AIDS workers. Two members of the AIDS Brigade, Khoshnood and Peter Fisher, left to form their own needle exchange, AIDS Community Educators, which collaborated with the city program. Stuen-Parker

EDWARD KAPLAN

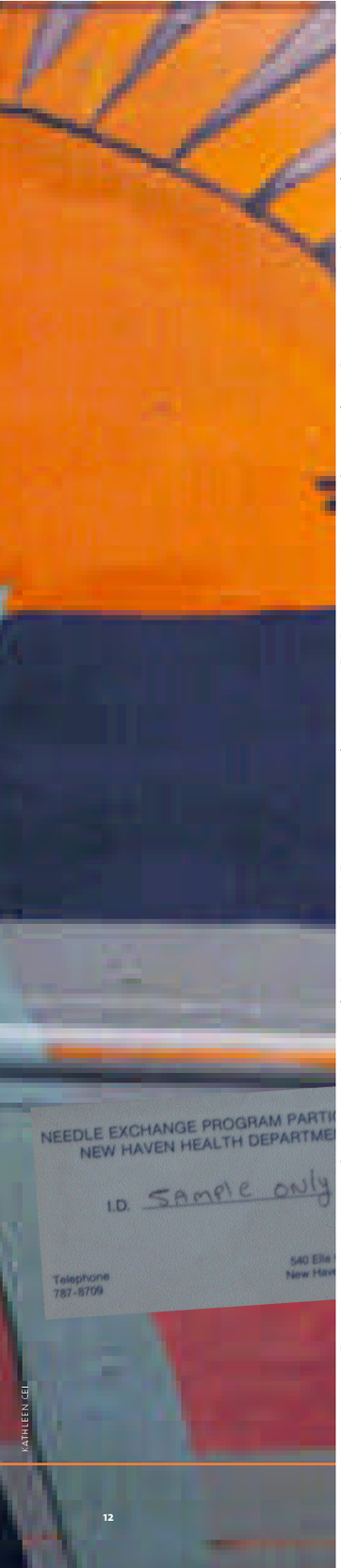
BACKGROUND The AIDS Brigade, the first needle exchange in the United States, traded clean needles for used ones in New Haven and Boston.

FOREGROUND A Yale librarian and New Haven high school students painted a mural on the original van to cover its blue hue, which was too close to the color of city police cars.

> "We were called crazy," Maldonado said. "We were told it was political suicide, that this would never happen in Connecticut."

KATHLEEN CEI

John Curtis is the associate editor of *Yale Medicine*.



KATHLEEN CEI

eventually returned to Boston, where he runs the National AIDS Brigade, which provides clean syringes and runs education programs around the country and abroad.

To make their case before the legislature, Maldonado, O'Keefe and AIDS task force coordinator Sher Horosko enlisted as much support as possible, even from the city's drug users. The city health workers wanted to know why addicts shared needles. The answer was disarmingly simple. Needles were hard to come by, and mere possession could land a drug user in jail. "They told us, 'We share needles because we don't have access to them. If we had them there would be no need for sharing,' " Maldonado said.

The group had a tough sell even in New Haven, where the task force itself was divided on the issue. Resistance to needle exchange was strongest among clergy in the African-American communities hardest hit by drugs. "It had the appearance of giving approval to drug use," said State Rep. Bill Dyson, a New Haven Democrat who shepherded the needle exchange bill through the state legislature. Nevertheless, advocates built a consensus. In the winter of 1989 a delegation of public health officials, outreach workers, expert witnesses and city leaders made the case for needle exchange before the state legislature's health committee. The committee turned them down. "We were told not to come back," O'Keefe recalled.

Over the next year the group marshaled more support. Quick to come on board was the new police chief, Nicholas Pastore. "We wanted to do our best to take dirty needles off the streets so they wouldn't endanger children or police and firefighters," said Pastore, now a research fellow in New Haven for the Washington-based Criminal Justice Policy Foundation. "I also believe fewer people should be coming into the criminal justice system for these kinds of reasons."

In the summer of 1990, New Haven needle exchange advocates returned to Hartford. "There was just a larger coalition," said Khoshnood. "We had physicians, we had public health officials, we had the police, we had policy makers. It was a critical mass." The health committee reversed itself and the full legislature approved a needle exchange program in New Haven, with funding of $25,000. But there were strings attached. The program would have to evaluate its results within a year. The legislature wanted to know how many needles came back to the program, whether the program led to changes in drug users' behavior, how many users entered treatment and whether the program encouraged drug use.

At the time there were scarce data on needle exchanges. A handful of programs were operating in the United States—in Washington, Colorado, Oregon, California and New York—but most evaluations came from abroad. "The research that was done in Britain and Australia was often based on self-reported behavior, often based on small sample sizes and often unpublished," said Peter Lurie, M.D., M.P.H., a leading researcher on the public health implications of the AIDS epidemic. When the evaluation of New Haven's needle exchange was published, Lurie was working with the Prevention Sciences Group at the University of California-San Francisco.

Novick, who chaired the city's AIDS task force, went to his friend Edward H. Kaplan, Ph.D., then an assistant professor in the School of Management. Kaplan's mathematical modeling approach to HIV infection had caught Novick's eye and the two had become collaborators. City health officials, more concerned with implementing the program than analyzing it, reluctantly asked Yale to evaluate their program. "We were very against the evaluation," Maldonado said. "We didn't feel it was a time to do research."

The city health workers imposed two conditions that shaped Kaplan's study. Drug users could not be tested for HIV infection. "The fear was you would scare people away," Kaplan said. The next condition, he recalled, went roughly like this: "You can't have a whole bunch of Yale students climbing all over the clients with surveys the size of telephone books." In other words, the people who would use the exchange, benefit from it and serve as the prime source of information about its effects on their behavior were off limits. And, in addition to the other restrictions, the $25,000 the state had allocated for the program was barely enough to cover costs, let alone fund a study.

For Kaplan, who had written a paper entitled "Needles That Kill," the solution was obvious. "You want to look at this from the perspective of the needles," he said. "It was like looking at malaria from the perspective of the mosquito." His idea? "We can't test people," he said. "Is it OK if we test needles?" If needle exchange reduced the number of new HIV infections, it stood to reason that used needles would be less likely to carry traces of HIV.

There was only one problem. Kaplan didn't know whether laboratory science was up to the task. He sought help from Edwin C. Cadman, M.D., then chair of the Department of Internal Medicine at the medical school. Cadman, in turn, went to an epidemiologist who was struggling with his post-doctoral work and looking for a new project. Cadman, now dean of the John A. Burns School of Medicine at the University of Hawaii at Manoa, offered to find a lab and money in his budget for the needle exchange evaluation. The postdoc mulled over the proposal for about an hour. "We decided," said Robert Heimer, Ph.D., now associate professor of epidemiology, "that using the very newly emerging polymerase chain reaction technology would be a feasible and scientifically exciting way to try to do this. Nobody had tried to look

"You can't have a whole bunch of Yale students climbing all over the clients with surveys the size of telephone books."

Dirty needles traveled from this collection bucket to a corner of a storefront outreach center to Robert Heimer's lab at Yale, where they played a crucial role in determining the effectiveness of the New Haven needle exchange.

at HIV in white blood cells sitting for who knows how long in the barrel of a needle." To see if it could be done, Heimer turned to the bucket of needles that had been gathering dust in a corner of the AIDS Brigade's storefront.

Working with the needle exchange team, Kaplan and Heimer devised an elaborate system to track the needles. They bought European-made syringes that would stand apart from domestic ones. Each needle had an ID number. Drug users signed up for the program anonymously and were given an identity of their choosing, often a pseudonym that showed some humor, such as "Bugs Bunny" or "Dan Quayle." Khoshnood, who knew many drug users from his years with the underground exchange, conducted a brief interview with each client to gather demographic data. Users received one clean syringe for each dirty syringe they returned to the van. Logbooks recorded who took a needle and who returned it, when and where the needle left the van and when and where it was returned. Incoming needles went to Heimer's lab for testing. Once a week, data from the lab went to Kaplan's office. "The level of infection went down as the number of needles in circulation went up," Kaplan said. He found another correlation. The longer a needle was in circulation, the more likely it was to come back HIV positive. "The most compelling data were the testing data, which demonstrated that the percentage of infected needles had decreased," said Heimer. "Ed, with his mathematical modeling, had concluded that there was a one-third reduction in new infections."

About 700 of the city's estimated 2,000 injection drug users participated in the needle exchange. Kaplan used a statistical sampling design, then applied "circulation theory" to gauge the impact of clean needles. Preliminary results found that 44 of 48 needles—92 percent—from a shooting gallery tested positive for HIV. A test of 160 needles from the street found 67.5 percent to contain HIV. As the program continued, a sampling of 581 street needles found that only half tested positive. Six months after the exchange began, 26 percent of needles returned to the program showed traces of HIV. New infections, Kaplan reported, had dropped by a third. Without needle exchange, he projected, 64 drug users out of a thousand would become infected with HIV. Once syringes became available through needle exchange, HIV would infect only 43 in a thousand.

In July 1991, Heimer and Kaplan announced their results. "When the report came out and hit the front page of *The New York Times*, that was a huge deal," said Lurie, now deputy director of Public Citizen's Health Research Group in Washington, D.C.

KATHLEEN CEI

"The most compelling data were the testing data, which demonstrated that the percentage of infected needles had decreased," said Heimer. "Ed [Kaplan], with his mathematical modeling, had concluded that there was a one-third reduction in new infections."

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KATHLEEN CEI

Through the city's needle exchange program, drug users obtained clean syringes in exchange for used ones. Yale scientist Robert Heimer then used a new technology, polymerase chain reaction, to measure the level of HIV in used syringes. Heimer's colleague Edward Kaplan applied mathematical models to translate the raw data into a quantifiable result. Kaplan's formula led him to conclude that New Haven's needle exchange reduced the rate of new infections by a third.

$$\bar{\pi}(\tau) = \int_0^\infty \left\{ \frac{\lambda}{\lambda + \mu} + \left(\pi_0 - \frac{\lambda}{\lambda + \mu} \right) e^{-(\lambda + \mu)t} \right\} \cdot \frac{1}{\tau} e^{-t/\tau} \, dt = \frac{\pi_0 + \lambda\tau}{1 + (\lambda + \mu)\tau}.$$

JOHN CURTIS

"That put needle exchange research and the programs themselves on a vastly more secure footing. It added a measure of credibility to the programs and provided a scientific basis that had not been there before. It provided a number that people could use, and still do use, as an estimate of the effectiveness of needle exchange—the well-known one-third reduction." Other communities approached New Haven for help in starting their own needle exchanges. "We could have been on the road every other week," said O'Keefe, the former AIDS division director. "There was a heavy demand placed on the New Haven program to go out and speak to other communities and groups that were trying to get needle exchanges in place." The Yale study led David Dinkins, mayor of New York City at the time, to reverse his opposition to needle exchange. Kaplan and then-Mayor John Daniels of New Haven, a former opponent of needle exchange, sang its praises on national television programs.

But attacks quickly followed. Bob Martinez, the nation's drug czar in the early 1990s, weighed in against the Yale study and its authors. He called the study flawed and said that there was no evidence the needle exchange slowed the spread of AIDS. Charles Rangel, a Democratic congressman from New York City and a critic of needle exchanges, asked the General Accounting Office to review Heimer and Kaplan's research. The Centers for Disease Control and Prevention (CDC) commissioned a report on needle exchange from scientists at the University of California. Their report, with Lurie among the authors, included a chapter on the New Haven evaluation project. Both reviews confirmed the study's conclusions. The CDC report went further, saying the Yale study understated the value of needle exchange. Kaplan's modeling approach won him the prestigious Franz Edelman Award from the Institute of Management Sciences. But the attacks continued.

"I don't think we were quite prepared for the politics of it all," said Kaplan. "The program generated data that suggested it did work. That led to Rob [Heimer] and myself being painted as activists and advocates." Kaplan offered to discuss his findings with officials at the Office of National Drug Policy, but received no reply.

"When we began the work, people opposed to needle exchange said there is no evidence it works," Heimer said. "After our report they had to modify that statement to say there is no good scientific evidence. After the various panels of inquiry had concluded that our work was scientifically valid and independently verified, they were left saying that needle exchange sends the wrong message. The debate had been taken out of the realm of science and placed entirely in the realm of politics and morality."

The years that followed saw a few victories for needle exchange. The state of Connecticut implemented five other programs and legalized over-the-counter sales of syringes. Other communities, most notably New York City, followed New Haven's example. As of last year 158 needle exchanges were operating in 36 states, the District of Columbia and Puerto Rico, the North American Syringe Exchange Network reports. In 1998, however, President Bill Clinton disappointed advocates by refusing to allow federal funding of needle exchanges. And threats to the availability of clean needles remain. Bridgeport police argued that the 1992 state law legalizing over-the-counter sale of needles covered only drug users participating in needle exchange programs. A federal judge found otherwise and in January 2001 enjoined the police from arresting people for possession of syringes.

> Kaplan and Heimer's methodology remains a landmark in evaluating needle exchanges.

In 1991, shortly after New Haven started one of the nation's first sanctioned needle exchange programs, its organizers and outreach workers posed for a photo. From left: Edwin Cadman, Elaine O'Keefe, Edward Kaplan, George Edwards, Dominick Maldonado, Robert Heimer, Chris Brewer, Sonia Lugo, Kaveh Khoshnood and Alvin Novick.

The New Haven needle exchange program has left a legacy of lessons for other communities as well. The long period of consensus building and the support of Daniels, the city's first African-American mayor, and police chief Pastore were crucial to the program's success. And there were by-products. The van offered more than needles. About one in seven of the original 700 program participants entered drug treatment, according to city officials. And there was no evidence that the needle exchange encouraged drug use. The van's client base, which included people of all social classes from 26 communities in Connecticut, remained stable.

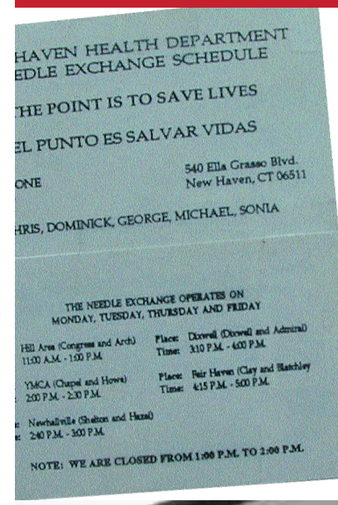
Kaplan and Heimer's methodology remains a landmark in evaluating needle exchanges. "In terms of proving the efficacy of needle exchange, I don't think it gets much better than this," said Lurie. "The Yale research was, for its time and in some ways still, the most sophisticated attempt to evaluate needle exchange, not only because the methods were sophisticated, but also because it tried to answer the central question around needle exchange—whether the programs really reduced the incidence of HIV."

"This was as good a documentation of effectiveness as had ever been seen," said Michael H. Merson, M.D., dean of public health at the medical school, recalling the excitement generated by the New Haven study. In 1991, when Kaplan and Heimer announced their results, Merson was working on international AIDS programs at the World Health Organization.

Despite their effectiveness, Merson sees little willingness in this country to embrace needle exchange programs as part of federal harm reduction measures. Although the Clinton administration declined to fund them, federal officials endorsed needle exchanges as an effective prevention measure. Merson expects little support from the Bush administration. "It's evident, at least for the foreseeable future, that there isn't going to be any change in federal policy that would allow federal funds to be used for needle exchange programs," Merson said. "What is unfortunate is that there are effective prevention interventions against HIV, such as needle exchange programs or distributing condoms in schools, which are judged morally rather than from the public health perspective. That is why this epidemic continues to be a major problem in this country."

Although the New Haven program is active, the city's original needle exchange van is long gone. Painted with bright murals by a Yale librarian and city high school students to cover its police-blue hue, the first van has been replaced several times. The new van runs a regular route five days a week through the city's neighborhoods and even makes house calls. From July to September of 2000, 518 drug users availed themselves of the van. The number of people using the van may have declined since passage of the 1992 state law that allows pharmacists to sell syringes without prescriptions. The van still leads drug users to treatment programs and since 1997 it has operated with the Community Health Care Van, staffed by a physician assistant and outreach workers. "It is clear that needle exchange does have an impact," said Matthew F. Lopes, M.P.H. '77, director of the city Health Department's AIDS division. "Connecticut has been forward thinking in allowing it to exist for 10 years."

Kaplan was even more emphatic when he spoke at the ceremony marking the program's 10th anniversary last fall. "In simple terms," he said, "the program has saved lives."



MICHAEL MARSLAND

JOHN CURTIS

For this year's graduates, a bit of pomp and controversy

For Associate Dean Ruth J. Katz, J.D., M.P.H., the Class of 2001 will always be her first class. As its chosen speaker at Commencement this year, Katz recalled arriving at Yale in 1997 with this year's graduates and learning with them. "I practiced on you as a rookie dean," she told the 79 graduates. "We experimented together and discovered the marvels of this place and identified some of its … let's just call them imperfections. We worked in small groups and went beyond simple problem-solving and critical thinking and helped to make significant institutional reforms. We sang, we danced and we laughed our way through the Second-Year Show.

"The Class of 2001 will always claim a piece of both my heart and my mind," Katz continued. "I am honored to have been with you from the beginning. I am humbled that you have asked me to be with you in such a meaningful way at the closing."

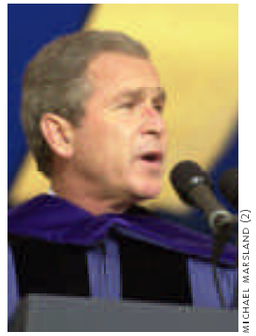
The medical school Commencement followed a University-wide ceremony that featured an address by President Bush, a 1968 Yale College alumnus and one of 12 people to receive an honorary doctorate. Sharing the stage with luminaries including actor Sam Waterston, former Treasury Secretary Richard Rubin and Nobel Laureate Harold Varmus, M.D., Bush spoke of his years as a Yale undergraduate. Before his arrival, scores of faculty members signed a petition protesting the awarding of the doctorate. They argued that it was too early in Bush's term for him to have distinguished himself, and they objected to most of his policies, particularly on the environment. Some students agreed, and during the Commencement on Old Campus, they held up protest signs, booed and turned their backs on the president, while others cheered him.

—John Curtis

Students began the Commencement procession May 21 from the Sterling Hall of Medicine to Harkness Lawn.

JOHN CURTIS

MEDICINE COMMENCEMENT 2001



MICHAEL MARSLAND (2)

MELANIE STENGEL

TOP LEFT **President Bush drew mixed reviews for his jokes about his education at Yale. Some students protested his policies while others laughed at his self-deprecating humor.**

TOP RIGHT **Former NIH Director Harold Varmus received an honorary degree for his contributions to cancer research. Varmus won the Nobel Prize in Physiology or Medicine in 1989 for his discovery of the cellular origin of retroviral oncogenes, which can turn normal cells into tumor cells.**

ABOVE **Ben Huffard, with his sons Mac and Jed, waited his turn to receive his diploma.**

The following prizes were awarded to School of Medicine faculty and students at Commencement:

Bohmfalk Prize
Emile Boulpaep, M.D.
Kathleen White, M.D.

Healthcare Foundation of New Jersey Humanism in Medicine Faculty Award
Jonathan Gage, M.D.

Leah M. Lowenstein Prize
Gail D'Onofrio, M.D.

Francis Gilman Blake Award
David Coleman, M.D.
Laura Ment, M.D.

Betsy Winters House Staff Award
Stephen Possick, M.D.

Parker Prize
Jessica L. Mega

Miriam Kathleen Dasey Award
Garth N. Graham

Norma Bailey Berniker Prize
Benjamin D. Smith

Dean's Prize for Community Service
Sharon A. Chekijian
Caroline N. Harada

Healthcare Foundation of New Jersey Humanism in Medicine Student Award
Caroline N. Harada
Melissa S. Lee

Campbell Prize
Heather C. Yun

Perkins Prize
Jerry Wu

Merck Book Award
Carl V. Crawford
Michael Z. David

M.D./Ph.D. Award
Matthew H. Levine
Daniel H. Wolf

Connecticut Society of the American Board of Obstetricians and Gynecologists Prize
Jennifer M. Lucero

New England Pediatric Society Prize
Patricia L. Birgeneau Prince

Society for Academic Emergency Medicine Award
Rockman F. Ferrigno

Department of Surgery Awards of Distinction:
Award for Outstanding Clinical Performance
Ajay V. Maker
Award for Outstanding Research
Matthew A. Gutierrez

Association for Academic Surgery Award
Ryan R. Davies

Connecticut Chapter of American College of Surgeons Prize
Anthony Lemaire

Peter A.T. Grannum Award
Carl V. Crawford

Lauren Weinstein Award
Jennifer M. Lucero

The Courtlandt Van Rensselaer Creed Award
LaLisa A. Anderson
Stephanie A. Boykin

ACP-ASIM Internal Medicine Award
Harry H. Yoon

The Patricia Nez Award
Jennifer M. Lucero

The C. Winternitz Prize in Pathology
Benjamin D. Smith
John C. Tilton

The Ralph W. Ellison Prize
LaLisa A. Anderson

The William and Charlotte Cadbury Award
Michele M. Johnson

The Wyeth-Ayerst Laboratories Prize in Women's Health
Jennifer M. Lucero

Michael Vaughn, Sara Erickson, Barbara Coren and Geoff Emerson chatted with Dean David Kessler, left, and Irwin Birnbaum, the school's chief operating officer, on Cross Campus before Commencement.

JOHN CURTIS

MELANIE STENGEL

Challenges abound in public health, surgeon general tells graduates

Citing 100 years of advances in science, such as the eradication of smallpox, a 30-year increase in longevity and widespread immunization for childhood diseases, Surgeon General David Satcher, M.D., PH.D., told the EPH Commencement audience that much remains to be done in this century. Among the challenges facing the 78 graduates in public health, Satcher said, are HIV/AIDS, an aging population and racial and ethnic disparities in health care. "How can we continue to improve the quality of life for all Americans?" he asked. "To the extent that we respond to the needs of the most vulnerable among us, we respond to the health needs of the nation."

Satcher called for a balance among the basic, biomedical and clinical sciences and for partnerships between public health and science. "We have to make sure we write policies that are consistent with the best available science," he said.

Student speaker Matthew Freeman, M.P.H. '01, asked his classmates to heed the admonition of Ralph Waldo Emerson "to leave the world a little better." "I, too, hope that we will find success by Emerson's definition," Freeman said, "by improving the health of the people, keeping the environment clean and seeking the most effective ways to prevent and treat disease."

JOHN CURTIS (2)

TOP **Surgeon General David Satcher, speaking at the School of Public Health Commencement ceremony in Battell Chapel, told graduates they would face the challenges of an aging population and disparities in health care.**

ABOVE LEFT **As they marched to Commencement, public health graduates Elizabeth Tong and Allison Stockman carried messages for President Bush.**

ABOVE RIGHT **The School of Public Health's first ceremonial mace, carried by Professor Curtis Patton, made its debut at Commencement this year. The mace is a mahogany staff adorned with the school's heraldic shield encircling a hollow globe.**

EPH COMMENCEMENT 2001

The following prizes were awarded to faculty and students of the School of Public Health at Commencement:

Award for Excellence in Teaching
Elizabeth H. Bradley, Ph.D.

Dean's Prize for Outstanding Thesis
Arvind Bakhru for "Smoking Cessation and Changes in the Acute Phase Response"

Pedram Fatehi for "Comparing the Predictive Value of Plasma Glucose Tests"

James Martin Kessler for "West Nile Disease: An Evaluation of the 2000 New York City Department of Health Active Physician-Based Surveillance System"

Martin David Slade for "Effect of DNA Vaccine and Granulocyte Macrophage-Colony Stimulating Factor on Cottontail Rabbit Papillomavirus Growth"

The Henry J. (Sam) Chauncey Jr. Inspiration Award *(awarded by alumni of the Health Management Program to a student who exemplifies Mr. Chauncey's ideals of innovation, integrity, leadership and community service)*
Trisha Marie Lollo

The Courtlandt Van Rensselaer Creed Award
Angela Marcia Williams

On Student Research Day, a chance to share observations and conclusions

Three years ago, when Jacqueline C. Dolev signed up for a course to improve her clinical observation skills, she didn't expect to spend class time in an art museum—nor, for that matter, to find the topic of her thesis in the exercise. But both things happened, and in April Dolev was standing in the lobby of the Jane Ellen Hope Building explaining her research to those attending Student Research Day.

Her project, "Enhancing Medical Observational Skills through Fine Arts: A Randomized Controlled Study," was a scientific evaluation of the course, taught by dermatology professor Irwin M. Braverman, M.D. '55, HS '56, and staff at the Yale Center for British Art.

Dolev assessed students' written descriptions of photographs from before and after the course and had them perform a visual search task. "The students who took the course were much better in their descriptive ability than the control group," she said while standing next to her display amid the buzz of the poster session. "They learned to look at the photographs of medical disorders for both global attributes and details." The control group, on the other hand, was more haphazard in its descriptions and more likely to see either the big picture or fine detail, but not both.

Dolev was among 50 medical, public health and M.D./PH.D. students presenting work at the school's 15th annual scientific poster session on April 20. Thesis topics ranged from the epidemiology of tuberculosis in Moscow from 1906 to 1936, to the role of cytokines and chemokines in leishmaniasis, to the role of religion and spirituality in the care of patients with HIV.

Although the poster session is a relatively new tradition at Yale, the thesis is an old one, dating to at least 1839, when first mention of the requirement is made in the medical school *Bulletin*. According to Director of Student Research John N. Forrest Jr., M.D., HS '67, Yale is the only medical school to require all students to write a thesis based on original research.

Has the nature of the thesis changed much? Not according to Braverman, leader of the observation course, Dolev's advisor and a 1955 graduate of the School of Medicine. Braverman's own thesis, published 46 years ago, was on "microglial response in West Nile virus encephalitis," a topic that would have a good deal of resonance in New Haven in 1999 when the virus appeared in the United States.

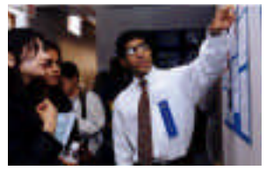
Students today pursue the same types of topics that they did in the 1950s, Braverman said. "Then, it ran the gamut of whatever was cutting-edge science—proteins and biochemistry for the most part—to the history of medicine, social topics and psychiatry," he said. "It's the same today. The thesis reflects what's going on in science."

The scheduled speaker at the 14th Annual Farr Lecture, Paul Greengard, M.D., PH.D., who shared the 2000 Nobel Prize in Physiology or Medicine for his work on signal transduction in the nervous system, had to bow out after he broke his leg during a trip to Japan. Replacing Greengard, who taught psychiatry and pharmacology at Yale from 1958 to 1983, was Richard P. Lifton, M.D., PH.D., chair of the Department of Genetics.

A quarter-century ago, Lifton said, there were virtually no tools to link genetics to the practice of medicine. Now, the human genome has created a revolution in medicine. "We are only beginning to see the outlines of where that will lead us; the future impact promises to be extraordinary."

—Michael Fitzsousa

Damani Piggott, right, asks Michael Singer a question about his research, which examined "Barriers to Health Care for Pakistani Girls."



TERRY DAGRADI (3)

TOP **Ajay Maker explains his project, "Studies on the Molecular Mechanics of Insulin Resistance in Pancreatogenic Diabetes," to Reena Rupani, left, and Rupali Gandhi.**

ABOVE **Winnie Au, center, worked with her thesis advisor, Charles Greer, left, on her study of "Sublaminar Organization of the Olfactory Bulb Nerve Layer."**

Exuberance rules the day as residency placements are revealed

Even before noon on March 22, it was clear that the crowd gathering outside the mailroom at Harkness Dormitory was smaller than in years past. With more students taking a fifth year for research or other activities, the original class of 106 was whittled down to 79 by Commencement this spring and five of the 79 chose to pursue activities other than a residency.

Just the same, the smaller group made a large-enough stir. A few minutes after noon, as students came out of the mailroom clutching letters, screams and tears of joy erupted. Anthony Lemaire danced around the hallway next to the mailroom with third-year student Kate Lally. In the embrace, Lally said, "I lost a shoe and an earring. It was overwhelming." Lemaire was headed for Duke University Medical Center, his first choice, for a residency in surgery.

Melissa Lee got on her cell phone to tell her brother and father in New York City that she'd be going to the Harvard Combined Medicine/Pediatrics Program. "They were hoping I would stay on the East Coast," she said. Christopher James was thrilled to be going to New York Presbyterian Hospital-Cornell for a residency in neurosurgery. "It's an up-and-coming program. It has a great reputation," he said, noting personal reasons for choosing Cornell. "I'm from New York and I went to Cornell as an undergrad."

As in previous years, the students' greatest preference was for internal medicine—38 percent chose that field. Nationwide, the National Resident Matching Program reported a shift away from family practice positions among the 24,000 medical students who participated. Slightly fewer than half matched to a residency in one of the generalist disciplines—internal medicine, pediatrics and family practice. The Yale placements appear on the opposite page.

—John Curtis

GALE ZUCKER (4)

TOP Roger Fan cheers his acceptance to the internal medicine residency program at Brigham and Women's Hospital in Boston.

ABOVE Melissa Lee called her family in New York with the good news that she'd stay on the East Coast. She matched at the Harvard Combined Medicine/Pediatrics Program.

2001 residency placements for Yale medical students

The Office of Student Affairs has provided the following list, which outlines the results of the National Resident Matching Program for Yale's medical graduates. Some names appear twice because the graduate is entering a one-year program before beginning a specialty residency. The transitional designation is a one-year program with three-month rotations in different specialties.

CALIFORNIA

Alameda County Medical Center, Oakland
Matthew Gutierrez, transitional

Kaiser Permanente Medical Group, Santa Clara
Allen Chen, medicine

Saint Mary's Medical Center, San Francisco
Artis Montague, medicine

Stanford University Programs
Jacqueline Dolev, internal medicine
Emily Finkelstein, internal medicine
Artis Montague, ophthalmology

University of California – Davis Medical Center, Sacramento
Andrea Ciaranello, internal medicine

University of California Medical Center – Los Angeles
Eon Shin, orthopaedics
Brian Woods, internal medicine

University of California – San Francisco
Sara Erickson, internal medicine
Jennifer Lucero, obstetrics and gynecology

COLORADO

University of Colorado School of Medicine, Denver
Lucy Budde, family practice

CONNECTICUT

Hospital of Saint Raphael, New Haven
Geoffrey Emerson, medicine
Brian Lester, medicine

Yale-New Haven Hospital
Esther Choo, medicine
Michael David, internal medicine
Oleg Drozhinin, medicine
Jonathan Erulkar, orthopaedics
Rockman Ferrigno, emergency medicine
Kira Giovanielli, medicine, dermatology
Avery Grauer, internal medicine
Sung Kim, medicine/primary
Pinar Kodaman, obstetrics and gynecology
Darren Lish, psychiatry
Gregory Merrell, orthopaedics
Dan Negoianu, internal medicine
Dena Rifkin, internal medicine
J. Mark Sloan, internal medicine
Benjamin Smith, medicine, radiation oncology
Andrew White, orthopaedics
Harry Yoon, internal medicine

GEORGIA

Emory University School of Medicine, Atlanta
Michele Johnson, surgery, neurosurgery

HAWAII

University of Hawaii School of Medicine, Honolulu
M. Vaughn Emerson, medicine

ILLINOIS

McGaw Medical Center – Northwestern University, Chicago
Benson Yang, surgery, neurosurgery

University of Chicago Hospitals
Caroline Harada, internal medicine

IOWA

University of Iowa Hospitals and Clinics, Iowa City
Kirk Clifford, orthopaedics

MARYLAND

Johns Hopkins Hospital, Baltimore
Patricia Moore, obstetrics and gynecology

Johns Hopkins University – Wilmer Eye Center, Baltimore
Geoffrey Emerson, ophthalmology
M. Vaughn Emerson, ophthalmology

MASSACHUSETTS

Beth Israel Deaconess Medical Center, Boston
Oleg Drozhinin, anesthesiology
Anna Paszczuk, internal medicine
John Yang, internal medicine

Boston Combined Pediatrics Program
Patty Birgeneau Prince, pediatrics/primary
Fabienne Bourgeois, pediatrics

Boston University Medical Center
Esther Choo, emergency medicine

Brigham and Women's Hospital, Boston
Barbara Coren, internal medicine
Roger Fan, internal medicine
Melissa Fuchs, internal medicine
Ajay Maker, general surgery
Jessica Mega, internal medicine
Lamioko Pappoe, internal medicine

Harvard Combined Medicine/Pediatrics Program, Boston
Ami Bhatt, medicine/pediatrics
Melissa Lee, medicine/pediatrics

Harvard Medical School
Neal Chen, orthopaedics

Massachusetts General Hospital, Boston
Garth Graham, internal medicine
Matthew Levine, general surgery
Daniel Wolf, psychiatry

MINNESOTA

Mayo Graduate School of Medicine, Rochester
Natalie Holt, surgery, urology

University of Minnesota, Minneapolis
Matthew Goodwin, general surgery

NEW JERSEY

UMDNJ – New Jersey Medical School, Newark
Ron Samet, internal medicine

NEW YORK

Albany Medical Center Hospital
Dinakar Shenbagamurthi, orthopaedics

Hospital for Special Surgery, New York
Benjamin Huffard, orthopaedics

Mount Sinai Hospital, New York
Joshua Gibson, internal medicine
Carmit Steren, obstetrics and gynecology

New York Presbyterian Hospital – Columbia
Winnie Au, diagnostic radiology
Ryan Davies, general surgery
Allison Stewart, pediatrics

New York Presbyterian Hospital – Cornell
Carl Crawford, internal medicine
Christopher James, surgery and neurosurgery

North Shore University Hospital, Manhasset
Joy Weinberg, medicine

St. Vincent's Hospital, New York
Winnie Au, transitional

University of Rochester/Strong Memorial Hospital, Rochester
Hong Zhang, medicine, radiation oncology

NORTH CAROLINA

Duke University Medical Center, Durham
Stephenie Boykin, pediatrics
Anthony Lemaire, general surgery

OHIO

University Hospitals of Cleveland
Heidi Smith, pediatrics

OREGON

Oregon Health Sciences University, Portland
Samuel Kim, emergency medicine

PENNSYLVANIA

Albert Einstein Medical Center, Philadelphia
Daniel Wolf, transitional

Hospital of the University of Pennsylvania, Philadelphia
Sharon Chekijian, general surgery

RHODE ISLAND

Rhode Island Hospital – Brown University, Providence
Brian Lester, dermatology

TEXAS

University of Texas – MD Anderson Cancer Center, Houston
Allen Chen, radiation oncology

Wilford Hall Medical Center (Lackland AFB), San Antonio
Heather Yun, internal medicine

WASHINGTON

University of Washington Affiliated Hospitals, Seattle
Frederick Cobey, general surgery

BELOW With friend Kate Lally, Ami Bhatt celebrated her match at Harvard Combined Medicine/Pediatrics Program.

BOTTOM Cyrus Kapadia congratulated Carl Crawford, who's headed to New York Presbyterian Hospital – Cornell for a residency in internal medicine.

ALUMNI NEWS

Alumni Notes

'40s

Psychiatrist **Aaron T. Beck**, M.D. '46, world renowned as the "father of cognitive therapy," received the $250,000 Heinz Award in the human condition category for his early development of techniques used to treat millions of individuals suffering mental and behavioral health challenges. The award was made by the Heinz Family Foundation, a charitable trust established by Mrs. John Heinz in 1993 in honor of her late husband, Sen. John Heinz of Pennsylvania. Beck is professor emeritus of psychiatry at the University of Pennsylvania and president of the Beck Institute for Cognitive Therapy and Research. Previous recipients of the award include Yale faculty members James P. Comer, M.D., HS '66, and Edward F. Zigler, PH.D.

'90s

Antonio F. Vinals, M.D. '93, wrote to say that he has completed a residency in ophthalmology and a fellowship in corneal and refractive surgery at Harvard Medical School. He is a clinical instructor at the Manhattan Eye, Ear and Throat Hospital and in private practice in Manhattan. Vinals is married to Liselotte Pieroth, M.D., a second-year ophthalmology resident at Columbia-Presbyterian Hospital, who was a visiting international medical student and resident at Yale.

Ramsey Alsarraf, M.D. '94, M.P.H., PC, was named director of The Newbury Center for Cosmetic Facial Plastic Surgery in Boston. Alsarraf completed an American Academy of Facial Plastic and Reconstructive Surgery subspecialty fellowship with Calvin M. Johnson Jr. and is a co-author with Johnson of the soon-to-be released text, *The Aging Face: A Systematic Approach*. He is also serving as a guest editor for a special outcomes research edition of *Facial Plastic Surgery,* the official journal of the European Academy of Facial Plastic Surgery.

Physical medicine specialist **Anthony S. Burns**, M.D. '94, has joined the Regional Spinal Cord Injury Center of the Delaware Valley at Thomas Jefferson University Hospital as assistant director. He was also appointed assistant professor of rehabilitation medicine at Jefferson Medical College at Thomas Jefferson University. Burns was the recipient of the Arthur A. Siemens Memorial Award, presented to a senior resident in the Johns Hopkins/Sinai Hospital rehabilitation medicine residency program for excellence in academic pursuits and devotion to patient care.

Send alumni news items to:
Claire Bessinger, Yale Medicine Publications, P.O. Box 7612, New Haven, CT 06519-0612.

IN MEMORIAM

William E. Bloomer, M.D. '42, HS '52, of Pasadena, Calif., who served for a short time on the Yale faculty, died of cancer on Jan. 14 at Long Beach (Calif.) Memorial Medical Center. He was 84.

A graduate of Stanford University, Bloomer earned his medical degree at Yale in 1942. After an internship at Stanford University Hospital and service in the U.S. Army Medical Corps, he returned to New Haven in 1946 as a fellow in thoracic surgery and completed his residency at Yale-New Haven Hospital.

He was assistant professor at the School of Medicine for five years before moving to California, where he continued his lifelong career in thoracic and cardiovascular surgery and developed innovative techniques using injection-molded plastics to study the anatomy of the lung. Bloomer continued to teach, and at the time of his death was associate clinical professor of surgery at the University of California at Los Angeles School of Medicine.

Howard E. Hornstein, D.M.D., of Guilford, Conn., a former faculty member at the School of Medicine, died March 9. He was 57.

A 1963 graduate of Boston University, Hornstein received his D.M.D. from the University of Pennsylvania School of Dental Medicine in 1967 and a master's degree from the University of Rochester in 1971.

Hornstein, a pediatric dentist and orthodontist, had a practice in New Haven until 1970, when he relocated to Guilford. He also was on the faculty at Yale as a clinical instructor in surgery from 1974 until 1981. Hornstein directed the section of pedodontics in the outpatient department at Yale-New Haven Hospital in 1974 and established an inpatient service for the retarded and physically handicapped. In addition, he was an author, a publisher and a musician.

Theodore Lidz, M.D., who served on the Yale faculty for half a century, died Feb. 16 at his home in Hamden. He was 90.

A native New Yorker, Lidz earned his bachelor's degree in 1931 and his medical degree in 1936, both from Columbia University. He served in World War II as a lieutenant colonel in the Army at hospitals in New Zealand, Fiji and Burma. He also tended to several hundred psychiatric casualties of the fighting on Guadalcanal.

Lidz came to Yale as a professor of psychiatry in 1951. He was chair of the Department of Psychiatry from 1967 to 1968. He gained emeritus status in 1978 and continued to publish, lecture and see patients into the mid-1990s. Lidz explored the background causes of schizophrenia and specialized in the treatment of the illness. He wrote extensively on the subject of schizophrenia in journals and books. He went beyond his patients' personal histories to understand the familial, social and cultural factors. One of his longtime collaborators was his wife, Ruth Wilmanns Lidz, M.D., who died in 1995.