# VIEWS

SPRING • 1995

Oregon Health Sciences University is devoted to the education and training of health care professionals, to biomedical research, to patient care and to public service.

OHSU
OREGON HEALTH SCIENCES UNIVERSITY

## ADAPTING AND REACTING TO NEEDS IN THE COMMUNITY

# A Message from the President

In the last issue of Views, I reported that the Board of Higher Education had voted to endorse the proposal to convert OHSU to a public corporation. At that time, I was optimistic that the Legislature would also respond positively to the proposal. To date, that optimism has been appropriate.

In February, the Senate Education Committee voted unanimously to approve SB 2, the public corporation bill, and to forward it to the Joint Ways and Means Committee. If Ways and Means approves the bill, it could be referred to the Senate in late April and then be sent to the House of Representatives.

The most heartening news has been the breadth of support the bill has enjoyed. Representatives of AFSCME, the OHSU Faculty Senate and the Oregon Nurses Association have been active in promoting the bill. The Oregon Medical Association, the Oregon Hospital Association and the Oregon Student Lobby have also lent their support. The Portland City Council adopted a resolution in early January endorsing the proposal and sent a letter to the Education Committee encouraging its passage. Higher Education Chancellor Joe Cox has repeatedly stated OSSHE's support for the measure.

In fact, although there have been requests for a variety of minor changes, no organization has come forward in opposition to the proposal as a whole. Changes that have been made to accommodate concerns include the addition of a student member on the OHSU board and the reduction of the number of Board of Higher Education members on the OHSU board from two to one. Language was also inserted to clarify OHSU's commitment to the disabled community and to make clear OHSU's obligations with regard to indebtedness.

The next big hurdle is to ensure that the new public corporation continues to receive enough state support to continue its public activities. Although conversion to a public corporation will allow the university to operate more efficiently and effectively in conducting its business, it will not change the essential character of the university as a public institution with a public mission. As a public corporation, OHSU will be better able to help finance such activities as indigent care, poison prevention and education of the next generation of health providers. It cannot sustain these public mission-related activities, however, without state support.

The positive reception SB 2 has received to date is due in no small part to the tremendous support it has received from OHSU's many friends. Business leaders, community leaders, legislators, the Governor, higher education officials have contributed significantly to bringing the bill through the process to this point. I want to thank all of you for that help. I look forward to continuing these efforts with you to see this bill become law and to begin converting OHSU to a model that will allow it to realize its full potential as a world-class biomedical research, education and care facility.

# VIEWS

SPRING • 1995




We are working on our mailing system. If you get duplicate copies of VIEWS, please let us know (OHS Foundation, 1121 S.W. Salmon Street, Portland, Oregon 97205-2021, phone number 503-228-1730).


VIEWS is published quarterly by the Office of University Communications, 3181 S.W. Sam Jackson Park Road, Portland, Oregon 97201-3098, phone number 503-494-8231. Permission is granted to reprint or excerpt from this publication with appropriate credit to VIEWS.

President: Peter Kohler, M.D.
Director of University Communications and Editor: Marlys Levin Pierson
Designer: Caryn Ruch
Photographers: Don Hamilton, Joel Preston Smith, and the Casey Eye Institute Photography Department

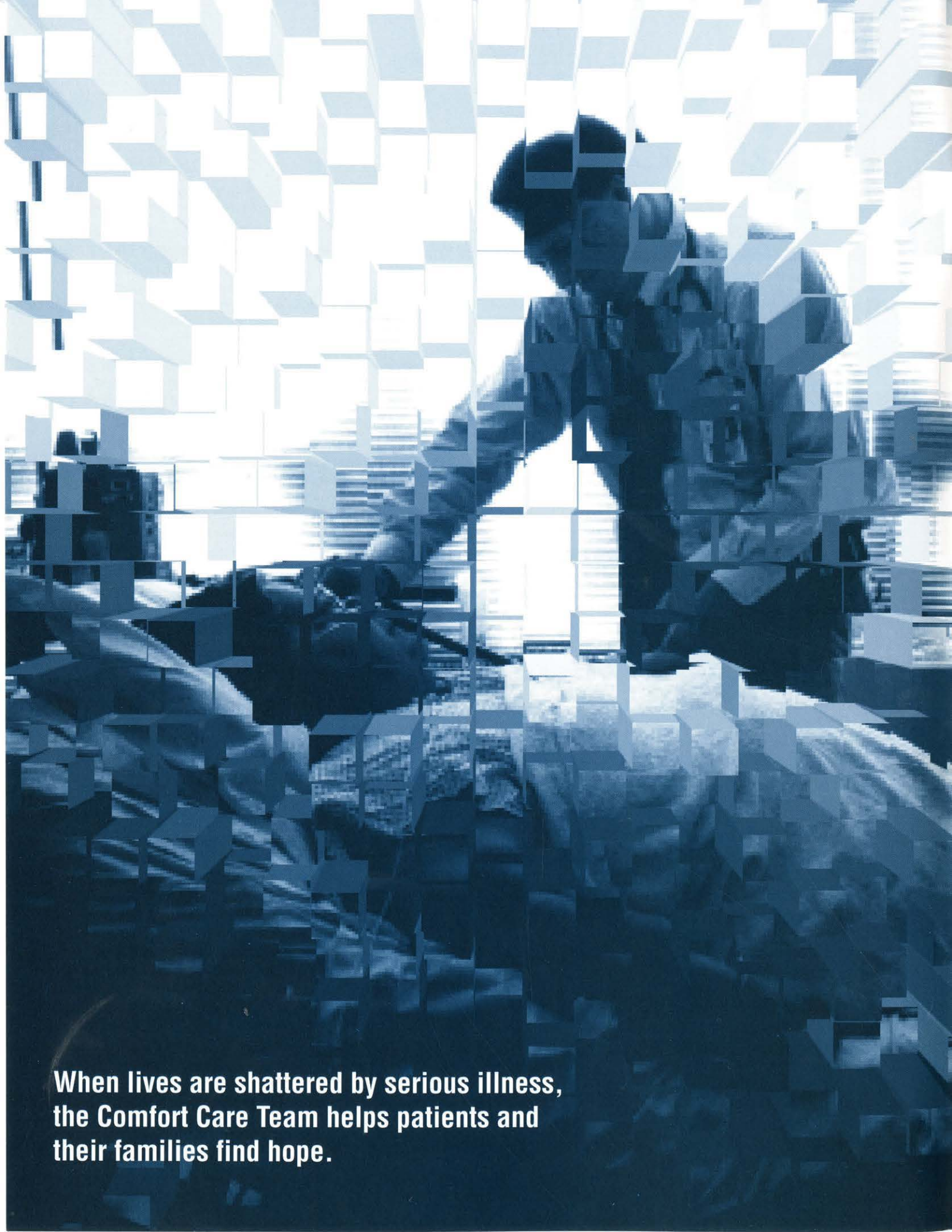
Cover illustration by Randy Braaten, the Image Bank.


OHSU **Oregon's Health University**

OHSU includes the schools of dentistry, medicine and nursing; University Hospital and Doernbecher Children's Hospital; dozens of primary care and specialty clinics; three research institutes; and several outreach and public service units.

OHSU is an equal opportunity, affirmative action institution.

Printed on recycled paper.



When lives are shattered by serious illness, the Comfort Care Team helps patients and their families find hope.

# Building on the Shoulders of GIANTS

## OHSU's new Comfort Care Team hopes to bring the principles of hospice to more people sooner.

by Sandy Poole

While medicine keeps getting better at prolonging and improving our lives, it hasn't always made it easier for us to die. As we live longer, often afflicted with chronic diseases, we're confronted with new sets of problems that can be emotional or spiritual, as well as physical. Deep down, most of us are afraid that we'll be in pain, that we'll be forced to depend on others, or that we'll suffer and die alone. Many believe these were the fears that prompted Oregon voters to pass Measure 16, making physician-assisted suicide legal.

"There's nothing like watching a loved one experience a horrible illness to make you vote for Measure 16," said Susan Tolle, M.D., director of OHSU's Center for Ethics in Health Care. "But it doesn't have to be such a struggle. It's not that we don't have the technology to make people more comfortable when they're sick or dying. It's just that we often concentrate so hard on curing, we don't focus on their comfort until the end."

OHSU's new Comfort Care Team is trying to change that. The team is made up of an internist, Paul Bascom, M.D.; a registered nurse, Lori Andreas; three licensed clinical social workers, Susan Hedlund, Debra Petersen, and Gloria Tuma; a chaplain, Carl Blanchard; and a pharmacist, Joe Bubalo. Physicians will be able to consult with the team when their seriously ill patients are suffering, in body, mind or soul.

***A cancer patient nearing the end of his life paces in his hospital room. He can't stop moving; he cries often; he can't seem to get any rest. He slumps in a chair, holding his head in his hands.***

***"How can I help you?" asks his nurse, an arm around his shoulder.***

***"Take away my cancer," he answers, sobbing.***

***The patient's physician calls for a consultation with the Comfort Care Team. After recommending changes in his medications to control his pain and help him relax, the team ascertains that there are family issues at play here. The team chaplain visits the patient's wife and learns that she has had difficulty accepting his impending death. With the chaplain's help, she is finally able to tell her husband that it's okay to let go, that he does not have to hold on for her. The patient seems more at peace during his final days.***

"The benefit of having a multidisciplinary team dedicated solely to the relief of symptoms is that it will be *our job* to ask these questions: How is your pain? Are you short of breath or nauseated? How are your spirits? How is your family holding up?" said team medical director Paul Bascom, who is assistant professor of medicine at OHSU and medical director of the Visiting Nurses Association Hospice program. "We can use our combined expertise to alleviate those symptoms. Then we can come back again the next day and see what we can do to make things even better."

The Comfort Care Team will primarily provide consultation for hospitalized patients, but also will hold a weekly clinic and be part of OHSU's statewide physician consultation service. Patients must be seriously ill and referred by their physician, but unlike hospice, they do not have to be dying to be eligible.

"That's one thing that makes this team unique," explained Tolle. "Hospice programs require that patients be in the last six months of life. Plus they must agree not to pursue aggressive medical treatments. Studies have shown only about 10 to 15 percent of people who are eligible for hospice are enrolled, and usually only in their last few weeks of life. And what about patients who still may be cured but could also benefit from specialized comfort care? Our team will see them."

"We in medicine have had a tendency to say: We can try to help you live longer or we can try to make you comfortable until you die. We can give you all the morphine you need and we'll offer spiritual support, but only if you agree you're dying," added Bascom. "So people have had to choose one or the other. We want to be involved with people who are still undergoing chemotherapy, awaiting a transplant, suffering from kidney or liver disease or diabetes, or fighting AIDS-related diseases. These people should

*continued on page 6*

have access to all our comfort services, too."

"We've learned a lot from our hospice programs," said Tolle. "Now we want to build on the shoulders of giants — that is, take all these wonderful skills to a larger population, much sooner."

***A middle-aged surgical patient lies immobile in her hospital bed. Her physician and nurses speak to her, asking about her pain, asking how they can help. She responds only by grimacing and crying out. The patient is obviously suffering, but is withdrawn.***

***Members of the Comfort Care Team are consulted. They discuss her medications and recommend that her doctors increase her morphine to a much higher level and administer the pain killer in a different way.***

***Eventually, with her pain now under control, the woman becomes more alert. She no longer withdraws in order to cope. Her family is greatly relieved.***

Pharmacist Joe Bubalo works in oncology and volunteered to be on the Comfort Care Team because he felt his skills might be useful in helping a wider variety of patients. "Morphine is still the most effective pain reliever," said Bubalo. "But there are new and innovative ways to administer medication. Some are longer acting; there are novel delivery techniques like transdermal patches; there are more routes of administration like under the skin or into the area near the spinal cord."

According to Bascom, while morphine is widely used for acute pain, many physicians are reluctant to prescribe large enough doses because they fear it can cause respiratory distress, perhaps even hasten death. "Studies have shown that pain is a natural antidote to morphine," explained Bascom. "The more pain you are in, the more morphine you can take without experiencing respiratory depression or decreased mental function. And it's clear that people who take morphine for real pain do not become addicted. When their pain subsides, they don't crave morphine. In fact, all the behaviors associated with addiction don't happen."

Relieving pain will be a large part of the Comfort Care Team's job, and it will work in conjunction with OHSU's Pain Management Service in the anesthesiology and neurosurgery divisions. The pain service works with patients in chronic and acute pain and is called upon for surgical interventions such as epidurals and morphine pump implantations.

Most seriously ill patients suffer from multiple medical problems, all of which effect each other. "A lot of people are looking out for patients in the hospital," explained Lori Andreas, certified oncology nurse on the team. "And they're usually looking at a specific aspect of symptom management. Our team will stand back and look at the whole picture of suffering."

**Paul Bascom, M.D., is the team medical director.**

Since the Comfort Care Team approach is a relatively new concept, especially in an academic health center, it will take time to incorporate its principles into the medical school curriculum. According to Bascom, in a leading 2,500 page medical textbook there is only one page on the appropriate use of opioid analgesics such as morphine for pain. At the same time, there are five pages of warnings about its abuse and addiction. In successive chapters on heart, kidney, Alzheimer's and other diseases, there is no mention of how to skillfully manage patients in process of dying from these conditions.

"We haven't been teaching students how people die," admitted ethicist Tolle. "Here at OHSU, we've recently begun teaching students that people have the right to refuse medical treatment, but not about what their dying will be like and how to make them the most comfortable during the process. But we're working to change that. I hope that soon, before residents finish their programs, they'll have consulted with the Comfort Care Team on their own patients. This way they can see the benefits with someone they know. That will be a powerful experience."

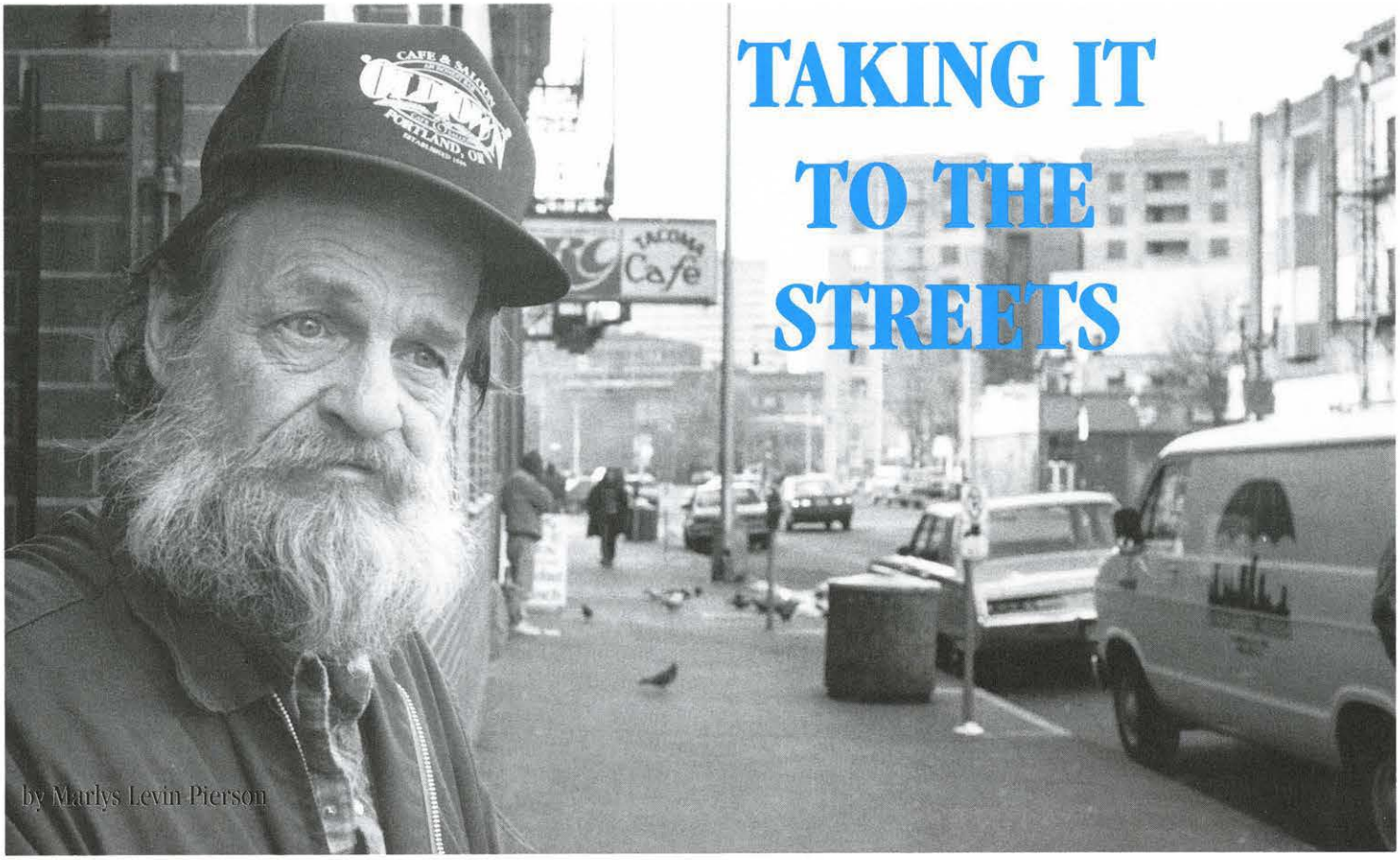
***A man has been battling pneumocystis pneumonia, a potentially life-threatening disease common among AIDS patients. This time, no treatments appear to be working, and the patient is in the intensive care unit. He has said he does not want heroic measures taken when his time comes, but as he struggles to breathe, he changes his mind and asks to be placed on a respirator.***

***A social worker from the Comfort Care Team who often works with AIDS patients visits. They talk about the patient's goals. He accepts the fact that there is no chance now of a cure for his disease. He realizes also that to be placed on a respirator will only prolong his pain and suffering and may prevent him from returning home to die. His goal is to spend his final days among those he loves. He chooses not to be placed on a respirator and dies peacefully in the presence of his family and friends.***

Social worker Debra Petersen believes the team is employing an innovative concept. "The idea is to allow patients to utilize their own belief and value systems to make their decisions. These are very personal and significant decisions: Should I continue with chemotherapy? Should I go on or off the respirator or have more surgery? Should I go home? We help clarify their options in a non-judgmental, compassionate way."

"A big issue is maintaining hope," added Bascom. "You might have to give up hope of a cure for your illness, but you still might have hope that you could get home or accomplish certain things. We think it's really valuable to help people decide what they can maintain their hope in."

Hospital chaplain, Carl Blanchard, brings a spiritual dimension to the team. "We can't be all things to all people. Maybe I can be a good listener, but I have no medical expertise. In my mind, I see a big difference between curing and healing. We may or may not be able to cure the cancer, but we often can bring about healing as a person works through the experience of illness and death. Healing can come when all the pieces of a human being work together in harmony. Each of us with our own unique gifts and abilities can help a person heal."




# TAKING IT TO THE STREETS

by Marlys Levin Pierson

Eric's listless blue eyes darted furtively from his dull face — hands tugging at his scraggley beard. "He was frantically searching for an escape route as I approached," said Neil Falk, M.D., third-year psychiatry resident.

Eric made his home under a bridge two years ago. He earns his income by returning discarded cans and accepting a few handouts. Local businesses sometimes help with donations of food and clothing.

Eric is among the growing number of disenfranchised, mentally ill who crouch in the doorways of abandoned buildings and under city bridges. Many don't know where to turn for help. Today, for Eric, help came looking for him.

Falk is completing his public-service project as part of the School of Medicine's Public Psychiatry Training Program. All OHSU psychiatry residents are required to work (and learn) in the public sector as part of their education.

Falk has been working with Project Respond, an outreach team from Mental Health Services West. The team provides outreach and crisis care for mentally ill homeless in Portland.

"We go to them, get to know them, try to earn their trust," says Falk. "It is important to understand their emotional needs. Many are too ill to get help for themselves. It's often a slow process. It usually takes many months to get to understand their needs and to help them into treatment."

The medical school's Department of Psychiatry has once again earned high accolades for its community service commitment. The Public Psychiatry Training Program, which focuses on one of the nation's most serious mental health delivery problems, has been ranked No. 1 in creativity by the American College of Psychiatry. The model program received the prestigious Creativity Award in Psychiatric Education at the ACP annual meeting Feb. 11.

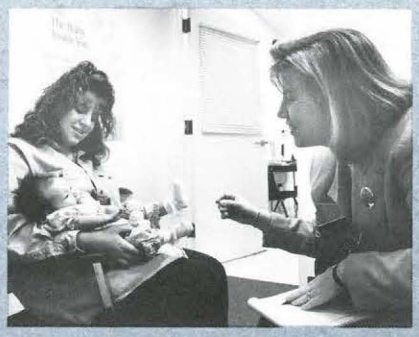
This mark of accomplishment distinguishes the program for innovation, ongoing commitment, effectiveness, quality, and contribution to significant community and educational issues. David Cutler, M.D., professor of psychiatry, is director of the program, and David Pollack, M.D., adjunct associate professor of psychiatry, is associate director.

Faculty and students have teamed up with the State Office of Mental Health Services to strengthen mental health support systems in rural areas, inner city mental health programs and state hospitals. "We have been very successful in training psychiatric residents in the special skills and knowledge necessary to provide effective and worthwhile care in these complex settings," says Cutler. Our goal is to provide a stable supply of psychiatrists to help all of Oregon's victims of depression, psychosis, substance abuse and other mental health problems."

Since 1973, psychiatric residents have completed part of their training in state and community mental health systems in both rural and urban Oregon. Seventy-five percent of OHSU's psychiatry graduates work either full or part time in public mental health programs or in rural areas.

The psychiatry training program has become a model for the nation. The PEW Foundation recently used the OHSU model to help other states and universities set up similiar collaborative psychiatric training programs nationwide. The program also earned the Exemplary Training Program Award from the National Alliance of the Mentally Ill in 1989.

# Health High



Jennifer Gilhooly, an OHSU nurse practitioner, visits with a young mother at Merlo High School.

by Joel Preston Smith

In an English teacher's classroom at Merlo Station High School, the thin and yellowing masterworks of English literature are dwarfed beside a more modern volume on the student's bookshelf: *The Complete Book of Pregnancy and Childbirth*.

There's a good reason why many students at the north Beaverton school might have more interest in the third trimester of pregnancy than in *The Brothers Karamazov*, *Macbeth* and *The Pilgrims' Progress*. At least 16 percent of Merlo's 344 students are either parenting or pregnant. Considering that pregnant adolescents (according to a vast body of medical literature) are more at risk than their adult counterparts for either being the victims or the initiators of child abuse, for being malnourished and for having low-birth weight or pre-term infants, Merlo Station holds more potential for human drama than all the imagined works of Shakespeare combined.

In an attempt to forestall the tragic outcomes often associated with teen pregnancies and many other adolescent health-care problems, the Beaverton School District this past August worked with OHSU's School of Nursing in establishing a free health center at the two-year-old school. Staffed by two OHSU faculty nurse practitioners and, currently, five upper-division nursing students, Merlo Station Health Center officially saw its first student-patients in early November. From treating pre-term labor to counseling against teen suicide, nursing students at Merlo get a daily immersion in the real world problems of today's teen-agers.

What they've found is a group of adolescents — much like their peers throughout the nation — plagued by malnutrition, violence, stress, unresolved questions of sexuality, minimal access to health care and a rate of attempted suicide that Carol Lindeman, Ph.D, dean of OHSU's School of Nursing, terms "astronomical."

In some ways, the problems hardly seem surprising. According to Public Health

Reports journal, more than 40 percent of women in the United States currently become pregnant before age 20. Each year, more than one million American adolescents become pregnant. To make matters worse, fewer than 35 percent of sexually active adolescents use condoms; teens are the least likely of any age group to seek health care; and more than nine million adolescents had no health insurance, and therefore no guaranteed access to immunization, medical exams or hospitalization as late as 1993.

You'd think that with the odds against them, Merlo's students would roll over. Not so, says senior nursing student Carol J. Reeves. "A lot of adults get buried with their own problems, but not these kids."

Reeves, in charge of developing mental health programs at the Merlo clinic, says, "Their sense of hope and working for something positive is really commendable. To see how these kids work through their problems has given me a lot of respect for them."

At this tender age, students are supposed to be burning brownies in home-ec, learning to forget why the Taft Act isn't all that memorable, and stowing away formulas and theories that will prove useful later in life.

Theory just doesn't have time to take out a pencil and a sheet of paper at Merlo. Theory needs a diaper change. Theory needs rocked to sweet sleep. One thing that makes Merlo such an innovative school — and makes the OHSU nursing program there so critical — is the on-site day-care center for the high school students' children. The nursery is barely 30 feet from the health center door. Between classes, students come in to breast-feed, rock a crying baby, check on a hoarse cough. So in addition to seeing the usual run of scratches, scrapes and coughs prevalent among high-schoolers, nurses and nursing students at Merlo have an opportunity to monitor the developmental growth of about 40 infants and toddlers and provide counseling and primary care to another 35 or so expectant mothers.

To the center's staff, every visit from a student is an opportunity to lay down lifelong health habits. One Thursday morning in February, an 18-year-old student comes into the clinic, arms tightly hugging a two-month-old baby boy. Jennifer Gilhooly, one of two nurse practitioners at Merlo, guides her into an exam room, seats the two and notes the steady gaze of the boy. "He's following everything!" she says, and leans forward in her chair to touch the face of the child.

His mother, not looking up from the baby on her lap, says excitedly, "He's already giving me big smiles. He's a happy little guy."

Between waving a fire-engine-red toy in the air over the boy's head, and asking about how he is eating, Gilhooly, an assistant professor in OHSU's School of Nursing, asks her about how the baby is eating, about how she is eating. If the two were alone (today someone else is present), Gilhooly might ask her how her home life is, if there is any stress, if she's getting along O.K. with her parents, if she has enough money for groceries, if she feels safe and secure and happy.

> "For a young woman in her teens, arms swallowed up with the weight of a new-born baby, the thought of missing school to ride a city bus across town to the doctor's office is a pretty daunting one."

"One of the best things we do," says Gilhooly, "is look at the whole person and assess their development. We assess them in the context of who they are, the way they describe themselves and their family. How are their relationships, how's their home life? That makes *them* look at those things to see how they interrelate."

Easy access to health care —and a holistic approach to the needs of the individual — is something nursing school dean Carol Lindeman strongly wants to promote both at Merlo and in all the university's nursing programs.

Lindeman, whom district officials asked to develop the school clinic, says, "The medical model is what we've traditionally been given to understand the health-care needs of children, but the real emerging issues with today's adolescents are parent-child interactions, abuse, stress, economic insecurity, pollution, violence.

"What we are facing in society today are illnesses simply caused by people living with people. We don't know enough about those illnesses. We do know enough not to just bring them into the nurse's office and give them a pill."

For a young woman in her teens, arms swallowed up with the weight of a new-born baby, the thought of missing school to ride a city bus across town to the doctor's office is a pretty daunting one. Merlo senior Lori Anderson, 20, whose eight-month-old son Michael has recurring ear aches, says, "It's a really big help when I don't have to take a long trip to see a doctor. I can make an appointment here during school hours and they [the OHSU nurse practitioners] can check it out really quickly."

Merlo is small — 400 students in the day program, 100 in night courses — and has a short but regrettably (from the perspective of some community members) "colorful" history. An alternative school for young people who were too bright or too colorful themselves to fit into "mainstream" programs, Merlo was built from the hull of a computer manufacturer's building. Students are there by "contract" and must adhere to strict policies of attendance and academic performance or lose their right to attend the school.

A former school for pregnant teens, set up in Beaverton in 1980 but now defunct, lives on inside Merlos's in a program called "Continuing Education for Young Parents." The Beaverton School District founded Merlo and the young parents program to keep students enrolled through graduation

*continued on page 10*

and to give them the kind of support network that just doesn't exist in a mainstream school.

The spirit of an alternative school is at the heart of the center's counseling programs, says Sheila M. Kodadek, Ph.D., associate professor of family nursing at OHSU and director of the Merlo clinic. Nursing students develop a counseling curriculum based on what they see are the Merlo students' needs and concerns. After an OHSU survey found that stress was the most common concern among Merlo's students — out of 222 students, 132 identified stress as the most problematic area in their lives — Carol J. Reeves founded a weekly newsletter which identifies the signs of stress and offers innovative ways to relieve it. Recognizing the concerns that teen women have about weight gain, junior nursing student Shelly Bedell-Stiles is teaching prenatal nutrition and the health benefits of exercise.

**Carol Reeves, senior nursing student**

Merlo has one of only 25 school-based health centers in Oregon. Of those, only 14 receive state funding. (All services at the Merlo center, including staff time, are donated by OHSU. Without funding, the future of the center is uncertain.) Although school clinics have little monetary support in Oregon, studies have shown a clear relationship between easy access to the health centers and a high frequency of use. During the 1990-91 school year, 9,352 students — more than 40 percent of the student bodies — were seen in 18 of the clinics. The ratio of boys to girls is roughly the same at Merlo, but the health center sees nearly twice as many females as males.

For Merlo sophomore Rebecca S. Copeland, 15, all that really matters is that someone is nearby to help her through her pregnancy. "The nurses are preparing me for being a mom," says Copeland," but they're not making it a pretty picture. I know [after going through prenatal classes] the baby isn't going to be cute and cuddly all the time. I don't think I'll be frustrated as easily now. If I get upset, I know I'm not going to take it out on my child."

Judy Hathaway, director of the young-parents program at Merlo, says the district's nursing staff suffered about a 50 percent reduction after 1993-94 budget cuts in Beaverton. The remaining district staff is housed in offices outside the schools. As a result, says Hathaway, the students and toddlers at Merlo went through much of 1994 without easy access to health care. "The opportunity to have the nurses here is wonderful," Hathaway says. "Because of their personalities, they spend a lot of time just talking with the kids."

The health center staff supports Merlo's primary instructors in the classroom, helping design and teach programs to students about quitting smoking, building self-esteem, exercising with their child, dealing with "the baby blues," child-proofing a home and practicing better home safety. Sue Ann Higgens, a Merlo teacher who leads the prenatal "focus group," has a hopeful view of what the health classes mean to students. With a nod toward the Shakspearian classics on her bookshelves, and the posters on her wall depicting the four stages of pregnancy, Higgens, an English teacher, says, "The literature we study in class is asking us, `Do we make our lives into comedy, or tragedy? Will you be able to rise above what life's dealt you?'

"One of our jobs as teachers," she adds, "is to equip these students with being able to answer *yes*."

Despite all the grim figures on teen pregnancies and the problems of adolescence, Merlo hardly has a tragic air about it. Grand motherly figures — volunteers — in rocking chairs lull babies to sleep in the nursery while two mothers in their early teens sit on a couch outside the health center, bottle feeding. Teachers, teen mothers, students in the school's advanced program for science and technology, and toddlers on wobbly knees share the same hallways. Sometimes there are glorious, subtle moments of affection and innocence. Case in point: down a long white corridor pasted over with paper mache decorations, a Merlo student weaves through a crowd of teenage boys leaving the bell for sophomore English. An eight-month old baby is cradled in her arms. She's tall and fluid and has hair the color of straw — attractive. But the boy bringing up the rear has his eyes only on the baby. The baby is draped over her shoulder like a sack of potatoes, head lolling side to side. The boy smiles, following the baby's gaze as he rounds the corridor, and goes on by. There's something peaceful about that — peaceful in and of itself — a feeling suspended there in in thin air, held by an appreciative look, a feeling of wonder apart from all the societal worries about the risks and costs of teen pregnancies.

These are the families that aren't *supposed* to be, yet the mothers pinch and coo, the babies squirm and smile their toothless smiles, Macbeth climbs the ramparts of Dunsinane in sophomore day dreams, the sun ascends past the flag pole at lunch, and boys in bleached football jerseys favor the looks of babies over lovely young women on the long walk between classes. The issue of "kids" bringing up kids is a controversial one, and one that won't be completely resolved at a school clinic. The nurse practitioners and nursing students see their responsibility as promoting good health and sharing a sense of respect with Merlo students — parenting or not. "We want to instill young people with a sense of accountability," Lindeman remarks. "If we can take one child and break the cycle of kids having kids, then we'll have done something with our clinic. If we can do it with two, four, six kids, then so much the better."

The students at Merlo might not realize it, but teaching goes both ways. With a relationship so novel and so new, the distinction between who are the teachers at the health center, and who are the students, is vague at best, if it's ever clear at all.

"Nursing students don't get much of a chance to work with adolescents," says Reves. "You can read all you want and study for exams, but when you do it for real, out in the community, that makes it really stick. One thing I've learned is that these kids don't have a lot of fears. What they have is a sense of excitement and a fervor. That's something we can really work on," Reves remarks. "To have this opportunity is absolutely wonderful."

# BACK ON THEIR FEET

## CROET studies injured workers.

by Francesca Clifford

When a worker is injured, few things are as important as getting that worker healthy and back to the job," said Peter Spencer, Ph.D., director of OHSU's Center for Research on Occupational and Environmental Toxicology. CROET researchers recently completed the last of three health outcomes studies aimed at helping employees and employers do just that.

"Researchers at the center have specialized expertise in the work site," said Patricia Butterfield, Ph.D., former postdoctoral fellow at the center. "We are committed to understanding workers' issues and incorporating their concerns into our studies, which increases the relevance of our research and education programs. Our research focuses on prevention of injuries as well as the most effective treatments." Health outcomes research provides valuable information in determining effective medical care, Butterfield added.

The investigations were a collaboration between CROET and SAIF Corp., a publicly owned carrier for workers' compensation insurance in Oregon. Study participants had filed a claim with SAIF between 1990 and 1993 and voluntarily answered a questionnaire. CROET kept patient identity strictly confidential.

Three of Oregon's leading on the job-related injuries are low-back pain, carpal tunnel syndrome and knee injuries. The goal of the CROET studies was to gain a more comprehensive understanding of the relationships among injuries, worker characteristics, medical treatment and recovery.

"These occupational epidemiology studies are advantageous because they can help workers understand how to help their own recovery process," said Butterfield. "The studies also can benefit employers who, of course, want healthy, effective employees. The information gained can indicate successful treatments that lead to quicker and more complete return to work."

Butterfield began by evaluating treatment patterns in individuals who had filed claims with SAIF. She then collected data on the workers' occupations, medical treatments and satisfaction with their medical care. Workers responding also described their employer's assistance in hastening their return to work.

"We were particularly interested in learning why some workers fared very well after an injury and were able to return to work, while others had prolonged discomfort and a much longer recovery process," said Butterfield. "We also wanted to learn about a broad range of variables that may affect a return to work for injured workers.

"We found many factors, both work-related and treatment-related, that play a role in recovery — the severity of the injury, the worker's level of energy and general health, and the various occupational risks, such as twisting or lifting," said Butterfield.

"We used the questionnaire data to profile groups of workers who, because of their job or other factors, may be at risk for a delayed recovery," said Butterfield. "We learned what factors led people to be satisfied with their care and have fewer symptoms." In addition, the surveys provided information about number of days off the job due to the injury, cost of care, and a variety of occupational and psychological factors that may play a role in preventing workers from successfully returning to work.

"To understand the dynamics of work-related injuries in Oregon workers, we examined their workplaces, homes and lifestyles, and we looked at both the clinical and the anatomic aspects of their injuries. This level of detail gave us a clear picture of the relationships among injuries, worker characteristics, treatment and recovery.

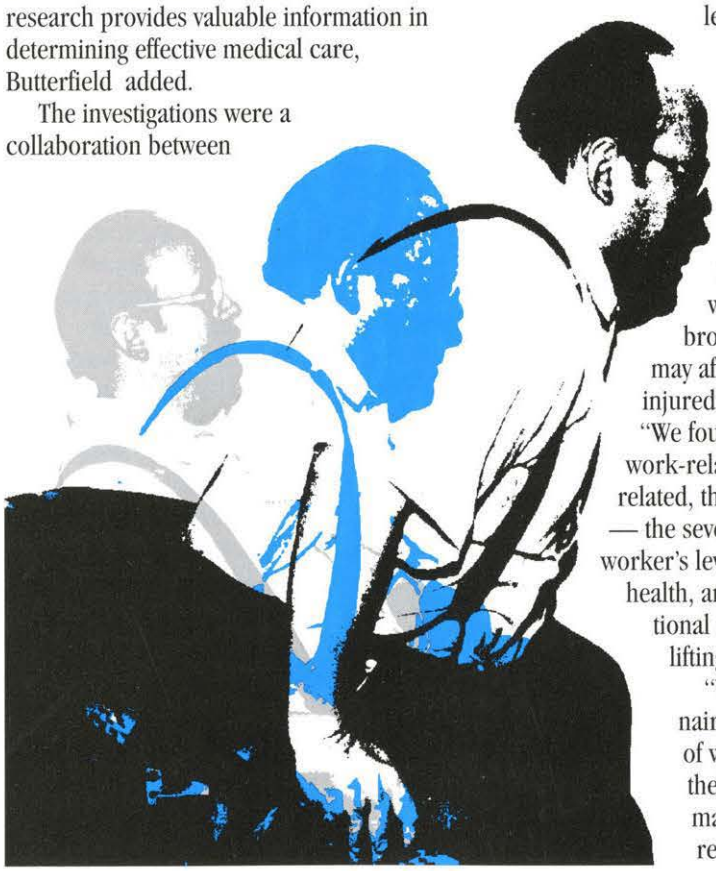
"By identifying risks for delay in return to work," said Butterfield, "we move closer to providing the best combination of treatment, support and financial resources for injured workers and their employees."

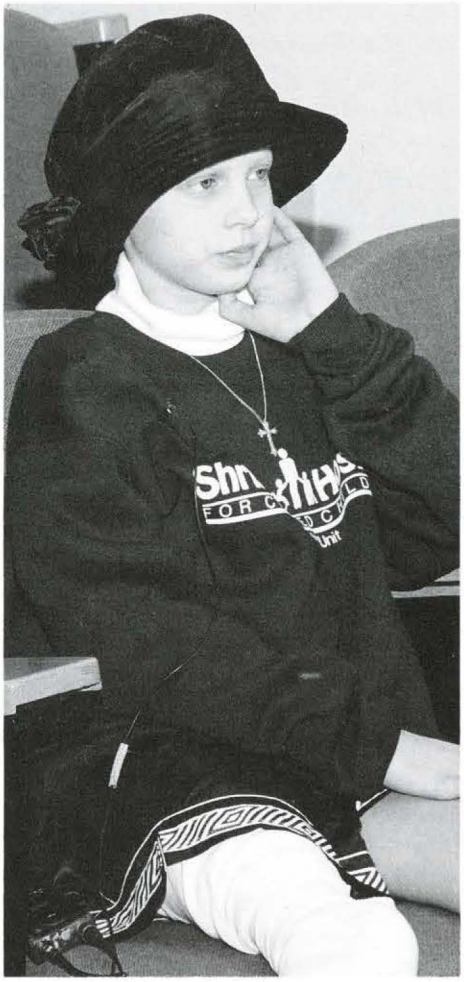
Highlights from the findings of the three investigations include:

People who had jobs involving repetitive, twisting and jarring motions were likely to have more severe carpal tunnel syndrome compared with workers who had less "hand-intensive" jobs. Those who had surgery were significantly more satisfied with their care than those not treated with surgery. They also had fewer symptoms after their claim ended, though some said it took longer to recover than they had expected.

Attitudes toward sports and hours of sports participation played important roles in understanding recovery and return to work. Fewer hours of sports participation were associated with less severe knee treatments. The severity of the injury determined the course of treatment. Workers treated by surgery had significantly more severe injuries than those who did not have surgery.

More than 70 percent of workers with low-back pain were male; this result is similar to other studies illustrating that more males are injured probably because of the nature of their work. There was a connection between physical fitness and recovery; workers who indicated they were not exercising tended to have higher medical costs, continued symptoms of back pain and greater loss of functioning.



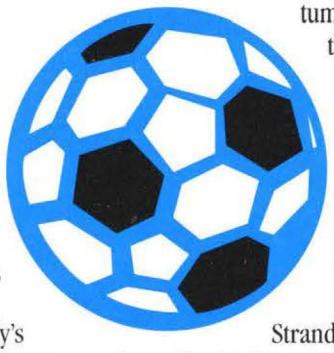


# Saving a Life AND a Lifestyle

## Doernbecher and Shriners Hospital pool their expertise to help a little girl battle bone cancer.

by Sandy Poole

Like her brothers and sisters before her, 10-year-old Holly Sullivan loves to play soccer. She's good at it, too. And if she's lucky and works very hard, she'll be back on the soccer field running and blocking and dribbling that ball again, the sooner the better.



It was on the soccer field that Holly's mother Debbie first noticed something was wrong. Holly had fallen and was limping, favoring her right leg. Logically assuming it was a bruise or pulled muscle, Holly stuck with her team and kept playing. As it turned out, what was causing her pain was not a wrenched knee. It was cancer.

"The injury didn't seem to go away completely, so we thought maybe Holly had bad knees like I do," says Debbie Sullivan. "I found an orthopedic specialist in the phone book, and we went to see him. He showed me the X-rays, and the very next day we were up at Doernbecher undergoing tests."

What the X-rays revealed was a large tumor growing in Holly's thigh bone and knee. She was given an MRI and then a biopsy. Though Debbie remembers that there was some talk of cancer, it just didn't sink in at first.

"When Dr. Sarah Strandjord introduced herself as Holly's oncologist, I knew," says Debbie. "She was straight with me. She said they suspected that Holly's tumor was osteogenic sarcoma, a type of bone cancer most commonly found in children. She was right."

Holly and her family didn't know it then, but if they were forced to face the devastating diagnosis of osteogenic sarcoma, then they were in the best possible place to wage their war against it. Doernbecher Children's Hospital has treated the majority of Oregon children with cancer for decades, and right next door is Shriners Hospital for Crippled Children, which specializes in orthopedics.

And the Sullivans' timing was propitious. Doernbecher and Shriners hospitals had just begun a collaborative bone tumor program, the first of its kind in the country. Doernbecher provides patients' diagnostic imaging, biopsies, lab assessments and chemotherapy. Shriners Hospital performs the surgery, designs the prosthesis and oversees rehabilitation.

Just 15 years ago, a diagnosis of osteogenic sarcoma often meant death. The survival rate has improved dramatically, partly because of new chemotherapy drugs, and also because sophisticated imaging techniques such as MRIs and CT scans make it possible for physicians to see where tumors begin and end so they can remove them before they spread.

"It took me a long time to get up the nerve to ask what my daughter's chances of survival were," says Debbie. "When they said 75 to 80 percent, I thought, wonderful! We can do that."

First Holly began a two-month course of chemotherapy at Doernbecher prior to surgery. She lost her hair, and the chemotherapy drugs often made her too sick to eat.

Several times she wound up back in the hospital with low blood counts and infections. "Often times the doctors would drop what they were doing and look at Holly, just to reassure us. They're not only tops in their field, they're tops as people," says Debbie. "They've been very tuned-in to our feelings."

> Thanks to a unique bone tumor program on the Hill, Holly will soon be running, blocking and dribbling that soccer ball again.

Until recently, a child with a tumor like Holly's would have the cancerous limb amputated. However, the pediatric orthopedic surgeon who was to operate on Holly at Shriners is one of the few people in the world who performs a new type of limb-saving operation called rotationplasty. Ivan Krajbich, M.D., recently arrived in Portland from Toronto and is one of the world's experts on bone tumor reconstructive surgery for children.

"In young kids who are still growing, the golden standard has long been amputation," explains Krajbich. "However now there are other choices. When you're operating on young children, you have to weigh the pros and cons very carefully."

Krajbich gave the Sullivans several options. One was a bone transplant. But Holly would lose her knee, and the leg would be unbendable. That would mean no more sports. In addition, transplanted bone does not grow, and Holly is still a long way from skeletal maturity.

Another choice was an artificial thigh and knee joint. Once again, the limb could not grow along with the patient, and a mechanical knee is prone to break during strenuous physical activity.

The Sullivans chose the third option, rotationplasty. In a seven-hour operation at Shriners Hospital, Holly's knee and most of her thigh were removed. Then her healthy lower leg and foot were reconnected to the thigh, backwards. In other words, Holly's lower leg bones and muscles became her thigh, and her ankle and heel became her knee. The advantages are that the leg is Holly's own tissue and will grow. She'll need a prosthetic lower leg and foot, but her new ankle/knee is a natural weight-bearing joint and will work better than a mechanical knee. Holly should be able to participate in sports again, her major goal.

The obvious drawback to rotationplasty is that it looks unusual. "There is tremendous emotional trauma when you suddenly face the possibility of dying, let alone losing a limb," says Krajbich. "Kids who have osteogenic sarcoma are usually old enough to realize what's happening. There are very few situations where we can make their limb look perfect, but we've found that our rotationplasty patients feel very upbeat because they can be active again."

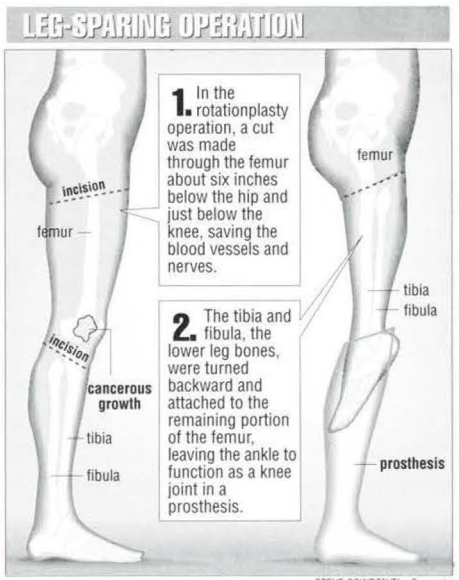
Holly's leg healed quickly, and she was soon bounding down the hospital corridors on crutches. A few weeks later, though, it was time to resume chemotherapy. Though the cancerous bone is gone, Holly's Doernbecher oncologists want to make sure no cancer cells lurk elsewhere in her body. The whole process is expected to take from nine months to one year.

"Therapy for bone cancer is complex and requires multiple physicians," explains Ron Rosenfeld, M.D., chairman of pediatrics at Doernbecher and professor of pediatrics in the School of Medicine. "Having a children's orthopedic facility on the same campus as a pediatric oncology unit is unprecedented anywhere."

"I think it's not only important to be on the Hill, it's essential," says Krajbich, who spends most of his time at Shriners but also has a faculty appointment at OHSU. "I don't think you can run a competent tumor program outside an academic health center. You need oncologists, general surgeons to put in intravenous lines or to remove other tumors if necessary, trained radiologists and micro-vascular surgeons. While you're in surgery, you need an expert pathologist who can look at the frozen sections and tell you whether all the tumor has been removed."

Holly has an agenda, an internal clock ticking away milestone after milestone. "I plan to get my prosthesis in April," explains Holly. "I hope to be walking within a week or so and running by June. Hopefully I'll be finished with my chemo by my birthday in July, and I want to be playing soccer with my team by next January. I have to relearn my skills because I used to do everything with my right leg. Now I don't have a right leg."

"Holly's a fighter," adds her mother. "We just tell her to keep her eyes on the goal, and she'll get one step closer every day."



STEVE COWDEN/The Oregonian

# Low-Income HIGH QUALITY

## The Russell Street Dental Clinic Delivers

by Dick Baltus

For 20 years, individuals with mental and physical disabilities, compromising medical conditions and others more accustomed to running into brick walls when seeking dental care have found an open door at Russell Street Clinic.

Operated and staffed by the OHSU School of Dentistry, the north Portland clinic specializes in treating low-income patients and has earned a widespread reputation for providing care that is high on both quality *and* compassion.

The clinic's work has been recognized and rewarded in many ways over the years. Most recently, in 1994, the National Institutes of Health awarded the School of Dentistry a three-year, $1.2 million grant to support studies by the Russell Street Clinic staff to determine the best dental therapies for AIDS patients.

Often, HIV-infected persons develop a painful gum disease which can prevent them from eating and cause weight loss, the results of which could be life-threatening, according to David Rosenstein, D.M.D., clinic director and chairman of public health dentistry. In the NIH study, which involves 500 clinic patients, principal investigator Rosenstein and associates are attempting to determine whether an antimicrobial mouth rinse and frequent cleanings can prevent the gum disease.

If this regimen proves successful, the Russell Street clinicians will be even better armed to accomplish their primary goal of maintaining their patients' oral health and, as an extension, their general health.

"If you have an infection in your mouth, the body focuses on that area and leaves other areas susceptible, which is of particular concern to patients whose immune systems are already compromised by the AIDS virus," says Rosenstein. There are many psychological side effects to good oral health, as well, he adds. "If you have gum disease or your teeth are rotting, it's hard to feel good about yourself.

"We try to help our patients remain as positive as possible. When I talk with my patients, I tell them, 'You can either be living with AIDS or dying from AIDS.' Those who are living with AIDS tend to do a lot better."

The Russell Street Clinic's patient population has grown steadily over the

> For 20 years, individuals with mental and physical disabilities, compromising medical conditions and others more accustomed to running into brick walls when seeking dental care have found an open door at Russell Street Clinic.

years. The pace picked up considerably in 1994 when the Oregon Health Plan was implemented, providing thousands of low-income Oregonians with the opportunity to benefit from medical and dental care.

The clinic also is seeing a growing number of HIV-positive patients. In fact, Russell Street Clinic has become the primary resource for AIDS patients seeking dental care in Oregon, according to Rosenstein. "The majority of HIV-positive persons in Oregon who are receiving dental care are receiving it from us," he says.

About 1,000 individuals living with the disease seek care at the clinic, traveling from Medford, Umatilla, North Bend, Pendleton, Roseburg and many other communities across Oregon.

The clinic charges patients on a sliding-fee basis, which provides one incentive for many to seek dental care. More than that, however, Rosenstein believes it is the welcoming atmosphere these patients find that brings them to the clinic. This helps explain why many AIDS patients with the financial means to be cared for in a private-practice setting still prefer to be seen by Rosenstein or one of Russell Street Clinic's other dentists, Drs. Gary Chiodo, Toni Eigner, Bob Johnson, Dennis Johnson, Rosemary Sotta, Dan Thompson, Farzin Turk and Don Turner. (School of Dentistry students also assist at the clinic. Every senior spends one week training on site, and many other students volunteer.)

"Often the AIDS patients who come to us have been alienated from everyone else — from their friends to other health care providers," Rosenstein says. "We try to provide a safe haven in which they can receive proper dental care, and we treat them in the dignified manner they deserve. We don't wear gloves just to shake hands with them. We don't dress up like Darth Vader when we talk with them. The odds of transmitting the HIV virus in a dental office are astronomical. So we understand that if there is any risk involved, it is to our patients, not to us. They could catch a virus from us and die."

It is not difficult for Rosenstein to empathize with many of his patients, he says. His decision to eschew the more lucrative world of private practice for this type of clinic work (all of the clinic's dentists could be making more money in private practice) can be traced to his upbringing in a low-income housing project in Boston.

"Both of my parents were handicapped," he says. "They lived on welfare and were, for all practical purposes, without health care. I remember having a toothache as a child that couldn't be treated because we didn't have any money."

When Rosenstein left the projects, it was for Harvard where, after graduating, he decided "to apply what I felt was the best education in the world to treating patients who wouldn't expect any care at all, let alone care given with quality and compassion." Rosenstein has followed that pledge throughout his career, the past 20 years of which he has spent helping Russell Street Clinic gain a reputation that has spread well beyond its patient population. In addition to the NIH grant and dozens of other honors, Rosenstein in 1991 was one of only six health care professionals (and the only dentist) in the United States honored by the Department of Health and Human Services for outstanding and compassionate treatment of AIDS patients.

The real value of such awards, Rosenstein says, is the confidence they instill in the clinic's patients. "AIDS patients and others who face the threat of illness need the psychological support that comes from trusting the people who care for them."

Douglas Perednia, M.D., associate professor of dermatology

# The Doctor Will See You In CYBERSPACE

## Pioneering Telemedicine at OHSU

by Joel Preston Smith

At 10 a.m. on a Monday morning in Tuscon, Ariz., the suspect body of Frank O'Conner — back, legs and torso, heavily mottled with penny-round brown patches — were assembled in discrete electronic bundles and thrust faithfully west *into the ether.*

His arms and shoulders went north, then west, traveling underground in a serpentine network of wires and switch boxes at more than a mile a second. The waves and pulses which constituted — in electronic form — his legs and torso, descended back to earth from a satellite relay station and appeared, along with his wholly reconstituted body, on a wide-screen monitor at a dermatology clinic in Portland at OHSU. Somewhere between the time O'Conner's body was captured on videotape, translated into a series of electronic pulses, routed 1,400 miles west over a network of telephone lines and satellite stations, and then decoded and reassembled into a recognizable human form, Douglas Perednia, M.D., blinked.

What Perednia, an associate professor of dermatology in OHSU's School of Medicine, then saw was a constellation of splotchy patches covering O'Conner's body "everywhere you can imagine." Perednia says O'Conner's friends, with little idea of how potentially life-threatening the blemishes really were, jokingly called him the "Cookie Monster" because the patches were so thick his body looked as though it were covered with chocolate chips.

Constellation seemed more than an appropriate term. Perednia had first conceived the idea of monitoring the potential malignancy and uncontrolled

growth of human moles while working informally with the University of Arizona's Stuart Peak Observatory in 1991. In the course of transferring computer image files back and forth between his laboratory and the observatory, Perednia wondered why dermatologists couldn't scan the human body for new galaxies of moles — "pigmented nevi" in the lingo — the same way astronomers scan the heavens for comets and supernovae. If the pattern could be mapped and transmitted in a telemedicine application, then even physicians with little or no experience in dermatology could get help monitoring not only atypical mole syndrome — O'Conner's malady — but a host of other questionable skin conditions.

Much of the telemedicine applications in Oregon will be routed through the Biomedical Information Communication Center at OHSU, which just received a $4.5 million Department of Energy grant due in large part to the work of Sen. Mark Hatfield. Teledermatology and other telemedicine applications can be used to help rural communities deliver services on-site, rather than lose their patients (and patient dollars) to metropolitan hospitals. As with O'Conner, patients could be "seen" hundreds — even thousands — of miles from home without having to incur the expense and the inconvenience of travel.

The idea of using the computer and the communications web as a kind of clinical assistant isn't anything new. NASA was one of the original telemedicine pioneers, broadcasting health-care information to remote villages in Alaska via satellite in the 1970s. Since that time, telemedicine has burgeoned into a field where only imagination — and capital investment — seem a barrier.

OHSU is using telemedicine to: receive and transmit X-rays from remote sites in the Pacific Northwest; remotely diagnose diseases of the eye; dramatically speed access to medical information over the Internet; deliver nursing courses to students living in Oregon's rural communities; develop and test teledermatology programs in three rural health-care centers in the state; and conduct psychiatric counseling sessions over two-way interactive video with patients in rural communities who need immediate access to mental health care.

Blurring the boundary between science fiction and science fact, universities and federal agencies are exploring telesurgery programs that would allow a physician to operate, with the assistance of a computer, a 3-D monitor and a robotic arm on a patient thousands of miles away. Other telemedicine projects are developing "virtual patients" who would lie electronically resolute, forever prepped and immortal, beneath a surgeon's virtual knife.

The obvious clinical benefit of a teledermatology program, Perednia knew, might be an enhanced detection rate for malignant growths or other difficult-to-diagnose conditions. Without the computer-generated map of a progressing mole syndrome, trying to monitor the spread of potentially cancerous moles "would be like looking into the sky each night at all the stars in the galaxy and trying to figure out whether there was a new one."

O'Conner was, by dubious honor, a catalyst for telemedicine at OHSU. With more than 100 moles — and their number continually on the rise — O'Conner's risk of developing melanoma was at least 10 times greater than someone with the normal complement of moles. A person with the normal complement, around 15 to 40, has about a one percent chance of a mole becoming cancerous. Because there is a linear relationship between the number of moles on a human body and the associated risk of melanoma, the need to map and measure atypical mole syndrome is critical.

Of course, O'Conner's exotic spotting wouldn't be the only syndrome targetable through telemedicine. Perednia and his staff in the BICC's Information Technologies Group — one of the university's principal telemedicine think tanks — are in fact developing teledermatology programs in Newport, Lakeview and other rural communities that don't have a dermatologist. The goal of the project, launched with a $2 million grant from the National Library of Medicine, is to study the costs and benefits of improving access to health care in rural areas of the state.

Jim Williams, BICC associate director, is well aware of telemedicine's potential to act as a bridge between rural practices in Oregon and metropolitan hospitals. "Time and again," says Williams, "experience has shown that as soon as something gets too complex, the rural patient is put on a bus, a plane — whatever — and gets shipped out to a large hospital. The payoff in telemedicine," Williams adds, "is in patient management. Linked to a larger system, rural communities don't need to lose their patients, and they don't need to lose patient dollars."

"By using the university's telemedicine system, we can provide a lot of the same resources that we could provide if we were on OHSU's doorstep," says Robert Bomengen, M.D., a family physician with the Lake County Medical Clinic in Lakeview, Ore. "I want my patients cared for just the same as if they were in Portland."

Bomengen believes the BICC's telemedicine programs will help Oregon's rural health care practices merge on the information superhighway. Bomengen further believes on-line services and other telemedi-

*continued on page 18*

"By using the university's telemedicine system, we can provide a lot of the same resources that we could provide if we were on OHSU's doorstep."

cine applications will lessen the isolation of working in a rural community. Multnomah County, for example, boasts one physician for every 231 residents, according to Karen Whitaker, director of OHSU's Office of Rural Health. By contrast, Bomengen's Lake County makes do with three physicians, each of whom serves — theoretically — 2,450 residents.

The need to feel wired-in, working on the cutting edge, is a serious concern for rural nurses, adds Marcia Short, associate dean of OHSU's nursing program at Eastern Oregon State College in La Grande. The university provides two-way interactive video courses, including case management and peer-decision reviews, to students in Enterprise, Baker, Burns, John Day and Lakeview. The OHSU telemedicine courses "are a critical part of our campus," says Short.

"We've found that without access to (telemedicine) undergraduate courses and professional development programs, students left those communities for education and didn't come back."

Perednia says the potential to use the technology for education, and to diagnose cases like O'Conner's, will become more frequent as the technology makes inroads into rural America. After three years of being under electronic scrutiny, O'Conner still continues to develop new moles, but none as yet has turned cancerous. As the resolution of graphic images and their ease of transmission improves, more patients with suspect health will find themselves *in the ether* — the invisible, fluid atmosphere — traveling the globe bit by byte, on their way to the doctor's office without ever leaving their hometown.

If telemedicine comes through on its promise to Oregon — and practitioners say it's already delivered a great deal — the quality of health care in outlying communities "is going to take a giant leap forward," Bomengen says. "It's one of the best improvements we've had in rural medicine in 25 years."

*Roughly defined, "telemedicine" is the transmission, by any electronic means, of data, text or graphic images with the intent to disseminate health-care information and facilitate the work of health care providers.*

*The patient identified as "O'Conner" has had his name changed to protect confidentiality.*

# PUTTING A PRICE TAG ON THE ELECTRONIC FRONTIER OF MEDICINE

by Joel Preston Smith

With a telemedicine on-ramp, a clinic in Condon, Ore. — with more fossils than health care practitioners — would have free and instant access to the abstracts of nearly 1.5 million medical documents and 6,500 medical journals over the Internet. A yearly "paper" subscription to all the BICC's on-line journals would cost — and this is a *conservative* estimate — about $1.3 million.

A clinician in eastern Oregon who might have to drive three hours to find a decent medical library can now hook into OHSU's computers, type *breast* and *cancer*, and have 12,862 medical research abstracts on the topic in a *leisurely* 3.5 seconds.

Out there on the high-tech frontier, telemedicine researchers dream of a time when surgeons will operate by proxy, through a robotic arm, on patients thousands of miles distant. Others simply dream of a time when rural health-care practices will be able to compete with metropolitan centers by providing better services on site and by keeping staff up-to-speed with on-line medical eduction courses.

Capitol Hill, corporate developers and the state of Oregon all want to know what price tag to put on those dreams — on the future of telemedicine. The annual U.S. market for all telemedicine applications (including computer sales) is, roughly, about $6.5 billion, according to Emma Steinberg. Steinberg, a market-response consultant for GTE Northwest in Everett, Wash., says that figure is growing at 10 percent annually.

Despite the seemingly astronomical growth of telemedicine in the United States, Steinberg says that from the perspective of the more advanced telecommunications industries, "Hospitals don't tend to be very high-tech when it comes to telecommunications technologies. They're really focused on the clinical side."

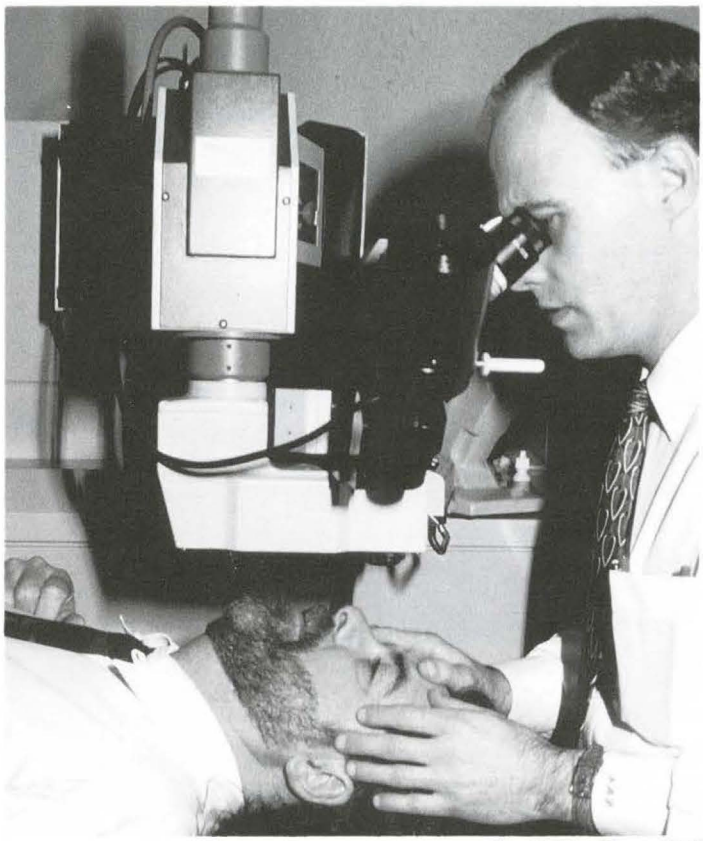
In fact, Steinberg observes, the total expenditures for telemedicine applications — which include all telecommunications expenditures incurred by medical practices — in Oregon and Washington have only absorbed from 1 to 3 percent of the operating budget for health care facilities in those states. Compared with the banking industry, for example, which typically invests around 8 percent of its annual operating budget on telecommunications applications, the health-care industry may as well be charting patients on stone tablets.

According to OHSU telemedicine researcher William Hersh, M.D., as applications become more accessible, and simply *more useful*, both the investment and the satisfaction with the developing technology will climb. Hersh, assistant professor of medicine with OHSU's School of Medicine, is currently applying two federal grants, totaling nearly $1.4 million, toward that end. Hersh's work, and the work of telemedicine developers at OHSU's Biomedical Information Communications Center, is aimed at increasing both telemedicine's use *and* its utility. By building new telemedicine "on-ramps" on the information superhighway and by streamlining the way data is transmitted, OHSU is working to break down barriers to the new technology and provide better access to health care for all Oregonians.

# FREEDOM FROM GLASSES FOR SOME MAY BE IN SIGHT

by Meg DesCamp

Freedom from wearing glasses could be in sight for nearly a quarter of a million people in Oregon, Washington and Idaho. Research now under way at OHSU's Casey Eye Institute is investigating the use of an excimer laser to correct nearsightedness, a condition that affects an estimated 250,000 Northwest residents. The study began in mid-December 1994. Within two months, 50 of 75 patients in the study's first phase had undergone surgery.



Scott MacRae, M.D.

Although it's too early to discuss results or interpret data, initial impressions are extremely positive, according to Larry Rich, M.D., director of the Casey Eye Institute's Cornea and External Disease Service. "Of course, we don't yet have any statistical evaluation of the work we've done to date. But we're very encouraged and impressed with how well the patients have done, and with how pleased the patients themselves are," said Rich.

The Casey Eye Institute is one of five national centers testing a particular type of excimer laser and is the only center in the Northwest where the laser is being clinically tested for refractive purposes. Other centers are studying the use of the excimer laser for therapeutic use, such as removing corneal scar tissue. Rich and Scott MacRae, M.D., cornea specialists, are co-investigators on the study. Both are associate professors of ophthalmology in the School of Medicine.

Excimer-laser surgery involves no incisions, unlike radial keratotomy, which requires making deep cuts in the cornea to flatten its curvature. Instead, the laser uses computer-controlled, pulsating, high-energy ultraviolet light to vaporize microscopic layers of the cornea and precisely sculpt its shape and slope. The process takes just 10 to 60 seconds per eye.

"The laser puts so much energy into the molecules of the cornea that millions of tiny particles are disrupted off the surface," said Rich. "There's no heat damage to the cornea, because no heat is generated in the process."

Excimer-laser treatment doesn't weaken the cornea the way incisions can. Based on what is known about wound healing, the laser should permit more stable and predictable healing than radial keratotomy. A recently released study showed ongoing vision fluctuation and other vision problems in RK patients for up to 10 years after RK surgery. "We don't expect to have that problem with the laser," said MacRae.

Excimer-laser surgeries are performed six months apart, with daily check-ups for three to four days until the surface of the surgically treated eye has healed. Monthly check-ups take place throughout the course of the study. As part of the Casey study, patients receive free disposable contact lenses that they wear on their untreated eye during the six months between surgeries. Participants will be followed for two years after their surgeries are completed.

The next phase of the study could start as early as May when up to 75 participants with nearsightedness and astigmatism will begin excimer-laser treatment. A third phase is expected to follow by the end of the year.

The excimer laser used in this study is a second-generation laser, Rich noted. FDA approval for use of this type of laser, in which the technology is more refined than in the first-generation lasers, could be four years away. The FDA recently approved the use of first-generation lasers.

The primary contributors to the $750,000 project include the M.J. Murdock Charitable Trust, the Oregon Elks and the Maybelle Clark Macdonald Fund. Costs for the project include the $400,000 excimer laser, manufactured by Nidek, and an additional $10,000 for accessories. Study participants are charged $1,500 per eye for the procedure.

# Interest in the Healing Professions Continues to Rise

Faced with the uncertainties of health care reform and the certainty of plummeting personal incomes, potential medical school students are turning to other careers — right?

Wrong. Especially at Oregon Health Sciences University, where applications to the medical school have increased steadily since 1980. In fact, applications hit an all time high with the class that begins in September 1995. More than 2,000 students applied for 96 available openings, an increase of close to 30 percent over the class that entered in 1994.

Obviously, the popular image of disgruntled physicians and wary students doesn't hold true at OHSU. Today's students don't buy into the idea of medicine as an unattractive career choice. Instead, they're enthusiastic about their futures and realistic about both the demands and rewards of a medical career.


"People in my class don't seem bothered by health care reform," said Stella Dantas, a second-year medical student at OHSU who is preparing for a career in primary care. "Older doctors are having to change, but we're starting out with reform."

Marc Orton, a third-year student, agreed. "Managed care isn't a problem; it's a reality. I think reform will actually produce better patient care. Medicine continues to attract so many students because the chance to make a difference in people's lives is still there, even if the money is less."

Donald Girard, M.D., is a professor of medicine and head of the division of continuing medical education in OHSU's School of Medicine. He believes the basic motivation for becoming a physician hasn't changed much over the years. "I've never personally believed entrepreneurship was a major reason for people entering the field of medicine. I've always thought it was more the attraction of helping and doing good for patients. It's still a service profession where people have always — and still — genuinely

by Meg Descamp

> Medicine continues to attract so many students because the chance to make a difference in people's lives is still there, even if the money is less.

**Stella Dantas, second-year medical student**

intend to be involved with other people. Obviously, though, enormous change has come about within the profession."

Lost in the uproar of that enormous change, said Girard, is the other side of the coin: what's taking place at the student level. "There's quite good news there. These young people are enthusiastic, they're coming here in droves, and they're bright and excited about medicine."

Orton showed some of that excitement when he spoke about the difficulty of choosing his medical specialty. "I keep thinking it will get easier to decide, but it's getting harder. The more I learn about medicine, the more interesting it all is."

No matter how interesting it gets, however, both Orton and Dantas plan to have active lives outside their medical careers. Unlike physicians in years past, they will almost certainly be working in managed-care systems and large group practices that provide adequate time away from the rigors of medicine. "Some people look at that and say medicine is no longer a calling, it's just another job. That may be true, but the up side is that it will help preserve the balance in doctors' lives," said Girard.

Dantas and Orton said working in a managed care environment will be more than worth the trade-off of potentially lower earnings. Dantas, whose mother is an internist with Kaiser, grew up with the concept of managed care and feels it's a positive system for both patients and physicians. "The only way you can relate to patients is if you've had some sort of life outside of medical school," said Dantas, who was a music minor at the University of California at Berkeley and still plays the piano regularly.

"Lots of students say that while medicine is extremely important to them, it's not their whole life," said Orton. "I've been married for six years, and that's the most important thing to me."

"People are choosing medicine based on patient relationships, not on making lots of money," concluded Dantas. "We have to take more pleasure from the work we do, not from the big houses we'll buy."

# A NEWBORN VISION

## Casey Eye Institute Saves Eyesight and Dollars

by Pam Wilson


When Cheyenne Keesis of Klamath Falls was born weighing a mere one and a half pounds, she, like thousands of other premature babies, faced the possibility of blindness. But thanks to a national clinical trial headquartered at OHSU's Casey Eye Institute, Cheyenne's chances for keeping her eyesight are excellent.

The clinical trial focuses on treatment for retinopathy of prematurity or ROP, the chief non-genetic blinding eye disease of premature infants. The disease is a result of the developmental immaturity of the retina, the last part of the eye to develop during gestation.

The study, which involves 23 centers across the country, has been a national success story. "The research has saved — and is still saving — the vision of thousands of babies like Cheyenne," said Earl Palmer, M.D., director of the eye institute's Elks Children's Eye Clinic. Palmer, professor of ophthalmology in OHSU's School of Medicine, is the principal investigator of the clinical trial.

The ROP clinical trial is also saving something else — substantial taxpayers' dollars. The trial's cost effectiveness was first documented when Jonathan Javitt, M.D., Georgetown Medical Center, and several of his associates published a cost/benefit analysis in 1992.

The ROP clinical trial, which was funded by the National Eye Institute, began in 1985. In 1988, initial results proved a treatment called cryotherapy greatly reduced the risk of blindness in infants with ROP. Because of this breakthrough, the institute established a new national standard of care early in the study. However, the trial is still under way as participants are followed until they are 10 years old to ensure a positive outcome.

ROP occurs primarily in extremely premature infants weighing less than three pounds. By using cryotherapy, blindness is prevented in about 290 to 320 infants annually who have severe ROP.

In his cost/benefit analysis, Javitt points out this may seem like a small number of children, but the federal savings associated with this is about $33 million a year. "The initial stages of the trial cost approximately $9.8 million to conduct. There are very few investment bankers who would not be happy to accept the annual 337 percent return on that investment," said Javitt.

Javitt and his associates spent two years quantifying as precisely as possible the high cost of blindness to the federal government. And although they did not calculate the cost to state government, a varying but increasing amount of the total cost is spent by states in the form of matching funds.

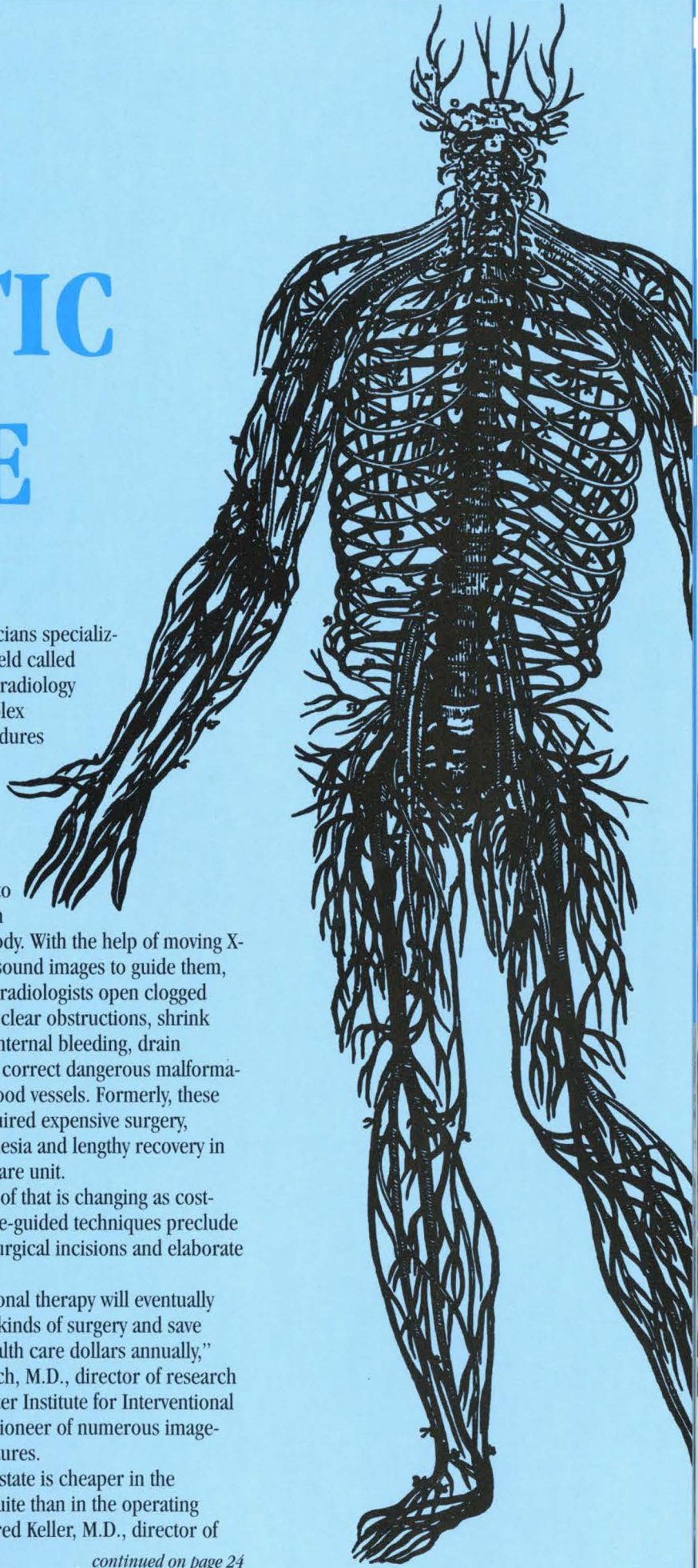
The total cost of a year of disability from blindness is calculated as $11,500 to $7,000 for payments including disability and welfare, $3,000 for tax losses, and $1,500 in Medicare and Medicaid payments. This estimate does not include people whose blindness occurs as a result of diabetes; these costs are much higher.

"In the case of babies with ROP who have been successfully treated with cryotherapy, an entire lifetime of costly blindness is prevented," said Palmer. "Without the clinical trial, this successful treatment would not have been proven effective and implemented as a standard of care."

Like the ROP study, clinical trials identify areas of considerable savings such as future health care costs; disability, lost wages and rehabilitation expenses; and resources that otherwise would be spent on ineffective or less-effective treatments than those proven in research studies.

The point is — clinical trials assist in improving treatments, and they are sound economic investments. During 1993-94, OHSU received $9,576,403 to conduct clinical trials. And that's good news to anyone concerned about reducing the cost of health care.

# THE FANTASTIC VOYAGE



by Julianne Remington

Threading the body's highways and byways with specially designed catheters, physicians at OHSU perform surgery without a scalpel to spare thousands of patients the ordeal of expensive and risky operations. For more than four decades, interventional radiologists at OHSU have explored new realms of cost-effective, non-surgical treatments for disease. On a pioneering odyssey of Homeric proportions, they have discovered numerous alternatives to surgery, which greatly reduce the need for extended hospitalization and nursing care.

*A young mother leaves the hospital fully awake after physicians patch a dangerous bulge in her aorta with a Dacron-covered device. Amazingly, they never opened her chest or made any lengthy incisions.*

*Physicians dissolve a life-threatening blood clot in a 36-year-old woman's brain without costly, invasive surgery.*

*A former policeman with severe internal bleeding goes home after doctors create a new pathway in his liver so blood can flow through freely — all without surgery or general anesthesia.*

Sounds like sick bay on the Starship Enterprise or some kind of science fiction fantasy. But there are no Vulcans or Klingons here, no medical tricorders or futuristic space crew. It's Portland, Ore. — inside the angiography suite at University Hospital where surgery without a scalpel is a daily occurrence.

Here physicians specializing in a new field called interventional radiology perform complex internal procedures by threading tiny tubes called catheters through the blood vessels to reach problem areas of the body. With the help of moving X-rays and ultrasound images to guide them, interventional radiologists open clogged blood vessels, clear obstructions, shrink tumors, stop internal bleeding, drain abscesses and correct dangerous malformations of the blood vessels. Formerly, these problems required expensive surgery, general anesthesia and lengthy recovery in the intensive care unit.

Now much of that is changing as cost-effective, image-guided techniques preclude the need for surgical incisions and elaborate nursing care.

"Interventional therapy will eventually replace many kinds of surgery and save millions of health care dollars annually," says Josef Rosch, M.D., director of research at OHSU's Dotter Institute for Interventional Therapy and pioneer of numerous image-guided procedures.

"The real estate is cheaper in the angiography suite than in the operating room," said Fred Keller, M.D., director of

*continued on page 24*

the Dotter Institute. "And patients frequently go home the same day or the next. We perform many non-invasive procedures here under local anesthesia that were formerly done only in the surgery suites where time is much more expensive and patients usually require general anesthesia."

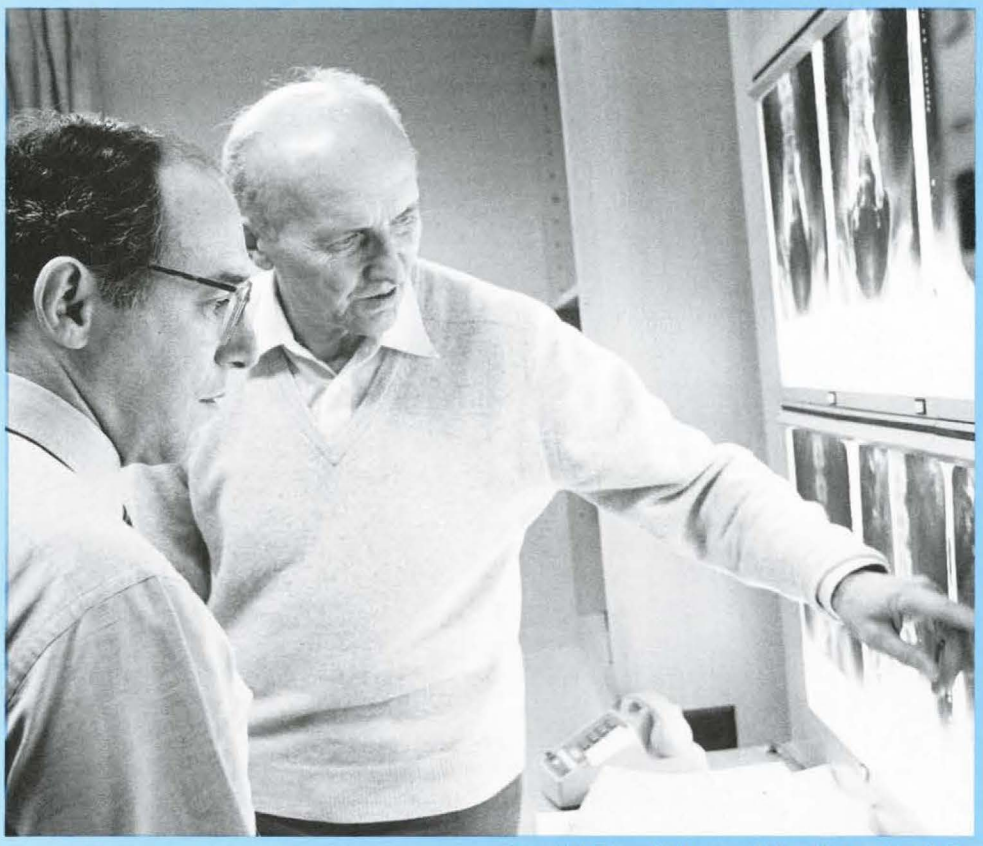
The angiography suite takes its name from the Greek word "angio" meaning vessel. This is the place where physicians perform image-guided procedures under local anesthesia to improve blood flow through the vessels of the body and correct many other problems.

Ever since Leonardo da Vinci and other early anatomists began to dissect human cadavers in the Middle Ages (at great risk to their own lives), the nature of the blood vessels fascinated natural scientists. In the late 15th century, Leonardo made a drawing comparing the arteriosclerotic vessels of a 100-year-old man to the elastic arteries of a young person. A century later, William Harvey mapped the human circulatory system, and physicians started to understand how problems with the blood vessels underlie many diseases. Eventually, surgical innovations advanced medicine enormously.

But now on the threshold of the 21st century, less-invasive procedures are gaining ground as imaging technologies allow doctors to peer into the body with previously undreamed of accuracy.

In the relatively new field of interventional therapy, physicians specialize in imaging and navigating the narrow channels of our blood vessels, which form an invaluable transportation network throughout the body. Many of us remember the movie The Fantastic Voyage where people magically shrank themselves down to fit inside the blood vessels, so they could move around the body and view all the structures up close.

Interventional radiologists pursue a similar odyssey everyday as they view the inside of the body with moving X-rays or ultrasound while threading catheters through vessels to sites needing repair. Some catheters are equipped with balloons to flatten plaque in cholesterol-laden arteries; others are tipped with tiny lasers or scissors to excise tissue. Specially designed catheters enable doctors to deliver clot-dissolving drugs right at the site of a life-threatening blood clot, whether it be in the leg, the chest or even the brain. And they have catheters that can deploy tiny Dacron- or Gortex-covered wire stents that expand upon release inside a vessel to strengthen a bulge or weak spot before it ruptures. Such bulges are called aneurysms, and they are a major cause of hemorrhage and death if left untreated.



**Fred Keller, M.D., and Josef Rosch, M.D.**

Interventional radiologists at University Hospital are world leaders in the burgeoning field of non-invasive, catheter-based treatments. In the past four decades, they spearheaded many techniques that built on the seminal achievements of Charles Dotter, M.D., widely recognized as the father of interventional therapy. OHSU established the Dotter Institute for Interventional Therapy in 1990 in honor of the medical school's former chairman of radiology.

Physicians at the Dotter Institute perform more than 3,000 interventional procedures annually and continue to expand the catheter technology into many medical arenas.

"We have a special stroke program to help patients who come to the hospital within the first six hours of their stroke," explained Keller. Wayne Clarke, M.D., assistant professor of neurology in the School of Medicine, and Stan Barnwell, M.D., School of Medicine associate professor of interventional therapy and neurosurgery at the Dotter Institute, are on call 24 hours a day to evaluate patients immediately. If the stroke is caused by a blood clot, a catheter is placed directly in the vessel where the clot has lodged in the brain, and a drug called urokinase is delivered to the clot to dissolve it before further brain damage occurs. "Formerly, such clots were untreatable," said Keller. Currently this procedure is available only at about 30 U.S. centers.

Keller further explained that physicians at the Dotter Institute also help patients needing long-term intravenous medicine such as chemotherapy drugs, antibiotics or I.V. feeding. About a year ago, they began placing long-term intravenous lines in patients requiring medicine or feeding for several weeks or more. These tubes, called tunneled catheters, are more resistant to infection than regular intravenous lines, which have to be changed after a few days to

prevent infection.

"Tunneled intravenous access lines have traditionally been placed surgically in the operating room under general anesthesia," explained Keller. "But for the past year we have been putting these lines in patients under local anesthesia in the angiography suite. Our success rate in the angiography suite is greater because we image the vein with ultrasound before we put the line in to make sure it's a good vein."

Hundreds of physicians and technologists from around the country and the world have traveled to the Dotter Institute for training in non-surgical, image-guided procedures. Josef Rosch, M.D., who is the founding director of the Dotter Institute, plays a major role in the dissemination of interventional techniques. He has directed major meetings throughout the world. This June he will organize his second interventional meeting in Prague, Chech Republic, to teach physicians in the eastern block countries about non-surgical interventions.

Through the efforts of Rosch, OHSU will host the annual meeting of the Society for Minimally Invasive Therapy at the Portland Convention Center this fall. More than 800 physicians from this country, Europe and Asia will attend.

In addition to advanced patient care and professional education, the Dotter Institute is dedicated to ongoing research. The institute expanded its research space by 5,000 square feet in 1993 and now ranks as the premier research facility of its kind in the United States and probably the world. It is here that many catheter-based innovations emerge. Rosch and his associates create many of their own devices, including stents, aortic grafts and specially designed catheters. Following FDA approval, theses devices are produced for commercial distribution by private firms.

The Dotter Institute attracts substantial private and corporate donations totaling more than $11 million in the past five years. Cook Group Company contributed $3 million toward the establishment of an endowed chair in interventional therapy and millions more to help establish the institute and nourish its growth. The Dotter Institute has other private and corporate sponsors and is currently applying for funding from the National Institutes of Health.

In addition to the millions of dollars in private funding generated through the expertise of university faculty such as those at the Dotter Institute, OHSU's federal research funding tripled in the last decade and now exceeds $70 million annually.

As the president of the Society for Cardiovascular and Interventional Radiology, Gary Dorfman, M.D., noted, "Despite an increasingly severe economic environment, interventional radiology has continued to thrive. We now face a health-care environment that should support our further development, in light of our ability to provide a medically proven and cost-effective 'product' compared with many diagnostic and therapeutic alternatives."

> "Most of us in this specialty view OHSU as the birthing place of many interventional techniques," said Gary Dorfman, M.D., current president of the Society for Cardiovascular and Interventional Radiology and clinical professor of diagnostic imaging at Brown University in Rhode Island. "Much of what we now do had its origins at OHSU. Philosophically, OHSU's Dotter Institute is seen as kind of a Mecca for our field."

In the simple words of 76-year-old Kenneth Williams, a former deputy sheriff of Vernonia, Ore., we see the human face of this promising medical field. "Dr. Rosch and his colleagues saved my life when everyone else had given up. Another hospital discharged me in poor condition, and my medical record said, 'Hospice care has been arranged so this patient can spend his final days in peace.' But I never made it to the hospice. Just days after Dr. Rosch stopped the bleeding in my liver, I was feeding my animals back in Vernonia on my five acres. That was in 1990, and I'm still doing fine. The healing continues even as I speak."

# a BIO

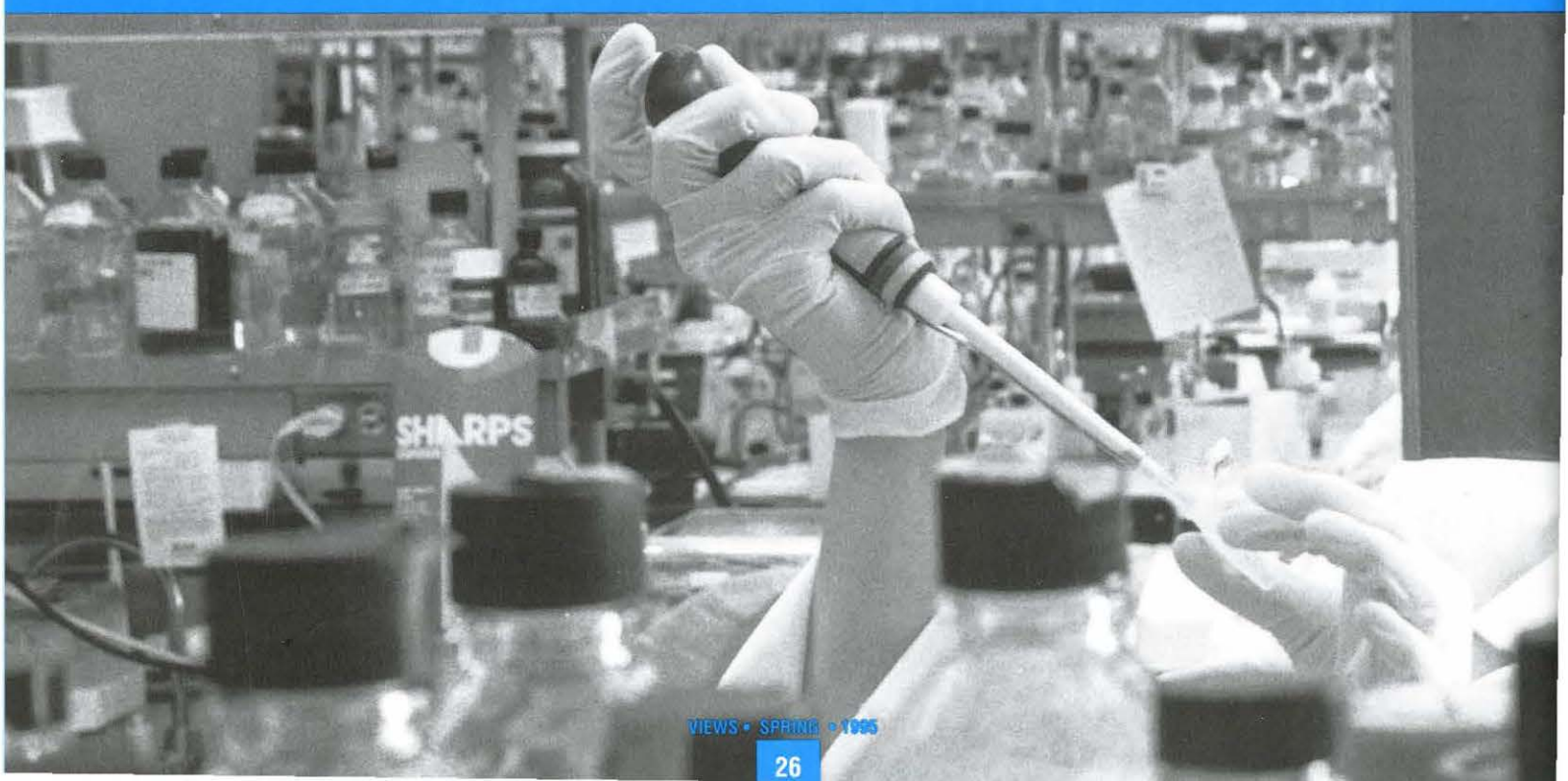
## OHSU Research Spawns Bio

by Julianne Remington

As reported in the January 1995 issue of Oregon Business Magazine, technology transfer from Oregon's universities is creating new companies necessary to build a viable biotechnology industry in our state. The article described OHSU as "a biotech incubator" with three spin-off companies that have the technological promise and management sophistication to make the most of the opportunity. As the article noted, Oregon's Pacific Rim position amid biotech kingpins San Diego, Los Angeles, San Francisco and Seattle will help the state develop biotech ventures.

"There are a lot of advantages to the state and the university to having biotech companies start up in the area," explained Sandra Shotwell, Ph.D., head of technology transfer at OHSU. "In addition to boosting the state's economy, biotech start-ups help attract more scientists to the area, which can enhance scientific collaborations; they create jobs for our students; and they cause a snowball effect that can lead to the creation of additional companies. Most importantly, as the start-up companies grow and succeed, discoveries made at the university will be developed into commercial products to improve health care for the public."

In the last decade, OHSU's federal research funding has tripled and now exceeds $70 million annually. This growth enriched the quality and volume of biomedical research at OHSU and helped propel the university into a strong position for spinning off biotech companies that commercialize the university's discoveries. OHSU President Peter Kohler, M.D., has placed a high priority on working with start-up companies and helping to found companies. "Dr.



# TECH incubator

## tech Companies for Oregon

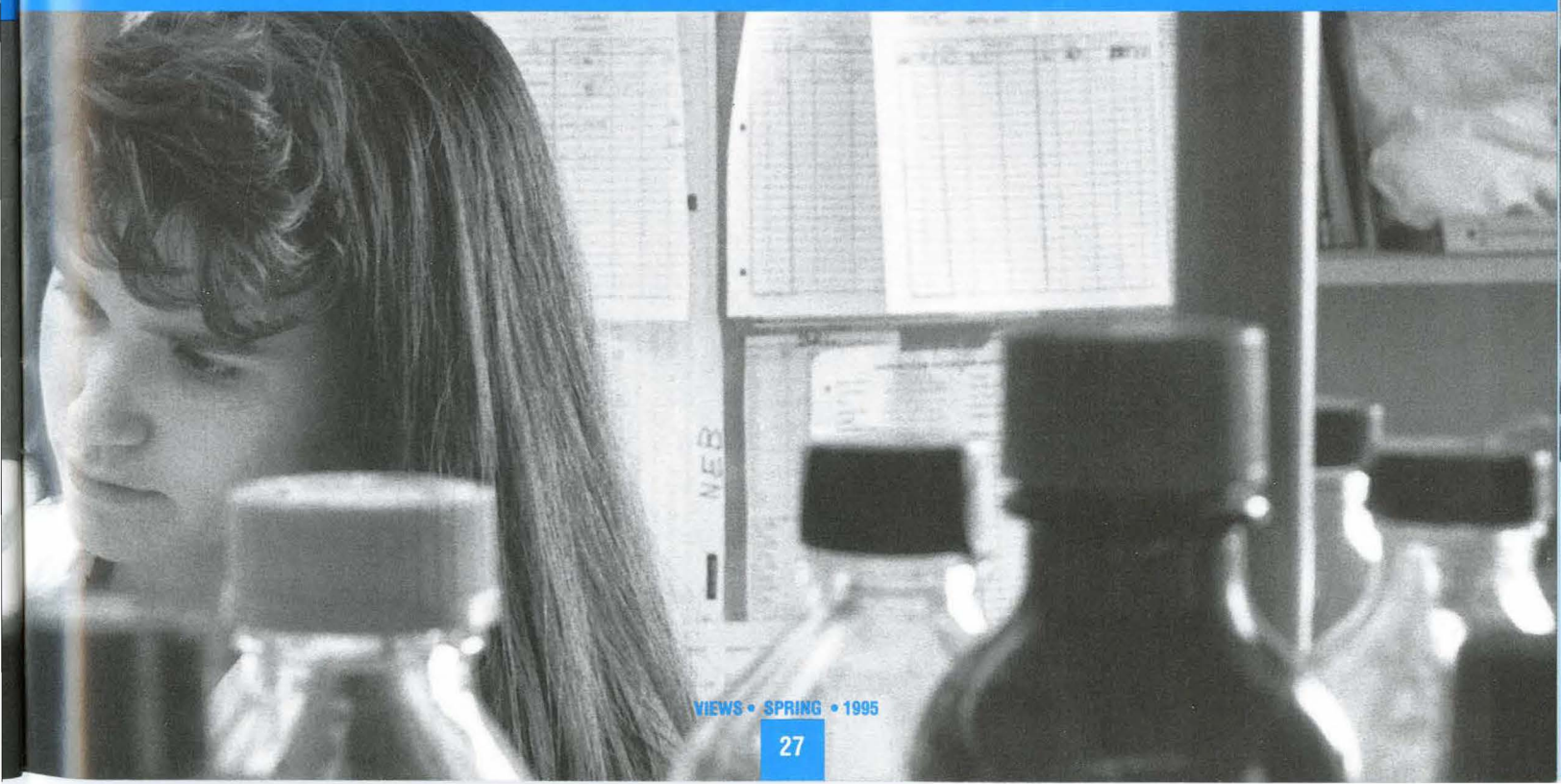
Kohler feels that's one of the primary ways OHSU can be a good partner with the city and state and be a positive force for economic development," added Shotwell. In addition to potential revenues from biotech start-up companies, the university earns royalties from the licensing of patents on new technologies. Over time, patents will be an increasingly important source of revenue for the university. Shotwell explained that while 10 years ago OHSU's revenue from technology transfer was about $40,000 annually, this year the university probably will receive more than $1 million.

Royalties from the cell receptor technology developed at OHSU's Vollum Institute for Advanced Biomedical Research comprise the largest share of the university's royalty revenue to date. Important cell membrane receptors that bind chemical messengers like dopamine in a lock and key fashion are critical for the design of therapeutic drugs to treat a host of mental and movement disorders, including drug addiction, depression, epilepsy, schizophrenia and Parkinson's disease. Four of the five dopamine receptors that have been identified were discovered at OHSU. "Pharmaceutical companies have been eager to get their hands on these receptors so they can test candidate drugs to see how they influence the receptors to reverse disease processes," explained Shotwell. "The receptor technology paves the way for highly specific, targeted drug design using, for example, computer modeling."

*Hedral Therapeutics, Inc.*

Utilizing new technology developed in their laboratories at OHSU, scientists Gary Thomas, Ph.D., and Jay Nelson, Ph.D., founded Hedral Therapeutics, Inc. in 1993

*continued on page 28*



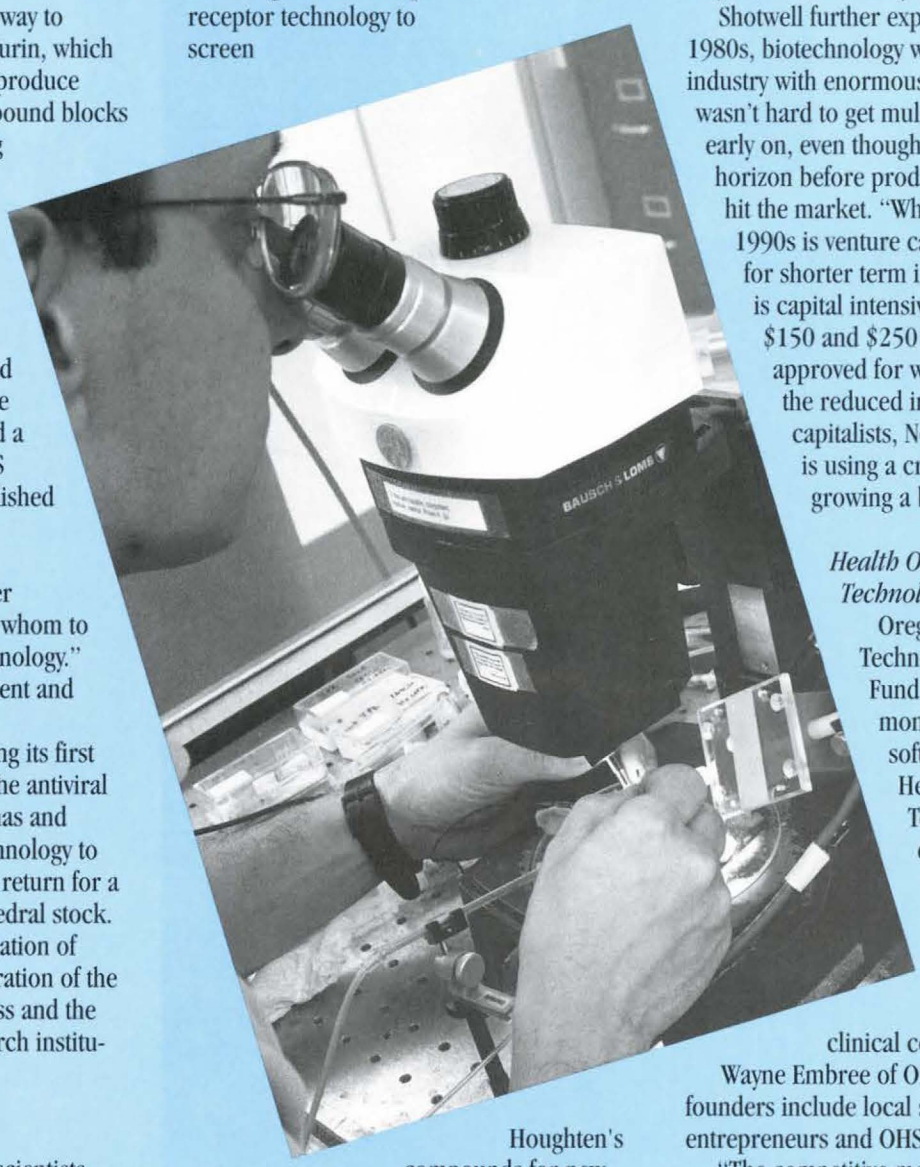
to develop new treatments for life-threatening viral diseases such as AIDS, CMV, viral pneumonia and influenza. Thomas, who is a scientist at OHSU's Vollum Institute, and Nelson, who is a professor of molecular microbiology and immunology in the School of Medicine, collaborated on a way to inactivate a key enzyme called furin, which viruses and bacteria need to reproduce inside human cells. Their compound blocks furin, thus robbing the invading virus of a critical component of its life cycle. Last summer, Hedral completed a licensing agreement with OHSU to use this technology commercially to develop a new generation of antiviral drugs and antibacterial therapeutics. At the same time, Hedral also finalized a financing partnership with ICOS Corp. in Seattle. ICOS, an established biotech company, is providing Hedral's seed funding.

"We couldn't have two better partners, OHSU and ICOS, with whom to realize the potential of this technology." said James Hicks, Ph.D., president and chief scientist of Hedral.

Hedral is currently developing its first products, which are based on the antiviral technology discovered by Thomas and Nelson. OHSU licensed the technology to Hedral on an exclusive basis in return for a combination of royalties and Hedral stock. According to Kohler, "The formation of Hedral is an excellent demonstration of the synergy between private business and the scientists at a biomedical research institution like OHSU."

*Northwest Neurologic, Inc.*

Founded in 1993 by OHSU scientists Roger Cone, Ph.D., and Susan Amara, Ph.D., Northwest Neurologic Inc. focuses on the use of cloned receptor and neurotransmitter molecules to identify new drugs for neurological, endocrine and skin diseases. It is a spin-off company that builds on the work of Cone and Amara, both scientists at OHSU's Vollum Institute. In 1993, Northwest Neurologic Inc. licensed several technologies exclusively from OHSU. In May 1994, Northwest Neurologic Inc. signed a research and licensing agreement with Houghten Pharmaceuticals. Houghten President Robert Whitehead explained, "This is a great marriage of technology." He added that Houghten has expertise in "combinational libraries" — that is, synthesizing large numbers of compounds or molecules that can be rapidly screened. Northwest Neurologic has developed the receptor technology to screen




Houghten's compounds for new drugs. "We have the chemistry and they have the biology," noted Whitehead.

Oregon Resource and Technology Development Fund recently provided seed money to help Northwest Neurologic Inc. in its initial stages, and the company has been very successful in building joint ventures with other companies, including Wyeth-Ayerst Pharmaceuticals. "This approach is a viable way to build a company in the current financial climate," said Shotwell. "It's an awkward time for biotech start-ups because there is very little venture capital available to them this year. So companies are moving to intermediary levels of funding and initiating more joint ventures with existing companies in an effort to leverage their resources. This helps the start-up company stay afloat until a major influx of money can be secured."

Shotwell further explained that during the 1980s, biotechnology was viewed as an industry with enormous potential, and it wasn't hard to get multiple millions invested early on, even though biotech has a long horizon before products are expected to hit the market. "What we're seeing in the 1990s is venture capitalists searching for shorter term investments. Biotech is capital intensive. It takes between $150 and $250 million to get a drug approved for widespread use. Given the reduced interest of venture capitalists, Northwest Neurologic is using a creative approach to growing a biotech company."

*Health Outcomes Technologies, Inc.*

Oregon Resources and Technology Development Fund provided seed money for an innovative software company called Health Outcomes Technologies, a spin-off from OHSU's Biomedical Information Communication Center. "The company develops integration tools for clinical computing," explained Wayne Embree of ORTDF. The company's founders include local software engineers, entrepreneurs and OHSU physicians.

"The competitive managed care environment has created an urgent need among health care providers for reducing costs while maintaining the quality of care," explained Amin Chisti, president of HOT. The software helps physicians and nurses keep track of laboratory tests and other patient data that enhances clinical decision making. For example, at OHSU's liver transplantation unit, it enables clinicians to pull up real-time data on the computer detailing lab results for the day, week or several months. Not only do they receive the patients' results quickly, but physicians can use the software to show where the patient falls within a set of

norms. This provides sounder data for clinical decisions. The software is currently in use at OHSU, St. Charles Medical Center in Bend and several other sites around the country.

Through an exclusive license arrangement, OHSU holds partial ownership in HOT and stands to gain revenue from future profits.

*Long-Term Economic Potential*

According to William Davis, Ph.D., editor of *Biotechnology Investment Review*, biotech will balloon from an $8 billion annual industry to a $50 billion annual industry by the year 2000. "In Oregon, technology transfer has long-term economic potential for the university and the state," said Shotwell. "Realizing this potential will require strong support for OHSU and higher education in general throughout the state."

With the advent of molecular biology and genetics, opportunities for biotechnology ventures have proliferated enormously. Last year, OHSU gained national attention when R. Michael Liskay, Ph.D., professor of molecular and medical genetics in the School of Medicine, cloned two genes implicated in the familial form of colorectal cancer. "This technology has already been licensed to companies that want to develop diagnostic testing services," explained Shotwell. Eventually diagnostic kits will be marketed, and there is the potential down the road for gene therapy. OHSU will receive royalties when these ventures yield profits.

The university is currently negotiating an agreement with an Oregon bioenvironmental start-up company to license a device invented by Richard Allen, Ph.D., scientist at OHSU's Center for Research on Occupational and Environmental Toxicology. "I call it the molecular garbage man," said Allen. "It's a slurry of materials that bind radioactive molecules and other harmful substances in solutions. When you pour your laboratory solutions through the mixture, it extracts the dangerous molecules and leaves a clean solution that can be safely poured down the drain." This saves the expense of transporting large volumes of low-level radioactive solutions to Hanford for permanent storage. "Molecular biology is getting bigger, not smaller," noted Allen. "There is a growing need to efficiently monitor the use of low-level radioactive probes in research as we safely dispose of solutions and return clean water to the environment."

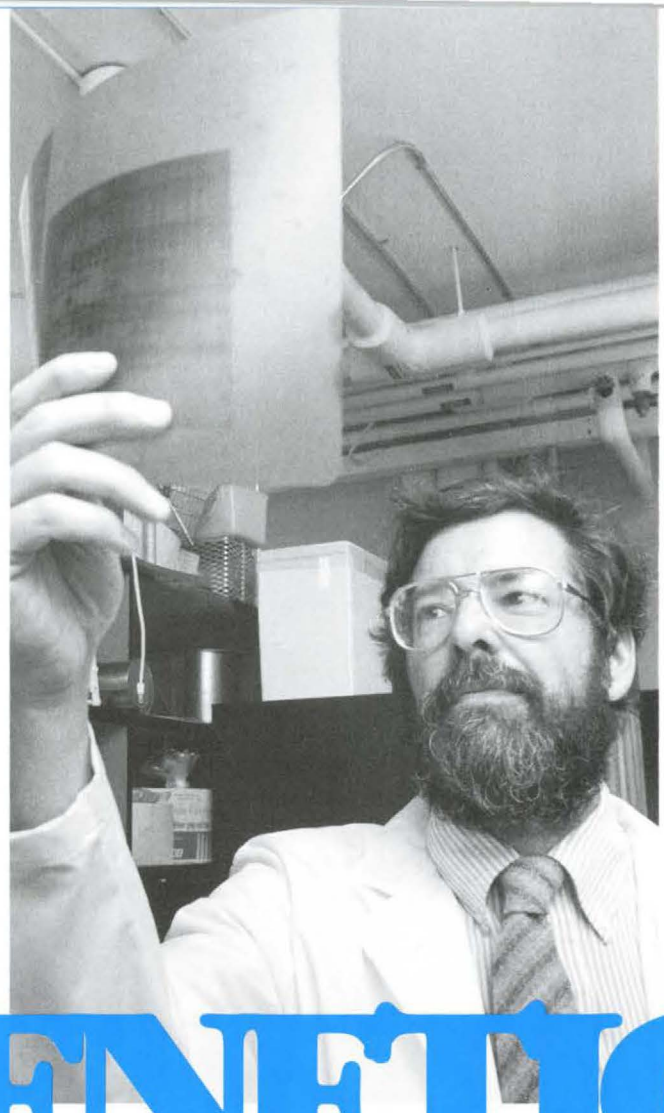
> "OHSU and other universities in the state are spawning grounds for the fundamental inventions and discoveries that fuel biotechnology. They boost the state's economy, causing a snowball effect that leads to new knowledge, new jobs, new products and new companies."

OHSU and other universities in the state are spawning grounds for the fundamental inventions and discoveries that fuel biotechnology. As Oregon Business Magazine stated this January, "To make Oregon a strong competitor in this field, the biotechnology industry needs highly skilled employees and diverse technology transfer opportunities."

As OHSU President Peter Kohler has pointed out, "A byproduct of research that holds enormous potential for Oregon's future is the creation of new industries in biotechnology." It's no coincidence that Massachusetts and California have the highest concentrations of biotech industries and some of the nation's finest research universities.

Amidst today's competitive research and health care environment, it is important to remember that OHSU's ultimate role is the relief of human suffering through the best medical treatments available. As legislators and citizens make crucial decisions about higher education in Oregon, it's essential to realize that research discoveries constantly advance this goal while simultaneously promoting a diverse and sustainable economy in the region. OHSU strives to support biotech endeavors while maintaining its paramount goals of patient care, education and the advancement of medical knowledge.

As Richard Goodman, M.D., Ph.D., director of OHSU's Vollum Institute points out, academic science is unique. The university thrives on collaborations between scientists pursuing many different avenues that all converge on the fundamental natural laws governing health and disease. Biotechnology on the other hand focuses on commercializing particular discoveries in a highly competitive atmosphere where profit is a powerful determinant. "At the Vollum Institute, we are totally committed to advancing biomedical knowledge and training young scientists," explained Goodman. "Biotech spin-offs may generate revenue, but they can never compromise our basic dedication to scientific discovery through shared expertise and the pooling of resources."



Jonathan Zonana, M.D., examines a pattern of genes from a patient.

# GENETICS

## ETHICAL AND CLINICAL STANDARDS EXAMINED

by Julianne Remington

People have always wanted to maximize their own destiny. Hence the popularity of oracles, fortunetellers, astrologers and all kinds of soothe sayers throughout history. In every culture, special individuals have been highly prized for their insights into fate's mysterious designs. Now on the brink of the 21st century, for the first time in human history, people are reading the genetic tea leaves and gaining far-reaching insights into human biology. The possibilities for guiding future health and mitigating insuperable disease are virtually infinite. But as all knowledge revolutions have taught us — from the use of fire to atomic energy — the ultimate challenge lies in applying genetic information for the greatest good for the largest number of people. That is the unique mission of the Pacific Northwest Regional Genetics Group.

"More and more expectations are burdening the primary care physicians as the country moves toward health care reform," said Susan Hayflick, M.D., assistant professor of molecular and medical genetics at OHSU's School of Medicine. "Not only are they expected to spot a wide range of common conditions like colds and flu but also domestic violence, depression and substance abuse. Now they are expected to recognize when patients need genetic services, which can be very complex."

Hayflick and OHSU family physician Patrice Eiff, M.D., recently led a symposium titled "The Delivery of Genetic Services by Primary Care Providers" at the 11th annual Pacific Northwest Regional Genetics Group meeting in Portland. They explained that today's physicians must deal effectively with various complications stemming from gene

defects, and many genetic diseases are relatively rare. With funding from the Maternal and Child Health Bureau of the Public Health Service, Hayflick teaches physicians and nurses about new genetic knowledge, so they can provide a higher level of care.

"Experience enters into this," explained Hayflick. "It may be unrealistic to expect the primary provider community to excel in all aspects of genetic diagnosis and treatment. It may be more realistic to train primary providers to spot patients who could benefit from the services of a geneticist and to refer the patient to that expert for comprehensive diagnosis and ongoing care."

Hayflick further explained that it costs HMOs and other organizations more money in the long run if primary care providers don't utilize services in an economical way. Referrals to geneticists with expertise in common and rare genetic diseases may be the most cost-effective approach.

Hayflick's presentation was one of several at the three-day PacNoRGG meeting. Other topics presented by local and national experts included "Genetic Counseling for Breast Cancer," "Population Screening for Cystic Fibrosis," "Improving Access to Genetic Services and Strategies for Maximizing Medicaid Reimbursement."

OHSU sponsors the annual PacNoRGG meeting. Directed by Jonathan Zonana, M.D., professor of molecular and medical genetics in OHSU's School of Medicine, PacNoRGG is one of 10 federally funded, regional genetics networks in the country. Zonana, who is also the director of clinical genetics at OHSU's Child Development and Rehabilitation Center, explained that PacNoRGG is a consortium of providers and consumers of genetic services from Alaska, Idaho, Oregon and Washington. Based at OHSU, it is funded by a $256,000 annual grant from the Public Health Service. Kerri Silvey, M.S., a genetics counselor, is the project coordinator for PacNoRGG.

During the past decade, PacNoRGG has had a tremendous influence on the planning and delivery of genetic services in the Northwest. As Zonana explained, the group focuses on: continuing education for primary care providers; analysis of genetic services provided to individuals, including minority and underserved populations; monitoring new tests to ensure that they are not implemented prematurely; and setting scientific and ethical standards for genetic testing in the Northwest. PacNoRGG's ethical guidelines are based on the principle that the patient should have ultimate control over who receives the genetic testing information. This principle is intended to preclude unfair discrimination especially regarding employment and insurance.

PacNoRGG produces educational materials aimed at the general public to raise awareness of genetic issues. One example is the brochure titled "Will I Have a Healthy Baby?" which guides prospective parents in the use of prenatal services. The brochure has been translated into Spanish, Cambodian, Chinese, Korean, Laotian, Russian and Vietnamese, and more than 100,000 copies are in circulation.

To help physicians and nurses refer people for genetic services, PacNoRGG compiles a list of board certified M.D.— and Ph.D. — level geneticists, genetic counselors and patient support groups throughout the Northwest. The group has distributed more than 4,000 such directories. It also publishes a quarterly newsletter targeted to 3,000 health providers; produces educational videos, books and curriculum guides; and conducts research that is published regularly in peer-reviewed journals.

As Zonana has pointed out, the road ahead for the delivery of genetic services will undoubtedly be rocky. In the context of health care reform, PacNoRGG and the other nine regional networks across the nation must play an essential role in ensuring that reforms actually result in more access to genetic services, not less.

"In anticipation of health care reforms, we must increase our educational efforts for primary care providers and others who will serve as gatekeepers for families needing genetic services," said Zonana. OHSU

*The Pacific Northwest Regional Genetics Group meets in Portland annually to help physicians and nurses understand ethical and clinical standards for newly emerging genetic knowledge.*

*Ellen Magenis, M.D., professor of molecular and medical genetics and pediatrics, School of Medicine and Child Development and Rehabilitation Center, founded OHSU's Cytogenetics Laboratory 30 years ago to analyze chromosome defects associated with inherited diseases and other disorders. OHSU's Cytogenetics Laboratory is considered one of the best in the nation and was a large factor in the university's receiving a $6 million federal grant last June to study the hereditary disease Fanconi's anemia. The grant was among the three largest biomedical research grants ever received in Oregon.*

# PHYSICIAN ASSISTANTS EXTEND HEALTH CARE SERVICES

**NEW PHYSICIAN ASSISTANT TRAINING PROGRAM REACHES OUT TO RURAL AND UNDERSERVED POPULATIONS.**

by Lee Lewis Husk

The Vietnam War gave the United States more than just political unrest and hurtful memories. It also gave the country, and Air Force Staff Sgt. Carlos Giralt, a new profession. Like Giralt, the first physician assistants were U.S. Armed Services medics who returned home from Southeast Asia hoping to turn their war experience into a healing art.

In 1965, Duke University enrolled four ex-Navy medical corpsmen into the nation's first physician assistant program. In 1974, Giralt entered the University of Washington's MEDEX (an abbreviated term for "medical extender") Northwest Program, until now the only physician assistant program in the Pacific Northwest. Giralt, now a 16-year veteran of Kaiser Permanente in Salem, and his colleagues have moved far beyond treating war casualties.

Beginning this fall, the first people to be educated as physician assistants in Oregon will enter OHSU's program.

Physician assistants do histories and physicals, perform minor surgery, diagnose and treat illness, order and interpret routine diagnostic tests, set fractures and assist in surgery. They also educate patients on illness, health promotion and disease prevention.

Since the beginning, PAs have worked alongside physicians. They are "dependent" practitioners, supervised by physicians. In fact, it is impossible for a PA to become licensed in Oregon without a supervising physician. To be licensed, a physician assistant and the supervising physician must submit a practice description to the Board of Medical Examiners for approval. The proposed scope of practice must match the PA's training, experience and capabilities. Their responsibilities may include the privilege of writing prescriptions.

Although they are dependent practitioners, physician assistants may practice in remote sites away from the supervising physician if the licensing board approves. In this way, PAs have extended health care services into such geographically remote places as Condon and Fossil.

The physician assistant profession is one of the fastest growing health careers of the 1990s. In Oregon, the PA ranks have grown from about a dozen in 1972 to 275 today. Why? "Because patient needs and state law have allowed PAs to work with physicians to do what is needed," said Francine Boullosa, a past president of the Oregon Society of Physician Assistants and a Salem PA.

### *Legislative fiat gets program rolling*

After years of lobbying by the physician assistant society and rural constituencies, the Legislature asked the Office of Rural Health in 1991 to examine the feasibility of starting a PA educational program in Oregon. It found that such a program was needed and feasible, and reported this to the legislative Emergency Board in 1992. The 1993 Legislature awarded the university $150,000 in lottery funds to launch the program. The program cleared its last major hurdle on Feb. 17 this year when the state Board of Higher Education gave its approval. Oregon's inaugural class of 12 physician assistant students will enroll in Sept. 1995.

"Physician assistants are considered an untapped resource for Oregon," said Ted Ruback, director of the new program. "They have a strong track record of providing good and cost effective care, and many have entered practice in rural areas and remained there." Studies indicate that services provided by physician assistants cost less than those of a physician, and that PAs can treat more than 80 percent of patient complaints.

Legislators hope OHSU's program will help alleviate the shortage of primary-care providers in rural Oregon. The School of Medicine, which has academic and administrative oversight for the program, has embraced this tenet in developing the program — from the recruitment and selection of students, to the curriculum and identification of clinical training sites.

A 1994 study of MEDEX Northwest graduates showed that PAs who practice in rural settings performed a much wider range of medical and administrative tasks

than those in urban practice. The same study, published in Public Health Reports, demonstrated that half the PAs who grew up in small towns were practicing in rural places, compared with only 18 percent of those from large towns. The results suggest that recruitment of students for rural practice should focus on rural residents.

Because rural residents are more likely to return to a small town upon completion of training, the physician assistant admission committee will give applicants from those areas special consideration.

The university designed the program to be self-supporting once it is up and running. OHSU applied for and received a three-year federal training grant of about $100,000 a year. Student tuition — approximately $10,000 a year for in-state students and $18,000 for out-of-state students — will provide the remaining support.

Because of the high tuition, program planners believe many students will need government loans and scholarships. Ruback said he will encourage students to consider the National Health Service Corps Scholarship Program, a federal initiative that requires recipients to serve two years in a medically underserved area for each year of scholarship support. He will also encourage students to explore other loan opportunities, including Oregon's Rural Health Services loan repayment program. This program helps students repay educational loans if they establish practice in a medically underserved rural community, as designated by the Office of Rural Health.

Despite the high tuition, more than 1,600 people requested an application. "Competition for the 12 positions in our first class will be stiff," Ruback said. In subsequent years, class size will increase to 18 new students each year.

Students entering the program must have had at least two years of college and two years of health-care experience, preferably in direct patient contact. For example, the profession has drawn pharmacists, emergency medical technicians, medical assistants, nurses and others from the health professions. Boullosa said the average student entering a PA training program has five years of previous work experience.

Each graduate of the program will receive a bachelor of science degree and will be eligible to take the national certifying examination for PAs. Oregon requires passage of the national exam for licensure.

Ruback said the 24-month curriculum is "rigorous and comprehensive." Students spend much of the first year in the classroom with courses in clinical medicine and in the basic health sciences, including pharmacology. The second year is all clinical training, including a five-week clinical rotation in each of these specialties: internal medicine, pediatrics, family medicine, obstetrics/gynecology and emergency medicine. A three-and-a-half month preceptorship in a primary-care discipline completes their education.

"As many as possible of the clinic experiences will be outside the Portland metropolitan area," said Ruback. "We hope the statewide Area Health Education Program will help provide many of the clinical sites for this program."

The AHEC program, a partnership between OHSU and Oregon communities, uses existing health professionals in rural and underserved areas to serve as preceptors for student training. The state has five centers in operation, and many students in the health professions currently receive part of their education and training from community practitioners through the AHEC program. Ruback added, "We would like to involve the AHECs in all aspects of the PA program from recruitment and selection of students to clinical training."

Lesley Hallick, Ph.D., vice president for academic affairs, said, "The PA program will complement and be coordinated with the university's allied health programs and fits well with OHSU's efforts to increase primary care providers in underserved areas."

Graduates of OHSU's program can expect a different reception from prospective employers than Salem's Giralt found back in 1975 when he went looking for a job. The PA profession was new and unfamiliar to many physicians; Giralt encountered reluctance. But the profession's early pioneers quickly proved their worth, and the attitudes of physicians began to change.

Accredited training programs now number 61 in the United States, and graduates have earned a reputation for delivering efficient, high quality care. The former Air Force sergeant Giralt today finds he is well accepted by physicians. As Ruback stated, "Once trust develops between the PA and the MD, the relationship benefits all concerned, especially the patient." OHSU

**Ted Ruback becomes the first director of OHSU's new physician assistant program.**

It was the challenge of starting a new program and a desire to return to the Northwest that brought Ted Ruback to OHSU. He is the founding director of OHSU's new physician assistant program.

His background includes academia, primary care practice in a rural clinic and staff physician assistant in a large, urban health maintenance organization. Educated as a physician assistant at the University of Colorado Health Sciences Center's Child Health Associate Program, Ruback left there in 1979 with the credentials to enter a pediatric practice in Ellensburg, Washington. (He later earned a master of science in child health from the same institution.)

In 1983, he left idyllic Ellensburg for Atlanta, Georgia, where he became a pediatric PA in a large HMO called Southeastern Health Services. Ruback stayed there until 1990 when Emory University School of Medicine offered him an assistant professorship with the Department of Family and Preventive Medicine's Physician Assistant Program.

He had many responsibilities as a faculty member: teaching and advising students, developing clinical rotations, redesigning the admission process to keep pace with the expanding applicant pool and serving as associate director of the program.

Ruback, his wife Holly — a native of Washington state — and their two sons were eager to return to the Northwest. The OHSU position gave him the perfect opportunity. "This program will be good for the university and good for Oregon," said Ruback. He added, "Everyone from the university involved in the initial proposal and early development of this program has been extremely supportive. Add to that the environment of the community of PAs through the state and the result is an extremely positive environment in which to develop the new program."

# Pianist

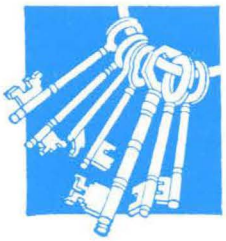
## Joins Practitioners of the Healing Arts

by Mark Kemball

To most of us, it sounds like the plot of a B movie: successful concert pianist is involved in an accident, fractures arm and wrist in fourteen places, temporarily loses the use of his left arm, undergoes painful and extended operations and rehabilitation, and emerges triumphant from doubt and despair to resume his career. House lights on, exit the theater with tears still running down the cheeks.

For OHSU patient Mark Westcott however, recovery two years ago from just such an accident was the overture, not the finale, to a second nightmare. Almost immediately after his successful rehabilitation, Westcott was diagnosed with a recurrent nasal malignancy that refused to respond to conservative treatment. When it became clear that a more radical approach was needed, he was referred to OHSU's Department of Otolaryngology, surgeon Ted Cook, M.D., and patient advocate Barbara Glidewell.

From this mix of ethicist, pianist and sensitive medical care came the offer from Westcott to perform a benefit recital for OHSU's Center for Ethics in Health Care. The event, held in the OHSU Auditorium on Sunday, April 2, provided not only the platform for some exceptional music, but also the opportunity to introduce the work of the Ethics Center to a wider audience. For Westcott, the recital was one more step on the road to a career recovered. To the spellbound listeners, music was briefly added to the list of the healing arts practiced on the Hill. OHSU



# Unlock Your Capital Gain with an OHS Foundation Charitable Trust

**•Dependable lifetime income •Current income tax savings**
**•Capital gains tax elimination •End of your investment worries**
**•Benefits research and care at OHSU**

**Are** you looking for a way to increase your income and reduce your taxes? You can turn highly appreciated assets such as **stock** or **real estate** into dollars you can spend **now** with an OHS Foundation trust.

**Here's** just one example:

Ann Brown, 72, bought stock years ago for $50,000. It is now worth $100,000. She uses the stock to fund a $100,000 **charitable remainder unitrust** at OHS Foundation. Ann reserves the right to receive as income for her lifetime 7 percent of the value of the trust as it is revalued each year. She also receives an immediate income tax deduction of $48,873. This means a $17,594 tax savings in her 36 percent marginal income tax bracket. She also avoids paying capital-gain tax on her $50,000 paper profit. This saves her an additional $14,000 of tax.

**The** best example could be **yours**—for more information about trusts and appreciated assets, please call **Al Zimmerman** or **Frank Vidin** at **OHS Foundation: (503) 228-1730 or toll-free 800-462-6608.** Or you may return the coupon. Thank you.

**Send me more information, please.**

NAME_____ BIRTHDATE_____

ADDRESS_____

CITY, STATE, ZIP_____ PHONE ( )_____

OHS Foundation

MAIL TO: OHS FOUNDATION, 1121 SOUTHWEST SALMON STREET, SUITE 200, PORTLAND, OR 97205

CRT-V495

Oregon Health Sciences University
3181 S.W. Sam Jackson Park Road
Portland, Oregon 97201-3098

Non-Profit Org.
U.S. Postage
PAID
Permit No. 722
Portland, Oregon

## MARQUAM HILL LECTURE SERIES

*OHSU Library Auditorium, 7:30 p.m.*

Thursday, April 20
"DNA Testing: It's in the Genes"
Bradley Popovich, Ph.D., assistant professor of medical and molecular genetics, and director of OHSU's DNA Diagnostic Laboratory

## HEALTHY TALKS

*OHSU Library Auditorium, 9 a.m.*

Saturday, April 1
"New Wrinkles on Skin Care"
Frank Parker, M.D., professor of dermatology, School of Medicine

Saturday, April 29
"Preemies to Puberty: Perspectives on Healthy Growth and Development"
Stephen LaFranchi, M.D., professor and head of pediatric endocrinology and professor of pediatrics, School of Medicine

*For more information about Healthy Talks or the Marquam Hill Lecture Series, please call the Office of Community Relations, 494-7686.*

## WATCH FOR

Miss Saigon benefit performance for Doernbecher Children's Hospital and the Campaign for Women's Health. Portland Civic Auditorium, 8 p.m., Thursday, June 22. Call 220-8339 or 1-800-800-9583 for tickets.

Pam Tillis benefit performance for Doernbecher Children's Hospital. Arlene Schnitzer Concert Hall, 7:30 p.m., Saturday, April 29. For tickets call FASTIXX at 224-8499 or 1-800-992-8499.

Children's Miracle Network Telethon, 6 p.m., Saturday, June 3, to 3 p.m., Sunday, June 4, on KATU-TV Channel 2 in Portland, KEZI Channel 9 in Eugene and KRDV Channel 12 in Medford.

495 (36)