VIEWS

SUMMER • 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.

SCALING NEW HEIGHTS

Faculty, Students and Residents Build Strength Through Community Ties

Academic Clinical Practices Meet the Challenge

Researchers Stretch Beyond the Limits of Current Knowledge

OHSU
OREGON HEALTH SCIENCES UNIVERSITY

Message from the Department of Medicine

D. Lynn Loriaux, M.D.

The Department of Medicine in the School of Medicine is the largest department at Oregon Health Sciences University. As such, we take seriously our responsibility to strengthen and enhance the health of all Oregonians. We do this primarily by training the highest quality health care providers, providing continuous medical education for our practitioners, and promoting the evolution of medical practice through discovery.

In the past months, we have placed a renewed emphasis on developing new and stronger ties with several health care systems in Oregon and the Northwest. Collaborative community programs in bone marrow and renal transplantation, and a cooperative center for the management of complex cardiac arrhythmias are being developed. Many more such opportunities are likely to emerge as a result of our ongoing emphasis on development and research.

This issue of Views highlights some of these activities in our department, both with the university's hospitals and clinics and with the Portland Department of Veterans Affairs Medical Center. I hope it will give you a better sense of our focus and of the contribution of OHSU's Department of Medicine to the quality of medical care in Oregon and, in some cases, the country and the world. We are enthusiastic about our opportunity to contribute and are confident that we can continue to catalyze substantial improvement in the health care of all Oregonians.

VIEWS

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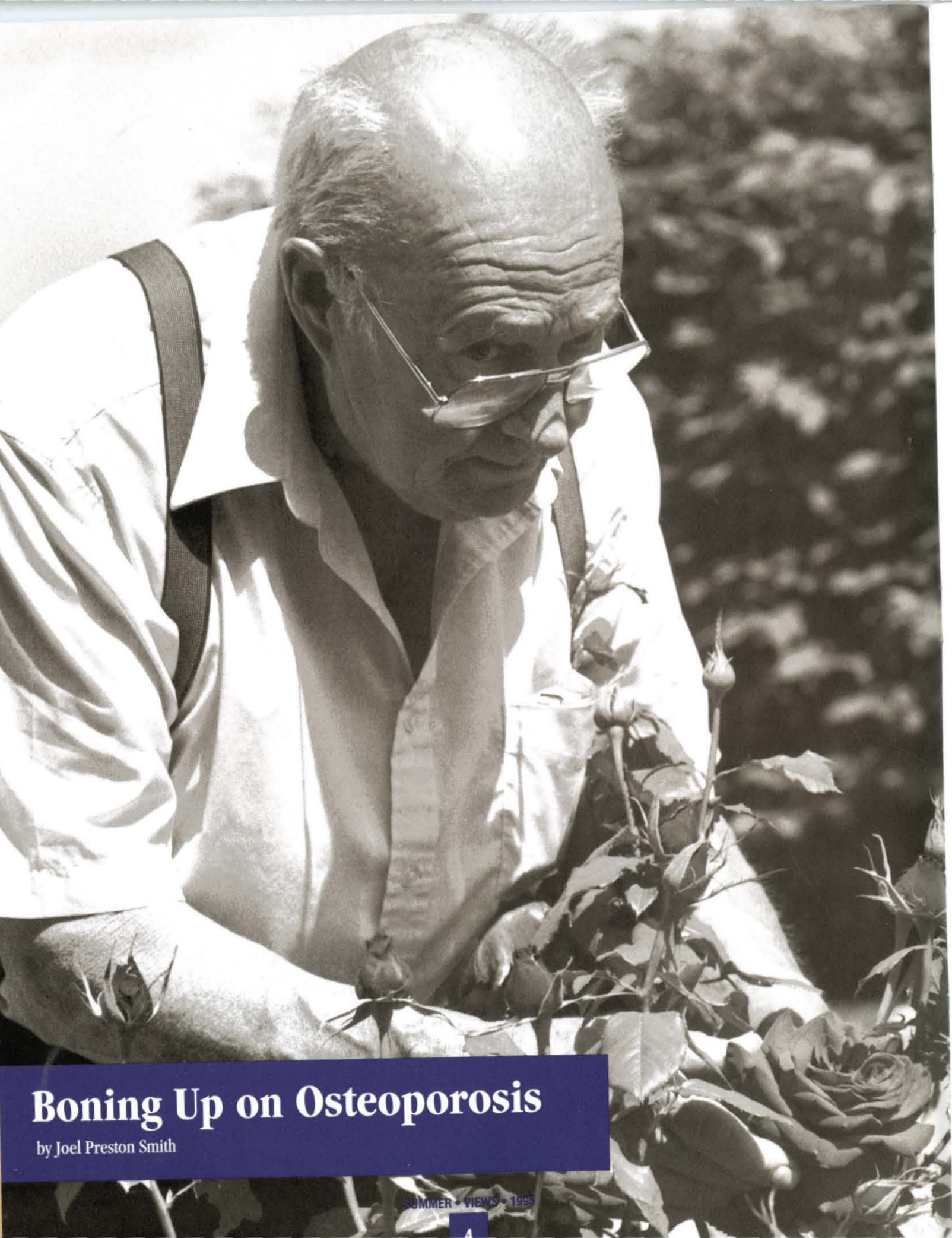

Boning Up on Osteoporosis

by Joel Preston Smith

He is gathered there in your memory, tall and gray and bent like a willow to water, some fragment of wood in his fingers turned and smoothed and shaped lovingly to match the grace of his broad hands. A weary angel — and all that seems to hold him earthbound are the years weighing so heavily on his shoulders.

Some of us grew up believing our fathers and our father's fathers were permanently bowed from the waist by the years of labor and by all those summers they'd spent leading us down garden paths. The truth is less kind. Time whittles away at our fathers and grandfathers not as the collective weight of their work and wisdom, but bone by bone, cell by cell. There is a time, later in men than in women, when the body virtually begins to dismantle itself, reclaiming the calcium and phosphorus invested throughout bones.

"Every year, as many as 1.3 million bone fractures can be attributed to the disease. (Imagine the entire state of Maine, every resident in a cast, all the victims of osteoporosis.)"

Osteoporosis, the advanced bone thinning that signals an increased risk of fractures in the elderly, is typically portrayed as a "woman's disease," but as many as 20 percent of all osteoporotic hip fractures occur in men. The problem goes well beyond the expected pain and loss of mobility. About a third of all men over age 75 who experience a hip fracture will die within a year.

To find out which patients are at risk for osteoporisis-related fractures, the university operates the Bone and Mineral Clinic in the Division of Endocrinology, Diabetes and Clinical Nutrition.

Eric Orwoll, M.D., heads up OHSU's Bone and Mineral Section and directs much of the university's research on the disease. Orwoll, whose program is run jointly with the Portland Department of Veterans Affairs Medical Center, said relatively little is known about the disease in men. "There are at least three therapies for osteoporosis in women," Orwoll explained, "but none in men. In fact, there has never been a trial of osteoporosis prevention or therapy in men."

Orwoll's research, along with the work of his colleagues, is a pioneering effort to find what factors may precipitate or speed the progression of the disease, including the relationship between alcohol consumption and increased bone metabolism. Orwoll's team is also studying androgen-replacement as a possible means of combatting excessive bone loss.

Statistics show the enormity of the problem. At any one time, 20 million Americans — more than the combined populations of Virginia, Maryland, Indiana and Massachusetts — are affected by osteoporosis. Every year, as many as 1.3 million bone fractures can be attributed to the disease. (Imagine the entire state of Maine, every resident in a cast, all the victims of osteoporosis.) Of these, about 200,000 will be fractures of the wrist. Hip fractures will account for another 300,000, and fractures to extremities other than the wrist will add 300,000 more.

Lives are broken, too. Dixie Cooper, research assistant with the Bone and Mineral Section, reads misfortunes from the blue-gray constellation of dots that compose a computer's view of a spine. She pulls up a translucent image of four vertebrae that look like the crumbling pillars of some Athenian ruin. The patient, 45, was anorexic in her teens and developed "premature" osteoporosis. The vertebral arches, transverse processes and the walls of the vertebral bodies appear narrowed and undercut. Cooper said, "She'll never walk again. She could break bones just standing." The woman now lives under constant care in a retirement center.

It's the same for others. According to Cooper, many elderly osteoporotic patients break ribs just coughing. Cooper performs bone mineral analyses with the DEXA (Duel-Energy X-ray Absorptiometer). The machine doesn't look as impressive as its name — it's mainly a square, metal arm, about six inches wide and three feet long, which passes over the patient as he or she lies on an exam table. X-rays measure the density of mineral in the hip, spine and forearm.

The image is digitized, then analyzed by a computer program that plots bone mineral density and relative risk of fracture for each bone type. Patients also can be counseled about modifying their diet, exercise or lifestyle to slow bone loss and lessen the chance they'll break bones. Several drugs — estrogen, calcitonin and etidronate disodium — are available to prevent further bone loss or, in some cases, restore lost bone. The cause of each patient's skeletal decline is defined as precisely as possible and the most effective treatment strategies chosen.

Many of the university's organ transplant patients eventually find their way into the clinic. Because prednisone, a steroid used to suppress the immune system and prevent organ rejection, slows skeletal growth, patients have to be screened for the drug's effects on bone composition. According to Research Associate Shelia Orwoll, manager of the university's Bone and Mineral Section's clinical research unit, parathyroid hormone is a promising new therapy for this form of

continued on page 6

osteoporosis, one the bone and mineral group will test in clinical trials.

Finding how parathyroid hormone receptors function in bone cells is the research goal of Orwoll's colleague Michael M. Bliziotes, M.D.

Too many questions, too few answers

"Despite decades of research into the nature of male sex hormones, the role of androgens in bone physiology is largely a mystery," said Ed Keenan, Ph.D., a co-investigator with Orwoll and Kristine Wiren, Ph.D. The researchers suspect that replacing androgen may salvage bone in elderly men, but until the hormone's exact mechanism in bone maintenance and growth is discovered, therapy with these agents will be little more than educated guesswork. "What androgens do in bones is just not well defined," explained Keenan, who has been studying sex hormones since he was a pharmacology graduate student at West Virginia University in the 70s. "We know there are androgen receptors present in bone cells and that they're modified by the concentration of androgen," Keenan added. "We even know how to block them, using drugs like flutamide (which inhibits its uptake or nuclear binding), but we don't really know how they act intracellularly."

Orwoll's team will remove a lot of the speculation and, hopefully, give scientists a clearer picture of how androgen acts in osteoblasts, bone cells that matured to become part of the skeleton. "The ultimate goal," said Keenan, "is to find a hormone-replacement therapy that will overcome the bone loss associated with aging." Keenan noted that androgen therapy can cause irregular menstral cycles in women and lower sperm counts in men. In both sexes, androgen causes cyst formation in the liver and can increase the risk of arterial disease. "Obviously we don't want excessive androgenic effects," said Keenan. "We only want effects in the tissues we target."

Michelle Gunness, Ph.D., is working with Orwoll to examine the effects of androgen withdrawal on bone metabolism. "By understanding what happens in the absence of androgens in laboratory animals, we hope to design new ways to use androgens to treat osteoporosis," said Orwoll.

The connection between hormones and bone decay comes from a wealth of data about the decline and fall of the human skeleton. For example, it's well known that both men and women lose bone density with aging. Much of the loss occurs about the time circulating levels of sex hormones take a downward turn. In the first five years after menopause, a woman will lose up to seven percent of her bone density annually.

> "Research and treatment at OHSU won't stop our population from aging, but with better prevention and treatment strategies, we won't bow under the years, but meet them face to face."

Excepting the initial steep plunge in estrogen and the fact that women live longer than men (and thus tend ultimately to lose a higher total percentage of bone), both sexes lose bone at about the same rate.

Alcohol and bone

According to Robert Klein, M.D., "even moderate quantities" of alcohol can significantly influence bone loss and increase the risk of fractures. Klein noted that alcohol specifically slows the creation of osteoblasts, cells that synthesize bone.

Klein has been investigating alcohol's role in osteoporosis since 1989. "Alcohol doesn't appear to act like a poison," Klein explained. "It's more like an inhibitor. And because the spine is the most metabolically active region of the skeleton, that's where you see the greatest effects of alcohol."

Klein's research points toward polyamines, chemicals critical for cell growth. He noted that blood-alcohol levels approximating the legal limit in Oregon (.08) reduce osteoblast formation by as much as 25 percent. At levels "typical" for an alcoholic, .2 to .3 blood-alcohol content, 75 percent of osteoblast production may be shut down."We've found that the enzymes necessary to generate polyamines appear to be disrupted by alcohol," he explained. "We also suspect that it may interfere with cellular signalling."

Counter to age-related osteoporosis, alcohol-induced osteoporosis has its best hopes for a cure in the willpower of the patient, Klein remarked. "Studies have shown this isn't a permanent condition — we can reverse it in the absence of alcohol."

Of course not all the impacts of aging can be overcome. Like a weathered building, the human form is eroded by time and the elements, physiological and otherwise. Osteoporosis research and treatment at OHSU won't stop the population from aging, but with better prevention and treatment strategies, we won't bow under the years, but meet them face to face. OHSU

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Oregon Cancer Center

Experimental Therapeutics Core

Oncologist Richard Maziarz, M.D., heads the experimental therapeutics core of the Oregon Cancer Center. "This multidisciplinary program is separated into two major subdivisions," explains Maziarz. "The first involves extensive participation in nationwide clinical trials, as well as the development of unique clinical trials by the Oregon Cancer Center investigators. The second subdivision entails a host of new experimental technologies, including bone marrow transplantation and numerous immunotherapies that help the immune system track down and kill tumor cells."

Bone marrow transplantation allows oncologists to treat patients with very high dose chemotherapy that would otherwise fatally destroy their blood cells. "We're on the threshold of developing ther-apies that can impact the new bone marrow transplantation technology," said Maziarz. "Many of our basic science studies on cellular interactions focus on making the transplantation procedure safer for the patient."

Richard Maziarz, M.D.

Maziarz also oversees numerous immunotherapy research projects focused on boosting the patient's immune cells so they can mount an effective attack on cancer cells. "Researchers are devel-oping immune biology therapies that manipulate the immune system with molecular factors or specially engi-neered cells," said Maziarz.

Research in this area includes studies detailing the complex steps involved in the recognition and elimination of tumor cells by the immune cells. OHSU

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Pulmonary and Critical Care Medicine
Head, A. Sonia Buist, M.D.

*Major stories on the Division of Gerontology and the Division of Hematology and Oncology were not included as entire issues of Views have been dedicated to these topics recently. For more information see Views, winter 1995, and Views, spring 1994.

by Julianne Remington

Smoking Cessation

Breat

Some ancient cultures believed that breath and spirit were intimately related. Breathing was considered the soul of life, animating all awareness and action. The breath of the gods inspired poets, and the fresh spring wind intoxicated lovers. Mystics gained transcendence through special breathing practices and even the humblest souls knew the enchantment of inhaling a soft midsummer's breeze.

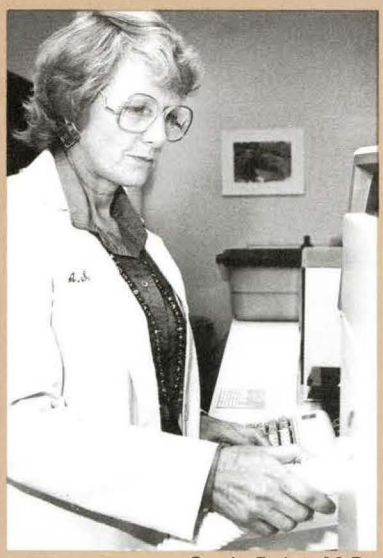
But modern man acquired some odd ideas about breathing. Inhaling tobacco on a daily, hourly — even more frequent basis — became popular with the rise of industrial life. A frenetic confusion resulted that still plagues contemporary culture as government subsidies favor tobacco production, and aggressive advertisements seduce the young. No matter what our politics, or what our beliefs, breathing is imperative, and smoking poses the single greatest threat to the nation's health, claiming more lives annually than traffic fatalities or violent crime.

The Oregon Health Division reported that in 1993 tobacco was a factor in the deaths of 7,164 Oregonians, a number that dwarfs the 514 deaths from car accidents and the 148 homicides that year.

Unlike so many diseases that seem to strike from nowhere, lung cancer and emphysema rarely occur in the absence of smoking. In the face of continuing use of influence money by the tobacco industry, the medical community plays a critical insurgency role, fighting for the lives of 500,000 Americans annually — persistently trying to silence tobacco's sad death toll. Each year, that toll far exceeds American deaths during all of World War II and surpasses the fatal U.S. casualties incurred during a decade in Vietnam by a factor of eight!

Physicians, nurses and other health providers must counter the deep pockets of the tobacco profiteers; smoking-cessation programs provide the fire power. Though public awareness of the dangers of tobacco is widespread, many smokers are divided against themselves and ardently wish for a way out.

"I've never done anything harder in my life than quitting," said 36-year-old Angela Winters, a wife and mother of three. "I had to learn to cope with depression, anger and anxiety without cigarettes for the first time in my life. Counseling was invaluable; I grew spiritually and emotionally; and the nicotine patch helped me maintain my resolve. In about a year, I started to identify with a non-smoking crowd."



Sonia Buist, M.D.

As Sonia Buist, M.D., the medical director of OHSU's Smoking Cessation Program and a specialist in pulmonary and critical care medicine, explained, people want to quit and often need medical help to succeed.

"Our special expertise is helping heavily dependent smokers stop smoking," said Buist. "Our program is based on knowledge derived from the Lung Health Study, an enormously successful research project that involved cigarette smokers who already had mild emphysema and chronic bronchitis."

The Lung Health Study was the largest project ever conducted on the prevention of lung disease, and OHSU was the largest of the 10 study sites across the country and Canada. The study was designed to see whether smoking cessation or the use of an inhaler that dilates the airways would help slow lung deterioration. The five-year study investigated the natural history of chronic obstructive pulmonary disease, a condition that encompasses both emphysema and chronic bronchitis.

Researchers randomly assigned participants to one of three groups. The first received intensive counseling to stop smoking, nicotine gum and an inhaled bronchodilator. The second group received the counseling and an inhaled placebo, and the third group received no special care. Researchers found that an aggressive smoking cessation program, combining behavioral modification with nicotine replacement helped people quit. "The good news from the Lung Health Study is that quitting smoking really does help, even if you already have COPD," said Wendy Bjornson, director of intervention for the Lung Health Study. "Some people worry that once they have lung disease nothing will help. This study proves that's not the case."

b i n g

Life Into Tired Lungs

"We learned a lot from the Lung Health Study about the process of quitting," said nurse Lynn Oveson, director of OHSU's inpatient and outpatient smoking cessation programs. "And we modified what we learned to fit individual needs."

Unlike many programs that group smokers in a lockstep fashion, OHSU's program tailors the counseling and behavior modification techniques, as well as the nicotine replacement, to the individual's lifestyle and health requirements.

"Many people I see have medical conditions related to their smoking," noted Oveson. "I've dealt with lifestyle changes among the chronically ill for more than 20 years as a nurse and nurse practitioner and can monitor the patients medically to make sure their prescription drugs are appropriate. "

Oveson sees people individually in the clinic or hospital on a referral basis and walks them through the process of quitting, using education and proven behavioral techniques.

"We analyze each person's smoking behaviors — the when, where and why of smoking. Then we talk about relapse prevention and make alternative plans for when they are likely to smoke." Oveson explained that patients actually work out substitute activities to divert their attention and help them cope with tough situations.

"The behavioral part involves understanding environmental cues — like having a cup of coffee or answering the phone or drinking a glass of beer after dinner — and breaking those links," said Oveson. "That's what our program is all about. And because dependence on nicotine is physiologic and plays a large role in the smoking habit, nicotine replacement for a period of time is important to prevent relapse."

Smoking is a huge culprit in lung disease, and though 98 percent of chronic obstructive pulmonary disease is related to smoking, there is a hereditary form of COPD that results from extremely low levels of a key enzyme called alpha$_1$-antitrypsin. The alpha$_1$-antitrypsin counters the action of special clean-up enzymes in the lungs that gobble up debris. To keep the "janitorial" enzymes from going too far and destroying good lung tissue by mistake, the body produces an opposing enzyme alpha$_1$-antitrypsin. Without alpha$_1$-antitrypsin, the clean-up enzymes become over zealous and begin to destroy healthy tissue. Affected people develop severe emphysema at a young age.

When 40-year-old Mike Fuller started getting short of breath while shoveling snow at the apartment complex he managed, he became concerned. After visiting several doctors who attributed his symptoms to increasing age, he went to see pulmonologist Alan Barker, M.D., at OHSU. Barker tested Fuller's blood for the enzyme and found it very deficient. He diagnosed Fuller's condition as alpha$_1$-antitrypsin deficiency.

Fortunately, alpha$_1$-antitrypsin can be purified from human blood plasma, and patients can receive infusions on a weekly basis. OHSU works with the National Institutes of Health on compiling a registry of people with the condition. The purpose of the registry is to learn more about the natural history of alpha$_1$-antitrypsin deficiency and the efficacy of replacement therapy to arrest the progression of the emphysema.

"The infusions of alpha$_1$-antitrypsin stopped the progressive lung deterioration in Fuller, and he hasn't lost any more lung capacity in the past two years," explained Barker.

Pulmonary and critical care specialists at OHSU treat a wide variety of lung conditions including asthma. "Asthma can come and go throughout a person's life, and patient education is extremely important in helping an asthma sufferer deal with the symptoms and manage their disease," explained Buist, who sits on the NIH coordinating committee that establishes patient care guidelines for asthma.

Whether it be asthma, emphysema, bronchitis, cancer or another lung disease, people suffer terribly when their breathing is compromised. Maybe the ancients knew something modern man has forgotten — spirit and breath are intimately related. Too many people struggle for breath in the modern world and the medical community strives to help people literally "catch their breath." Health care providers see lung disease at its worst and know all too well that healthy lungs are the foundation of good health, forming the critical interface between our human physiology and the vast atmosphere surrounding us. OHSU

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The Beat Goes On . . .

The Newell family shares an inherited, debilitating heart condition known as dilated cardiomyopathy.

Cardiologists Try New Fixes

by Lee Lewis Husk

It happened really fast — the end of eighth grade. David Newell couldn't catch his breath in PE class. His family doctor thought he might have asthma, which runs in the Newell family. But something worse runs in David's family.

The inhaler David's physician prescribed made him sick, and he was severely dehydrated. In the ensuing two weeks, he went from Santiam Memorial Hospital in Stayton to the pediatric intensive care unit at OHSU's Doernbecher Children's Hospital in Portland. There, he nearly died from advanced heart failure.

Inside the 14 year-old's body was a heart primed by generations to fail. Heart specialists were within hours of losing David when the OHSU cardiac transplant team found a donor heart to replace his sick one.

In the next two years, his father and two older brothers would learn that the family shares an inherited, debilitating heart condition known as dilated cardiomyopathy. Through an unlucky coincidence, David's mother's heart shows signs of the same disease.

The first clues of a larger family problem came earlier this year when John Newell, David's father, told doctors that his mother had died of cardiomyopthy in 1988. Kathy Ann Crispell, M.D., a fellow in cardiology at OHSU, began to study the family.

"We picked Dad's disease up (through an ultrasound test) after David's transplant," said Crispell. David's father is now a regular patient at OHSU's heart failure/heart transplant clinic and one day, he too, may need a heart transplant. David's older brothers and mother all have enlarged hearts, and all are under the watchful eye of their physicians.

Only 20 to 25 percent of patients whose doctors diagnose idiopathic dilated cardiomyopathy (enlarged heart muscle disease of unknown cause) have their ancestors to blame. Yet OHSU cardiologists are studying families like the Newells, hopeful that new therapies will slow the disease's progression and that researchers will isolate the faulty gene. Until then, physicians can offer patients aggressive treatment and, in some cases, a transplant to lengthen and improve the quality of life.

"OHSU specializes in providing outstanding clinical services for patients with advanced heart failure," said cardiologist Ray Hershberger, M.D., who heads the OHSU Heart Failure Treatment Program. "We're also learning through research how to provide better clinical services."

Heart failure isn't a specific disease but a clinical syndrome that can result from many causes. It isn't the same as a heart attack, although heart failure can develop after a heart attack has damaged the heart muscle. And heart failure doesn't mean the heart stops beating, only that the heart muscle is weaker than normal.

The heart is a muscle that pumps blood to all parts of the body. When injury or disease damages the heart muscle, the

pump becomes inefficient and incapable of circulating enough blood to meet the body's demands. Patients with heart failure may experience shortness of breath, fatigue and edema. With time, their health deteriorates.

About 2.3 million Americans have heart failure; 80 percent are 65 years or older. Mortality is high: 40,000 to 200,000 deaths annually. Five-year survival is only 25 percent for men and 38 percent for women. It is one of the most costly diagnoses, especially among the elderly. Health analysts estimate that heart failure costs the country $38 billion a year.

University hospitals, like OHSU's, often care for the most seriously ill patients in the region. Like David Newell, many are young and at high risk for death. Hershberger said the OHSU group offers transplantation only after everything else fails. "We push the limits of conventional therapy," he said. "Yet, sometimes transplantation is the patient's only chance."

OHSU heart surgeons, under the leadership of Adnan Cobanoglu, M.D., perform 30 to 35 heart transplants a year. OHSU's survival rates are higher than the national average: 86 percent of organ recipients are alive at one year and 75 percent are alive five years after the operation. Since 1985, university physicians have performed 271 transplants, making OHSU the country's 18th most active heart transplant center.

Research gives patients access to newest medicines.

Like many universities, OHSU has the expertise and technology to participate in experimental drug studies. "We try to get access to the newest, and hopefully the best, agents to prolong survival," Hershberger said.

Today, new drugs are extending life.

Vasodilators, drugs originally developed to treat high blood pressure, are showing good results in patients with heart failure. ACE inhibitors, a type of vasodilator, open up narrowed vessels to ease the heart's workload, bring blood pressure down and improve blood flow to the kidneys. OHSU cardiologists and patients participated in large, national studies which showed that ACE (angiotensin-converting enzyme) inhibitors can extend survival, even in patients without symptoms.

New drugs are always under study. "The

> "We try to get access to the newest, and hopefully the best, agents to prolong survival."

reason we can prolong life is that more than 7,000 people (across the country) agreed to participate in the study of (the ACE inhibitor) enalapril — *without knowing whether the drug would lengthen their survival*," said Deirdre Nauman, a nurse researcher in the Division of Cardiology.

OHSU has been using a new drug vesnarinone, which improves the heart's squeezing ability, for four years. OHSU is the first and only Oregon center to have the drug. A 1992 study published in the *New England Journal* reported a 62 percent decline in mortality among patients receiving vesnarinone. The university is currently pinpointing the most effective dose of vesnarinone in patients with advanced heart failure.

Another class of drugs that may offer patients symptom relief and enhanced survival are beta-blockers. These drugs relax blood vessels and restore the heart's ability to deal with stress hormones. OHSU is studying a new and promising beta-blocker called carvedilol. The Portland center is also involved in a large National Institutes of Health study known as BEST — BEta-blocker Survival Trial — in which 2,500 patients across the United States will receive either the beta-blocker bucindolol or a placebo.

Cardiology researcher Nauman said that heart specialists need a variety of drugs to fit a patient's health needs. "We want to stack the odds in favor of our patients as much as we can," she said, referring to OHSU's expertise in bringing new and experimental drugs to its heart patients.

Finally, families like the Newells offer researchers valuable insight into inherited forms of heart failure. OHSU's Heart Failure Treatment Program is undertaking a major study to determine the prevalence of familial dilated cardiomyopathy and to identify large lineages for additional clinical and molecular genetic analysis.

"If we can identify family members at risk, we may be able to affect the progression of the disease by using current and experimental therapies," said cardiologist and researcher Crispell.

John Newell admits that heart failure is not easy to live with, and he knows that he may be the next Newell in line for a transplant. But he said the family has made peace with their genes. He cites the family's faith in God for carrying them through their days.

David is doing well in his sophomore year at Stayton High School. His energy is back, and he practices his golf game every night after school. The physician he beat at a recent Oregon Donor Program fund-raising golf tournament may need to be practicing his game. It was the surgeon who gave David his new heart. OHSU

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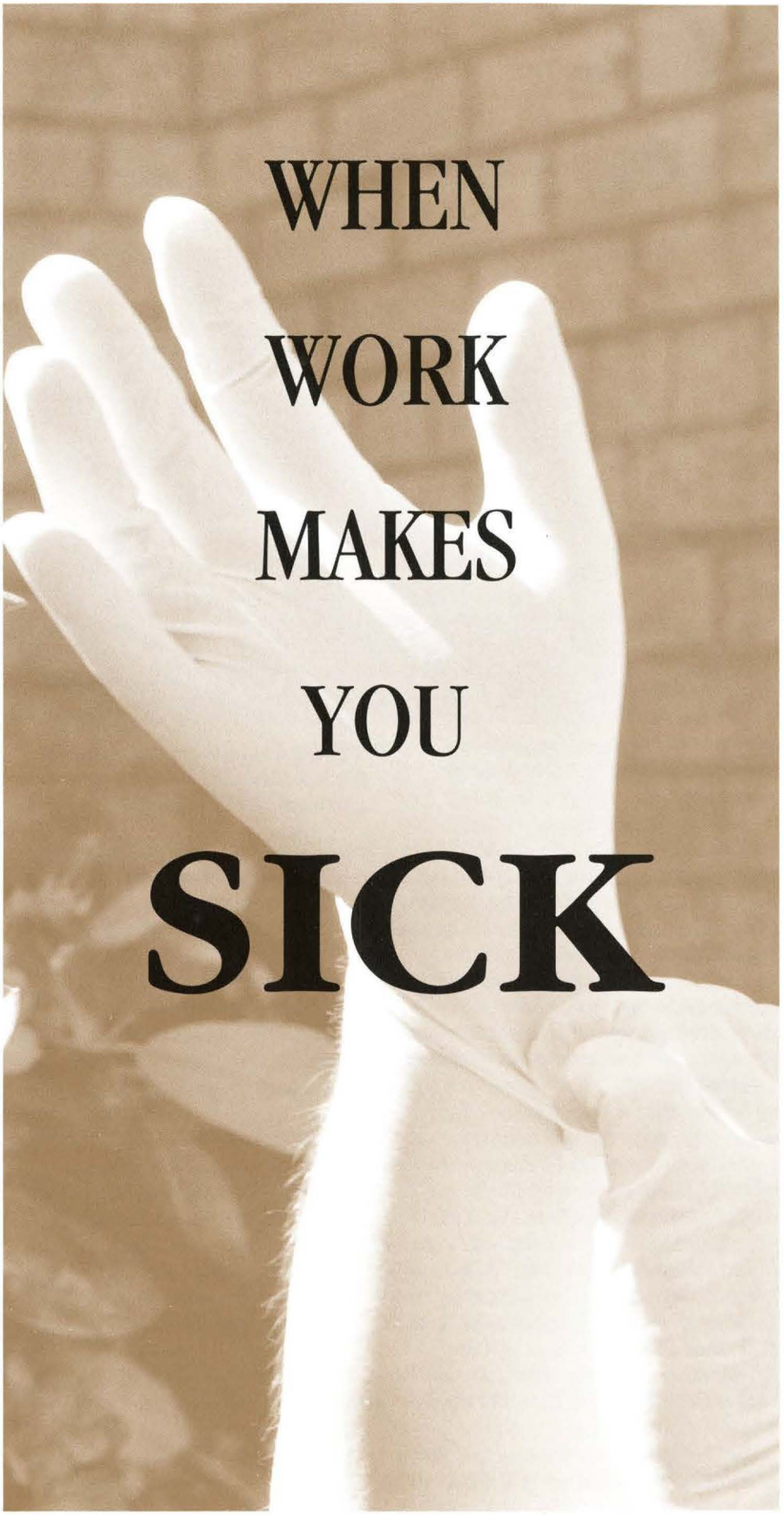


WHEN WORK MAKES YOU SICK

Allergists provide protection for on-the-job exposures.

by Patricia Feeny

The scenario is common: A patient enters a hospital emergency room for treatment. Dozens of gloved hands swirl around taking vital signs, drawing blood and placing an IV. In just a matter of minutes, the patient has been exposed to more aerolized natural rubber latex than most of us would experience in a normal week. More than 20,000 different items contain rubber; and to most people, it is harmless. Even people with an allergy to rubber generally have only mild symptoms. But to a few, even a brief exposure can produce lethal consequences.

"Being around aerolized natural rubber latex can be a serious problem," said allergist Emil Bardana, M.D. "To most, it's harmless, but if you have a severe allergy to latex, anaphylaxing can occur." Anaphylactic shock is a severe and sometimes fatal systemic reaction caused by exposure to a specific chemical. It is characterized by a rash, an inability to breathe and, ultimately, loss of consciousness.

"So much of what we use in medicine — IV ports, blood pressure cuffs, gloves — is made of natural rubber latex," Bardana said. "Just breathing the powder from natural rubber gloves can cause sensitized people to have the asthma attack."

Bardana heads OHSU's Division of

Allergy and Clinical Immunology, whose clinicians often work like sleuths, putting together clues to solve some of the more challenging riddles in medicine. The division has helped develop policies to protect the university's health care workers who are affected by latex exposure and who, in turn, can expose their patients. The clinicians also consult with insurers and other medical centers, as well as patients and employees within the institution, to assess potential work-related diseases secondary to latex and other occupational exposures, including drugs and chemicals.

As a leader in the care and treatment of asthma and other allergic disorders, the division is continually expanding its services to meet the emerging needs of patients here and throughout the Northwest. "Our specialty is unique among medical specialties, because we are certified by the American Board of Allergy and Immunology, which is under both the American Board of Internal Medicine and the American Board of Pediatrics," said Bardana. "In other words, we are trained in both pediatric and adult patient care."

The division is a major referral center for environmental and occupational hypersensitivity disease. Patients come from throughout Oregon and beyond its borders — Alaska, Idaho and Washington. Occupational asthma is widespread, touching almost every industry and workplace setting. Cases include Western Red Cedar asthma, farmers' lung, bakers' asthma, isocyanate (paint-related) asthma, metal and metal salts asthma, and latex allergies. The division's allergists have produced a major text for physicians, "Occupational Asthma."

Members of the division also have conducted clinical research into issues related to sick-building syndrome and indoor pollution. Examples of indoor-related illnesses include Legionnaire's disease and fiberglass dermatitis. The division staff is currently editing another textbook, "Indoor Pollution and Health."

The division runs a laboratory with the Division of Clinical Pathology, which has become a major referral resource for special immunological tests to investigate typical allergies, hypersensitivity pneumonitis and certain types of chemical allergies. The lab, headed by Anthony Montanaro, M.D., also can analyze blood samples to determine latex sensitivity.

> "The division is a major referral center for environmental and occupational hypersensitivity disease."

With a new physician on board this summer, the division will develop a service to evaluate drug allergies such as penicillin, sulfa and Novocain. This may eventually expand to food and food additive allergies.

"Whether a patient suffers from mild seasonal hay fever or something more exotic, like asthma due to insects, the resources to diagnose and prescribe a treatment are right here," said Bardana. "Our goal is to continue in a leadership role in the treatment of children and adults with asthma and allergic diseases." OHSU

School of Medicine, Department of Medicine, Division of Allergy and Clinical Immunology (staff in story):

Emil J. Bardana, Jr., M.D., professor of medicine, and head of the division

Anthony Montanaro, M.D., associate professor of medicine

One Stop, One Shop

Practice in the Physicians' Pavilion is a marked departure from anything in the past. Gone are the days where patients saw their physicians in one building, had an X-ray in another and underwent lab work in yet another. Planned and built for efficiency, accessibility and customer service, the 18-month-old pavilion is a model of 21st century medicine.

A visit to the pavilion begins with parking, where the first sign of change is apparent. The parking structure is easily accessible and has plenty of room. From there a smooth elevator ride takes patients to their destinations.

Privacy is an important issue in health care. The pavilion's waiting rooms offer much more privacy than the old outpatient areas, where a hallway sometimes served as the only place to wait.

Convenience is a crucial requirement for many patients. An in-house pharmacy and on-site clinical and X-ray laboratories further add to the appeal of the pavilion. While waiting for an appointment or lab results, patients can enjoy a cup of coffee or sandwich at the pavilion's deli.

Touring the four-story, 80,000-square-foot building, the feeling is open, spacious, modern. Every service is clearly marked. If patients do get lost or have questions, an information booth is on the first floor.

Should a patient need to leave the building for other parts of the university's hospitals or clinics, an enclosed bridge eases their passage from the pavilion's third floor to the Outpatient Clinic.

OHSU's outpatient services have grown by 50 percent in the past five years, leaving many clinics short on space to house equipment, supplies and research activities.

The customer-friendly, patient-focused pavilion has been the perfect prescription.

Surfing the Stress Axis

by Doug Rennie

OHSU team a national leader in combating Cushing's syndrome.

When he showed up at the clinic a few months ago, the guy was pretty much a mess.

Bloated face. Crush fractures of vertebra, the result of a devastating structural weakening of muscle and bone. Hypertension. Diabetes. Skin blotched all over with oil-dark bruises. Thirty pounds overweight. And just 25 years old.

Yet, he was lucky. He came to the OHSU School of Medicine for repairs.

His symptoms were diagnosed as those of Cushing's syndrome, a somewhat rare endocrine disorder brought on by the presence of excessive amounts of cortisol, the stress hormone, in the blood. The only real question here was the source. Traditional tests employed at most hospitals would likely have homed in on a small tumor on the spleen and surgically removed it — wrong diagnosis, wrong treatment in this case. OHSU endocrinologists David Cook, M.D., and Mary Samuels, M.D., however, used the cutting-edge cavernous sinus sampling procedure and correctly identified the cause: a tiny tumor on the pituitary gland.

Five days later, OHSU neurosurgeon Stanley Barnwell, M.D., removed the tumor, and four days after that the patient went home cured to begin a new life as a normal 25-year-old man.

"The huge problem in dealing with Cushing's syndrome," said Cook, "is really twofold: First of all, does the patient even have Cushing's? Cortisol is the stress hormone, and psychological stress can pour excess amounts into the blood. So, is it simple stress then or a pathology mechanism — the most common of which is a pituitary tumor — at the root of the problem? Correct diagnosis is really the key, and it can be difficult to obtain. Then, if the diagnosis is Cushing's, what is the cause, what is the origin of the hormone overload?"

Once a pituitary tumor is identified as the source, "treatment options are pretty straightforward. You remove the tumor, if possible," said Samuels. "But if the pituitary gland is not the source, things become more difficult because you have to find some small tumor somewhere else and, obviously, the *last* thing you want is brain surgery."

But how can you accurately pinpoint the all-important source?

That's what physicians Cook and Samuels figure out. They are clinical investigators whose frontier is pituitary disorders. Central to their investigation is the stress axis — the brain, the pea-sized pituitary gland on the brain's underside and the adrenal glands that sit just above the kidneys — and their primary diagnostic tool is a procedure called cavernous sinus sampling.

Here's how the stress axis works.

Apply stress to the organism, and the brain commands the pituitary to release the hormone ACTH (the "straw-boss hormone," said Cook) which, in turn, signals the adrenals to unload cortisol into the blood. This is fine, even necessary, short term. But when the stress axis's switch is perpetually locked in the "on" position, you end up like the 25-year old above. The problem is that this can be caused by chronic stress or by a tumor on a lung, on the adrenal — or on the pituitary. In other words, abnormally high cortisol levels may or may not be the result of Cushing's syndrome.

That's where cavernous sinus sampling comes in.

"CSS is the 'new twist' that we're using at OHSU," explained Cook. "It allows us to extract a blood sample closer to the pituitary — almost at the exact point where the hormones exit the gland and much, much closer than any other technique."

In diagnosing Cushing's, distance is everything. The farther from the gland the sampling is done, the greater the opportunity for dilution and the greater the difficulty in determining whether the pituitary was the original source. "It's like you throw some red dye into a river," said Cook. "If you remove a sample say a hundred yards downstream, it would be highly diluted. You would have no idea what the source was or at what point in the river the dye was first introduced. It's the same situation when you try to track down the starting point for excess cortisol once it spreads throughout the bloodstream."

In the search for more precise and reliable means of diagnosing and treating Cushing's syndrome, the OHSU School of Medicine is a national leader for many reasons, including the sheer number of Cushing's patients that OHSU's endocrinology team sees, the unusual degree of cooperation between different medical disciplines and the exceptional competence of team members.

"A typical endocrinologist in private practice might see a Cushing's case every five years, a general practitioner perhaps once in a lifetime," said Samuels. "Here, though, we see two new patients every month to evaluate as possible Cushing's cases."

So rare is Cushing's that most hospitals and medical centers see one here, one there now and then; hence, there is little progress in dealing with the disorder. Attracting such a high patient volume to a single central facility — patients have come from as far away as Texas, Tennessee, Florida and Alaska to be seen here — is a huge asset for OHSU.

"We are unique," said Samuels, "because we can do two things — treatment and research — at once and both extremely well. The patient gets the best workup possible, and we have the patient numbers to do the kind of research that leads to more precise, more reliable diagnostic and treatment protocols. So the scientific community benefits, too."

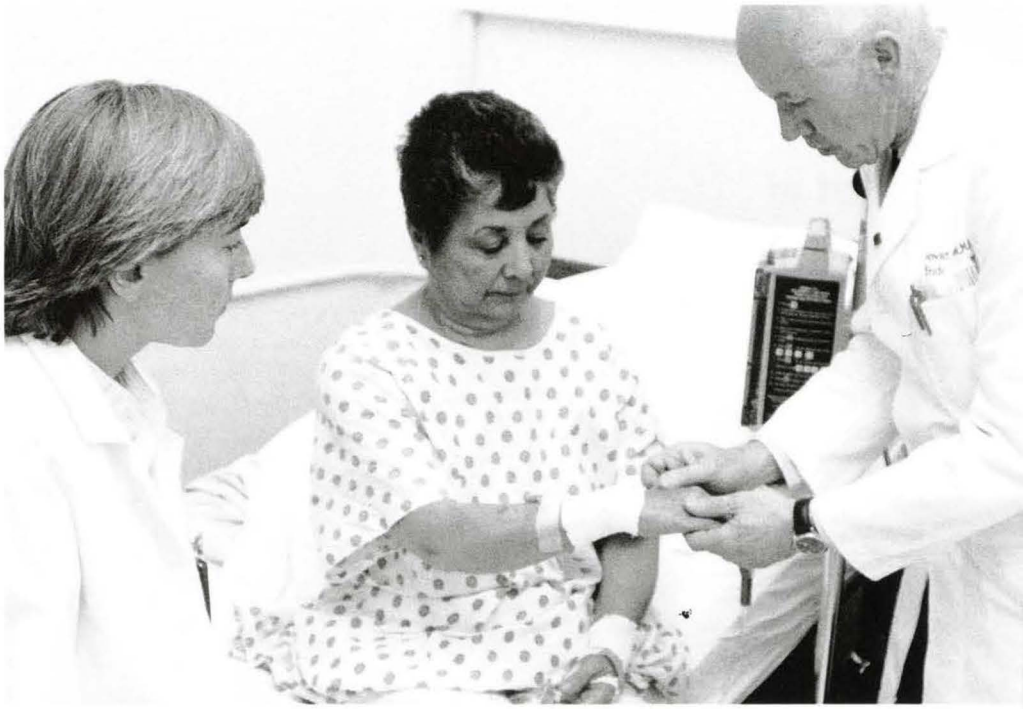
Another vital element in OHSU's success is having a crack in-house team of specialists who frequently and intensively share information and work together, transcending the insularity that often separates departments. "The key to caring for Cushing's victims," said Samuels, "is teamwork. And we have two of the best in the country: neurointerventionist/neurosurgeon Barnwell, and neuroradiologist (neuroradiologists pinpoint the location of tiny tumors) Scott Atlas, M.D., who joined us early this year from the University of Pennsylvania Medical School, one of the best in the country in the area of pituitary research."

So. What's next?

"Well," said Samuels, "using the data that we are currently collecting, we could be in a position a year from now where we are able to use cavernous sinus sampling as the intitial diagnostic test — to be able to tell patients almost immediately whether they have Cushing's, something we cannot do right now. We'll be able to greatly alleviate the anxiety that patients feel when they have to wait for months to know for sure if they even have Cushing's."

Could this happen within, say, a year?

"A year?" said Samuels, pausing briefly to look out the window of her eighth floor office. "Yes," she said, nodding. "I'd say that's a reasonable expectation." OHSU



Mary Samuels, M.D., and David Cook, M.D., meet with one of their patients in the Clinical Research Center. Extensive testing is key in diagnosing Cushing's syndrome.

School of Medicine, Department of Medicine, Division of Endocrinology, Diabetes and Clinical Nutrition (staff in story):

David M. Cook, M.D., professor of medicine

Mary H. Samuels, M.D., assistant professor of medicine

School of Medicine, Department of Diagnostic Radiology (staff in story):

Scott W. Atlas, M.D., professor of diagnostic radiology

Stanley L. Barnwell, M.D., Ph.D., associate professor of diagnostic radiology, Dotter Institute for Interventional Therapy, and associate professor of surgery

IN IT FOR THE LONG RUN

The art of transplantation medicine.

by Joel Preston Smith

Becky McKenzie was in Reno, Nev., at the Comstock Casino, and she'd just sat down at the blackjack table with $320 in new money in her pocket. A Friday night, November 1994 -- she remembers it vividly. She was picking up the first hand and there at the top of her throat, a prickling. Then a hoarse, dry cough. She shrugged it off, played on, and when she finally found the elevator up to her room, morning was only an hour under the horizon.

She was worse the next night. By Sunday, when she drove back to Prineville, Ore., she hardly had the strength to walk. There was no reason, she believed, to think that the hoarseness, the malaise, was in any way connected with what had happened to her earlier, in the spring, when her legs had swollen so big she couldn't get her socks on, and her thighs were so thick she couldn't wear pants any longer, and her mother had had to buy her maternity clothes just to go outside.

McKenzie, 35 and legally blind, was so weak by the following Thursday that her parents drove her to a clinic in Prineville. After drawing blood, doctors there took her parents around the corner and asked McKenzie to wait in the hall. They didn't take the couple far enough. McKenzie said, "I heard them tell my parents, 'Get her to the hospital as fast as you can go without wrecking the car.'" Three nurses were waiting when McKenzie got to the hospital in Bend. In the confusion, the phalanx of white coats, wheelchairs and strangers talking incomprehensively all at once, the words dialysis and acute kidney failure stuck somewhere deep in her mind.

"They had me hooked up before I was even out of my street clothes."

Five months later, out of the "thick of it" but still not well, McKenzie found herself at a crossroads. She went from fear, despair and confusion — "My first reaction was not wanting to go on dialysis. I didn't even know what it was for" -- to a kind of measured optimism.

McKenzie, who was diagnosed with diabetes at age 14 and has had seven major eye operations, said she hardly had the will to live at first. "I was hysterical. I was determined I wasn't going to be kept alive by a machine."

A transplant was out of the question. There was the epic waiting list, the pain, the circumscribed life afterwards and a good possibility she wouldn't live long after the operation anyway — or so she believed.

McKenzie said after two days on hemodialysis, nurses at St. Charles Medical Center in Bend turned her around. "I don't think I'd be alive today if it weren't for them," McKenzie speculated. Nurses sat bedside with her and explained the options. Yes, you could spend the rest of your life on dialysis, with a fistula (a tube for channeling blood during the procedure) implanted in your arm. Or you could spend a short time on a waiting list, get a transplant and recover both your life and your lifestyle. That didn't sound like an artificial existence to McKenzie. That sounded like resurrection.

Now, some seven months later, McKenzie is wending her way through OHSU's pre-transplant program. Like most people who've learned about transplantation the hard way, she's a rare witness to one of medicine's most talked about, and least understood, arenas.

Transplantation is something of an Aristophenian drama: unless you catch the whispers off in the wings, you never really get the plot. Most of what goes on never makes it center stage, where physicians labor over the failing organ, new kidney iced and waiting bedside. The public image of transplantation is that you get sick, you get an operation.

But before patients ever make it to the operating room, physicians evaluate their medical history, dialysis staff stabilize the blood's growing toxicity, dietitians manage how each medicine will dovetail with their diet ... the list goes on. Social workers, dentists, pharmacists, chaplains, transplant

coordinators... According to Douglas Norman, M.D., director of transplantation medicine, it's this thorough evaluation — rather than some magic bullet — that makes the university's program so successful. In a recent study of 236 transplant programs in the United States, conducted by the United Network for Organ Sharing, OHSU's kidney transplant program ranked third in "actual survival rates" among the nation's 20 largest transplant centers.

"We're not successful because of some major new technique or formula," said Norman, director of immunology and renal transplant medicine. "We're successful because we have a good pre-transplant selection process and a good follow-up program."

Nephrologist William Bennett, M.D., agreed emphatically. "We transplant some of the highest-risk patients, but we manage them well before surgery," explained Bennett. "The better we know the patient, the better we know what we're going to encounter."

Norman noted that the university's medical and support staff may spend several weeks just to draw a thorough profile of how a patient such as McKenzie will fare after a transplant. The underlying question, through it all, is, Will the patient be better off after the transplant than she is now? Sometimes the answer is no. Patients fighting a malignancy, patients who have a major systemic disease or who are HIV-positive would be so jeopardized by immune-system suppression that a kidney transplant would offer little improvement.

"A lot of people think you get the kidney and ride off into the sunset," said Linda Wehrman, clinical transplant coordinator. "That's really just when the work begins." Making sure the patient sees himself "as the captain of the team," as much responsible for the ultimate outcome as the physicians and support staff, is one of the principal goals of the university's transplant program.

The irony for McKenzie and other transplant recipients is that once the new organ is in place, physicians "have to make you a little sick in order to make you better," remarked Bennett. Immunosuppressive drugs combat white blood cells directed against the transplanted organ, thus preventing rejection. But in doing so, they also put the patient at an increased risk of infection. Since 1959, the year of OHSU's first kidney transplant, improved immunosuppression has been both the curse and the blessing of transplant medicine.

"Making sure the patient sees himself as the captain of the team, as much responsible for the ultimate outcome as the physicians and support staff, is one of the principal goals of the university's transplant program."

Knowing how much to reduce the action of T-cells, helper cells and antibodies against a foreign organ — without entirely shutting down the body's ability to cope with infectious agents, viruses and bacteria — is what Bennett calls "the art of transplantation medicine."

"Drug research," according to Noreen Schmunk, a research nurse with the division, "is a very vital part of transplantation medicine. Without patient support in clinical trials, we wouldn't be anywhere near where we are today. The patients," Schmunk added, "are pioneers, too."

At the Immunogenetics and Transplantation Laboratory, the division screens the immunosuppressive effects of drugs by employing a laser to map antibodies, cell by cell, which attack the transplanted organ. Looking like an industrial-strength microwave oven, the flow cytometer pumps donor cells through recipient serum to find evidence of antibody attacks on cell membranes. The technology is essential, said Norman, in finding the most appropriate match — and the least potential for complications — for a transplant recipient.

The university has transplanted more than 2,100 kidneys in its 35-year history in the field. Norman noted that in time, OHSU has catalyzed a number of medical and surgical innovations in kidney transplants. One of the most notable and widespread advances involves sewing the ureter into the bladder. The procedure has become so routine and so standardized that in many parts of the world it's known as "the Barry procedure," after OHSU surgeon John Barry, M.D.

"The big challenge is not your initial success rate anymore," Bennett remarked. "It's the long-term success that counts."

Being in it for the long run — that's McKenzie's dream. She's surprised but sees the advantage of all the hurdles, all the drug juggling, all the poking and prodding and prying into her diet, her habits, her own attitude toward taking medicines that will both compromise her immune system and extend her life. "I didn't realize you had to go through this," McKenzie admitted. "Still, I don't see it as a hassle because if your life means that much to you, you're going to do it." OHSU

School of Medicine, Department of Medicine, Division of Nephrology and Hypertension (staff in story):

William M. Bennett, M.D., professor of medicine and pharmacology, and head of pancreas transplantation medicine

Douglas J. Norman, M.D., professor of medicine and medical director of transplantation medicine

Noreen J. Schmunk, registered nurse

Linda J. Wehrman, registered nurse, and renal clinical transplant coordinator

School of Medicine, Department of Surgery, Division of Urology (staff in story):

John M. Barry, M.D., professor of surgery, head of urology and surgical director of renal transplantation

STRET

Medical sleuths unravel the complexities of fibromyalgia.

by Julianne Remington

People with fibromyalgia can become 90 percent better," explained Carol Burckhardt, Ph.D., who helped design an innovative self-management program aimed at relieving this painful condition. "The symptoms of fibromyalgia may be very puzzling to a lot of people. The first signs are fatigue, stiffness and widespread muscle pain."

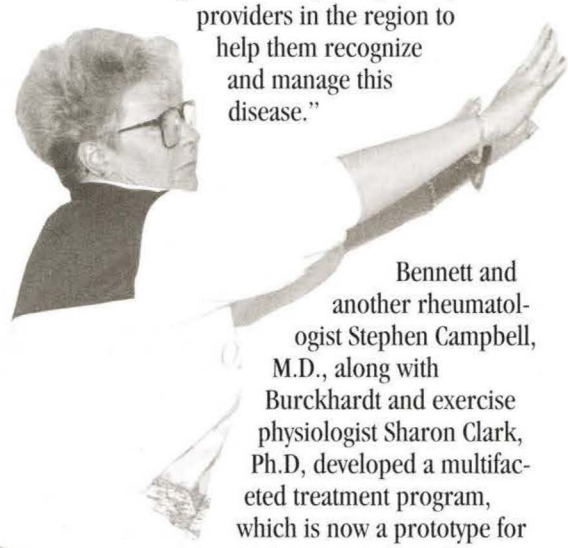
When fibromyalgia struck 56-year-old Sally Jacobs, she wondered if all her good days were behind her. At first she thought she had the flu. But it lingered mysteriously, and she felt irritated, tired and sore all the time. Her easy vitality vanished and muscle pain appeared from nowhere like an oppressive, exhausting intruder.

Physical strength had always been an unearned gift for Jacobs, a matter of will power. Now she could barely function. "A helpless feeling began to grip me for the first time in my life," said Jacobs. "I felt worried and wondered if it was cancer, or arthritis and I started to dread Lyme disease and chronic fatigue syndrome. No one seemed to know what I had."

Jacobs was eventually referred by her family physician to Robert Bennett, M.D., a rheumatologist at OHSU specializing in the poorly understood condition known as fibromyalgia.

Bennett and his colleagues had given a workshop on fibromyalgia in Jacobs' hometown of Walla Walla, Wash., and Jacobs' doctor made the link between her symptoms and the chronic muscle pain, fatigue and sleep disturbance that characterize fibromyalgia.

"In 1989 a number of us at OHSU decided to treat fibromyalgia using a team approach," explained Bennett, who conducted many of the seminal studies that originally helped define the mysterious condition. "Fibromyalgia patients have a complex spectrum of problems, including a lot of stress related to pain and fatigue. We give workshops for primary care providers in the region to help them recognize and manage this disease."



Bennett and another rheumatologist Stephen Campbell, M.D., along with Burckhardt and exercise physiologist Sharon Clark, Ph.D, developed a multifaceted treatment program, which is now a prototype for similar programs in this country and throughout the world. The treatment is aimed at helping fibromyalgia patients play a large role in managing their symptoms and emphasizes patient education, stress management and exercise training.

"When patients begin the treatment program, they meet in small groups every week for five months," explained Burckhardt. "Dr. Bennett, Dr. Campbell and a recently recruited rheumatologist Dr. Kelly Krohn educate patients

Sharon Clark, Ph.D, helps one of her patients with a new stretching technique.

CHING FOR ANSWERS

in detail about what fibromyalgia is and what it isn't. We take a team approach to helping patients respond more positively to their limitations and maximize their remaining strength."

Burckhardt helps patients cope with stress by teaching relaxation strategies, guided imagery and positive self-talk. Known as cognitive restructuring, these techniques enable patients to get rid of the negative messages they send to themselves about their fibromyalgia. They start to substitute positive affirmations about their strong points. "We do a lot of time management work with patients too," added Burckhardt, "so people can accomplish what they have to do and pursue activities that bring them pleasure within their limited energy level."

Burckhardt emphasized that there is no "typical" fibromyalgia patient. The disease strikes men and women of all ages, though the incidence increases with age. The most recent epidemiological data indicate that 3.4 percent of women are affected and .5 percent of men. An important part of the self-management involves psychological counseling to assist people in adapting to their chronic condition. Clinical psychologist Connie O'Reilly, Ph.D., provides family counseling and meets with couples to address issues that arise from the pain and fatigue of fibromyalgia.

Exercise physiologist Clark teaches fibromyalgia patients how to condition themselves. Clark begins with stretching exercises to improve fitness and then gradually moves into aerobic training. She teaches patients how to evaluate community exercise programs to see whether they meet their needs. For the fibromyalgia patient, there is a fine line between staying in shape and over doing it. They need to learn how to perform certain muscle activities in ways that reduce further damage. Though there is no cure at present, patients can manage their symptoms to enhance their overall well-being.

"Until you know what causes something, you can't tell people that they will be cured," said Burckhardt. "But we can tell patients what we have seen from our clinical work. Fibromyalgia patients can become 90 percent better."

OHSU's fibromyalgia treatment program began in March of 1989. "When we set out to design our program, we combined the best of our clinical knowledge with the little bit that was in the medical literature about fibromyalgia," explained Burckhardt. "Then we reviewed the literature about self-management techniques used with other chronic conditions such as osteoarthritis and rheumatoid arthritis. Finally, we tailored this information to fit the needs of people with fibromyalgia."

Over time, Burckhardt and her colleagues refined the specialized self-management strategies for fibromyalgia patients. "There are ways to stretch and use the muscles that help reduce pain," explained Clark. "And gradual exercise that builds very slowly over time conditions patients without damaging their already sore muscles."

The team found that people needed to stay in treatment for five or six months before they really felt the benefits. "Exercise conditioning and behavior modification take time," said Burckhardt. "Real change requires a time commitment of at least six months. Then patients often go their own way because they have learned enough about coping successfully with their condition. If they need to see any one of us individually for further work, they can."

Burckhardt explained that many fibromyalgia patients consider fatigue their worst symptom because they don't wake up refreshed even if they sleep all night. Though the cause of fibromyalgia remains unknown, there have been several hypotheses about its origin. Some researchers, including Bennett, believe a disruption in a neuroendocrine feedback loop that controls the production of growth hormone by the pituitary gland may play a role in the aggravation of the condition. Growth hormone is produced mainly during a part of our deep sleep called stage four sleep. Most fibromyalgia patients have very diminished stage four sleep.

Clark and Bennett together with the rest of the team, including nurse practitioner Jackie Walczyk, conducted the first clinical trial using recombinant human growth hormone with fibromyalgia patients. The research showed that a significant number of patients taking the growth hormone improved dramatically compared to those taking a placebo. However, the drug is so expensive at this time, most patients can only obtain it by participating in a sponsored clinical research trial. The biotech company producing the growth hormone is considering a larger, multicenter clinical trial to further investigate the efficacy of

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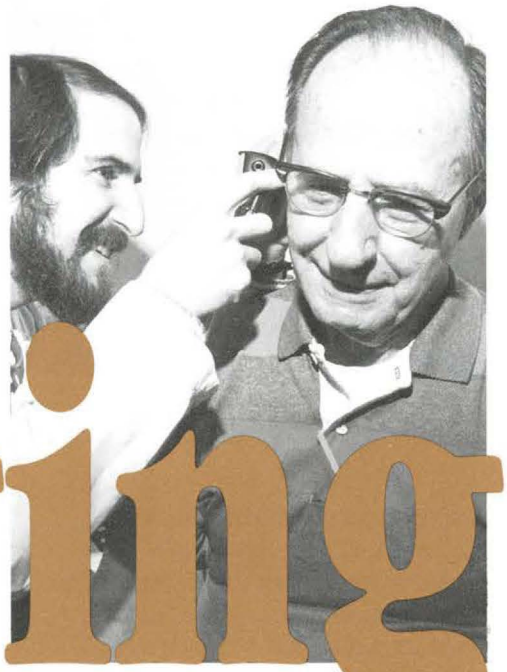
Addressing the needs of a Changing health care environment is Primary care at its Best.



by Marlys Levin Pierson
and Doug Rennie

There was a time when patients booked appointments at a university medical center only when they needed to see subspecialists and were referred by their family doctors. Today patients come for the full spectrum of health care — from the basic to the complex, from disease prevention to highly sophisticated care for rare or complicated illnesses. They come with referrals or on their own; they come to the academic health center campus or to an OHSU neighborhood clinic.

"It's a new era. Primary care is the base on which the academic health center's pyramid rests," said Gregg Coodley, M.D., chief of the university section of general internal medicine. "For years, academic medicine concentrated on high-tech, inpatient services — things like transplants and highly specialized subspecialties."

All of this is changing, and quickly. The team delivery of care is not only the wave of the future, it places primary care in a central, coordinating role.

"The managed-care revolution," explained Coodley, "has put new emphasis on the coordination of patients' care through internists and other primary care physicians." In the capitated- and managed-care era, providers receive fixed monthly fees per person regardless of the patient's medical needs. Thus, the management of resources (and care) by primary care physicians has become increasingly important. "It is simply not cost-effective to slight health promotion and disease prevention, nor is it cost-effective to have subspecialists inappropriately used," said Coodley.

And the revolution, Coodley believes, is just getting started.

One of the biggest complaints in American health care is that medical schools are not only training too few primary care providers, they're training them in high-tech hospitals instead of in outpatient settings, and they're not training physicians to function as a team.

Not so at OHSU. The School of Medicine has responded by developing primary care-oriented models for both teaching and delivery of care. The advantages of this new system are many. "For one thing," said Coodley, "these changes reflect a new interest in primary care for OHSU."

As a result, there has been a dramatic increase in the number of primary care providers at OHSU. In fact, primary care physicians from four university departments — internal medicine, family medicine, pediatrics, and obstetrics and gynecology — have formed the Integrated Primary Care Organization to better provide efficient and cost-effective primary care services. They are managing the care of a growing number

of patients who are encouraged by their insurers to have their health care coordinated by internists or other primary care physicians. This shift to "every one starts with a primary care physician" from "every one starts with several specialists" reflects the new thinking in this health care era.

Government support for academic health centers continues to decline and private insurers continue to be reluctant to pay for training and research, even though they could eventually benefit everyone. As a result, university medical centers are increasingly dependent on patient care revenues. "As the university expands its primary care services," said Coodley, "it can better support the range of secondary and tertiary clinical care, as well as education and research. The university's general internal medicine clinic has experienced a 42 percent increase in patients this last year," he added.

Capitated care, unfortunately, Coodley explained, does not make allowances for academic health centers such as OHSU that care for the nation's sickest patients. In this fixed-fee era, faculty who care for patients with the most severe medical needs, with conditions that are difficult to diagnosis and treat, receive the same fee as providers whose patients are healthier.

Restructuring of OHSU's professional product is another spin off of the change. For starters, the primary care training requirements for OHSU medicine residents have nearly doubled in recent years. Residents will soon spend two half days each week in primary care with their own patients, compared to half that in years past. Their training includes increased experiences in outpatient settings, including both inner-city and rural underserved areas. New curricula offered to internal medicine trainees allow residents to tailor their education to include experiences not frequently offered in the academic setting. Innovations aimed at improving patient care and general internal medicine include podiatry, acupuncture, comfort care for the terminally ill and information technology systems, to name a few.

"The number of faculty who are general internists has also grown significantly," Coodley pointed out. The growth of the general internist has not displaced the need for or importance of the specialists. Rather, the "new look" wrought by the managed-care whirlwind magnifies the importance of the generalist and specialist working as a team to optimize the comprehensive management of the patient. The bottom line is this: expanded primary care capabilities at OHSU will, in the new managed-care era, allow the university to provide the best possible patient care in a cost-effective manner.

The Portland Department of Veterans Affairs Medical Center is a very important part of the training of all OHSU residents, particularly the internists. Thus as OHSU's curricula and practices change to respond to today's needs, the university's affiliated VAMC is experiencing similar changes.

According to Thomas Cooney, M.D., residency director for the Department of Medicine, "Last year the secretary of the Veterans Administration in Washington, D.C., issued an edict that the VA nationally would move toward the primary care model of delivering medical services. Although the VA has a unique mission, the belief is that it will become more efficient and more relevant to patients' needs — and more competitive, too — if it emulates the medical settings in both medical schools and in the private sector."

Even prior to the "capitol imperative," Cooney explained, "the Portland VA already had initiated a plan to increase its primary care capacity by developing and implementing a medical model that parallels the changes occuring at the university.

The up side to the changes ongoing at OHSU to meet the challenges of the managed-care era include a better balance of physician skills to practice in a more cost-efficient manner. There is, however, a down side and that is a significant reduction in support for graduate medical education.

Training graduate doctors — interns and residents — is expensive. This cost has been supported in large part by Medicare. In the current health care era, this support is at risk for being significantly reduced. "There is a real threat," said Cooney, "and that is that one day, possibly soon, there may be a lot less money available for graduate medical education, given the budget-cutting political climate in Washington. All you need to do is read the newspaper to know that Medicare is one of the few areas left to cut, and Medicare is one of the few sources left to fund graduate medical studies. It just seems inevitable that Congress will cut the money used to finance these graduate progams. We'll see some changes then, too, though not the kind we want." OHSU

School of Medicine, Department of Medicine, Division of General Internal Medicine (staff in story):

Gregg O. Coodley, M.D., assistant professor of medicine and chief of the university section of the division

Thomas G. Cooney, M.D., professor of medicine, OHSU and VAMC, and director of the department's residency program

What's an Internist Anyway

An internist is a primary care physician who specializes in the care of adults. Clearly, the internist — also called a general internal medicine doctor — needs a new name, according to OHSU internist, Donald Girard, M.D.

"I've pretty much given up on telling people I'm an internist," said Girard. "I can tell by their furrowed brows, they're wondering why a guy with white hair is still working his way through his early medical training program. 'No, not an intern — one of those young medical school graduates in the first year of postgraduate training. They almost never have white hair.'"

Internists are like pediatricians except they specialize in adults instead of children.

"I think we need to change our name — maybe *adultrician* or *adultologist* might be more descriptive titles," he said. "Everyone knows what a cardiologist does, even a neurologist."

Like an intern, they are always learning explained Girard. But by the time they've earned the privilege of being an internist, they've completed four years of medical school and three years of postgraduate training (as an intern and resident), specializing in managing the care of adults.

Through the Ages

Perfecting the picture with enhanced imaging techniques.

by Julianne Remington

Making people more comfortable is the ultimate goal of medicine. Sometimes that means a complete cure. And sometimes it means the relief of unbearable symptoms if the disease has become incurable.

When 70-year-old Mary Banks came to see Ronald Katon, M.D., she was carrying a cup in her hand to collect her saliva. She could no longer swallow because a tumor that began as lung cancer had enlarged and was pressing on her esophagus.

"I see a lot of patients with cancers blocking the esophagus," said Katon, who specializes in gastroenterology. "These patients cannot swallow and need immediate relief. Such cancers may originate in the esophagus or arise in other organs such as the lung or breast."

During the past five years, OHSU physicians have devised a way to open strictures in the esophagus using an expandable, metallic device called a stent. The expandable stent is covered with a silicone membrane and can be collapsed into a very small catheter and placed in the esophagus under X-ray guidance.

Katon examined Banks' esophagus with the help of an endoscope — a narrow fiberoptic tube with a tiny videocamera at the end. Using local anesthesia, he threaded the endoscope into the esophagus to obtain a direct view of the impinging tumor. A 10-centimeter-long stent was handmade to fit inside the esophagus and open it up.

Working together with interventional radiologists specializing in X-ray guided techniques, Katon prepared Banks for the non-surgical procedure with local anesthesia. Physicians first placed a guide wire down the esophagus and through the tumor. Then a specially designed catheter was loaded with the expandable wire stent. "The catheter was passed over the guide wire. And when the stent was released from the constraining catheter, the stent opened up gradually and forced the tumor apart," explained Katon.

Within moments the patient was able to swallow and four hours later she went home with her family. During the remaining 15 months of Banks' life she was able to eat normally and remain at home with her daughter and son-in-law.

"I see a lot of patients with incurable cancer, and some of the most rewarding experiences I've had involved taking care of these patients and their families," said Katon. "They are so grateful to swallow again and live at home for the last few months of their lives. It's not depressing as one might think. You see an immediate result and the relief lasts generally as long as the patient lives."

Patients have traveled to OHSU from around the country and the world for this comfort care. The silicone-covered wire stents are handmade at OHSU's Dotter Institute for Interventional Therapy and tailored to each patient's unique problem. The Dotter Institute has pioneered numerous X-ray guided procedures to clear obstructions and repair injured tissue. OHSU is one of a few centers in the country that offers expandable wire stents to treat esophageal malignancies.

The stent is also used successfully to close off esophago-tracheal fistulas, which occur when a tumor erodes from the esophagus into the bronchial tree of the lungs. This is a desperate condition in which the patient coughs and aspirates food because liquids and solids pass directly from the esophagus into the lungs, causing infection and often pneumonia. "The stent is collapsed into a very small catheter and placed under X-ray guidance," said Katon. "When the stent is released from the catheter, it expands to cover up the fistula so the patient doesn't suffer from food and fluid going into the lungs."

Katon has also pioneered the use of the endoscopic laser in Oregon, which can be used to burn away esophageal and rectal tumors and to treat various types of bleeding lesions in the gastrointestinal tract.

The Division of Gastroenterology is frequently involved in collaborative solutions to complex clinical cases. When a 27-year-old pregnant woman with severe abdominal pain was referred to University Hospital, Katon worked with ultrasound specialists to determine the problem. The woman's pain was caused by a large stone blocking the bile duct, which empties into the small intestine. Using the endoscope, Katon viewed the blocked bile duct on a TV monitor. He then threaded a thin wire through the endoscope tube and applied an electric current to open the blocked bile duct. The stone popped quickly from the bile duct into the small intestine where it moved along easily. The patient returned home two days later and eventually delivered a healthy baby.

"Many diseases of the gastrointestinal tract require endoscopic solutions," noted Katon, who has been the director of endoscopy for 20 years. "If there is a difficult digestive problem to diagnose or treat, I get a call. We now use a longer scope called an enteroscope to look farther into the small intestine than we could before." Therapeutic applications of endoscopy include polyp removal, balloon dilation of strictures, removal of bile-duct stones, control of active hemorrhage, laser treatment of cancer, placement of feeding tubes and esophageal stents.

Though modern endoscopes appeared 20 years ago, recent advances in video technology have revolutionized the field of gastroenterology. Before the fiber optic endoscope, gastroenterologists relied heavily on barium X-rays, blood tests and a lot of clinical expertise. Now refinements in ultrasound, CAT scans and the endoscope have expanded the tools for viewing the inside of the body. Katon and his colleagues Emmet Keeffe, M.D., and Clifford Melnyk, M.D., designed the first flexible sigmoidoscope, widely recognized as a major advance in the diagnosis of colorectal disorders. They were the co-authors of a book titled *Flexible Sigmoidoscopy* published in 1985, and Katon and Melnyk have taught numerous workshops designed to train primary care physicians in this technique.

> "One day patients will swallow little capsules with video chips inside enabling doctors to view the entire length of the alimentary canal without threading any kind of scope into the body."

Advances in seeing previously hidden areas of the body translate to better diagnosis and treatment. It was only 130 years ago that William Beaumont gave the first modern description of gastric physiology. One can only guess what he would think of today's vivid, color images obtained with the endoscope. And though it may be hard for us to imagine, one day patients will swallow little capsules with video chips inside enabling doctors to view the entire length of the alimentary canal without threading any kind of scope into the body. Leading gastroenterologists predict this will be the case by the year 2020. "Using the same remote capabilities by which we manipulate space satellites through distant galaxies, gastroenterologists will guide the encapsulated endoscope through the digestive tract," said David Fleischer, M.D., former president of the American Society for Gastrointestinal Endoscopy.

Visualizing the problem area is often a key to successful treatment. The sooner a lesion or diseased site can be located, the better chance there is for a cure. No where is that more evident than in colon cancer, which claims the largest number of cancer deaths in the United States next to lung cancer. Yet, the survival rate from colon cancer is very good if it's caught early.

"Many people have suggested that if you really want to eliminate colon cancer, you should screen everybody one time with a colonoscopy and determine if they have polyps," said David Lieberman, M.D., an OHSU/VAMC gastroenterologist, who heads the nation's largest clinical trial on colon cancer. "If they don't have polyps, we feel they are at very low risk for at least 10 years. But screening for everyone is costly and hard to do."

Instead of massive screening with colonoscopy exams, Lieberman and his colleagues believe that grouping patients according to risk will help sort out the people who could benefit most from regular colonoscopy exams. "There are a variety of potential risk factors that can increase the chances of getting colon cancer," said Lieberman. "None of these risk factors have been carefully studied at this point. Consequently we recommend screening for everyone beginning at age 50."

Lieberman is the principal investigator of a three-year, $2.7 million national clinical trial aimed at definitively uncovering the risk factors for colon cancer. Known as the Veterans Administration Cooperative Study, the clinical trial began in January 1994 and involves 13 centers across the country. "The major goal is to identify risk factors for large colon polyps, which can develop into cancer," said Lieberman.

The study entails examining 3,000 healthy, male veterans between the ages of 50 and 75. Study participants are selected at random from general medicine clinics and undergo full colonoscopic examinations to determine if they have polyps. "At the same time we're acquiring lots of information about their family history, diet, medications, physical activity and habits," explained Lieberman. High levels of dietary fat, low levels of fiber, insufficient calcium and vitamins, inadequate exercise and prior gall bladder surgery all are under investigation as risk factors.

The researchers are obtaining tissue

continued on page 28

CUTTING *through the* fat

by Dick Baltus

Roger Illingworth, M.D., Ph.D., cuts through the fat and goes straight to the numbers that define the scope of America's cholesterol problem.

"The Centers for Disease Control estimate that 95 million American adults have blood cholesterol values higher than the optimal level of 200; that's more than half of all adults," he said. "About 37 million, or 20 percent of all adults, have levels of 240 or above. Thirteen million people have cholesterol concentrations that potentially qualify them for drug therapy in addition to dietary modification."

Considering the indisputable link between cholesterol and heart disease, these are sobering statistics that help explain not only America's current obsession with all things low-fat, but also the steady growth of the Lipid Disorders Clinic at OHSU.

In the two decades since William Connor, M.D., opened the clinic, it has evolved from a one-man program devoted to cholesterol research into an active center widely recognized for its expertise in the diagnosis and treatment of lipid disorders, patient education and clinical investigations. Patients with cholesterol-related disorders travel from all across the state and points beyond to take advantage of the expertise focusing on lipids, the fatty substances in the blood that give cholesterol its well-deserved bad name.

That expertise was developed, to a great degree, on site and is enhanced by clinical and laboratory research conducted by lipid clinic staff and their colleagues. Illingworth joined the clinic in 1980 (Bart Duell, M.D., is the clinic's third physician) and has obtained several grants for studies related to lipid disorders.

Among its many studies, the staff of the clinic have drawn national attention for their work on the lipid-modifying effects of dietary fatty acids as well as original work to evaluate the efficacy and metabolic effects of newer cholesterol drugs.

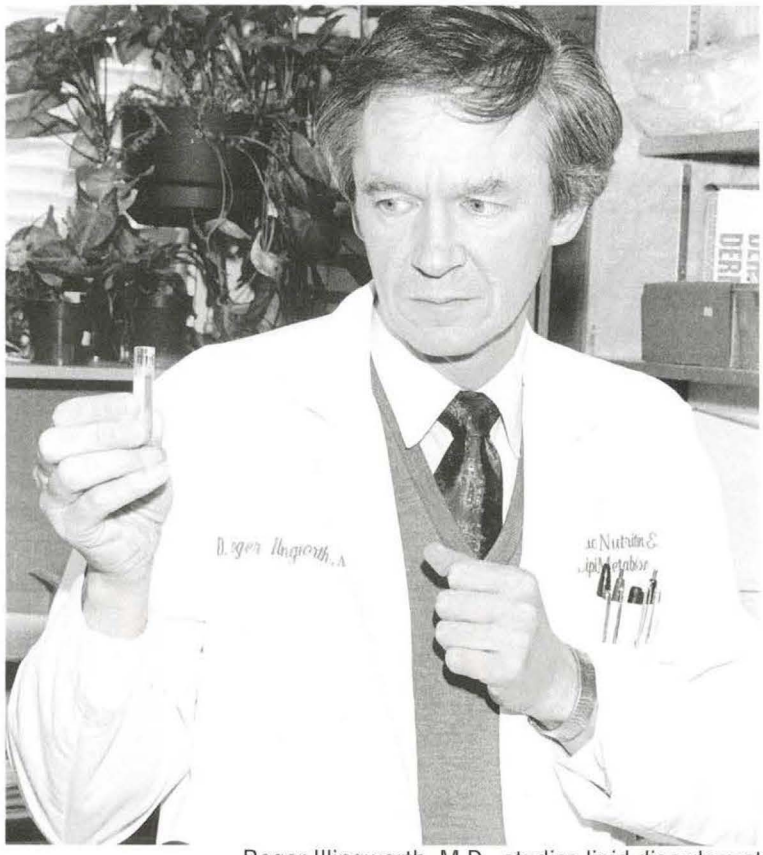
The staff's active role in research means the patients who come to the Lipid Disorders Clinic find themselves benefiting from the most up-to-date techniques and therapies available for the diagnosis and treatment of cholesterol disorders.

Exploring Family Ties

One of the most common conditions seen at the Lipid Disorders Clinic is an inherited disorder called familial hypercholesterolemia. The disorder, which results in above-normal levels of blood cholesterol, affects approximately one in 500 persons and is present from birth. Familial hypercholesterolemia is associated with an increased risk of premature coronary heart disease.

"Men with this disorder typically develop symptoms suggestive of heart disease in their early 40s, and women become at risk in their early 50s," Illingworth said.

That points to the importance of early diagnosis. At the Lipid Disorders Clinic, physicians use sophisticated laboratory tests that enable them to study lipid disorders at



Roger Illingworth, M.D., studies lipid disorders at the cellular and molecular level.

the cellular and molecular level. "This is helping us gain a much better understanding of the causes of lipid disorders," said Illingworth of the technology that is not available elsewhere in the state.

The Lipid Disorders Clinic is one of six centers comprising a national registry whose goal is to gather data that will lead to better means of identifying members of families in which the potential exists for familial hypercholesterolemia. "Ultimately, we would like to be able to screen all relatives in a region who are living with this condition but don't know it," Illingworth said.

Ongoing studies by lipid clinic investigators also are giving us a better understanding of the genetic causes of high cholesterol. "We've identified a condition in which the patient has an abnormality in a particular protein (apoprotein B) so that low-density lipoprotein particles don't bind with the receptor that usually clears LDL from the blood," Illingworth said. "We've identified and are following about 30 individuals with this condition and have published three papers outlining their response to diet and drug therapy."

Advances in Treatment

Patients of the Lipid Disorders Clinic received early access to a group of new medications that Illingworth calls the most significant recent advance in the fight against cholesterol. Four drugs — lovastatin, simvastatin, pravastatin and fluvastatin — approved in recent years are all used to help lipid clinic patients lower their blood cholesterol concentrations.

"These drugs act to reduce cholesterol synthesis in the liver and increase the number of LDL receptors present on liver cell membranes," Illingworth said. "Though response varies, reductions in the concentrations of LDL cholesterol ranging from 20 to 40 percent can be achieved. Understanding how these drugs work is a major therapeutic advance."

Two of the clinic's patients benefited from an advanced technology called LDL apheresis. In this procedure, the patient's plasma is circulated through equipment that filters out the lipoprotein.

Diet restrictions designed to reduce intake of saturated fat and cholesterol also play an important role in treatment. Connor, his wife Sonja, and other members of the clinic's nutritional staff have, with their clinical studies and educational efforts, contributed greatly to the increased awareness of the potential for better health through a low-fat, low-cholesterol diet.

Spreading the Message

Education is a critical component of the mission of the Lipid Disorders Clinic. Besides publishing its research findings in leading journals, the clinic staff is involved in an array of educational programs. In addition, an informative quarterly newsletter is mailed to patients and health care professionals throughout the state.

"We are a statewide resource, and our goal is to reach as many people as possible with information that can help them manage their cholesterol," Illingworth said. "We want to help prevent premature heart disease which occurs so commonly in patients with hereditary disorders such as familial hypercholesterolemia." OHSU

School of Medicine, Department of Medicine, Division of Endocrinology, Diabetes and Clinical Nutrition (staff in story):

Sonja L. Connor, M.S., research associate professor of medicine, section of clinical nutrition and lipid metabolism, registered dietitian

William E. Connor, M.D., professor of medicine, section of clinical nutrition and lipid metabolism

Paul B. Duell, M.D., assistant professor of medicine

D. Roger Illingworth, M.D., Ph.D., professor of medicine, chief of clinical nutrition section

Finding the Twilight of Hope in the Darkness of AIDS

by Patricia Feeny

With no cure in sight and no vaccine on the horizon, a simple phrase can become a mantra for those whose lives have been shadowed by a dark disease.

At OHSU's Kelly Avenue Clinic a number of bulletin boards line the walls. Among the notices for research volunteers, personal ads and invitations to support meetings, is a single phrase in a simple frame: "Nothing Is Worth More Than This Day."

"We're under no illusion that we have forever to care for these patients," said AIDS expert Mark Loveless, M.D. "We're working to increase the time they do have and make it the best we can."

Loveless, who directs the Kelly Avenue Clinic, didn't set out to be an AIDS doctor. In 1980, he had just completed a fellowship in infectious disease here at the university. He was working with patients who had sexually transmitted diseases. The word AIDS didn't exist yet.

Since then he has been committed to understanding this disease and those whose lives it affects. "How many physicians have the opportunity to be involved in such an amazing phenomenon that qualifies as life work?" he said. "I feel tremendous satisfaction being in people's lives when they are in the toughest time and doing what I can to help them through it."

Right now the best therapy he can offer is comprehensive care. Loveless recently received a federal grant from the Ryan White Care Act that will fund a project designed to coordinate community services for patients with HIV. The goal of the 10-month program is to maximize patient access to community health care resources. "This is a landmark project; there is nothing like it in the United States," said Loveless.

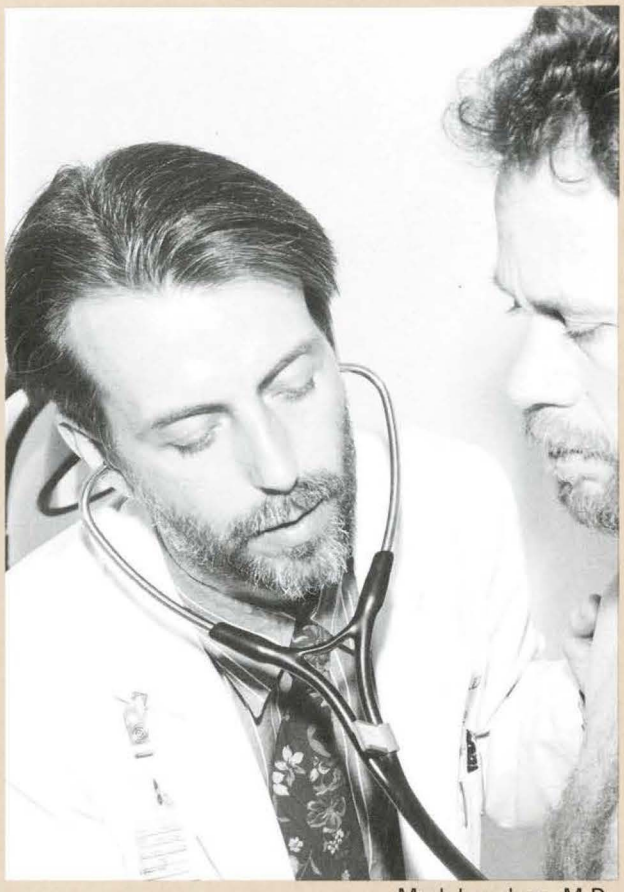
Legacy Health System, Ecumenical Ministries of Oregon, the Institute for Traditional Medicine and the health departments in Multnomah and Clackamas counties have joined OHSU in coordinating services to this patient population.

Here's how the program works: A physician or other health care provider determines if a coordinated approach to care would benefit the patient. If so, the provider refers the patient to a case management team for evaluation of social, medical and economic needs. The team then develops and implements an individualized care plan to meet those needs.

This project won't produce a cure or save any lives, but an estimated 250 OHSU patients will have their access to services markedly improved.

"Unfortunantely, we realize that we will ultimately lose many of our patients. It's part of what we do," Loveless said. "With this disease, successes and failures are not measured by whether patients live or die, but rather how well they function in the face of their illness."

At the Kelly Avenue Clinic, Loveless follows about 400 patients with HIV. "This is a comprehensive, ambulatory care center," said Loveless. "We do both primary care and specialty care for people with HIV and other infectious diseases." The staff, who are also involved in clinical and basic science research at the university, includes physicians, adult nurse practitioners, nurses



Mark Loveless, M.D.

and social workers. The clinic is also a training ground for students, residents, nurses and community physicians. A clinic-based education program keeps care providers up-to-date on information and treatment techniques for HIV and other infectious diseases.

Unlike the sterility and formality so inherent to other clinic settings, the Kelly Avenue Clinic is warm and inviting, looking more like a living room than a clinic. "This is a bad disease that takes its toll on a person emotionally," Loveless said. "The homey atmosphere is designed to decrease the emotional barriers. The softer approach is therapeutic." Because the clinic is adjoined to a day center — a gathering place for those with HIV — patients also receive social support and learn about nutrition and personal care.

In the patient waiting area, four overstuffed, brown recliners form a circle on a Persian style rug. A stack of handmade afghans spill over from a nearby shelf where a framed poster of Mickey Mouse holds court from above. Hand-woven baskets hold pieces of hard candy and the smell of freshly popped corn fills the air.

But there is no mistaking what goes on here. An open door reveals a closet stocked with vials of clear liquid, bottles of rubbing alcohol, boxes of bandages and packages of syringes. In one corner of the clinic are four examination rooms; all are occupied and will be for the rest of the day.

The first patient Loveless sees this afternoon is new to the clinic. He's HIV positive and has been having ongoing episodes of fever and diarrhea. More recently, he has noticed the appearance of spots on his limbs and chest.

Nothing prepares a person for the initial diagnosis of HIV or the ensuing diagnoses of other afflictions. And today's news is not good. Kaposi's Sarcoma, or KS as those in this loop refer to this cancer, is the most likely cause of the spots.

As Loveless makes his diagnosis and explains the next step — chemotherapy — he keeps one reassuring hand on the patient's shoulder and maintains eye contact. His straight-forward, matter-of-fact communication style is tempered with compassion and kindness. His connection to his patients is genuine, his appreciation for them immeasurable.

"I feel an intimacy and immediacy in my relationships with my patients; every event is important," he said. The team approach to the disease is apparent in his choice of words. He uses the word "we" a lot in reference to his patients: "We need to get started on that. We had a rough time with that in the fall. We tried that treatment, let's try something else."

"Teaching works both ways," he said. "Our patients have educated many students, residents, nurses and physicians. They appreciate what we do for them, and we could not move forward without them. The respect is mutual. The way medicine should be."

For these patients whose futures are shrouded in mystery and the unknown, the Kelly Avenue Clinic is a harbor of hope. Although the journeys that bring them here are individual, until there is a cure for AIDS, the endings remain the same. "Nobody survives this disease," said Loveless. "We can only try to make every day as good as we can."

School of Medicine, Department of Medicine, Division of Infectious Disease (staff in story):
Mark Loveless, M.D, associate professor

The Kelly Avenue Clinic is located at 3835 S.W. Kelly Avenue in Portland, Ore.

Fibromyalgia continued

growth hormone. More widespread use of growth hormone will probably bring down the cost of production. Most people cannot pay the current $1,500 monthly expense but two OHSU patients who can afford it are doing very well.

Though fibromyalgia has historically been difficult to diagnosis definitively, during the past decade rheumatologists have arrived at a cluster of features that define the condition clinically. Burckhardt, Bennett and Campbell designed the Fibromyalgia Impact Questionnaire in the late 1980s to assist in diagnosis. The brief 10-item questionnaire measures physical functioning, work status, depression, anxiety, sleep, pain, stiffness, fatigue and well-being. It is now used throughout the world to help in the assessment of disease activity. It has been translated into at least five languages. The self-management, physical training and education program developed at OHSU is remarkably successful in reducing patients' chronic pain.

Managing the chronic pain of fibromyalgia presents unique challenges to both patients and care givers. As Burckhardt explained, many of the drugs that relieve acute pain do not work against chronic pain. But new drugs coming to the market seem to help some people with chronic pain, including fibromyalgia patients. Stress reduction and relaxation therapy currently offer considerable relief to many people.

As people age, they experience more muscolo-skeletal discomforts in general. In the presence of fibromyalgia, complaints that may arise as a normal part of aging are hard to sort out from the disease. "That's why self management of pain and stress are essential to maintain a good quality of life and minimize negative thought patterns that exacerbate the pain," explained Burckhardt.

Fibromyalgia is a relatively common chronic rheumatic disease. The incidence of rheumatic complaints of all kinds is increasing rapidly as the population ages. "With the maturing of the baby boomers, arthritis and rheumatic diseases will be the major chronic health problems in America for the next few decades," explained Bennett. "Osteoarthritis and rheumatoid arthritis appear more frequently as people get older. Education and self-management techniques are critical in minimizing the symptoms of these chronic conditions."

Though some people are afflicted relatively early in life, most of us will experience some combination of muscle, cartilage and bone problems if we're lucky enough to see our 70s or 80s. The privilege of a long human life is presumably worth it. Hence the importance of rheumatology with its pioneering self-management strategies to maximize strength and minimize disabling discomfort. As Bennett noted, "There is no shortage of patients in our specialty. In fact, we had to hire more staff to handle the increasing numbers of people with musculo-skeletal pain problems."

Though the long sought after fountain of youth still evades human kind, we have more power over our lives than many previously thought. As spiritual leaders have emphasized for ages, our ultimate capacity may lie in the resilience of our minds and the regenerative capability of our will. The rheumatologists and colleagues at OHSU help patients combine their individual strengths with sound scientific knowledge about disease. They are showing us that real hope and progress can be found in the enlightened self-management of rheumatic diseases. OHSU

School of Medicine, Department of Medicine, Division of Arthritis and Rheumatic Diseases (staff in story):

Robert M. Bennett, M.D., professor of medicine, head of division and fellow of the Royal College of Physicians of London

Carol A. Burckhardt, Ph.D., registered nurse, professor of mental health nursing, School of Nursing, and assistant professor of medicine

Stephen M. Campbell, M.D., associate professor of medicine, OHSU, and chief of rheumatology, VAMC

Sharon R. Clark, Ph.D., registered nurse, family nurse practitioner, associate professor of nursing, School of Nursing, and assistant professor of medicine

Kelly D. Krohn, M.D., assistant professor of medicine

Connie O'Reilly, Ph.D., clinical assistant professor of medicine

Gastroenterology continued

reliable indicator of colon cancer risk," said Lieberman.

By stratifying patients according to risk, physicians hope to determine who might benefit from highly sensitive tests for colon cancer. And perhaps less invasive screening tests can be performed on patients who are at low risk.

Ronald M. Katon, M.D.

To assist scientists who are searching for genetic markers for colon cancer, the National Cancer Institute has funded the creation of a blood and tissue bank at OHSU for the study. Scientists can use this tissue to test for genetic markers when suspect genes are discovered further down the road. "We are providing a mechanism for other scientists to test genetic markers in the future," explained Lieberman.

Several genes implicated in the familial cancer known as hereditary nonpolyposis colon cancer have been identified, however this form of colon cancer accounts for only five to 10 percent of all colon cancer cases. The vast majority of people who will get colon cancer do not carry an inherited genetic defect. Instead, most colon cancers arise from spontaneous genetic mutations caused by the wear and tear of daily cellular life. "The one risk factor that we know is important in the majority of colon cancers is age," said Lieberman. "We need to identify the other risk factors and screen people in the most effective way possible to reduce the incidence of this widespread and often fatal cancer." OHSU

School of Medicine, Department of Medicine, Division of Gastroenterology (staff in story):

Ronald M. Katon, M.D., professor of medicine and director of endoscopy

Emmet B. Keeffe, M.D., former professor of medicine at OHSU and president-elect of the American Society of Gastrointestinal Endoscopy

David A. Lieberman, M.D., professor of medicine, OHSU, and chief of gastroenterology, VAMC

Clifford S. Melnyk, M.D., professor of medicine and head of the division

OHSU MAKES HISTORY

The public corporation structure helps the university accomplish its missions more efficiently and cost-effectively.

By Marlys Levin Pierson

Oregon has once again made history — this time by being the first in the nation to create a public corporation that separates an entire academic health center from its state system of higher education.

Senate Bill 2 establishes OHSU as a public corporation and delegates its oversight to a Board of Directors appointed by the governor and confirmed by the Oregon Senate. The bill was signed into law by Gov. John Kitzhaber on May 24, and went into effect July 1, 1995. A bipartisan effort, the Senate vote was 24-3 in favor; the House, 57-0.

Though this action means that OHSU will be independent from the Oregon System of Higher Education, its missions of education, research, patient care and public service will remain the same. It will continue to coordinate educational activities with OSSHE.

As a public corporation, OHSU will no longer be a state agency. The Legislature has delegated complete authority for university governance to a single board that will guide the institution. In other words, while OHSU retains its public mission, it will be structured more like a private corporation with a single board that is responsible for its operation and budget. OHSU will no longer have to work through several layers of government.

Unlike a private corporation, however, OHSU will not be owned by stockholders. Its land and buildings will continue to be owned by the citizens of Oregon. The physical facilities will be operated through an agreement similar to a long-term lease.

This new streamlined governance structure will help OHSU carry out its missions more efficiently and effectively and respond better to the demands of a changing marketplace.

Federal and state funding for academic health centers has declined steadily in recent years. Plus, under the managed-care system, private insurers are reluctant to pay for training and research, even though they could eventually benefit everyone. As a result, a few teaching hospitals in the country have separated from their state's system of higher education. However, OHSU is the first academic health center — complete with the schools of medicine, dentistry, nursing, three research institutes, two hospitals and outpatient clinics — to do so.

"I believe that this change may serve as a national model for academic health centers," said Peter O. Kohler, M.D., president of OHSU. "We'll be able to do a far better job with the limited state and federal resources in the managed-care marketplace. That is the advantage taxpayers will have from this innovative bill.

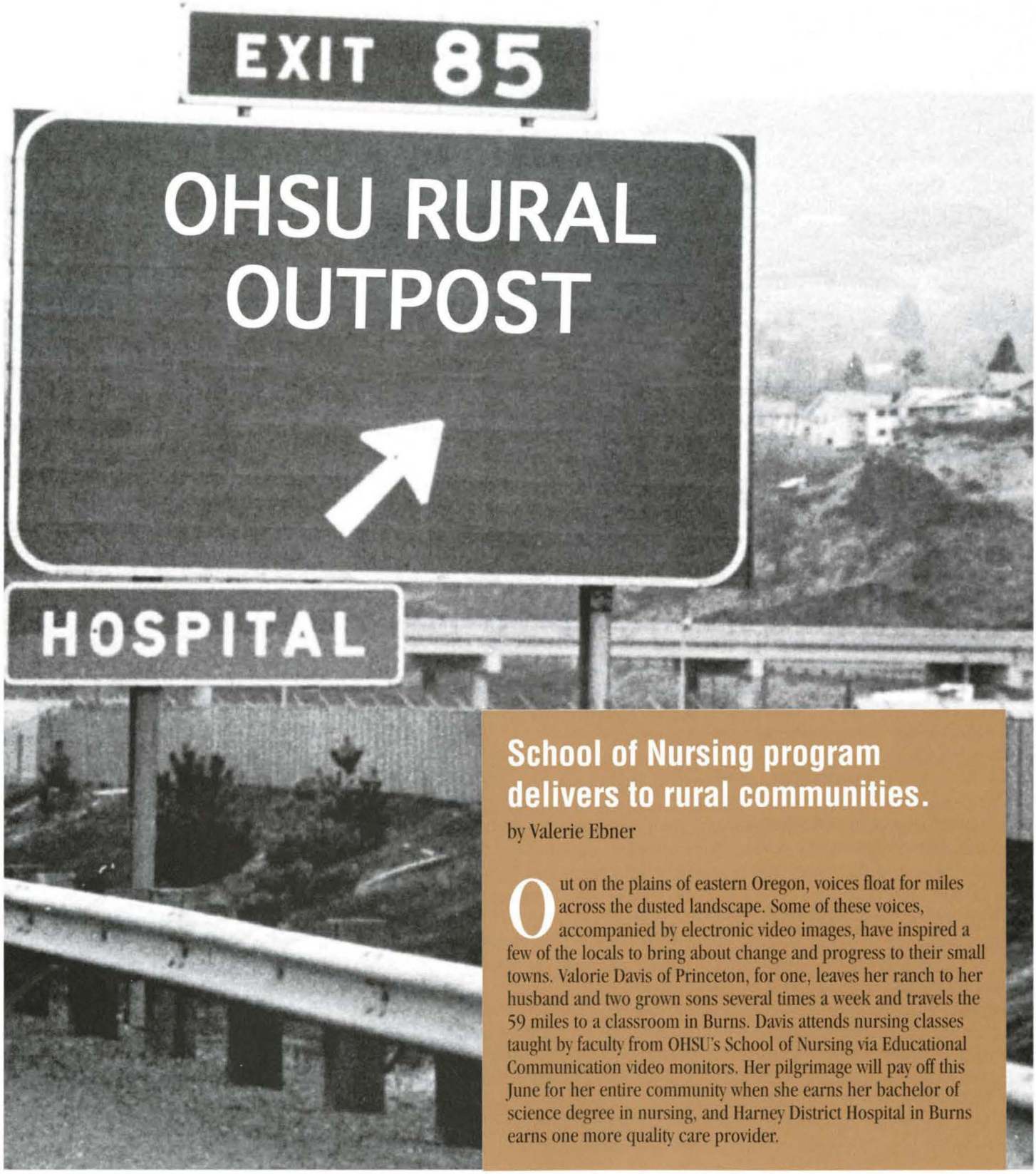
"As we change, a commitment to excellence will continue to be our hallmark. We will be more agile and creative in our decision making, delivering premier education, research, patient care and public service programs."

As a public corporation, OHSU will be subject to the laws for all public bodies such as the right of due process, the Public Records Act and the Ethics in Government provisions. Laws that apply only to state agencies and not to other public bodies will not apply. Examples include state personnel rules, contracting procedures and centralized services.

Over the past decade, OHSU's reliance on state support has declined. However, state funds remain an important source of funding to support its academic programs. Unlike the research and patient care programs that garner support from grants and fees, academic programs have less opportunity to be self-sufficient. Thus the OHSU Board will continue to request a small percentage (11 percent for 1995-97) of its budget from the Legislature biennially.

"Not only does this action address the growing concerns about government efficiency, but it recognizes that the changing health care environment nationally is putting academic medicine at risk," said Kitzhaber. "Unless we allow our only academic health center to function more competitively, OHSU will not be able to maintain the quality that it has achieved, and the health of Oregonians will suffer. That's why we've taken this bold step."

Work is now under way to maximize the tools provided by SB 2. A transition team is reviewing all policies and procedures — including hiring, employee benefits, purchasing and contracting practices. This will streamline and improve OHSU operations enormously. In the interim, OHSU will continue to use established state and higher education guidelines. OHSU



School of Nursing program delivers to rural communities.

by Valerie Ebner

Out on the plains of eastern Oregon, voices float for miles across the dusted landscape. Some of these voices, accompanied by electronic video images, have inspired a few of the locals to bring about change and progress to their small towns. Valorie Davis of Princeton, for one, leaves her ranch to her husband and two grown sons several times a week and travels the 59 miles to a classroom in Burns. Davis attends nursing classes taught by faculty from OHSU's School of Nursing via Educational Communication video monitors. Her pilgrimage will pay off this June for her entire community when she earns her bachelor of science degree in nursing, and Harney District Hospital in Burns earns one more quality care provider.

The program can remove barriers for people hoping to enter the nursing field, but who wish to remain with family or in jobs in a particular rural location. In Davis' case, her eldest son will be off to college soon, but her youngest is still in high school. Although time spent with her family is important, Davis has long anticipated the upcoming empty-nest years as free time to pursue her own dream of going back to school. The Rural Frontier Delivery Program's remote classes have allowed her to earn her degree and watch her sons grow up at the same time.

"I would have been a nurse no matter what, but this program allowed me to get a baccalaureate degree without relocating. Now OHSU is starting a remote master's degree program, and I'm willing to wait here for it."

Davis will be among six students from rural Oregon in the first class to graduate from the Rural Frontier Delivery Program, a remote nursing education program administered by OHSU's School of Nursing and run through its nursing outreach center at Eastern Oregon State College in La Grande. The Murdock Foundation funded the video monitors used in the program.

Classes are broadcast over a remote video system from the EOSC campus and sent to education sites in Baker City, Burns, Lakeview, Enterprise and John Day. David Cary of Prairie City has spent the last two years absorbing the same lessons as Davis through his local video classroom in John Day. The Blue Mountain Hospital there has been very supportive about the program since its start. The people at the hospital know what they stand to gain in a well-trained nursing professional.

"The (RFD) Program has been a godsend for the area. If we didn't have it, the community would not have the opportunity to cultivate quality nurses from quality people," said Cary. "Our class members have such diverse backgrounds, I think we have a lot to offer our communities."

Having lived in the John Day area for 25 years, Cary said his family has no intention of pulling up roots. His education and skills will be recycled right back into the environment that helped him grow.

"When you go through a program like this in a rural area, you get to know the people at the hospital with whom you will be working, and you get fairly comfortable with them," said Cary. "The doctors, nurses and staff are with you every step of the process, and they are there to help you however they can."

Because students joining health care professions in rural areas are far and few between, more of them have the opportunity to observe all types of procedures, and everyone is willing to help in the learning process.

"The patients seem to be concerned about getting a good quality nurse trained in their hospital. They see themselves as playing an important role in my education and not just being a medical subject," said Davis. "Any time I get discouraged and think 'I just can't do this,' someone will come up to me and ask how I'm doing. It's at those times that I think 'I'm not just doing this for myself, I'm doing this for everyone in my community,' and that gives me the incentive to go on."

"By bringing education out to where the people of Oregon are and where they wish to remain, OHSU may have struck upon one of its most effective solutions for providing health care to the state."

From the perspective of faculty in the School of Nursing, this kind of partnership with rural health care providers is what will keep a strong pool of providers throughout the state. According to Nancy Findholt, clinical instructor in the Rural Frontier Delivery Program at EOSC, all six members of this year's graduating class plan to stay and practice in their home towns.

"We've been getting positive feedback on this program since it started a year ago," said Findholt. "The students have been very innovative in coming up with new programs to aid the community."

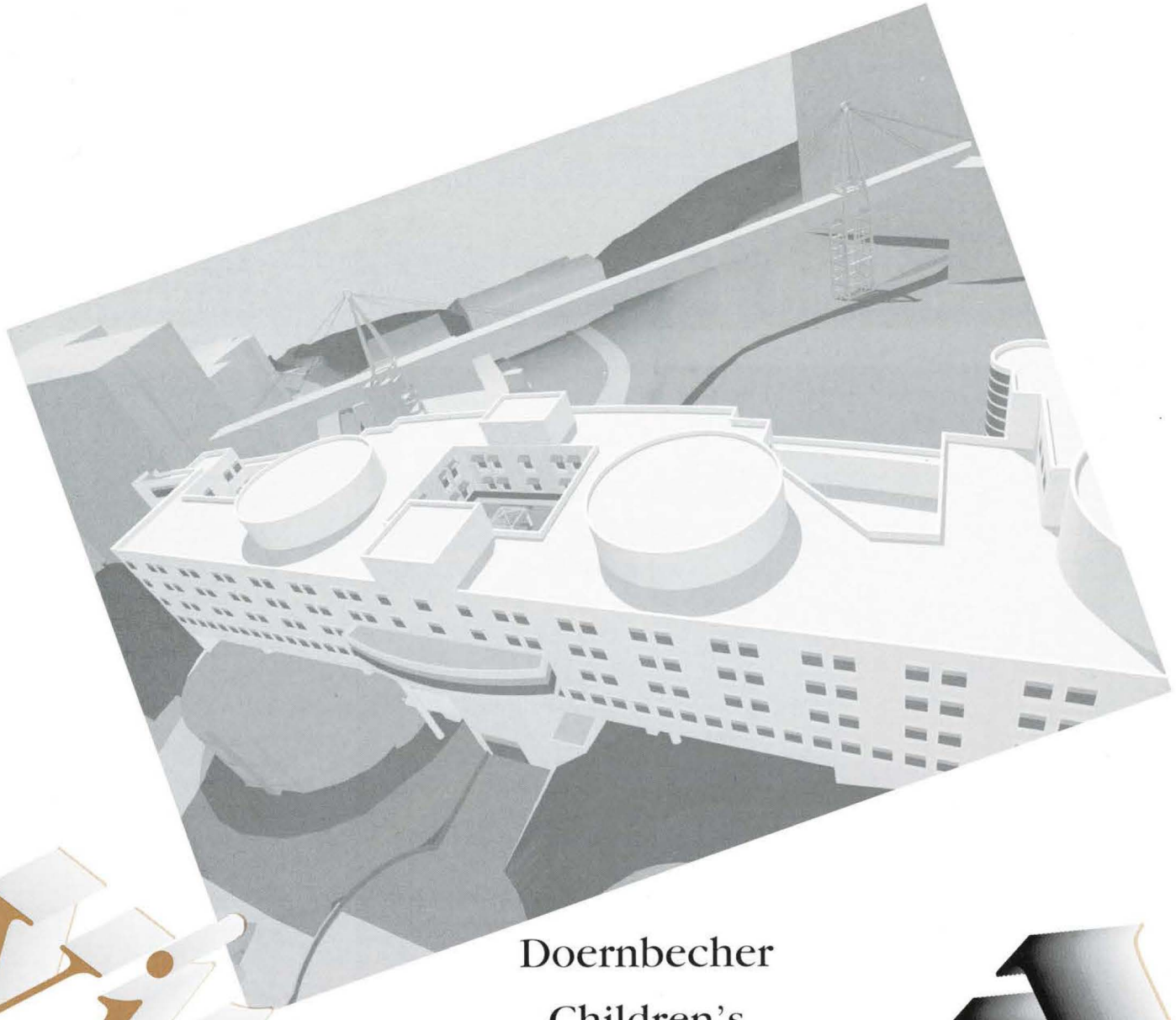
For example, one student developed a creative and well-advertised immunization clinic for low-income residents, which resulted in record-breaking attendance. Two others did leg work to get their community accepted for a Reduce Adolescent Pregnancy Program (RAPP) through the Oregon Health Division. Other students created an information booth on pregnancy reduction and sexually transmitted diseases at a local health fair. The students completed this work in addition to providing patient care and teaching health care to community residents.

In effect, the benefits to the community start as soon as the student enters the program and is able to turn his or her education into practice in local health and social agencies.

As long as small towns can generate students willing to learn the healing arts and mentors willing to encourage them through the process, the impact and significance of training rural residents will be lost on no one. The students of this year's graduating class are pioneers of sorts, breaking new ground, unhindered by the distance barriers that have stopped people before them. By bringing education out to where the people of Oregon are and where they wish to remain, OHSU may have struck upon one of its most effective solutions for providing health care to the state. OHSU

School of Nursing

Nancy Findholt, R.N., M.N., assistant professor and clinical instructor with the Rural Frontier Delivery Program at EOSC



Doernbecher Children's Hospital is a virtual reality

The Doernbecher Foundation has raised two-thirds of the $30 million needed to replace the hospital.

by Sandy Poole

Before even a clod of dirt had flown, the new Doernbecher Children's Hospital could be seen rising up behind University Hospital, white walls gleaming, windows flashing. Suddenly, you were behind the structure, then circling its roofline, swooping down into a courtyard. It had form; it had color. Was it really Doernbecher? Yes. And no.

Doernbecher's replacement facility now exists, but only in the minds of its architects as they use computer-generated models to paint a picture in virtual reality. The result is surreal and exciting. It shows on video what the facility will probably look like, a four-story structure spanning a canyon between University Hospital to the north and Child Development and Rehabilitation Center to the south. It is tangible evidence for those who dared not believe that the real Doernbecher is on its way.

For months, architects from Zimmer Gunsul Frasca Partnership with Anshen + Allen have been pouring over blueprints with teams of experts --Doernbecher staff and families. They've made many decisions: one floor will house outpatient clinics; the next floor up will hold intensive care and surgical facilities; next comes the inpatient rooms; and the top floor will consist of a comprehensive cancer center. Each floor will have adequate space for waiting rooms and play areas. Each room will house a single patient with a bath and a bed for a parent to room in. The hospital will link up with University Hospital so that high tech equipment can be shared. It will be located close to emergency facilities and the new Doernbecher Neonatal Care Center.

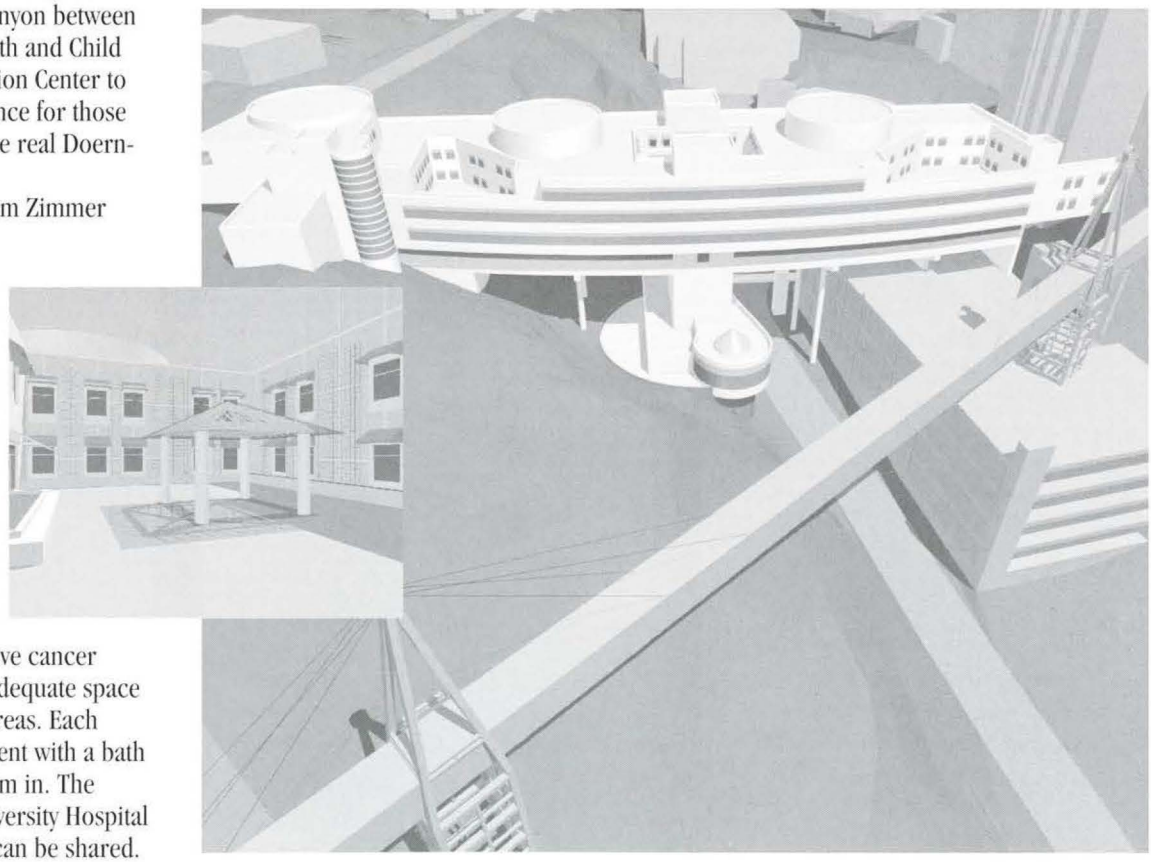
All this takes funding, of course, and the Doernbecher Foundation has been hard at work raising its share of the $60 million facility. The 1995 Children's Miracle Network Telethon, which aired June 3 and 4 on KATU Television, brought in more revenue for Doernbecher than ever before. Call-in pledges were up some 40 percent over last year, bringing the total to more than $3 million. Add it all up and the Doernbecher Foundation has raised nearly $20 million toward its goal of $30 million. And all that within the span of a year and a half.

But this is no time for the foundation to rest on its laurels. Fund raising continues through volunteer programs like Friends of Doernbecher, Kids Making Miracles, Credit Unions for Kids and Miracle Aisles. Support keeps coming in through loyal corporate sponsors like United Grocers, Price-Costco, First Interstate Bank and Starbucks, just to name a few.

One particularly popular fund raiser involves the sale of personalized bricks. Donors can have their names or those of anyone they wish to honor inscribed on bricks that will be used to pave courtyards in the new Doernbecher. Sales are being coordinated through the Doernbecher Foundation at (503) 294-7101.

In the meantime, patients continue to flow into Doernbecher, and families are excited about the future. Kaiser Permanente and OHSU are establishing a center of excellence for pediatric care at Doernbecher. That means Kaiser permanente physicians will treat their pediatric members at Doernbecher. Chief of Pediatrics Ron Rosenfeld, M.D., is actively recruiting new faculty in oncology, nephrology, infectious disease, neonatology, critical care and primary care.

The "space breaking," as it is fancifully called, is happening in late summer. Hoffman Construction Company is the contractor, and if all goes as planned, the new Doernbecher Children's Hospital could be up and running by late 1997. OHSU



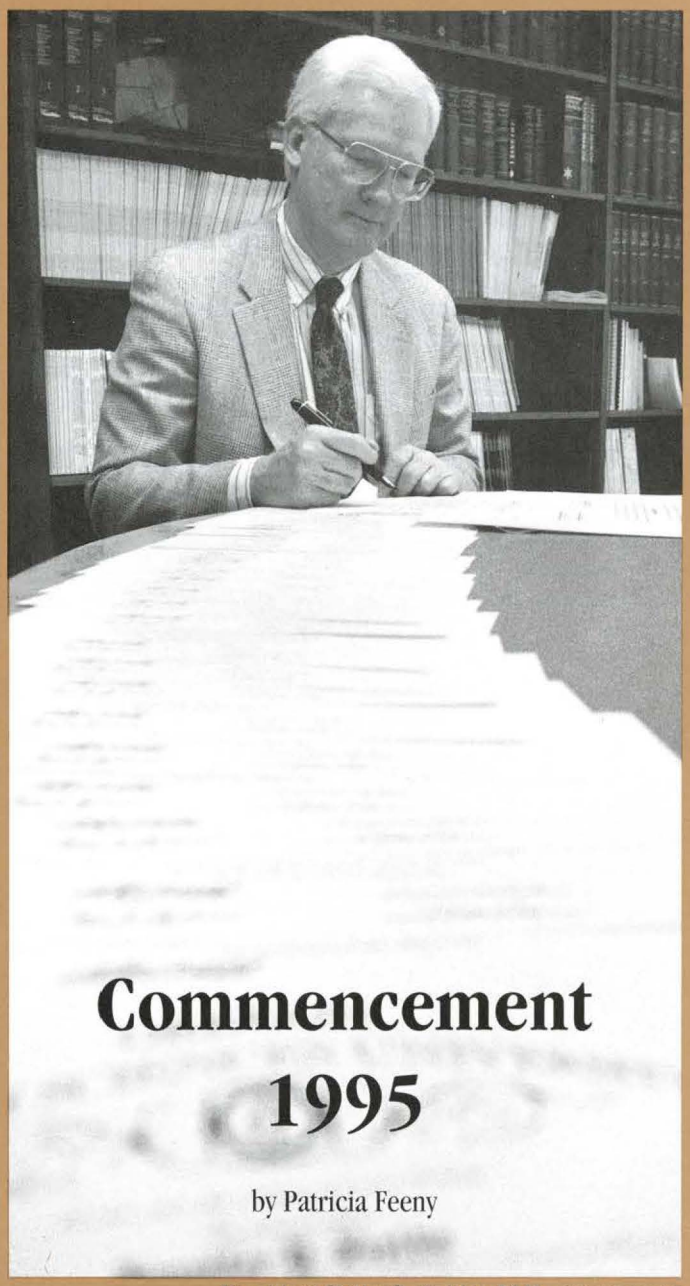
Above: view of new Doernbecher looking west; VA bridge in foreground; University Hospital south on far right **Near left**: courtyard paved in bricks **Far left**: view of new hospital looking east

STUDENT AWARDS
The highest student honors at commencement included the following awards:
School of Dentistry Alumni Association Award in Memory of Stephen P. Peglow: Martin Matovich
School of Dentistry Alumni Association Award in Dental Hygiene: Shannon Marquis
School of Medicine, Gold Headed Cane Award: Edward Bartkus II
School of Nursing Dean's Award, graduate: Judith Norris (EOSC)
School of Nursing Dean's Award, undergraduate: Tanya Baker and Clint Mitchell (Portland), Marilyn Krueger (EOSC), Pat Smith and Jennie Watt (SOSC), H. Louise Nixon (OIT)

FACULTY AWARDS
School of Dentistry
Outstanding Clinical Instructor, dentistry: James Tinkle, D.M.D., assistant professor of endodontology
Outstanding Didactic Instructor, dentistry: Fred Cowan, Ph.D., professor of educational resources
Outstanding Clinical Instructor, dental hygiene: Cathy Avera, A.A., instructor in dental hygiene
Outstanding Didactic Instructor, dental hygiene: J. Henry Clarke, D.M.D., professor of behavioral science and dental hygiene

School of Medicine
David W.E. Baird Award: Chris Salmon, M.D., assistant professor of diagnostic radiology
The J. David Bristow Award: John McAnulty, M.D., professor of cardiology
Alan J. Hill Jr. Teaching Award, basic science: Philip Copenhaver, Ph.D., assistant professor of cell biology and anatomy
Alan J. Hill Jr. Teaching Award, clinical science: Tom DeLoughery, M.D., assistant professor of hematology
Howard P. Lewis Award: Lisa Pew, M.D., resident in obstetrics and gynecology
John S. Miller Award: John Duong-Tran, M.D., resident in pediatrics
Oliver M. Nisbet Award: David McAnulty, M.D., clinical assistant professor of family medicine

School of Nursing
Undergraduate Faculty Award: Marie Duncan, R.N., Ph.D., associate professor of family nursing (Portland), Karen Hasel, R.N., M.S., instructor in adult health and illness nursing (EOSC)
Graduate Faculty Award: Jean Harrison-Hohner, R.N., M.S.N., instructor in family nursing (Portland), Linda Felver, R.N., Ph.D., associate professor of adult health and illness nursing (EOSC)



Commencement 1995

by Patricia Feeny

President Peter O. Kohler, M.D., signs more than 500 diplomas for this year's graduates.

OHSU's 1995 commencement speaker offered this year's graduates a global perspective of the health care challenges ahead of them. Miriam Hirschfeld, D.N.Sc., chief scientist for nursing, World Health Organization, gave a speech titled "We Live in Exciting Times — A Blessing? A Curse?"

"It is a time of rapid change where the half-life of knowledge is about three years and where old and accepted values are being questioned," said Hirschfeld. "In such a world, we must learn to live with ambiguity and try to master the contradictions."

Having worked in the international trenches of health care delivery, Hirschfeld provided the graduates with a philosophical survival kit.

She addressed the fact that in an insecure world, the graduates must trust the knowledge they have, go on to gain more, but continue questioning its validity. She encouraged them to feel open and vulnerable in facing suffering, anguish, illness and death, but still feel a sense of purpose and comfort. And with this they may become aware of the need for genuine partnerships with fellow health care workers and others — patients, families, communities. "Be able to laugh and be able to cry in becoming genuinely yourselves, while being genuine with others," she said.

At graduation, 568 students began their health care careers. The School of Dentistry awarded the following degrees: 68 doctor of dental medicine, 27 bachelor's of dental hygiene and 12 postgraduate specialty certificates. The School of Medicine awarded the following degrees: 87 doctor of medicine, 15 doctor of philosophy, one M.D./Ph.D., three master's of science in medicine, 20 bachelor's of medical technology and six bachelor's of radiation therapy. The School of Nursing awarded the following degrees: five doctor of philosophy, 59 master's of nursing, 19 master's of science in nursing, 227 bachelor's of nursing and 20 post-master's certificates in nursing.

OHSF Board Chairman Ben Whiteley (right) and OHSF Director of Development Jay Barber (2nd from left) are part of the team with OHSU clinicians, researchers, students and staff.

This Is One University Where the Cheerleaders Are Part of the Team

Sorry—you won't see OHSU at the Final Four. We'll never appear in the Rose Bowl. The cover of SPORTS ILLUSTRATED? Forget it.

But we **are** a top-rated team: In 1994 our medical school was ranked first in the nation for comprehensive education by U.S. NEWS & WORLD REPORT, and continues to stand in the top etchelon. Our schools of dentistry and nursing are recognized among the country's best. And several internationally respected OHSU research institutes are unique in America. The people who make this possible represent the best and brightest in hundreds of biomedical and health care fields, the top students, the most productive staff—and, as important as any other teammate, **you** and all OHSU supporters.

The donors, volunteers and board members that power OHS Foundation in its support of OHSU and biomedical research in Oregon are the cheerleaders who believe in the many missions of the Hill. OHS Foundation has never been stronger, with assets and endowments approaching $158 million. We are one of America's 400 largest and most efficient charitable institutions. Last year alone, OHS Foundations donors contributed more than $25 million to the future of health care and education.

We thank you—and urge you to continue your support. Like all great teams, we're in this thing together. You can reach us at (503) 228-1730.

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MARQUAM HILL LECTURE SERIES
1995-1996

OHSU Library Auditorium, 7:30 p.m

October 19, 1995
"Lifestyle: Research on Good and Bad Health Habits in Health and Illness," Joseph Matarazzo, Ph.D., professor and chairman, medical psychology, School of Medicine

November 16, 1995
"Multiple Sclerosis: Taking the First Step Toward a Cure," Dennis Bourdette, M.D., associate professor of neurology, School of Medicine

January 18, 1996
"The Skin Cancer Epidemic: Melanoma," Neil Swanson, M.D., professor and interim chairman of dermatology, School of Medicine

February 15, 1996
"Prematurity: Are We Making Progress," Gerda Benda, M.D., professor of pediatrics, School of Medicine

March 21, 1996
"From Bench to Bedside: The Importance of Basic Research," Susan Smith, Ph.D., director of the Oregon Regional Primate Research Center

April 18, 1996
"AIDS in Oral Health: Clinical and Ethical Challenges," Gary Chiodo, D.M.D., professor of public health dentistry, School of Dentistry

For more information about the Marquam Hill Lecture Series, call the Office of Community Relations, 494-7686.

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